



## Prosuming (the) self

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### abstract

Web 2.0 has placed prosumption at the very centre of economic value creation. Digital prosumption has been usually associated with user-generated content. However, recent studies argue for a need to also treat user generated data as a form of prosumption labour, as it is the appropriation and exploitation of these data that fuels digital capitalism. In this paper I analyze self-tracking as a form of digital prosumption. When people use the increasingly popular self-tracking devices, they produce huge amounts of data about themselves, referred to as self-quantification, which firms draw on to create value. The paper aims to expand on the notion of data production as prosumption labour by focusing on self-quantification. I draw on Dallas Smythe's concept of the 'audience commodity' to analyze the commodification and valorization of life through self-quantification practices. I argue that through the generation of data the quantified-self becomes the 'prosuming self' that generates value through her own tracked life, but also the 'prosumed self', an active and entrepreneurial subject that is governed to produce the kinds of data that can create value for firms.

### Introduction

Throughout the years the focus of marketing thinking and practice has shifted from distributing products to the market to marketing products to the consumers and, increasingly in our days, to engaging consumers in the marketing process (Lusch, 2007). In fact, it has been acknowledged that marketers can no longer build and manage successful brands alone, but they need consumers' help and dynamic cooperation (Bagozzi and Dholakia, 2006; Brown et al., 2003; Cova et al., 2007). Thus, the separation between consumption and production becomes blurred as the consumer is involved in production processes and thus evolves into a 'prosumer'. As Cova and Cova (2012) underline, the emergence of the

empowered prosumer has been hailed not only by co-creation discourse (Prahalad and Ramaswamy, 2004; Vargo and Lusch, 2004) but also by postmodernist researchers (Firat et al., 1995; Firat and Dholakia, 2006) and consumer culture theorists (Arnould and Thompson, 2005).

The social features of Web 2.0 have played a major role in this shift from the passive consumer to the active prosumer, as the Internet has been the main ground where these co-creation activities take place (Bonsu and Darmody, 2008; Cova and Dalli, 2009). It has been argued that Web 2.0 platforms have not only enabled marketers to engage in constructive dialogues with consumers, but also empowered the latter, allowing them to take an active role in decision-making and production processes (Füller et al., 2010).

However, previous studies have also provided a critical gaze on prosumption, focusing on control and exploitation of prosumers for commercial purposes, through this very freedom that was supposed to empower them (e.g. Arvidsson, 2006; Fyrberg-Yngfalk et al., 2013; Zwick et al., 2008). Digital prosumption has been usually associated with the content that users generate on Web 2.0 platforms. User generated data are also crucial for the creation of economic value (van Dijck, 2009), and for that reason consumers' generation of data has been conceptualized as a form of digital prosumption (Fuchs, 2013). In this article, I argue that more recent technological advancements allow for new modes of prosumption to emerge as 'smart' tracking technologies are increasingly becoming part of our everyday lives and offer numerous possibilities to users to track and quantify their activities and develop what has been termed as the 'quantified self'<sup>1</sup>.

Self-tracking (or self-quantification) is becoming an increasingly popular phenomenon that aims to promote 'self-knowledge through numbers' (see <http://quantifiedself.com>), or in other words data. Numerous tools and devices are introduced every day in the market that allow users to track and quantify every aspect of their lives and by doing so, generate huge amounts of data. Examples include traditional pulse measurement devices, smartphone applications that measure sleep quality and health monitoring wristbands that not only measure the activity level of individuals, but also guide them towards an 'optimal' activity level during the day. The companies that sell these products get the data which can then be used to develop new products and services, inform

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1 The term 'quantified self' was coined by Gary Wolf and Kevin Kelly, editors of *Wired* magazine, in 2007. They later founded the Quantified Self Labs company and launched the [quantifiedself.com](http://quantifiedself.com) platform with the intention of bringing together users and makers of self-tracking tools and providing support to the growing Quantified Self community worldwide.

the marketing of their existing products or further enhance their brand value by connecting consumers to one another through competitions on different kinds of brand community platforms and social media.

This paper aims to expand on the notion of data production as prosumption by looking beyond Web 2.0 platforms and focusing on self-tracking and self-quantification practices. Drawing on Dallas Smythe's notion of the 'audience commodity', I explore the commodification of life through self-quantification. I argue that the quantified self becomes the 'prosuming self' through the generation of data, but also the 'prosumed self', an active entrepreneurial subject that produces the 'right' kinds of data which satisfy market expectations and requirements. In other words, the consumption/use of self-tracking technologies engenders two distinct but interrelated forms of prosumption: one that relates to the production of data (the 'prosuming self'), and the other that concerns the production of the self-quantified subject herself (the 'prosumed self'). I further argue that these forms of prosumption generate value, as they constitute labour time that is necessary for the production of a specific commodity: life itself.

The paper is organized as follows: first, the notion of prosumption in relation to co-creation discourse is discussed, followed by an overview of the phenomenon of self-quantification and a brief review of relevant recent studies. The concept of the 'audience commodity' is then presented and its relevance to self-quantification is discussed. Following this analysis the notions of the 'prosuming self' and the 'prosumed self' are introduced and explicated. In the conclusion the main points of the paper are summarized and its contribution is highlighted. This paper aims to provide a critical theoretical analysis of the emerging popular phenomenon of self-quantification. While this is a conceptual paper, illustrative examples are provided throughout the text to support, explain and clarify the points and arguments made by the author.

## Prosumption

First coined by Alvin Toffler, in 1980, the term 'prosumption' aimed at breaking up the consumer-producer divide. In fact, according to Toffler, prosumption was prevalent in pre-industrial societies as there was no distinction between producers and consumers, but that changed with the industrial revolution that separated the producer from the consumer. Ritzer (2010), however, takes a different stance, arguing that the distinction between consumers and producers is inaccurate as consumers are – and have always been – involved in production processes in the same way that producers engage in consumption practices. In this, he follows Marx, who in the *Grundrisse* (1973: 90) contested the division

between consumption and production, arguing that the 'act of production is therefore in all its moments also an act of consumption' while at the same time 'consumption is also immediately production'. Postmodernists also dismiss this binary division between production and consumption as they view it as inherently superficial (Baudrillard, 1981; Firat and Venkatesh, 1993). What is less disputed though is the fact that the proliferation of social and digital technologies has placed prosumption at the very centre of today's economic value creation (Cova et al., 2011; Ritzer, 2010; Ritzer and Jurgenson, 2010), fulfilling Toffler's (1980: 27) prophecy for the 'prosumer economics of tomorrow'.

While prosumption evidently did not emerge with the advent of Web 2.0, it is the social nature of Web 2.0 and its universal acceptance and popularity that contributed to the steep rise in prosumption activities in recent years (Fuchs, 2013; Ritzer and Jurgenson, 2010). Due to recent advances in information technology consumers now have the opportunity to engage with organizational processes which would not have been possible just a few years ago. Via various online platforms, consumers nowadays engage in research and development activities, generate product ideas and even become involved in decision-making processes (Humphreys and Grayson, 2008). They may also act as word-of-mouth marketers, enhance a brand's identity and meaning, and even stage experiences for other customers (Cova et al., 2015). Prosumption therefore encompasses a whole range of activities that may not lead directly to the production of goods or services, as in the traditional Tofflerian conceptualization of the notion of prosumer, but can provide significant benefits for companies. In fact, it is argued that the proliferation of smart technologies diminishes consumers' agentic role in prosuming practices, as prosumption becomes increasingly automated (Ritzer, 2014). Therefore, prosumption can also include processes that take place during consumption without consumers' direct knowledge, intention or even involvement.

### **Prosumption: Co-creation vs. exploitation**

This section will present and analyse prosumption from two different and opposing angles. First, a positive approach that celebrates consumers' empowerment and active involvement in all aspects of business processes as co-creators of value will be presented. Then, a contrasting view that focuses on the exploitation of consumers' unpaid labor will be developed and discussed in more depth, as it informs the theoretical approach of the present paper.

*Co-creation*

Digital prosumption is the main manifestation of the popular concept of value co-creation in consumer markets, which has been hailed as the future of marketing theory and practice (Prahalad and Ramaswamy, 2004; Vargo and Lusch, 2004). In fact, it has been argued that co-creation's transformative role extends far beyond a firm's marketing department as it spreads throughout the organizational structure, bringing into being the co-creative organization (Ramaswamy, 2009). Proponents of co-creation have envisioned a new direction for marketing practice where the consumer is an equal partner, a constant co-producer of meanings, messages, products and services.

Co-creation has been broadly defined as 'the participation of consumers along with producers in the creation of value in the marketplace' (Zwass, 2010: 13). The tenet of co-creation is that 'the consumer is always involved in the production of value' (Vargo and Lusch, 2004: 11), as co-creation develops from a fundamental understanding that modern day consumers have evolved from oblivious to informed, from isolated to connected, from passive to active (Prahalad and Ramaswamy, 2004). The crux of co-creation is that it does not distinguish production and consumption as two separate practices, on the contrary co-creation discourse adopts a continuous-process perspective as the separation between production and consumption becomes blurred (Vargo and Lusch, 2004). In this perspective, consumers are actively involved in production processes and ultimately in the creation of value. In co-creation discourse, even products, tangible goods, are viewed not as the final product offering to the end user as their production is not completed in the manufacturing process, but rather production is seen just as an intermediate phase and the product itself as just an opportunity to provide services for and in conjunction with the consumer (*ibid.*).

Therefore, the marketing landscape has changed as companies have realized that they can no longer design products, develop production processes, create marketing messages and control sales channels on their own, but they need the active involvement of consumers in order for all these processes to be successful (Prahalad and Ramaswamy, 2004). And, according to co-creation theorists, consumers are more than eager to become involved in these processes as they wish to interact with firms and 'exercise their influence in every part of the business system' (Prahalad and Ramaswamy, 2004: 6). Motivated by individual (autonomy, competence, enjoyment and relaxation, self-identity, coping) or social (community, relatedness, public sense of accomplishment) needs and interests (Chandler and Chen, 2015) consumers, thus, evolve and transform into prosumers.

### *Exploitation*

Firms have realized that they have substantial benefits to gain from the prosumption economy and have been actively trying to engage with consumers and involve them in value creating processes. However, while co-creation has been hailed as a democratizing process that bestows power to consumers, it should not be overlooked that it is a calculated effort to attract and appropriate unpaid labor (Bonsu and Darmody, 2008). Not only prosumers augment the value of products and services they use, but – what is more important – they also create value that would not be available otherwise (Bonsu and Darmody, 2008). Following this logic, Zwick et al. (2008: 166) assert that ‘co-creation economy is about experimenting with new possibilities for value creation that are based on the expropriation of free cultural, technological, social and affective labour of the consumer masses’.

As value is created and organizations benefit from uncompensated work that consumers carry out, it is argued that exploitation takes place. In Marxist terms, exploitation of labour is the process that allows capitalists to appropriate the financial gains of selling products that have been created by workers and only return a fraction of the value of said products to waged labourers (Rey, 2012). To highlight the exploitative nature of prosumption, Cova and Dalli (2009: 333) introduce the concept of working consumers ‘who, by the means of immaterial labour, add cultural and affective elements to market offerings’. They emphasize that there is a great asymmetry in the distribution of profits as the common practice is not to compensate working consumers for the value that they create, and even if they do, organizations only return a tiny fraction of it (Cova and Dalli, 2009). Therefore, it is suggested that prosumption is just an entrapment and working consumers end up being subjected to continuous exploitation (Comor, 2011).

This phenomenon is nowhere more evident than on the Internet where the success of a website is guaranteed when users become producers of content as well, and not on an ad hoc way, but through continuous and active involvement with the website (Bonsu and Darmody, 2008; Terranova, 2000). In fact, like the capitalist factory, web platforms are created in such a way that allow the owners to appropriate value created by others, in this case the web users (Rey, 2012). Dean (2010) also draws comparisons between industrial capitalism that was based on the exploitation of labour, and what she calls ‘communicative capitalism’ that relies on the exploitation of communication. According to Dean, communicative capitalism ‘is that economic-ideological form wherein reflexivity captures creativity and resistance so as to enrich the few as it placates and diverts the many’ (*ibid.*:4). In other words, Web 2.0 (and communicative capitalism in

general) relies on the appropriation and exploitation of the active participation of users who create content, interact with each other, develop and cultivate relationships, provide suggestions and solutions and even express their dissatisfaction or anger towards the nature of the medium. In online platforms, while users expect no financial compensation for the content that they produce, it is this very content that creates value for the owners of the platforms (Rey, 2012).

Van Dijck (2009) places more importance on the data that are generated on web platforms, as she asserts that the role of users as data providers is even more important for value creation purposes than their role as content providers. It can be argued that prosumption embodies the ultimate form of exploitation because while a regular worker usually produces some amount of surplus value, the – unpaid – working consumer creates nothing but surplus value (Ritzer and Jurgenson, 2010). Therefore it is important to understand that consumers, usually without realizing it, do work and create or add value to products and services they use (Cova and Dalli, 2009). The fact that they may not know, or even care, that they produce value for companies makes exploitation easier and effectively poses greater danger as along with exploitation comes social inequality (Rey, 2012). Looking even beyond the appropriation of unpaid labour, it has been argued that working consumers are double exploited.

The notion of ‘double exploitation’ has been strongly associated with feminist studies and analyses that underline the exploitation of women’s labour both in the workplace and at home (Hartmann, 1976; Dunaway, 2001). Going further back, Jones (1949) highlighted the triple exploitation (and oppression) of black women workers on the basis of their class, gender and race. More recent critical approaches to consumer studies have emphasized the double exploitation of working consumers in co-creation processes, who are expected to pay – sometimes even premium prices – for products and services that they have helped to develop (Cova and Dalli, 2009; Zwick et al., 2008). Gauntlett (2011) informs us that similar critical studies on the exploitative nature of Web 2.0 draw attention to the double exploitation of users, who on the one hand provide the content that attracts visitors and revenue; while on the other hand through their online activities they generate data that are again used and exploited by the owners of Web 2.0 platforms. Day (2015) explores precisely the links between women’s unpaid housework labour and digital prosumers’ free labour. As Dean contends, networked media practices ‘emerge and persist as components of a vast commercial entertainment culture that has found a way to get the users to make the products they enjoy and even pay to do it’ (2010: 37). Therefore, in prosumer economy the main role of marketers is not to promote products and services, but to cultivate the enthusiasm and the active participation of prosumers in order to sell (to) them more effectively (Bird, 2011). In fact, the

active entrepreneurial consumer is an integral element of prosumption as co-creation constitutes a form of neoliberal governmentality that aims to 'bring about particular forms of life in which consumers voluntarily provide unwaged and exploited, yet enjoyed labor' (Zwick et al., 2008: 176). Marketing's shift towards collaborative, relational and co-creative practices signifies precisely a strategic turn for capitalist accumulation and consumer control (*ibid.*), with the ultimate aim of appropriating prosumers' 'free labour' (Terranova, 2000).

However, the application of the Marxian notion of exploitation in online environments and its relevance to prosumers' 'free labour' is not universally accepted even among critical researchers. Hesmondhalgh (2010) argues that the notion of exploitation is a specific historical, explanatory and ethical concept that has been loosely and unconvincingly used in relation to the term 'free labour'. Arvidsson (2011: 266), on the other hand, while acknowledging that 'uneven forms of value exchange' definitely exist in digital environments, dismisses the Marxist analysis of exploitation. He maintains that the very essence of 'free labour' is that it bears no value and therefore cannot be seen as a source of surplus value. Arvidsson and Colleoni (2012) further argue that the labour theory of value is incorrectly linked to online prosumer activities for two reasons. First, because creation in online environments is poorly linked to time, and second, because value is accumulated not in direct commodity exchange but in financial markets. Thus, they suggest an alternative view of value creation that postulates that value is primarily linked to an 'affective law of value',

...where the values of companies and their intangible assets are set not in relation to an objective measurement, like labor time, but in relation to their ability to attract and aggregate various kinds of affective investments, like intersubjective judgments of their overall value or utility in terms of mediated forms of reputation. (*ibid.*: 142)

While users' affective investments in online environments should not be underestimated, an analysis that focuses solely on users' affective labour is problematic as it dismisses other elements that play an even more important role in value creation processes. As both Fuchs (2012a) and Andrejevic (2015) stress, (labour) time is still inextricably connected to value creation and rejecting its role in value creation processes is inaccurate. In fact, as Andrejevic (2015) shows, more time spent on a website translates into more content viewed and produced, greater exposure to ads and more data generated and aggregated about user behaviour. It is precisely these generated data that are commodified and sold to advertisers (Fuchs, 2013). Facebook, as well as most online platforms, base their entire business model on capturing information, in the form of data, provided by users (Andrejevic, 2015). While it may be a pleasurable activity, it is this very activity that produces commodities and profits and thus becomes exploited as



labour time is extended into leisure time (Fuchs, 2013). Thus, looking beyond users' affective involvements, Andrejevic (2015) argues that an accurate understanding of value generation process should highlight the role of users' data.

## Self-quantification

The user generated nature of Web 2.0 has been pivotal in bringing the prosumer economy into the spotlight as digital capitalism relies on the appropriation of value – in the form of content, services and particularly data – generated by consumers. The ubiquitous social media platforms are the prime example of this phenomenon. But as capitalism has historically relied on finding 'new ways to generate value in order to sustain new profits' (Arvidsson, 2008: 329), it constantly seeks for new ways to commodify and extract value from human activities, and in that quest, new technological advancements have allowed for new modes of prosumption to emerge. The following analysis will demonstrate that these modes of prosumption do not only require consumers to generate content, design products or develop services, but are based on the subsumption of consumers' whole lives.

From networked household appliances that gather data and give users the opportunity to remotely monitor and manage their home, to interconnected smart cars that can collect data and improve road safety; from environmental sensors that can detect public health risks to sensors and devices used by businesses to track and influence consumers' behaviours, there are endless possibilities afforded by modern technology to track, monitor and control inanimate objects and create what has been called the Internet of Things. But this developing tracking culture is not limited to objects, but spreads to human beings as well as. This is exemplified and epitomized in the self-quantified movement. Self-tracking 'refers to a multitude of practices that center around systematic recording of personal behaviors and responses' (Barta and Neff, 2014: 9).

In other words, self-quantification explores the numerous new possibilities provided by mobile and digital devices as well as the social features of Web 2.0 platforms to monitor, measure, represent and discipline the human body (Lupton, 2013). Relating to the notion of the Internet of Things, self-quantification aspires to enhance human abilities through self-knowledge, by collecting and analyzing data for everything related to the human body and mind that can be measured (Prince, 2014), although critics question whether it can actually improve the experience of living (Albrecht and Michael, 2013). While the

Internet of Things may have various remarkable possibilities, incorporating human beings into this vision essentially turns them into – measured – objects that not only must be scrutinized and transformed (Klauser and Albrechtslund, 2014), but may be used, controlled and manipulated for commercial, political and economic interests, while at the same time putting another nail in the coffin of the human right to privacy (Albrecht and Michael, 2013).

Self-quantification can take many different forms as every single aspect of a person's life can be monitored and quantified. Physical as well as mental and emotional state, somatic activities, consumption habits, financial behaviours and social conducts can all be subjected to self-tracking. Devices and applications have been developed that allow users to track activities and behaviours for every stage of their lives and generate huge amounts of data.

For example, the *quantifiedself.com* community provides an extensive – but not complete – list of available tools that users can use to track, monitor and quantify different aspects of their lives. Out of the total 505 tools listed on the website (June 2014), 185 can be used for health tracking, 124 for fitness, 122 for lifelogging, 87 for goals, 76 for lifestyle, 60 for medicine, 59 for mood, 57 for location, 55 for productivity, 54 for food, 36 for energy, 34 for sleep, 33 for money, 20 for learning and 19 for relationships, while, of course, most of those tools can be used for more than one category of self-tracking and self-quantification. Understandably, fitness is one of the areas where self-quantification has become most prevalent as it has attracted the interest of both companies and end-users (some of the most popular self-tracking tools are FitBit, RunKeeper, Nike+, Mapmyrun, Strava, Fitocracy, Jawbone Up, My FitnessPal and Runtastic). These tools allow users to track specific fitness activities (running, walking, cycling, basketball, strength training etc.), providing detailed data information for different variables (pace, distance, duration, location, heart rate, calories burned etc.), and in conjunction with mobile and Web 2.0 technologies promote the socialization of those activities through online and mobile communities.

The socialization, along with the overall success, of commercial self-tracking applications is also fostered by the gamification of self-quantification. Users are encouraged to compete in challenges with each other or they can even set up a challenge just for themselves. Based on their self-tracked data, they are rewarded with points, virtual badges and awards. They can even receive penalties or lose points for not tracking their activities or for failing to complete a challenge. Gamification has been defined as the 'use of game design elements in non-game contexts' (Deterding et al., 2011: 1) that relies on 'encouraging playful subjectivities so that users voluntarily expose their personal information, which is then used to drive behavioural change' (Whitson, 2013: 163). Whitson (2013)

sees gamification as a means of promoting the acceptance of otherwise contentious technologies. In fact, through gamification of everyday activities tracking technologies actually aim to make surveillance pleasurable for users (French and Smith, 2013) and for that reason surveillance becomes ‘participatory’ as users under their own volition submit data and information about themselves and their activities (Albrechtslund, 2008). In that sense, the gamification of self-quantification promotes a post-panoptic culture of constant participatory surveillance and control of the human being that can be seen as a manifestation of Deleuze’s (1992) notion of the societies of control. The post panoptic gaze is not restricted within the confines of institutional boundaries but spreads throughout the social landscape (Martinez, 2011) as surveillance is mobile and flexible (Bauman and Lyon, 2013) and thus becomes constant and cumulative (Palmås, 2011).

Some of the tracking tools available to self-quantifiers employ this logic of constant participatory surveillance as they can be used not only for tracking particular fitness activities but allow and encourage the monitoring of users’ whole lives. For example, the Nike+ Fuelband, the Jawbone Up and the FitBit trackers are wearable devices in the form of hand bracelets that can be worn all the time and gather data for every activity that the user performs, including sleep. Following the tenets of gamification users can set up their own personal goals, compete in challenges against other users and earn (virtual) trophies and awards for achieving their goals, winning a challenge or generally for their overall progress. However, fitness and life tracking tools are not the only ones that promote a competitive ethos. Lupton (2015) presents an excellent analysis of apps that not only track the sexual and reproductive lives of the users, reducing sexual activity to numbers, but much like the fitness and life tracking devices, they incorporate gamification elements that turn sex into a competitive sport.

### **The self-quantified commodity**

In the late seventies Dallas Smythe (1977) introduced the notion of the ‘audience commodity’ in order to address what he perceived as a ‘blindspot’ in Marxist analyses of mass communication media. Smythe claimed that Marxist tradition had mistakenly focused solely on the role of mass media as ideological apparatuses overlooking their economic function in capitalism. Therefore, he argued for a need to reorient and analyze ‘the media more in terms of surplus value and exploitation and less in terms of manipulation’ (Fuchs, 2012b: 695). The crux of the notion of the audience commodity lies in the fact that in capitalism all non-sleeping time is actually work time, in the sense that people work and create value beyond their official working hours either as members of

audiences or in the production and reproduction of their labour power (Smythe, 1977). Based on that premise, he maintained that audiences form and constitute the commodity that is being sold by media channels and bought by advertisers. It is therefore in – and through – their time that audiences ‘work’ and produce value, which is then appropriated by media owners and marketing and advertising agencies.

Dallas Smythe, though he did not explicitly use the term, in essence described the double exploitation of the labour force: workers first are exploited at the workplace in direct production processes and then at home too, during leisure time, as recipients of advertising messages from mass communication channels (Lebowitz, 1986). Smythe (1977) maintained that the content of mass media communications itself is merely a ‘free lunch’ offered to audiences in order to attract and maintain their interest and at the same time cultivate favourable attitudes towards the advertisers’ messages. In a similar way, self-quantifiers’ continued interest is promoted and safeguarded through the interactive affordances of virtual communities and the gamification of the self-quantified experience that turns self-surveillance into a pleasurable activity.

Dallas Smythe’s work on the audience commodity has received its share of criticism over the years. Lebowitz (1986) argued that the audience commodity was based on a false premise as media do not have property rights over the audience (commodity) and therefore cannot sell it. Thus he maintained that the role of the media does not lie in production (of an audience commodity) but in accelerating circulation of existing commodities. Meehan (1984), on the other hand, accepted that media produce and sell a commodity, but argued that this commodity is constituted solely by the ratings. Dallas Smythe was also criticised – both from scholars who embrace his notion of the audience commodity (Fuchs, 2012b) and those who stand more critically towards it (Caraway, 2011; Hesmondhalgh, 2010) – for not including sleep into his conceptualization of work time. However, the first who pointed out this criticism was Dallas Smythe himself, who acknowledged in the footnotes of his article that the exclusion of sleeping time from work time may have been incorrect, as sleep in that sense, can be seen as a necessity for the reproduction of labour power. Indeed, as Marx explained:

Within the 24 hours of the natural day a man can expend only a definite quantity of his vital force. A horse, in like manner, can only work from day to day for 8 hours. During part of the day this force must rest, sleep; during another part the man has to satisfy other physical needs, to feed, wash and clothe himself. (Marx, 1976: 341)

But in the era of self-quantification, sleep is no longer just a physical function necessary for the reproduction of labour power – through self-tracking it becomes a commodifiable, value producing activity in itself. As it has already been presented, tracking devices like the Nike+ Fuelband and the Jawbone Up can continue monitoring the user and produce data even while sleeping. Tools like the Sleep Cycle, the Sleep as Android, or the SleepBot are specifically geared towards tracking sleeping patterns, while other tools aim to enable users to track their dreams (Shadow, Dream:ON, Dreamboard). Therefore, the users of these – and other related tools – can still generate data during their sleep. Considering that a recent report has estimated that American consumers spent 32.4 billion dollars in a single year for sleep related aids (Mackey, 2012), it can be understood how important these data can be for the ‘sleep industry’. Therefore, I argue that self-quantification not only intensifies the transformation of leisure time into labour time (Till, 2014) but converts every single moment of a person’s self-tracked life, including sleep, into labour time.

Data, in the form of demographics that include among others age, sex, income level, family composition, urban or rural location, ethnic character, ownership of home, automobile, credit card status, social class and so on, are a determining factor of the value of the audience commodity (Smythe, 1977). The digital audience commodity of the Internet can be more accurately identified, valued and exploited as online activities are constantly monitored and advertising messages are geared towards specific online behaviours, users and groups (Fuchs, 2012b). Data gathering is automated and enables Internet platform owners to target their users with the relevant advertising messages. Popular social media platforms typically do not commodify and sell access or content to users, but treat the data generated by them as a commodity that is sold for advertising or other commercial purposes (Fuchs, 2012b).

In the realm of self-quantification, data are the king as commodification of life itself is made possible through the process of self-tracking while users generate vast amounts of data about their own lives and activities. In that sense, the user’s self-tracked life becomes both the subject and the object of prosumption and his/her activities provide the necessary data upon which companies develop their products and services. Another direct link between self-quantification and the commodification of life can also be found in the recent emergence of a number of online and mobile platforms that offer monetary compensation to users who share their data. Datacoup promises to pay users up to \$8 a month if they share data about their online activities, credit card transactions and – soon, as they state – activities tracked by Fitbit. The Pact app works as a motivational tool for leading healthier lifestyles and it works by connecting users who make monetary pacts related to specific goals. The users who fail to achieve the goals pay the set

amount of money to the users who manage to reach their goals. Leap4Life is also promoted as a health and fitness motivational platform as users earn points, based on their tracked data, which they can later redeem to buy products or exchange for cash.

### The 'prosuming self'

While consumers use these self-tracking devices and get personal information in the form of data about their activities, firms also gather the user generated data and amass huge amounts of data sets, or Big Data as it has been popularized recently. This allows not only to get information about individuals and their (consumption) habits, helping to develop personalized marketing strategies, but also to observe and analyze consuming patterns for many different and diverse parts of the population. For example, Nike has developed the NikeFuel weather activity platform that showcases the physical activity that users of NikeFuel trackers perform throughout the United States in different temperature and weather conditions. Lupton (2014a) explores how data generated and collected by patients and shared in online health platforms may be used for commercial purposes. Till (2014) argues that self-tracked exercise is a form of 'digital labour' that not only generates surplus value, but leads to double exploitation as users pay in order to use tracking devices that gather data, which will then be used for the promotion of more products to the very same users that generated the data.

Because self-quantification leads to the generation of vast databases of consumer behaviour, it becomes extremely attractive to marketers, as marketing nowadays is more than ever driven, shaped and guided by data (Zwick and Denegri-Knott, 2009). Database marketing refers to 'customer production processes that rely on the exploitation of the multitude of consumer life' (*ibid.*: 221). Self-quantification not only provides incomparably larger and much more precise data sets in relation to the data of the audience commodity of the analog era, but has the potential to surmount the accuracy, the depth and the diversity of the data generated by the users of Web 2.0 platforms. As a result, consumer data generated through self-quantification practices can lead to the valorization of the quantified body (Lupton, 2015), as self-tracked lives are commodified and become a primary source of value creation. Therefore, the use of self-tracking tools as well as mobile and internet platforms and websites that allow users to monitor and measure their bodies and minds and reduce them into quantifiable digital data becomes a form a prosumption (*ibid.*), as the quantified self turns into the prosuming self.

## The 'prosumed self'

While it has been previously suggested that self-quantification is a voluntary practice, and that has certainly been the norm so far, it should also be noted that this is not always the case. As Lupton (2014b) observes, while self-tracking was initially associated with a specialized subculture that consisted of techno nerds, health fanatics, chronically ill or just plain narcissists, as it becomes a mainstream trend it ceases to be just a private and voluntary activity. On the contrary, because of the enormous financial and other potential gains that can be extracted from self-tracked data, users are increasingly urged, persuaded, pushed or flat-out forced to engage in self-tracking practices and share their data with various entities (*ibid.*). Thus, Lupton (2014b) proposes a typology of five different – but sometimes overlapping – modes of self-tracking: (i) private, (ii) communal, (iii) pushed, (iv) imposed and (v) exploited. She suggests that although there is a slight difference between pushed and imposed self-tracking – 'pushed' indicates that the user can still refuse to self-track while in imposed self-tracking the user has no such choice – they are both initiated by external actors and not the user.

The insurance industry has been identified, both in academic journals and in the media, as such an external actor that is particularly eager to make, one way or another, people engage in self-tracking activities. French and Smith (2013) caution that self-tracked data could be used by employers or insurance firms in order to penalize users for activities that they deem excessive or indolent. Leonard (2014) also maintains that insurance companies could offer discounts for users who can prove with their data that their calorie intake or their exercise activities do not deviate from prescribed norms and guidelines. It is suggested that in the US such insurance practices are promoted through the Affordable Care Act that allows employers to charge (up to 30%) lower insurance rates to employees that maintain a healthy lifestyle or penalize and charge higher rates for unhealthy behaviours, like smoking (Dudley, 2014; Zamosky, 2014). Fitbit, one of the most successful companies that develop self-tracking devices, has invested heavily in corporate wellness programs as firms hope to minimize insurance costs with the help of the data that their employees generate about their lifestyles outside the working environment (Olson, 2014). Insurance companies from their part are developing schemes that offer lower premiums to customers who are willing to share their data (Newman, 2014). Some of the companies that have used Fitbit's corporate wellness programs are BP, Diageo and Autodesk while, according to news reports, Appirio, a San Francisco based IT consulting company managed to save \$280,000 in insurance expenses by employing such a program (Gohring, 2014).

Therefore, it becomes clear that not all data produced through self-quantification are the same, just like the watching time of different audiences is not the same as some market segments are more valuable than others (Jhally and Livant, 1986). And in the same way that the value of the audience commodity is determined by how appealing the specific audience segment is to advertisers (*ibid.*), the value of the self-quantified commodity is defined by how useful the generated data are to a number of external actors (brands, advertisers, employers, insurers, information brokers). Therefore the quantification of the self produces people and subjectivities, in a similar way that the ‘consciousness industry’ aims to produce ‘people who live and work to perpetuate the capitalist system built on the commodification of life’ (Smythe, 1981: 9).

Thus, I argue that the quantified self becomes the ‘prosumed self’ that not only produces data, but produces the ‘right’ data, which resonate with subject positions promoted by neoliberalism, e.g., active, responsible and entrepreneurial self. This neoliberal logic of the entrepreneurialization of the self posits not only that we are responsible for our own well-being, but also that we are not responsible for others (Bradshaw, 2011). Previous critical studies have linked the healthism discourse to the promotion and formation of the responsible, entrepreneurial citizen under the auspices of neoliberalism (e.g. Ayo, 2012; Lupton, 2013; Roy, 2008). Self-quantification amplifies this logic as it not only follows the tenets of healthism, but makes the entrepreneurial subjects visible by recording and registering data for their activities. This is manifested through insurance schemes that are based on self-tracked data that aim not just at reducing insurance premiums and costs, but at determining the eligibility for health care and even employability of individuals, thus adding to the already intensified competition that spreads way beyond criteria such as professional skills and qualifications into life itself (Chertkovskaya et al., 2013). Following this logic, the (quantified) self must be seen and treated as an enterprise that, just like any other enterprise, has to gather and provide solid data about its own well-being. As Maturó (2014) maintains, self-quantification can be seen as a form of Taylorism, which is employed not on the firm, but on the individual.

## Conclusion

In his fascinating book, *24/7 Late capitalism and the ends of sleep*, Jonathan Crary (2013) reveals a very bleak picture of our contemporary consumer societies, where (almost) everything is colonized by capitalism and turned into a commodity. The only thing that has not, yet, been transformed for the purposes of capitalism, constituting an ‘incongruous anomaly’, is sleep, as sleeping time ‘subsists as one of the great human affronts to the voraciousness of



contemporary capitalism' (Crary, 2013: 10). However, this paper makes the point that self-tracking brings an end to this 'anomaly' and turns, even sleep, into a (surplus) value producing activity. Building on recent studies that treat self-quantification as a form of 'digital labour' (Till, 2014) and 'prosumption labour' (Lupton, 2015), this paper has introduced the notion of the 'prosuming self' to highlight that with the use of commercial self-tracking tools, the quantified self becomes the 'prosuming self' that constantly produces value through the generation of data.

In addition, the 'prosuming self' is positioned as just one side of the coin, as I further contribute to the increasingly growing literature on self-quantification by introducing the notion of the 'prosumed self'. I see self-quantification not only as a neutral data generation mechanism, but as a mechanism that is used to produce specific subjectivities and subjects that are able (and required) to produce the 'right' kinds of data. Through the – voluntary, pushed or imposed – consumption of self-tracking devices, users produce their own new subjectivities of active, responsible, productive, entrepreneurial employees, students, citizens, etc. Through the notion of the 'prosumed self' I emphasize that what is crucial in self-quantification for value creating purposes is not just the generation of data, but the generation of satisfactory data that are beneficial for firms.

Finally, this paper contributes to critical studies on prosumption. Through a re-examination of Dallas Smythe's concept of the 'audience commodity' I argue that self-quantification can be seen as an exemplary form of prosumption that aims to capture, appropriate, and exploit every single aspect of consumers' lives. Previous seminal work on prosumption illuminated that the prosumption economy is based on putting consumers to work (Ritzer, 1993; Zwick et al., 2008) in a number of different market settings like the gas station, the fast food and the ATM machine (Ritzer, 1993) or more recently in the digital environment of online platforms (Bonsu and Darmody, 2008; Denegri-Knott and Zwick, 2012). This paper demonstrates that self-quantification is a prime example that the prosumption economy is moving beyond the simple appropriation of consumers' work in specific and isolated contexts. In fact, I assert that through a single consumption behaviour – the use of commercial self-tracking tools – consumers' whole lives are being put to work and turned into a commodity.

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