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Mobilizing the audience commodity: Digital labour in a wireless world

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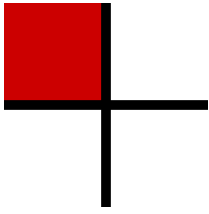# Mobilizing the audience commodity: Digital labour in a wireless world

Vincent Manzerolle

abstract

This paper re-examines the work of Dallas Smythe in light of the popularization of Internet-enabled mobile devices (IMD). In an era of ubiquitous connectivity Smythe's prescient analysis of audience 'work' offers a historical continuum in which to understand the proliferation of IMDs in everyday life. Following Smythe's line of analysis, this paper argues that the expansion of waged and unwaged digital labour facilitated by these devices contributes to the overall mobilization of communicative, cognitive and co-operative capacities – capacities central to the accumulation strategies of 'informational capitalism'. As such, the rapid uptake of these devices globally is an integral component in this mobilization and subsumption. In the case of Smythe's provocative (and somewhat controversial) concept of the audience commodity the work of the audience is materially embedded in the capitalist application of communication technologies. Consonant with Smythe's emphasis on the centrality of communication and related technologies in the critical analysis of contemporary political economies, this paper elaborates upon the concept of digital labour by rethinking Smythe's theory of the audience commodity as a central principle organizing the technical and social evolution of IMDs.

Introduction

Work under contemporary capitalism is profoundly bound up with the development, deployment, and colonization of everyday life by digital information and communication technologies (ICTs). The growing ubiquity of mobile web-enabled devices (IMDs), particularly those that exist at the convergence of computing and mobile telephony, are paradigmatic technologies illustrating this point.[1] This paper will focus on one example of these devices – the smartphone[2], which will soon constitute the

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1 According to Gartner Research Inc. (2009), mobile phone sales in 2009 reached 1.2 billion units, of which 172 million were smartphones. Although the overall market for mobile phones declined year over year, the smartphone market grew an astonishing 24 percent year over year (http://www.gartner.com/it/page.jsp?id=1306513). Strong growth in this sector continued in Q1 of 2010 with a 48.7 percent increase in smartphone sales over the same period in 2009 (http://www.gartner.com/it/page.jsp?id=1372013).

2 The term smartphone (a common industry term) is somewhat misleading since it privileges voice transmission as a defining feature. Instead, these devices – whose emblematic brands include Apple's iPhone and Research in Motion's Blackberry – are more fundamentally defined by the integration of telecommunication and mobile computing, including web browsing capabilities, GPS, email and, increasingly, social networking media as core competencies.

global mainstream of mobile communication (Lohr, 2009). The implications drawn from the following analysis can also be applied to a wide variety of yet to be designed mobile and wireless devices.

This paper engages with the critical work of Dallas Smythe to frame an analysis of digital labour in an era of ubiquitous connectivity. Smythe's concepts have, arguably, gained a renewed saliency amidst the emerging practices and celebratory rhetoric of web 2.0. Following his line of analysis, the expansion of waged and unwaged labour facilitated by devices such as the smartphone, involves the mobilization of communicative, cognitive and co-operative capacities – capacities central to the accumulation strategies of 'informational capitalism' (Fuchs, 2010).[3] I argue that the rapid uptake of these devices globally is an integral component in this mobilization and subsumption of human capacity. In the case of Smythe's provocative (and somewhat controversial) concept of the audience commodity, the 'work' of the audience is materially embedded in, and articulated through, the capitalist application of communication technologies. Consonant with Smythe's emphasis on the centrality of communication and related technologies in the critical analysis of contemporary political economies, this paper elaborates the concept of digital labour by rethinking Smythe's concept of the audience commodity as a central principle in the technical and social evolution of IMDs.

This argument, therefore, has two central components: first, it examines Smythe's contribution to Marxist thought, highlighting the place of communication and communication technologies in the organization of waged and unwaged work. The paper will then develop this framework as it applies to ubiquitous connectivity generally and IMDs specifically. Finally, it will briefly outline how these considerations shed light on the rapid evolution of IMDs as they become dominant media across a variety of everyday settings.

From Marx to Smythe: Communication and labour

Before detailing Smythe's contribution to the analysis of contemporary forms of digital labour it is instructive to highlight his connection to key components of Marx's critique of capitalism, specifically the centrality of co-operative and communicative capacities to the reproduction of industrial capitalism. Throughout the section entitled 'Co-operation' in *Capital Volume 1*, Marx outlines how a necessary precondition for the creation of surplus value involves enclosing the social and communicative relations between workers. As a result of this ongoing process, 'The socially productive power of labour develops as a free gift to capital whenever the workers are placed under certain conditions, and it is capital which places them under these conditions' (Marx, 1976:

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3   Communicative capacity refers to an index of human potential involving the encoding and decoding of meaning. Moreover, capacity of this sort enables the individuation and articulation of the self as a socially constituted agent within certain definite social relations. As a function of capitalist innovation, these capacities are increasingly the object of technical mediation leading to their reconstitution, amplification and prospective exploitation by the capitalist application of ICTs.

451). As a result of the gains in productivity engendered through the organization and co-ordination of workers, and guided by various bourgeois fetishistic myths,[4] technology (capital) is seen as the bearer and creator of value rather than co-operative labour power. In reality it is the co-operation of workers, and the synergy created from their co-operation, that generates surplus value. For this reason, 'co-operation remains the fundamental form of the capitalist mode of production...' (Marx, 1976: 454).

Following Marx's understanding of the communicative and co-operative basis of labour and as a result surplus value, Smythe demonstrates via a materialist analysis of ICTs under capitalism that the co-operative and creative basis of human labour is a regular object of capitalist mediation and technological innovation. Indeed, technological innovation increasingly mediates the articulation of human communicative capacities in general. For Smythe, one of the key abstractions emerging from this process of mediation is the audience as commodity. In the commercial broadcast model, viewers' attention to commercial messages is exchanged for television programmes (the 'free lunch'). The audience participates in the necessary work of consuming, and responding to, commercial messages. By performing this service *gratis,* the audience works for media capital by marketing goods and services to themselves and others (Smythe, 1981: 9). In so doing, '(a)udiences thus labour for advertisers to assure the distribution and consumption of commodities *in general*' (Jhally, 1987: 67, emphasis added). The necessary expansion of consumption required by declining production costs calls into being the '[m]ass media of communications' as a systemic creation of industrial capitalism 'whose purpose is to set a daily agenda of issues, problems, values, and policies for the guidance of other institutions and the whole population. They [media capital] mass produce audiences and sell them to advertisers' (Smythe, 1981: xii). Thus the increasing productive capacity of industrial capitalism is mirrored by a concurrent production of audiences as 'a new major institution which now holds a central place in the interwoven complex of institutions – the family, workplace, school, church, and state' (1981: xiii).

Smythe therefore places mass communication, consciousness and communicative capacities within the productive framework of industrial mass production and consumption by highlighting their necessary role in realizing, as well as conserving, surplus value within the sphere of circulation.[5] It is in this process that the audience commodity becomes central. As Sut Jhally explains,

> Industrial capital seeks a means of reducing its circulation costs. Media capitalists offer access to audiences to accomplish this, thus sharing in the surplus value of industrial capital. Consumers participate in the process of buying…It appears that broadcasters sell consumers to industrial capitalists rather than seeing their activities as part of the process of selling commodities of industrial capitalists to consumers. (Jhally, 1987: 117)

Seen from the perspective of the total circuit of capital, the media and cultural industries are important components in expanding and speeding up this circulation of commodities through the incorporation of pre-existing communicative and co-operative capacities mediated by evermore sophisticated and ubiquitous ICTs. The broadcasting model that

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4   For an insightful and contemporary overview along these lines see Mosco, 2004.

5   See Marx, 1978.

defined the rise of the audience commodity, and the more contemporary forms of fragmentation that mark Internet users, are successive evolutionary steps in the ever-expanding circuit of capital comprising the integration of both production *and* circulation.

Through Smythe's emphasis on the capitalist application of ICTs, the sphere of circulation can be seen as productive in two senses: 1) it literally facilitates the expanded circulation of commodities and thus the realization and accumulation of surplus value; and 2) it facilitates the subjective reproduction of the wage-labourers themselves. To this end, the capitalist application of ICTs creates what Smythe calls the 'the consciousness industry' – a consortium of institutions emphasizing the productive articulation of communicative capacities and the overall management of consciousness itself.[6] In so doing it enables the reproduction of the wage-relation *in general* by compelling consumers back to work so as to consume an expanding bundle of goods through the willing, and sometimes involuntary, acceptance of new and novel needs.

Real subsumption, mobilization and the consciousness industry

The operation of the consciousness industry, however, has an evolving technical and material basis. As Smythe has detailed, the development of spectrum-based wireless technologies able to overcome the temporal and spatial barriers that divided the places of work from the places of leisure has been central to the production of audiences by the consciousness industry. This has involved the exploitation of a commonly held resource: the electromagnetic spectrum. The integration of the radio spectrum and wireless technologies into the management of consumer consciousness is part of a more general *mobilization* of productive capacities across entire populations. Citing the work of John Paul de Gaudemar, Frank Webster and Kevin Robins argue that the language of mobilization offers a compelling frame within which to understand 'the ways in which capital uses labour power and how populations are "mobilized"' (Robins and Webster, 1999: 111). De Gaudemar outlines two major forms of mobilization: absolute mobilization, in which 'the traditional way of life of rural populations (is) systematically undermined in order to create a factory workforce. This process involve(s) disciplinary efforts, both within the factory and across the fabric of everyday life' (1999: 111); and relative mobilization in which earlier ways of policing workers are 'replaced by an internal factory discipline in which technology [comes] to play a core role and in which control coincide[s] with the goal of productivity and surplus value extraction: the machine as dual instrument of control and of increased

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6   Smythe elaborates on the consciousness industry: 'Although the mass media began the mass production of information, they are linked through interlocking business organization and a complex of largely managed, i.e., oligopolistic, markets with a much broader base of information production and exchange. The whole complex is [the] Consciousness Industry. Advertising, market research, photography, the commercial application of art to product and container design, the fine arts, teaching machines and related software and educational testing, as well as the formal educational system, are all part of it' (Smythe, 1981: 5).

productivity' (1999: 112); this process coincides with the rise of Fordism and Taylorism.

While the application of ICTs in the realm of waged labour makes work more intensive, it also contributes to the direct integration and blurring boundaries between 'waged' and 'unwaged' time. The colonization of everyday life by ICTs catalyzes a transformation whereby '[f]ree time becomes increasingly subordinated to the "labour" of consumption' (Robins and Webster, 1999: 116).

Absolute and relative mobilization, however, map onto Marx's distinction between the processes of formal and real subsumption under capitalism. The former depends on clear divisions between work and leisure time, whereas the latter attempts to erase all such distinctions. In this case, the condition of relative surplus-labour – that is, the intensification of work within a given working day – is the precondition, and material expression, of real subsumption (Marx, 1976: 1025). Real subsumption is intimately tied to cycles of rapid technological change, particularly when labour practices have, through technological innovation, become subject to relative surplus value (intensification) (Marx, 1976: 1035). As real subsumption comes to define ever-greater parts of the collective labour process through ICTs, 'capital puts to work…the lifestyles, desires, and knowledge that are formed outside it' (Read, 2003: 18).[7] Real subsumption therefore becomes an active force outside of the factory once the circulation of capital has become completely inseparable from the social and subjective reproduction of the individual worker.

The history of ICTs explored by Robins and Webster via de Gaudemar's concept of mobilization is, in fact, a history in which the synchronization of the factory and home is facilitated by the capitalist application of ICTs. The growth of demographic, psychographic, and other lifestyle data about consumers through the expansion of commercial broadcast media made possible the appearance of the audience commodity, a process which would, through the growing ubiquity and interactivity of communication media, result in 'the integration of advertising, market research, point-of-sale devices, and just-in-time inventory…single, integrated constellation' (Dyer-Witheford, 1999: 81), which extends across spaces of work, sociality and domesticity.

Smythe's view of who and what is alienated under the conditions of real subsumption not only includes workers dispossessed of the means of production, but also includes processes of self-production. Self-commodification occurs when one's self-reflexive and social capacities are increasingly inseparable from the machinations of capital accumulation and capital intensive ICT infrastructure, which are increasingly central to the articulation and deployment of one's personal capacities. As Smythe writes, 'Today and for some time past, the principal aspect of capitalist production has been the

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7   What arises from the completion of this process is what some contemporary Marxists call the 'social factory'. The constitution of a social factory as the metaphor to understand the effects of real subsumption has been explored at length by autonomist Marxists like Tronti (1966), Negri (1989), Dyer-Witheford (1999) and Virno (2004) and constitutes an important stream in communication research that parallels and often complements many of the research interests expressed in Smythe's work.

alienation of workers from the means of producing and reproducing themselves' (Smythe, 1981: 48).

For Smythe, the concept of real subsumption characterizes a process that brings social and communicative capacities within the gravitational pull (i.e. enclosure) of capitalist social relations; it is this particular process described in Smythe's approach to the capitalist application of communication technologies. Taken to its logical end, the process of communicative enclosure, which begins in the factory, evolves into a seamless integration of work and non-work time through the intervention of capitalist technologies and social relations (like the commodity form) into the social lives of workers. Smythe's analytic starting point – the capitalist application of information and communication technologies – offers an important contribution to the concept of real subsumption as it takes up 'the place of communications in the wider system of social reproduction and the reproduction of capital' (Jhally, 1987: 67). Communicative capacities under the guidance of the consciousness industry contribute to increased synchronization between the production of subjectivity and the speeding up of circulation.

Smythe's concept of the audience commodity and audience work has been criticized for its phantasmal and seemingly un-Marxian characteristics (Lebowitz, 2009: 217). The claim that audience work actually creates surplus value has been a specifically disputed one. Although the creation of surplus value in a classical Marxist sense does not neatly map on to the 'work' of the audience (particularly in the case of commercial mass broadcasting), arguably, it is the *appearance* of the audience as a saleable commodity that provides the means of harnessing communicative capacities for the purposes of circulation *as if* they were producing surplus value. Under traditional mass broadcasting, the appearance of surplus value is really, in the first instance, an abstraction – a necessary abstraction – but an abstraction nonetheless.

The audience commodity and audience work do not *actually* produce surplus value directly. Rather, the conservation and realization of surplus value in the sphere of circulation occurs through the intervention of capital in the materialization of social communicative, co-operative and cognitive capacities of audiences; it is in this sense that the audience can be said to actually 'work'. That is, the audience is active in the 'production of circulation' as a necessary, though 'unproductive' (Marx, 1976: 1038) function required by post-Fordist capitalism. The work of the audience is an abstract category that, at first glance, merely reflects the conservation of surplus value in the speeding up of circulation through the communicative mobilization of consumers. The net savings incurred through this mobilization, however, produces the audience *as* a commodity, which then guides the development and deployment of commercial media systems, and in particular, the commercial application of spectrum-based technologies. This function gains a greater material reality with the spread of interactive digital media. In this way the abstraction of the audience commodity and its work becomes a *real* force in the world – a real abstraction (Toscano, 2008).

The contemporary IMD industry, its rapid evolution and colonization of everyday life, is, therefore, a material expression of shifts in the nature of waged and unwaged digital labour in a political economic milieu defined by ubiquitous and personalized digital

ICTs. In terms of the necessary and unwaged labour involved in the sphere of circulation, the colonization of these devices in 'free' time has spurred on the valorisation of user generated content and other potentially valuable personal data – data used both to commodify personal information and to enhance, rationalize and personalize marketing and advertising in exchange for user's attention, functioning as Smythe's 'free lunch' inducement. IMDs are key components in the valorisation of co-operative and communicative capacities as these capacities pass through the converged nexus of digital ubiquitous networked media. The resulting configuration creates the conditions for what Christian Fuchs (2010), following Smythe, suggestively calls the 'prosumer commodity' as a structuring principle in the development of the mobile web and digital labour generally.

Mobile 2.0: Rise of the prosumer commodity?

The increasing forms of self-commodification that mark a variety of digital labour practices (Hearn, 2008) are reflected in the technical, functional and social capacities of the mobile media. Indeed, the sinews of digital labour writ large, comprising both waged and unwaged labour, increasingly demand the maintenance of digital identities and social networks as a function of the highly competitive categories of so-called 'creative', 'intellectual' and 'affective' labour (see Fuchs, 2009b; 2010; Cohen, 2008). These digital labour practices are made materially possible in part by increasingly ubiquitous media like Blackberries and iPhones and are systemically performed by an increasingly precarious, alienated and exploited worker.[8]

The personalization of consumer ICTs endemic to the web 2.0 era, including IMDs, creates the basis for scalable audiences with varying degrees of heterogeneity and segmentation for the purposes of direct marketing and advertising. As highly personalized consumer devices, IMDs are increasingly employed to further the constant presence and cultural status of polling and marketing surveillance under the guise of democratizing culture (for example through integration of these devices in the flow of broadcasting content like American Idol, CNN or Much Music) by creating an instant feedback mechanism. The intensifying rhythms of capitalist cultural production and its ubiquitous flows of information are now increasingly inseparable from the human body.

As opposed to traditional mass media audiences, in the web 2.0 era 'users are also content producers: there is user-generated content, the users engage in permanent creative activity, communication, community building and content production' (Fuchs, 2009a: 82). In this case, the more apt term is the 'prosumer commodity'; but, rather

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8 In waged labour, as technologies to maximize the communicative and co-operative capacities of paid labourers, these highly complex devices reflect an increasingly precarious working arrangement. Not only are contracts shorter, requiring workers to be more flexible in terms of their scheduling and skills set in order to keep up with industry changes, but the integration of these ubiquitous media have made work both more intensive and extensive for waged workers (see the Pew Internet & American Life Project study by Madden and Jones, 2008). *Intensive* because workers are now expected to accomplish more 'within the traditional time and space confines of their job'; and *extensive* because it has become 'much easier for individuals to work longer hours' (Middleton, 2006: 169-170).

than signifying a democratization of media content, Fuchs contends the term signifies 'the total commodification of human creativity' (2009: 82). Coined by Alvin Toffler (1980), the term 'prosumer' reflects the convergence of the cultural roles of producer and consumer. Crucial to this convergence is the role of ICTs in amplifying the communicative capacities of individuals in everyday settings. This convergence is also marked by the rapid expansion of a flexible, precarious and contract-based workforce (Neilson and Rossiter, 2008; Gill and Pratt, 2008). It must be reiterated that the relative alienation and precarity of this category of workers is masked by the triumphalism of the prosumer. As Edward Comor argues, 'surely what the prosumer reflects and develops – including social norms and attitudes – is itself little more than an alien force: the abstract power of private property and social relations mediated by contracts and the price system' (Comor, 2011).

It is worth remembering, however, that web 2.0 is not a specific object, technology or application. Rather, it is more fruitfully understood as a set of marketing discourses promoting the interactive and personally empowering nature of the Internet, which ostensibly stems from the valorisation of user-generated content. 'Web 2.0' reflects a concerted effort to re-brand the commercial opportunities of the web, advocating its incorporation into professional and social settings via an assemblage of interactive, networked and digital media. In addition to the perception of empowered users across a variety of technologically mediated settings, 'web 2.0' reflects a new web-based marketing approach that strategically employs user-generated content in the production and targeting of commercial messages. As Fuchs concisely summarizes, '[i]n the case of the Internet, the commodification of audience participation is easier to achieve than on other mass media' (Fuchs, 2009: 84).

The drive to democratize culture said to inhere in web 2.0 (Jenkins, 2006; Tapscott and Williams, 2008) is outweighed by a much more powerful interest in monetizing online behaviour. The Internet-based operations of media conglomerates – even relative newcomers like Google and Yahoo – do not break from, but, instead, build upon principles developed by traditional mass media (for example, Google's *Ad Sense* updates the audience commodity for the web 2.0 era). AdMob, acquired by Google in 2009 for $750 million USD, is highly valued because of its prospective ability to 'monetize' data traffic to and from personal devices. In so doing, it produces and sells mobile audience commodities through the generation of detailed user information across a number of different metrics and includes the collection of data about application and website use. As AdMob proclaims:

> AdMob offers brand advertisers the ability to reach the addressable mobile audiences. Our innovative ad units will carry your brand messaging onto the top mobile sites. As one of the leading brand mobile advertising marketplaces, we have the products and the people to help you meet your campaign needs. (AdMob, 2010)

It goes on to note, '(m)obile advertising provides you with targeted access to mobile users, and is easy to buy and measure' (AdMob, 2010).

The logic of monetization hinges on audience attention as the primary commodity produced and delivered to advertisers. As a result of this logic, content is tailored to highly targeted audiences (Dahlberg, 2005). Not only is the audience more fragmented

online, it can now be spatially mobile and mobilized by, for example, the empowering rhetoric of 'web 2.0'. IMDs are more than innovative communication technologies; they now represent a potentially lucrative venue (or *platform*) for consuming billable data and reconstituting the audience commodity as one composed of many discrete identities.

Given the propensity to incorporate the unpaid labour of the prosumer, it is not surprising that IMDs are heralding the rise of 1:1 marketing (Mitra, 2008) or so-called 'participatory marketing' that relies on social media to incorporate user-generated content (UGC) directly into the marketing process. The following examples demonstrate how IMDs might act as platforms for the direct solicitation of users to reflexively participate in their self-commodification. Once they have done this, users are rewarded with a 'free lunch' consumed on their mobiles.

Both MyScreen and Sidebar offer users targeted and personalized content delivered to their mobile devices in exchange for personal data. These examples reflect the way in which the mobile prosumer commodity is being constructed in application-based services – services offering new revenue streams enabling the collection of personalized data through the willing participation, or unpaid 'work', of the device user. These encapsulate some of the dominant evolutionary paths that mobile devices will take; paths in which a particular user – the prosumer – is the object of potential commodification. But in this case IMDs provide a personalized platform to close the loop between informational production and consumption (prosumption).

As a platform for the mobilization of the prosumer commodity, applications or 'apps' are a defining characteristic of IMDs, shaping the contours of the mobile industry. Online application stores now exist for all major handset manufacturers and also include content producers and network operators (of these, the iTunes store is the most popular). Many of these stores offer software development kits for the production of applications, which can then be sold by third party developers, with the companies taking a share of the profits. These apps perform a variety of services, including tourist information, games, news, maps and other branded content. Indeed, most applications are now a means for targeted ads, marketing data or branding strategies and function as tools for collecting valuable personal data (Furchgott, 2009). In an effort to compete with AdMob's application based advertising and metrics, Apple has thrown its hat in the ring by releasing iAd as a feature of its new operating system, iOS4**.** Moving away from search-based advertising popularized by Google, Steve Jobs notes that, '(p)eople are not searching on a mobile device like they are on the desktop'; rather, they access their information increasingly through applications (Stone, 2010). In this way applications are a central area of expansion in the use of smartphones, representing an expanding revenue stream for a variety of mobile industry players including handset manufacturers, software developers and telecommunication companies (Middleton, 2009**)**.

The production of the mobile audience commodity by offering some sort of free lunch is juxtaposed by the limited willingness of big media to provide net neutrality on mobile broadband (demonstrated recently by partnership talks between Verizon and Google). This prospectively two tiered system comprising prosumer commodities and pay-per-byte users will, if trends continue, become the central revenue model for telecom providers, software designers, entertainment content providers, and handset manufacturers seeking to profit from accelerating IMD use (Parker, 2009).

In coming years, location-based services (LBS) are expected to become an important driver in the micro-billing system, particularly as IMDs become fully integrated into the

user's environment. Simply put, LBS are applications used 'to locate the customer in space' and thus to 'better map and understand what they are doing in a particular place and at a particular time, and so articulate and enmesh product and service offerings into this context…' (Goggin, 2006: 197). These types of applications use the GPS function now standard in most smartphones to offer information about the individual's surroundings. In exchange for highly detailed locational data, users are given potentially valuable and context specific information about their surroundings. LBS are predicted to account for roughly 14 billion USD in 2014 compared to 2.3 billion in 2009 (Zeledon, 2009). Features might include finding car dealerships, bars and restaurants nearby, locating friends or searching for maps and directions. Industry trends suggest that such features will become largely subsidized by advertising and marketing in which campaigns can be narrowly targeted focusing on place. Combined with detailed profiles of user tastes, habits and interests, LBS will provide valuable channels for monetizing the work of the prosumer commodity. One way in which this may happen is by targeting digital coupons to smartphone users based on their location and profile (Reedy, 2009). Additionally, location-based services are giving way to what is called augmented reality, 'a class of technologies that place data from the web on top of a camera view of the physical world' (Kirkpatrick, 2009), further blurring the distinction between the real and virtual world in the hope of monetizing user behaviour channelled through IMDs.

Although the conversion of mobiles into platforms for the articulation of the prosumer commodity actually fulfils a certain narrative of capitalist media identified by Smythe, it is the radio spectrum itself that is the least understood, yet most important component. Policies governing this limited and increasingly scarce resource will set certain material limitations on how the paid and unpaid labour of mobile users will come to define the evolution of these technologies. The spectrum infrastructure is typically associated with terms like 3G, 4G, WiMAX or Long-term evolution (LTE), but the growth of the prosumer commodity and the smartphone (among other IMDs) has engendered huge demand for mobile bandwidth with which many telecom providers are currently ill equipped to deal. In pursuit of long-term profitability amidst the popularity of web 2.0, telecommunications providers and handset manufacturers have pushed mobile devices from simple transmitters of voice to multi-media data receivers/transmitters. And, as a result, the general trend of increasing data use at the mobile level has begun to outpace voice transmissions (Middleton, 2010). With smartphone sales predicted to outsell normal phones by 2011, estimates of the cost to upgrade the US broadband infrastructure are as high as $350 billion USD. Such demands have placed increasing pressure on government regulators to offer more spectrum for commercial applications and to subsidize upgrades with tax-payer money (Reuters, 2009).

Both mobile broadband and web 2.0 have risen from the ashes of the first dot-com bubble. Like the euphoria surrounding web 2.0, high-speed mobile Internet has been called the 'great white hope of the telecommunications industry' (Brody and Dunstan, 2003). These two technological moments – web 2.0 and 3G/4G – represent what Fransman (2002) would call 'consensual views' within the telecom industry regarding the path of ICTs in the private (and public) sector. This view provides a collective promotional narrative that is able to draw investment from public and private sectors alike. These narratives are significant because the choice to pursue 3G and 4G

technologies is a risky (and expensive) one, premised on a belief that consumer demand for broadband will steadily increase and pay off the huge investments needed to replace the infrastructure. The next generation of mobile media, 4G, is being envisioned as seamless mobile broadband access far surpassing the patchwork of 3G standards that currently exist; it will no doubt be subsidized by tax payers due to its apparent necessity.

In these ways, the mobilization of the prosumer commodity has pushed the existing limits of mobile broadband networks. The most salient example is the case of the iPhone and its preferential relationship with AT&T in the U.S. – a relationship that has been a double-edged sword. While average revenue per user (ARPU) is up 3.8 percent and, as of October 2009, wireless data revenue is up 33.6 percent year over year, this increase has caused a 'data traffic jam' that has angered users and slowed down the network overall (Malik, 2009). This problem has led to increased research in to 4G technologies like LTE and WiMAX, which, once implemented, may increase average uplink and downlink rates, but will require costly upgrades and more sophisticated handsets. Such upgrades are also associated with broader economic stimulus plans and form a central plank in national broadband plans in the United States (see www.broadband.gov). The rising demand for mobile bandwidth precipitated by the popularity of the iPhone has made the question of spectrum policy and allocation all the more pressing. As noted by FCC chairman Julius Genachowski (Schatz and Sheth, 2009), there is a 'looming [spectrum] crisis' (Reuters, 2009); this claim is also echoed by industry leaders. This real or manufactured potential for crisis has reinforced an industry view that net neutrality should not be applied to the next generation of broadband standards.

Conclusion: Spectrum as commons

As ever more bandwidth is required to keep up with demand, choices made regarding spectrum allocation policies and technologies will become all the more important. Addressing the changing demands of waged and unwaged digital labour calls for rethinking the possibility of a spectrum commons (Lehr and Crowcroft, 2005). This may include a shift away from the private property model that has dominated spectrum management thus far and the implementation of more flexible spectrum management policies (Bauer, 2002). As it stands, the monopoly control of much of the spectrum by telecommunications and other commercial interests acts as a kind of rent placed upon an existing natural phenomenon that belongs to all of humanity.

Since all current trends point towards a society of ubiquitous connectivity premised on the organization and allocation of the spectrum and since it is through personal technologies that most people will increasingly come to experience communicative and co-operative relationships – a world where each person becomes, more and more, an island technologically linked to others – Smythe's prescient comments on the spectrum as commons gain a renewed importance:

> The radio spectrum is to communications today as is land to crops and water to fish. It is a peculiar natural resource, one whose politico-economic and social aspects have been largely ignored by social scientists. Like all other features of the human environment, it must be looked at

in its relationships with people…Like no other resource, the radio spectrum is the first form of world property. (Smythe, 1981: 300)

Smythe's analysis of the specifically capitalist application of communication technologies offers an analytic entry point into the ways digital technologies are deployed in an effort to more fully subsume communicative capacities as forms of 'digital labour'. Smythe has described technology as 'a mystifying term, which describes the ongoing capitalist system' as well as comprising 'capitalism's most potent propaganda weapons in the struggle between the rich and the poor nations and the rich and the poor within nations' (Smythe, 1981: 20). Considering how spectrum-based technologies now constitute a 'normal', perhaps necessary (Livingston, 2004), bundle of goods demanded by individuals, both in their capacity as wage labourers and social agents, Smythe's warnings become even more salient and vital for contemporary media criticism.

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