

## CHAPTER 5

# The Quantified Self and the Digital Making of the Subject

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### Introduction

The Quantified Self website, created in 2008 by two *Wired* magazine editors, Gary Wolf and Kevin Kelly, instigated a movement for the better understanding of the self, based on numbers (Lupton 2014). The site has indeed as its slogan: ‘self-knowledge through numbers.’<sup>1</sup> Such a self-knowledge was promoted by the manual collection of numbers on one’s body functioning, which were analysed thanks to tools of analysis offered in the site. The founders also encouraged the construction of communities where people would share their calculation and insights with others, thus helping each other to get a better understanding of their quantified bodies.

More recently, ‘wearable fitness technology’, as sensors directly connected to the body that continuously collect data (Gilmore 2016), have been coupled with smartphone applications that perform the analysis—or smartphones that function as sensors (Andrejevic & Burdon 2015). What was once elaborated manually through the site is now collected and crunched by algorithms that provide insights, notifications and recommendations for a better knowledge and control of one’s body and mind.

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The impetus to attribute scores to individuals is hardly new; it was once the appanage of teachers and surveillants in what Foucault coined ‘the disciplinary power’, in its endeavour to correct and control. For Foucault, these techniques aimed at bringing each individual body to behave according to a desired norm, posed as normal. Normalization was achieved through constant measuring and the sanctioning of deviance, producing docile bodies and subjects (Foucault 1995).

The technological capacities for measuring and ranking have drastically changed since the 19th century that interested Foucault; the type and the volume of information, the manner in which it is collected, but also the agent of the collection and the ways of interpretation have all changed. The advent of big data technologies in the domain of bodily measurements implies a shift in the constitution of the subject that I would like to analyse here. While the modern subject developed with the injunction to conform to a static, biographical narrative that had to be *said*, the quantified self is driven by a series of fluctuating numerical indicators that are immediately collected by sensors. Yet, these digital traces cannot be transformed into a meaningful representation of the self without the algorithms that are assumed to give an objective overview on a person’s well-being. But if one admits with Foucault that the subject is always constituted in relation to truth (Foucault 2017), what kind of self is produced by a discourse of truth that is the output of an algorithm?

Moreover, the various platforms and smartphone apps for the tracking of the self all claim to enhance a subject that gets better control on his body and his health, thanks to recommendations and quantified feedbacks. But what is actually being managed by the algorithms? This numerical outlook seems to point to a hyper-rationalized approach to self, one that strengthens the modern *homo oeconomicus*. However, a deeper analysis reveals that the behavioural economics that inform the algorithms actually bypass the rationality of the agent and manipulate instead impulsive and addictive responses.

After *Discipline and punish*, Foucault turned to technologies of the self in late antiquity to better understand how the subject is constructed or constructs itself, in relation to specific forms of government, each constituting a regime of truth. I will track in the first section the use of numerical indicators in modern forms of government, in order to isolate the specificity of digital governmentality. The second section highlights how the quantified self participates in the construction of true discourses that rely on numbers for the sake of self-knowledge. Finally, the final section questions the control over the self-promised by the recent tracking applications.

### Numbers in Regimes of Truth—a Genealogy

There are two ways to characterize a regime of truth: the first shows the imbrication of scientific discourses with mechanisms of power; the other generalizes the power implication of true discourses, from their scientific

form to any other form, such as confession, for example (Lorenzini 2015). The endeavour to attribute a number to individual behaviours or physical activities, at the core of the quantified self, belongs to the first kind of regime; the individual score seems indeed to imply the existence of a scientific knowledge behind the number. Yet, in his analysis of the disciplinary and security regimes, Foucault has shown how numbers can be used in very different manners. Current big data technologies further combine those techniques in a novel way that I would like to isolate here, as this will serve the understanding of the knowledge at the core of the quantified self.

The generalized examination as a technique of government in the 19th century made grades a central instrument. Discipline indeed works by differentiating and comparing individuals, thanks to the grading system. This technique served the normalization of the population, obtained through five operations:

[The discipline] measures in quantitative terms and hierarchizes in terms of value the abilities, the level, the 'nature' of individuals. It introduces, through this 'value-giving' measure, the constraint of a conformity that must be achieved. Lastly, it traces the limit that will define difference in relation to all other differences, the external frontier of the abnormal ... The perpetual penalty that traverses all points and supervises every instant in the disciplinary institutions *compares, differentiates, hierarchizes, homogenizes, excludes*. In short, it normalises. (Foucault 1995: 182–183, emphasis added)

In the French 'republican school' of 19th-century, grades were used to define the individual by measuring his conformity to a desired behaviour, posed as normal. This model was valid in various spaces, from the school to the barracks or the factories. The normalization that interests Foucault occurs with the correction of deviant or abnormal behaviours; those deemed as dangerous were further enclosed in prisons, in order to transform them into 'normal' individuals (Foucault 1995: 231–256).

This disciplinary control on the collective via numbers continues to exist to this day in many spaces: besides grade systems that pave the way of an education, one thinks of the periodic evaluations that have become commonplace for the management of work forces (Lupton 2016: 110). Yet, where Lupton speaks of 'an imposed self-tracking', one might rather see here a surveillance of the traditional kind. Reports from Amazon's workplace might be a case in point: in its warehouses, employees are monitored by sophisticated bracelets that measure the number of boxes they pack every hour; in its offices, algorithms measure the performance of its staff and encourage them to use the 'Anytime Feedback Tool' to send feedback on one another. All these elements contribute to the constant ranking of the workers, those at the bottom—just like Foucault's 'abnormals-', being eliminated every year (Kantor & Streitfeld 2015).

The disciplinary techniques aim at 'pinning' an identity to an individual and at correcting his behaviour; liberal government by contrast functions with

statistical tools that abandon the individual level and make another use of the numbers gathered on each. The collection of statistics indeed allowed the isolation of regularities at the aggregate level, and the emergence of a new object of knowledge in the form of the population (Foucault 2004). The 19th century's 'avalanche of numbers' (Hacking 1990) shaped the population at large; the census functioned as a strong instrument for both the collection of data and the construction of modern national states (Anderson 1988; Rose 1999).

Liberal government, in contrast to discipline, does not try to reduce the diversity via normalization, but manages this at the aggregate level. One can take as an example credit scores as they developed in banking. The process consisted at first in splitting a population of borrowers according to their assumed risk level: people were not asked to change behaviour, but were assigned to a group of assumed similar people. The association with a specific group further determined the interest rate they obtained. Technically, the method allowed the bank to quantify the risk of credit failure *on a group* of similar borrowers, for whom an average rate of failure could be computed (Lazarus 2012); compared with the disciplinary grade, the credit score is valid at the group level alone, and results from a very different work from the individual examination. For the individual, by contrast, the score is most of the time incomprehensible (Pasquale 2015). It also affects him in a very different manner from the discipline; the system works on the assumption that the rational individual will make the decision to borrow or not, based on his perceived value of the credit offer. There is no physical sanction, but a self-selection and a behaviour 'freely chosen' based on indicators and price, which further create new forms of exclusion.

The constitution of groups in this mode of government is at the heart of their management. Desrosières thus describes how the statistician relies on questionnaires for creating classifications. The specialist is indeed needed to elaborate categories that codify and homogenize an otherwise diverse reality: by mapping the reality according to an a priori understanding, he was sometimes tackled for imposing a subjective preconception of what he intended to study (Desrosières 2008). Porter further insists that this homogenization implies the renunciation of individual specificities. There is indeed a tension between the objectivity that one aims at reaching thanks to numbers, and the subjective data upon which these numbers build. As Desrosières puts it, the averaging allows for the emergence of objectivity, by 'melting' individual contingencies into a rational order (Desrosières 2014: 161). Objectivity thus implies the erasure of everything subjective for the sake of standardization and the constitution of workable numbers:

Inevitably, meanings are lost. Quantification is a powerful agency of standardization because it imposes order on hazy thinking, but this depends on the license it provides *to ignore or reconfigure much of what is difficult or obscure*. As nineteenth-century statisticians liked to boast, their science averaged away everything contingent, accidental,

inexplicable, or personal, and left only large-scale regularities. (Porter 1996: 85, emphasis added)

Something radically different is happening with the digital turn. The ‘datafication’ of the world (Mayer-Schönberger & Cukier 2013) means indeed that the data is now obtained without human intermediaries nor codification. There is therefore no standardization performed behind the numbers: the subject’s behaviour has become accessible and measurable without the mediation of the questionnaire. Paradoxically, what was once considered as a warrant of objectivity (the statistician’s codification) is now seen as a source of errors. Data scientists working on digital footprints contend that ‘unlike surveys and questionnaires, Facebook language allows researchers to observe individuals *as they freely present themselves* in their own words’ (Schwartz et al. 2013: 13, emphasis added).

Gary Wolf has the same type of claim when he questions standardization as a poor description of reality: ‘people are not assembly lines. We cannot be tuned to a known standard, because a universal standard for human experience does not exist.’ He thus participates in recent trends to adjust knowledge to the specificities of the individual and the rejection of previous, aggregate forms of quantification: ‘behind the allure of the quantified self is a guess that many of our problems come from simply *lacking the instruments to understand who we are*’ (Wolf 2010, emphasis added).

In this strand of thought, while original credit scores aimed at roughly dividing the population, they have become more refined over time, with current scores being based on behavioural data (the individual’s credit history) alone. The FICO scores in the United States now claim to be truly individual: ‘your FICO scores are unique, just like you.’<sup>2</sup> It has become public information that can be purchased by anyone, and reflects a person’s credit reputation (Lazarus 2012). The statistical management of borrowers has thus evolved from the aggregate average of the previous period to individual predictions.

In another domain, Harcourt describes how mathematical models have developed in the judicial domain in order to *predict* the chance of recidivism of convicts; the aim is no longer to give a description of ‘who one is’ (as was the case in the disciplinary regime), nor to give a statistical average for a population (as with early credit scores). The aim is now to predict the specific behaviour of an individual, measured by the probability of acting in the future in a certain way. This score is used as a tool to decide who should be released from or maintained in detention (Harcourt 2006).

The current breakthrough of predictive analytics that accompanies the accumulation of data on each individual seems to generalize this predictive approach (Siegel 2016). Siegel distinguishes between traditional statistical techniques of forecasting and the new algorithmic capacity to predict as follows: ‘whereas forecasting estimates *the total number of ice cream cones* to be purchased next month in Nebraska, predictive analytics tells you *which individual Nebraskans*

*are most likely to be seen with cone in hand*' (Siegel 2016: 16, emphasis added). Algorithms are thus calibrated so as to predict online *individual* behaviour.

The scores have therefore taken different meanings over time: they were first a measure of the distance to the norm, then the measure of an average within a group and, most recently, they seem to evolve towards representing the individual probability of performing a specific action. But there is one feature that they all have in common: the score, be it a grade or a probability, is attributed by an external party, for the sake of managing the collective. The consequences associated with a specific number are also decided by a third party: both the teacher at school and the banker attributing loans are those who make decisions about the individual under observation. As Foucault puts it, the individual produces the truth, but it is interpreted by the 'masters of truth' (Foucault 1990a: 76–77). Something different seems to happen with the quantified self.

### The Quantified Self: Self-Knowledge through Numbers

In the regime of truth implied by discipline, Foucault claimed that the subject is a product of power, always already subjugated in its mechanisms: the normalization process creates docile bodies necessary for the functioning of early industrial societies. The 'self-knowledge' advanced as a slogan in the Quantified Self site points rather to another kind of regime of truth; the numbers are indeed organized so as to help the subject make sense *of his own self*. At first glance, it belongs to the 'techniques of the self' that Foucault studied in his last years, briefly defined as follows:

Those intentional and voluntary actions by which men not only set themselves rules of conduct, but also seek to transform themselves, to change themselves in their singular being, and to make their life into an *oeuvre* that carries certain aesthetic values and meets certain stylistic criteria. (Foucault 1990b: 10–11)

The disciplinary truth—the knowledge acquired by the examiners to sanction and correct individuals in order to bring them to behave 'within the norms'—is here replaced by a code of conduct freely chosen by a subject, in order to obtain mastery on his self.

For Gary Wolf, self-knowledge was for long confined to the imprecise use of words. In his view, the continuous collection of data rendered possible by recent technologies (wearable sensors or smartphones) transforms the statistical knowledge *once used for the understanding of aggregates* into a tool for the understanding of the self. Large amounts of data are indeed becoming available on each individual. Since the data of questionnaires was costly, it was adjusted in advance to the purpose of the enquiry; working on few variables, the statistician was limited both technically and practically by the amount of

information at hand. The digital turn by contrast means that the data scientist works with tables where variables are more numerous than users (Kosinski et al. 2016: 496). Hence, once applied to the population as a whole, statistics become accessible for the interpretation of individual data.

The point though is that the data at stake is drastically different from those gathered for census purposes: it is the ‘contingent, accidental, inexplicable, or personal’, all that was once left aside, which is becoming most valuable. The information gathered through questionnaires demanded a codification on the side of the practitioners, but further implied, on the side of the individual answering the questions, that he *consciously* positions himself as regards his answers. As Foucault puts it, the subject is constituted in acts of truth where he binds himself to what he enunciates (Foucault 1990a: 62). The classification was further known to produce retro-actions on the individuals thus classified (Hacking 2007).

The big data by contrast is immediately collected as online *behaviour*. The fact that no human intervention is needed also means that most of the data collected takes the form, among others, of online traces or footprints that are not usually conscious, and remain difficult to grasp for the individual who produces them (Rouvroy 2013). Andrejevic and Burdon (2015) further notice the passivity of the data subject; it is magnified in the case of quantified self, since the data that comes now to the fore consists of bodily indicators such as heartbeats and blood pressure—intrinsically unconscious and passively transmitted factors. It further seems to deepen Rose’s ‘somatization’ of the self, by giving it a numerical outlook:

Selfhood has become *intrinsically somatic*—ethical practices increasingly take the body as a key site for work on the self. From official discourses of health promotion through narratives of the experience of disease and suffering in the mass media, to popular discourses on dieting and exercise, we see an increasing stress on personal reconstruction through *acting on the body in the name of a fitness* that is simultaneously corporeal and psychological. (Rose 2001: 18, emphasis added)

More drastically even, elements that used to be consciously understood through words, such as feelings, moods and states of mind, are now inferred from bodily indicators, or online posts (Kambil 2008; Cambria 2016). Anxiety, for instance, is now equivalent to a stress level, measured by a ‘heart rate variability’ indicator. The data is collected from heart pulses and transformed into information accessible to the subject via the application, which thus learns about his feelings via the sensors (Hilton Andersen 2014; Butcher 2017). The quantified self therefore illustrates a trend where the ‘ethical substance’ for the work on the self (Foucault 1990b: 26) is not to be found in conscious acts or feelings, but in numbers collected on unconscious bodily functioning.

Finally, the successful machine-learning treatment of online texts—the conscious part of the traces left by users—further transforms our understanding

of language. For LeCun and colleagues, recent developments in natural language processing indeed ‘raise serious doubts about whether understanding a sentence requires anything like the internal symbolic expressions that are manipulated by using inference rules’ (LeCun, Bengio & Hinton 2015: 441). The new data and techniques bring a knowledge of the self that is therefore deeply different from both the statistical knowledge of liberal governmentality and the biographical knowledge of the discipline.

The quantified self, which intends to make of the digital subject a master of his own self, further seems to result from two significant shifts: the first is the ‘datafication’ of the world (Mayer-Schönberger & Cukier 2013) that allows the collection of data on life itself; the second is the use of statistical techniques on the individual as with the above-mentioned new credit scoring techniques. The knowledge of the self is therefore transformed into a numerical enterprise; as Rudders puts it: ‘the idea is to move our understanding of ourselves *away from narratives and toward numbers*, or, rather, to think in such a way that numbers are the narrative’ (Rudder 2015: 19, emphasis added).

### The Digital Self: A Rationalization?

One of Foucault’s main findings as concerns the process of the constitution of the subject (subjectivation) is that it always implies a relation to truth (Foucault 2017). Early antiquity techniques of the self, for instance, were founded on the adoption of a rule of conduct as principles that had to be memorized and practised (Foucault 1990b). The subject thus formed can aim at self-mastery—as is the case with the Stoic self—or, as in early Christian practices, at a total renunciation of the self (Foucault 1990b: 27). As Judith Revel puts it, subjectivation is entrapped into a chiasm between on the one hand an autonomous subjectivation (in the form of an invention or a transformation of the self) and, on the other hand, an objectivized subjectivation in the form of subjection (*assujettissement*) (Revel 2016: 171). In this section, I will examine the type of subject implied by truth expressed with numbers.

Notwithstanding the obvious impossibility to transpose techniques of the past onto current societies, one cannot help but be struck by some similarities of the new self-construction with its early ancestors. Indeed, just like the Greeks beforehand, the quantified subject starts by adopting some goals that he strives to achieve. Where the Greek subject was asked to practise an evening examination in order to measure the distance between the desired behaviour and his actual deeds, the digital subject has data being collected on his behaviour and distance to the goal being measured (this time through numbers) and exposed via graphs or indicators in the app. Self-tracking thus involves that data subjects confront their own personal information, in order to optimize and improve their lives (Lupton 2016). From this perspective, it seems indeed that self-knowledge, once acquired through discourses, is now obtained through numbers, for the sake of transformation and mastery.

The collection of continuous and systematic information in the form of numbers is supposed to further warrant an exact depiction of the self, which was not possible with words:

Humans make errors. We make errors of fact and errors of judgment. We have blind spots in our field of vision and gaps in our stream of attention. Sometimes we can't even answer the simplest questions ... We make decisions with partial information. We are forced to steer by guesswork. We go with our gut.

That is, some of us do. Others use data. (Wolf 2010)

The techniques of the self, which have admitted changing historical forms (Sauter 2014), would be therefore entering a new era thanks to big data. Wolf further claims that thanks to individual data and the self-knowledge it allows, the subject becomes aware of his own specificity, thus resisting normalization. As public health indeed aims at standardized procedures applied to all, it ignores individual needs: 'the idea that we can—and should—defend ourselves against the imposed generalities of official knowledge is typical of pioneering self-trackers' (Wolf 2010).

In the same strand of thought, Topol sees the future of medicine in predictive medicine, with people bringing 'their own data' to the physician (both indicators collected on a daily basis through sensors, and genome scan data)—in order to have the treatment adjusted to their specific case (Topol 2010). If this indeed is the future of health, it seems to have interestingly reversed the power relations implied by the disciplinary techniques described in the first part. By giving the knowledge in the data to the data subject himself, the individualization propelled by big data technologies serves his goals rather than those of a third party.

Yet, the shift from words to numbers has a singular importance as concerns the truth that binds and constructs the subject. As Foucault observes on ancient Greece:

*The meditatio ... involves ensuring that this truth is engraved in the mind in such a way that it is recalled immediately if the need arises, and in such a way that we have it ready to hand; consequently making it a principle of action. It is an appropriation that consists in ensuring that, from this true thing, we become the subject who thinks the truth, and, from this subject who thinks the truth, we become a subject who acts properly.* (Foucault et al. 2005: 339–340, emphases added)

The precepts followed by the stoics have been replaced, in the case of the quantified self, by a computed recommendation or simply by the numeric indicator showing the level of achievement. The incorporation of ancient precepts was obtained by a 'subject who *thinks* the truth', who had to perform a hermeneutics

in order to become a subject, the thinking part being as important as the acting that follows. In the case of numerical outputs and the replacement of words by the immediacy of numbers, the hermeneutical constitution of the ancient self has collapsed. This, for Wolf, is a further warrant of more accurate knowledge: ‘when we quantify ourselves, there isn’t the imperative to see through our daily existence into a truth buried at a deeper level’ (Wolf 2010).

It is possible to look at this shift as the hyper-rationalization of agents turned into entrepreneurs of themselves; in such a context, the reliance on numbers, and on numbers alone, shows the sweeping impact of the entrepreneurial culture—where key performance indicators (KPIs) have become the guiding tools of sound management (Campbell & Hwa 2012). Lupton situates the Quantified Self movement within the audit culture and the aspiration to accountability (Lupton 2016: 115–116), in what could be seen as a refinement of the instruments at the disposal of the *homo oeconomicus*. The quantified conception of selfhood brings indeed to the fore ‘the importance of self-awareness and self-improvement (the attempt to be “an *optimal* human being” and “your *best* self”) and also the role played by self-interest (“studying yourself as an interesting topic”)’ (Lupton 2014: 3, emphasis added). The numbers would thus offer an indication to act (the KPIs are indeed tools for decision making) that bypasses the need to construct a true discourse beyond the truth of the indicator itself.

However, I would rather suggest in what follows that a close look at big data technologies shows that they rather tend to discard the conception of the subject as *homo economicus*, in a couple of ways. First, the construction of the digital self makes of the algorithm a preferred interlocutor (Karakayali, Kostem & Galip 2018: 5), with specific problems. Contrary to a mentor that might express empathy and indulgence, the verdict of numbers is without appeal: ‘Machines don’t understand the value of forgiving a lapse, or of treating an unpleasant detail with tactful silence. A graph or a spreadsheet talks only in numbers, but there is a policeman inside all of our heads who is well equipped with punishing words’ (Wolf 2010). Wolf further describes the hectic behaviour of people that thus become obsessed with the indicators of their own failures.

In the same strand of thought, Karakayali, Kostem, and Galip enlighten the dependence created by music recommendation systems.<sup>3</sup> A song that would be heard without being recorded in a user’s profile leaves him with a feeling of incompleteness because ‘users consider the “data” transferred to their libraries through scrobbling as a part of themselves’ (Karakayali, Kostem & Galip 2018: 10). Moreover, since the application incites to always diversify one’s musical taste, the ‘flow of recommendations ensures that diversification is never completed but remains an endless pursuit’ (ibid.: 11): the dependence is not a by-product of the recommendation system, but actually one of its goals.

The process of quantifying emotions and affects (Cambria 2016), evoked in the previous section, serves in fact a new economy, I would suggest, where impulses and desires are being managed, rather than rational behaviour. This is

confirmed by other domains where recommendation systems are involved: state of the art research in data science consists indeed in being able to infer from online behaviour the feelings of the agent, in order to adjust the next offer to his desires and characteristics (Couto 2017; Radford, Jozefowicz & Sutskever 2017).

Nir Eyal thus describes how state-of-the-art behavioural economics inform today recommendation systems so as to create ‘hooked’ users. He interestingly defines habits as “‘automatic behaviors triggered by situational cue:’ things we do with little or no conscious thought’ (Eyal 2014: 1). In his attempt to transform his self and build new habits, I would like to argue, the quantified self actually accepts to subject himself to the recommendation system that builds additional habits—the unconscious addiction to the application that serves his conscious transformation. The ‘Hook model’, aimed at building both types of habits, functions within a closed loop of trigger-action-reward (Liu & Li 2016). And, indeed, the data of the quantified self usually feeds ‘habit transformation apps’, which use triggers as daily reminders and rewards based on the achievement of specific milestones (Stawarz, Cox & Blandford 2015).

The variability of the reward is further key to the creation of excitement, curiosity and the need to come back. In the economy of smartphone apps, the user’s ‘engagement’—his propensity to continue using the app (Eyal 2014: 95–134; Liu & Li 2016)—is the key indicator of success, rather than the progress made towards the user’s personal transformation goal.

Furthermore, since the judgment on the achievement level is built within the app as a key product of the algorithm (the trigger), it is not the quantified subject’s own reflection. Ironically, then, the true discourse on the subject is not said by the performing subject, but is rather computed based on behavioural data. If such is the case, it bears some features of the Christian confession, where the scientific value of what is said escaped the confessing subject:

The truth did not reside solely in the subject who, by confessing, would reveal it wholly formed. It was constituted in two stages: present but incomplete, blind to itself, in the one who spoke, it could only reach completion in the one who assimilated and recorded it. It was the latter’s function to verify this obscure truth: the revelation of confession had to be coupled with the decipherment of what it said. The one who listened ... was the master of truth. (Foucault 1990a: 66–67)

The priest’s hermeneutic function is replaced by the indicators of performance and the rewards offered to the quantified subject, hence creating a ‘quantified true discourse’. Besides, as soon as numbers have taken precedence over words and the volume of data makes their manual treatment inconceivable, the algorithm is perceived as more trustworthy than any mentor could ever be (Reigeluth 2014).

Furthermore, the ‘Hook model’ is based upon the techniques of both online advertising and game industry that flourished with the Internet (Eyal 2014: 4).

It thus combines elements of the individualization process that accompanies the datafication described in the first part, with ‘gamification’ (Whitson 2015), defined as ‘the permeation of non-game contexts with game elements’ (Schrape 2014: 22). The trend is not specific to habit transformation apps, since gamification is becoming more common as a technique of government at large (Schuilenburg & Peeters 2017). While Schuilenburg and Peeters insist on the gift being the counterpart of surveillance and control (see also Whitson 2013), I would rather point to how gamification builds in fact a digital version of behaviour regulation, as again a combination of discipline and statistics, where rewards would have replaced punishment. As Eyal puts it: ‘the convergence of access, data, and speed is making the world a more habit-forming place’ (Eyal 2014: 14).

Gamification builds upon an accumulation of points, obtained through repetitive ‘good’ behaviour (Whitson 2013). It actually enlarges to other domains the token economy first conceptualized in behavioural psychology in the 1960s, for the sake of modifying undesired behaviour. In the therapy, good acts are associated with points (secondary rewards), which can then be converted into items (primary rewards) (Wexler 1973), thus positively reinforcing them. For Wexler, this is a form of ‘Skinnerian operant conditioning’, that is, the conditioning of specific actions, that come to be performed automatically rather than rationally. Used in therapy and education (Kazdin 1982), this method’s assumptions concerning the individual couldn’t be further from those of a *homo oeconomicus* taking decisions by maximizing his utility. The quantified self apps seem to transpose these techniques to the digital world. What remains unclear, though, is whether the habit transformation they obtain concerns the created addiction to the app, or the claimed control on and knowledge of one’s body through numbers, or both. What is more obvious is that the disciplinary techniques are transformed so as to become pleasurable; the addictive power of self-tracking comes from the enjoyment associated with the gamification of discipline (Turel & Serenko 2012).

## Conclusion

The Quantified Self movement characterizes in many ways the current digital predicament; it builds upon the huge volumes of data available at the individual (and infra-individual) level, combined with technologies that produce insight and guidance for a new form of self-knowledge. It thus takes the entrepreneurial self to another level of involvement: the individual seems now to have gained a deepened understanding of his body indicators and to be taking charge of his health and well-being without the need of mentors.

But it also illustrates the other side of the digital era, which is often said to mark the end of theory (Anderson 2008; see also Fisher, Chapter 6, in this volume). Algorithms function without a priori theories or assumptions, and the

new knowledge bypasses the expert that used to give the data its meaning. Algorithmic knowledge doesn't need hermeneutics. My contention here is that it also discards the rational individual as an object of knowledge; what is currently being modelled is not the utility maximization of the *homo oeconomicus*, but rather the impulses and emotions that can be turned into further dependence and addiction. Focused on the collection of behavioural data and the prediction of future behaviour, the digital era thus propels a self of a new kind. The relation to self indeed takes the shape of an objectivation of the body, grasped via numbers. The digital subject thus exhibits a new negotiation of his simultaneous subjectivation and subjection to a truth produced by the algorithm.

### Notes

<sup>1</sup> <http://quantifiedself.com/>

<sup>2</sup> <https://www.myfico.com/credit-education/whats-in-your-credit-score>

<sup>3</sup> These recommendation systems function in the same manner as other applications of the quantified self since 'the scrobbler is akin to a wearable technology that accompanies users' (Karakayali, Kostem & Galip 2018: 8).

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