**How Are We Now?**

**Real-time mood-monitoring as valuation**

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**Abstract**

In a digital society, we are frequently invited to communicate our present affective state via interfaces. These include smart-phone apps which allow users to track their mood in ‘real-time’, plus touchpads in organisations and public spaces which seek rapid feedback on whether an experience is positive or negative. In contrast to the use of surveys as tools of valuation, these technologies seek to capture experience in ‘real-time’, which can then be viewed and evaluated critically at a later time. Based on study of a number of mood-monitoring technologies, this paper highlights some of the ways in which they challenge conventional accounts of (e)valuation. In particular, rather than inviting individuals to represent their feelings towards the past numerically, they invite them to make uncritical expressions of positive or negative mood in the present. The central question of value is no longer *how much* is something valued, but *whether or not* it is valued. Quantiative and calculated analysis of positive and negative emotions occurs subsequently.

**Keywords**

Affect, valuation, experience, self-tracking, data, interface

The appearance of touchpads displaying smiling and frowning faces is an increasingly common means of collecting feedback in everyday locations, such as cafes, public service outlets, airports and cultural institutions such as libraries. The ease with which one can press a button to register a given mood represents an apparent methodological advantage over the use of customer satisfaction surveys or other evaluation mechanisms. In Dubai, whose government has recently pledged to make it the ‘happiest city on earth, touchscreen interfaces displaying three faces – happy, unhappy, neutral – are appearing across public spaces, creating what its designers term ‘the world’s first city-wide live sentiment capture engine’. The same faces appear on all of Dubai’s government websites, to allow users of e-government services to register their experiences.

Alongside emoji and emoticons, interfaces which invite a non-verbal reporting of affect are now everyday features of smart technologies and social media platforms. In 2016, Facebook unveiled five emotional ‘reactions’ (‘love’, ‘haha’, ‘yay’, ‘wow’, ‘sad’ and ‘angry’) that would complement the ‘like’ button, each being represented by its own emoji. This is evidently an expansion of Facebook’s capacity to process data for purposes of market research and other data analytics services (Horning, 2016). Mood-tracking apps, such as MoodPanda and gottaFeeling, allow users to track their moods on their smart phones, complementing other forms of ‘self-tracking’ and ‘quantified self’ technologies. These are designed with close attention to the aesthetic dimensions of the interface, so as to make the reporting of mood as instinctive and easy as possible. Often, as with the iPhone app Moodnotes, the user is required to track their mood by adjusting a face on the screen in gradations of upturned and downturned smile. This represents a form of self-tracking, but not necessarily a self-quantification, at least initially.

These sorts of developments have been explored within media studies and software studies. Emoji and emoticons have been studied in terms of the forms of sociality they facilitate and express (Dresner & Herring, 2010; Stark & Crawford, 2015). The human face has been analysed as a particular variety of digital interface, that mediates between bodies and machines in distinctive ways (Hansen, 2003). Interfaces are now theorised and studied more generally, as the means by which we encounter, inhabit and navigate digitally-enabled environments, whether as passive subjects or as the designers and controllers of those environments (Manovich, 2001; Galloway, 2013; Hookway, 2014). And ‘self-tracking’ – including ‘mood-tracking’ (Boesel, 2015) – is now the focus of an extensive literature in media studies, sociology and anthropology (e.g. Moore, 2014; Crawford, et al, 2015; Lupton, 2016; Schüll, 2016).

Scholars in cultural economy and economic sociology have long been attuned to the importance of affect in markets, workplaces and consumption practices. Advertising and branding have sought to produce or manipulate consumer emotions for most of their history (Baritz, 1960; Ewen, 1976; Arvidsson,Ftt 2006), employing scientific techniques to evaluate the affective impact of a given brand, such as surveys (Schwarzkopf, 2010) and focus groups (Lezaun, 2007). Affect is integral to the production of value in post-Fordist workplaces, especially where employees are required to perform positive emotions for customers (Hardt, 1999; Hochschild, 2012). *Positive* affect appears to have a particularly privileged role within contemporary capitalism, making the science of happiness critical to contemporary management, public policy and entrepreneurial selfhood (Binkley, 2014; Davies, 2015). More generally, the Weberian characterisation of capitalism as rooted in cold, calculative rationality has been contested with the claim that emotions are integral to the demands that capitalism places on us (Illouz, 2013; Konings, 2015).

What, then, are we to make of the contemporary spread of interfaces facilitating ‘real-time’ non-verbal – and sometimes unquantified – affective feedback? Addressing this question requires us to bridge the above literatures and consider interfaces as critical to how affect is known, measured, represented and governed in contemporary capitalism. This article approaches the question in terms of the sociology of valuation and evaluation (Stark, 2009; Beckert & Aspers, 2011; Lamont, 2012), to consider how an emerging temporality of affective capture potentially transforms how value is conceived and gauged. Sociologists and cultural economists have often assumed that rendering things calculable involves the imposition and expansion of quantitative metrics. But this overlooks alternative modes of valuation, where users express their affective state instinctively and unreflectively via an interface of some kind – pressing a button, selecting a colour, swiping a screen and so on. Often, this involves binary choices (positive/negative, smile/frown etc) which can be successful in capturing affective reports in ‘real-time’. Arguably, such measures are as prominent as quantitative measures for the inhabitants of digital, ‘real-time’ environments.

To be sure, the emphasis on real-time emotional feedback did not begin with ubiquitous ‘smart’ devices. As we shall explore, there are various historical precedents for it (one need think only of the ‘worm’ which traces studio audience reactions during televised Presidential debates). Meanwhile, the rise of what Andrew McStay has termed ‘empathic media’, which often detect emotion via physiological indicators alone, means that emotion-tracking may increasingly bi-pass visible and cultural interfaces, meaning we are no longer aware of the affective feedback that we are giving (McStay, 2014, 2015a, 2015b). Then there are various tracking technologies such as Ginger.io which detect emotion via analysis of mobile phone communication (‘sentiment analysis’) and analysis of social behavior. These capture aspects of subjective experience, but without subjective awareness of this fact. This article does not engage with these technologies of behavioural analysis, not because they are not deemed important, rather because they fall outside of the specific philosophical and methodological problem explored here. Where ‘empathic media’ seek to circumvent subjective reports altogether, the technologies explored in this article lie somewhere *between* traditional self-reports (which require the individual’s full attention) and new behaviorist forms of affective capture (of which the individual is not even conscious).

This rest of this article is in four sections. Firstly, it addresses some of the key philosophical and methodological issues that are at stake in the privileging of ‘real-time mood’, as opposed to other representations of affect, such as ‘life satisfaction’. What is crucial here is the Bergsonian distinction between measurable but impersonal dimensions of subjectivity and the ‘pure duration’ of time, which resists quantification. Secondly, it looks at how mood-tracking interfaces seek to mediate the experience, without excessively disrupting it. Here, the crucial concern is that interfaces become ‘invisible’ and attractive, such that they draw the user towards and through them. Thirdly, I argue that mood and value are not only being represented by such technologies, but necessarily augmented by them, presenting certain epistemological dilemmas. Finally I indicate some of the challenges that this poses to the sociology of (e)valuation.

This analysis is informed by interviews with the designers of emotion-tracking interfaces of various sorts. These were approached via email, then interviewed either via skype or in person over 2015-16. Where possible, the author has also used the technologies over several months. These are deliberately not limited to a single type of application (such as mood-tracking apps), but also include devices for getting psychological feedback in workplaces and websites which help people with mood disorders. While these technologies are often informed by academic psychological theories and methods, the pragmatic question of *why* someone might choose to share mood via an interface, and how they might benefit from doing so, never disappears. Hence, ‘scientific’ questions of the ‘truth’ of emotions can never be disentangled from ‘practical’ questions of feedback, optimisation and control; these are methods with a particularly active ‘social life’ (Ruppert et al, 2013; Marres & Weltevrede, 2013). Different practical agendas shape how data is collected, and my interviewees were diverse in this regard.

**What is ‘real’ about ‘real-time’ mood?**

The contemporary science of positive and negative affect can be traced back to the early 1960s, when growing psychiatric concern with depression coincided with the rise of cognitive psychology, to produce new techniques for measuring affect such as the ‘Beck Depression Inventory’. These were joined soon after by the first surveys focused on life satisfaction, employing questions such as ‘how satisfied are you with your life as a whole?’. To answer these, individuals give a number between 1 and 10. Life satisfaction surveys have since become a key component of ‘happiness economics’, which can be used to evaluate public policy measures and spending decisions. Statistics agencies, such as Britain’s Office for National Statistics, now employ these surveys to produce data on ‘national wellbeing’. This can serve as a form of ‘contingent valuation’ (when seeking to put a monetary price on public goods), where an equivalence ratio between happiness and money is derived from data on correlations between income and happiness (Fujiwara, 2013).

As psychologists and economists have noted, this methodology relies on the authority of the reflective self to stand back from immediate experience, and offer a judgement on their past and present. This is a ‘remembering self’, who performs an evaluation of their feelings and experiences over a long period of time, and reports that evaluation (Kahneman & Riis, 2005). Therefore, when performing a valuation on the basis of life satisfaction survey data, the researcher is really carrying out a valuation based on evaluations: an objective measure of reflexive subjective judgements.[[1]](#footnote-1) This is a largely unremarked-upon feature of most evaluation techniques and feedback mechanisms, such as customer satisfaction surveys, restaurant reviews or Amazon ratings. The subject looks back into the past and provides a judgement; the time lag between experience and evaluation is a condition of critical distance.

However, from the perspective of hedonic psychologists, there are inevitable defects involved in relying on the ‘remembering self’ to report mood. Studies have shown that individuals tend to misremember their experiences and that survey questions of this sort lead individuals to attach too much weight to certain experiences in their past (Kahenman & Sugden, 2005). This is particularly problematic if the question concerns how a certain change or condition (such as an illness or loss of a job) affects one’s happiness: focusing on the experience in question will usher in conscious attitudes and opinions about it, which interfere with memories of it. Subjects are more likely to report on how a particular transition affected them (such as *getting* divorced), rather than on how it affects them day-to-day (such as *being* divorced).

To counter this, since the 1970s, economists and psychologists have developed various techniques for trying to capture affect as it is experienced in the moment. They include the Experience Sampling Method, the Ecological Momentary Assessment and the Day Reconstruction Method, which try to collect data in the ‘real world’ (i.e. not in a laboratory) and in ‘real time’ (i.e. not after the event via a survey), using devices such as diaries and mobile technologies (such as smart phones, but before then, pagers) which periodically prompt the subject for a report of their affective state (Kahneman & Krueger, 2006; Schiffman et al, 2008; Csikszentmihalyi & Larson, 2014). These are types of subjective valuation, but which seek to cut out the detached, critical *e*valuative self from the feedback loop. They seek to capture how the research subject feels *right now*, or as close to that as possible. In doing so, they pursue a methodological ideal originally articulated by the economist Francis Edgeworth in 1881, who dreamt of:

*an ideally perfect instrument, a psychophysical machine, continually registering the height of pleasure experienced by an individual, exactly according to the verdict of consciousness.*

(Quoted in Colander, 2007).

Edgeworth named this imaginary machine a ‘hedonimeter’, a term since adopted by at least two academic research projects employing digital tracking technologies to quantify experienced happiness.[[2]](#footnote-2)

For those with mood disorders of various kinds, there is a particular need to track moods as they occur, rather than as they are remembered. Mood charts of various kinds have been developed since the 18th century, offering individuals a way of tracing variations in their subjective feelings (Martin, 2007: 177-196). These tend to involve various combinations of personal and professional oversight. Individual sufferers are responsible for keeping track of mood, and may even design a chart themselves. This enables a sufferer of a mood disorder to achieve some distance from the mood that they are presently in, and to attain a more objective perspective on their condition. Yet the data that accrues is often presented to a physician for inspection as evidence of how their mood has fluctuated.

The choice between ‘remembered’ life satisfaction and ‘experience’ is ultimately a philosophical one between two modes of subjectivity or being. This is well captured by Bergson when he writes:

*Our perceptions, sensations, emotions and ideas occur under two aspects: the one clear and precise, but impersonal; the other confused, ever changing, and inexpressible, because language cannot get hold of it without arresting its mobility or fit into its common-place forms without making it into public property.*

(Bergson, 2002: 88)

The survey and quantitative scale are well-suited towards the capture of the former ‘aspect’. They invite the subject to engage with a public measure for purposes of comparability. Capturing the latter, by contrast, represents a very different methodological challenge. The turn to real-time mood poses a philosophical problem: *when is now*? To what does a ‘moment’ of ‘experience’ refer to when one is no longer engaging with the reflective, evaluative self?

From a Bergsonian perspective, which renders time as a ‘pure duration… without any affiliation to number’, these questions brook no objective answer (Bergson, 2002: 74). To introduce a temporal measure (such as clock time) would be to misrepresent time as space. Recognising this philosophical critique is especially important if ‘real-time’ experiences are to include immersive states of ‘flow’, where the subject loses track of time. To dwell in such a state is to lack demarcations of time, and to experience the ‘melting of states of consciousness into one another’ (Bergson, 2002: 76). Bergson perceived this in the state of dreaming, where ‘we no longer measure duration, but we feel it; from quantity it returns to the state of quality’ (2002: 87). Another example would be the phenomenon of machine gambling addicts entering ‘the zone’, as explored by Natasha Dow Schüll (2012). ‘The zone’ refers to a psychological state where the gambler loses any sense of themselves as separate from their machine, or of their spatial or social environment. This is, as Schull puts it, ‘a zone beyond value with no social or economic significance’, and it is this exit from measurable time and space (rather than monetary winnings) that the addict is really seeking (2012: 199). How, then, can *experience itself* be valued, if it resists the logic of numbers?

For psychologists, one methodological way around this is via the dichotomy of ‘approach and avoidance’: ‘respondents can be asked to indicate whether they feel impatient for their current situation to end, or would prefer for it to continue’ (Kahneman & Riis, 2005). Binary questions – yes or no, smile or frown – potentially allow for a capture of momentary experience in ways that do not provoke conscious, evaluative reflection on it, of the sort that a questionnaire or numerical scale might do. Of course, even these questions represent an interruption in the flow of experience, and invite reflection on *how long* the ‘current situation’ has been going on for, in order for an answer to be given. That then leaves the question of duration in the hands of the respondent, as opposed to it being imposed by the researcher. If ‘life satisfaction’ data grants the subject the authority to evaluate their own life, then data on the quality of ‘experience’ grants the subject the authority to define what counts as a ‘moment’ of time.

This binary perspective on value – ‘more or less?’ – is a feature of the cybernetic view of human behaviour. From a cybernetic perspective, agents are constantly adapting their behaviour in response to negative feedback in a real-time loop, in an effort to render the future predictable (Halpern, 2005; Pickering, 2010). At any moment in time, the issue is not how much worth an individual attaches to something, but whether they want to conserve their present relation to it, or to adapt it. The cybernetic individual does not rely on numbers or calculation, but on a constant processing of experiences, with a view to improving future strategies. This is true of cybernetic accounts of markets, as found in the work of Hayek. According to Hayek, the price system is a ‘machinery for registering change, or a system of telecommunications which enables individual producers to watch merely the movement of a few pointers’ (1945: 527). Immersed in this system, traders do not have time or cognitive distance to carry out evaluations or empirical justifications for their decisions. In real-time, their dispositions are either towards something or away from it:

*It does not matter for [the trader] why at the particular moment more screws of one size than of another are wanted, why paper bags are more readily available than canvas bags, or why skilled labor, or particular machine tools, have for the moment become more difficult to acquire. All that is significant for him is how much more or less difficult to procure they have become compared with other things with which he is also concerned*

(Hayek 1945: 525)

While the price system is manifestly numerical in character, Hayek implies that it is not *experienced* via calculation or quantification. Rather, the consumer or entrepreneur is either drawn in one direction or another, while the price system itself performs the all-important computation and coordination. This corresponds to the colloquial financial rhetoric of going ‘long’ or ‘short’, feeling ‘bullish’ or ‘bearish’.

The methodological and ethical shift towards an emphasis on *experience* corresponds closely to how Deleuze characterises the shift from societies of ‘discipline’ to societies of ‘control’ (Deleuze, 1992). The former employ ‘spaces of enclosure’ to instruct individuals to keep watch over themselves, whereas the latter flood open spaces with *continuous* forms of monitoring. The latter is inevitably dependent on the ubiquity and processing power of information technology: as both of these increase, so the possibilities for ‘real-time’ control expand (Beniger, 1986; Franklin, 2015). The embedding of data capture technologies in the physical environment (referred to as the ‘internet of things’) combined with the spread of ‘smart’, mobile and wearable technologies opens up whole new possibilities for ‘real-time’ control (Agre, 1994), as currently manifest in the rhetoric surrounding ‘smart cities’ for example (Kitchin, 2014; Kitchen et al, 2015).

Dramatic new cognitive and evaluative capabilities are arising as a result of these shifts. Where so much physical movement and peer-to-peer communication is captured and available to computational analytics, human cognition is vastly out-stripped by non-human cognitive capacities (Andrejevic, 2013; Hansen, 2015). This *potentially* allows humans to dwell in a purely ‘real-time’ cognitive state (feeling, experiencing, responding, liking) and allowing machines to perform acts of judgement, evaluation and decision-making, at least as an ideal. ‘Predictive shopping’, in which consumers are mailed goods they are likely to want without having chosen them, becomes plausible and desirable (Sunstein, 2015). The amount of data being captured and the speed at which it is processed means that media technologies no longer serve to record *conscious* memories and *reflective* experience, but to provide records that are unmediated by human experience or memory. In Hansen’s distinction, the processing of ‘sensation’ comes to replace human reliance on ‘perception’ (Hansen, 2015).

Empirical enquiry into ‘experiences’ and ‘moments’ of positive and negative affect acquires vast new possibilities in this technological context. Beyond comparatively basic analogue techniques such as diary-keeping, it becomes possible for psychologists, economists, computer scientists, managers and policy-makers to witness variations in mood as they are occurring ‘now’. In marketing, it has yielded a fascination with what’s known as the ‘experience economy’, where companies focus on the moment-by-moment phenomenology of consumption, rather than on subsequent feedback (Pine & Gilmore, 2011). ‘Moments’ have become the stated offering of a number of social media platforms. At the frontier of technological possibilities, the emotions of crowds and audiences can be monitored in real time through a combination of digital facial analytics, sentiment analysis (focused on social media data) and analysis of noise. Wearable technology offers much new biomarker data on wellbeing for economists to analyse, such as pulse rate and blood pressure (Blanchflower et al, 2011). These ‘empathic media’ (McStay, 2014) potentially result in a purely behaviourist account of affect, which circumvents subjective experience altogether.

While such techniques unleash dramatic new possibilities for physiological and behavioral data capture, they also eliminate ‘experience’ (as *conscious* duration) from their valuations. Observable proxis for consciousness are plentiful, such as ‘attention’ (indicated by eye movement), ‘sensation’ or neural activity (Crary, 2001). But what is sociologically and philosophically intriguing about interfaces for capturing affect via touchscreens and emoticons is that they seek to grasp something of *conscious experience*, but with minimal interruption in that experience. They must be *perceivable* but without requiring close *attention*. This involves a methodological balancing act, in which the collection of data is as unobtrusive as possible, but nevertheless intrudes into consciousness in some way, and only subsequently generates a report or dashboard representing this in quantified, factual form. There is a philosophical contradiction here between the privileging of immediate, unreflective experience as the essence of value and the attempt to represent it in calculable, objective form for purposes of evaluation. In Heidegger’s terms, this signifies *at best* an ambivalence between what is ‘ready-to-hand’ and what is ‘present-at-hand’, and at worst an unwieldy conflagration of the two (Heidegger, 1962). Either way, it is a challenge of design as much as anything, which is what we now explore.

**Designing for affective capture**

It is often assumed that the production of quantitative social knowledge involves processes of objectification, that is, a certain critical, Cartesian detachment on the part of the knower. To appeal to the ‘facts’ of a situation involves a step away from the immediate, embodied and emotional dimensions of a situation, and a reference to some more general measure of validity or magnitude (Poovey, 1998; Boltanski & Thevenot, 2006). Quantitative methods serve as tools of discipline and government, where experts are able to attain ‘panoptical’ perspectives on individuals and populations. A number of studies of ‘quantified self’ practices operate within this register, exploring how bodies become objectified as natural entities or capital thanks to new forms of digital tracking (Till, 2014; Moore & Robinson, 2015; Lupton, 2016).

But practices of quantitative objectification cannot operate in the same way where ‘real-time mood’ is concerned for two reasons. Firstly, the epistemological and methodological challenge is to grasp something of experience itself, and not to impose discipline upon the individual. A traditional customer satisfaction survey, for example, sets up a disciplinary situation, in which the subject behaves in certain pre-formatted ways, rather than expresses their affective state. Secondly, there is the constant risk of tracking devices that they will produce boredom, alienation or outright refusal. The methodological challenge is therefore closer to that of qualitative social research, as in focus groups or ethnography, of seeking to get ‘inside’ the world of the subject, rather than seeking to impose a quantitative grid upon them.

This is where the concept of ‘interface’ becomes significant, because it is in the very nature of an effective interface that it becomes invisible to the ‘user’. Interfaces occur at the boundary between human and machine, separating one from the other, but allowing for the augmentation of the former by the latter (Hookway, 2014). Whether it be the car dashboard, the smart city control room or the iPhone app, interfaces are the medium through which individuals act technologically, but without having to attend to this fact. The driver does not reflect on the nature of the steering wheel, unless it breaks: ‘that the interface should seemingly disappear in use follows its mode of operation’ (Hookway, 2014: 124). In a 2006 TED Talk on the new touch-screen technology that would later form part of the iPhone, Jeff Han lauded it with the words ‘the interface just disappears’ (Kaerlein, 2012). One of my interviewees, whose firm produced a wearable technology which combines with a mood-tracking app, told me that ‘we’ve designed it so it can literally disappear on you’. Thus, where a focus group can achieve evaluative ‘invisibility’ with use of one-way mirrors, everyday contexts or alcohol, and ethnography involves long-term submersion of researcher within context, interfaces offer ways to embed methods within everyday use (Marres & Gerlitz, 2016).

In the case of real-time mood-tracking, we can identify three semiotic features of interfaces that support this balancing between epistemological and pragmatic priorities. The first concerns the rhetoric of enquiry. The questions employed to capture ‘experience’ in ‘real-time’ are borrowed from everyday social situations. One of the opportunities provided by smart phones is to capture data sporadically, at different and unpredictable times during the day, so as to identify the minutiae of how mood rises and falls. This requires very generic questions, that are suitable and meaningful at any time of day or night. Hence, Moodnotes uses questions including ‘Just checking in, how are you feeling?’ and gottaFeeling uses ‘Hi. How do you feel?’. One app simply called Happiness uses the question ‘How are you?’. Mappiness (produced as part of a research project at LSE) uses the more risk-aware ‘How do you feel? Tell us as soon as you safely can’. These echo the convivial rhetoric employed by social media platforms to invite sociality, such as ‘what’s on your mind?’ (Facebook) and ‘what’s happening?’ (Twitter).

Such questions are clearly distinguishable from those of traditional quantitative social science or audit. As pragmatist critics of psychology have argued, questions such as ‘how are you?’ or ‘what’s on your mind?’ are not invitations to provide factual representations or reports of empirical states (Harre & Secord, 1972; Wittgenstein, 2001). They can only be understood in a relational and interactive sense. Where expressed by digital interfaces, they are primarily seeking to provoke a reaction *across the interface in question*, capturing data in the process. The avoidance of expert rhetoric is therefore a means of debarring – or at least, delaying – any moment of objective representation. This is what Pickering describes as the ‘refusal of the detour through knowledge’ that is ‘the hallmark of cybernetics’ (Pickering, 2010: 21).

A second semiotic characteristic is the circumvention of representational language and numbers, in favour of embodied expression. As already noted, this is taken to more advanced levels by affective computing and ‘empathic media’ which gauge affect without any mediation via conscious experience of the subject, but focus wholly on the face, brain or other physiological indicator. If emotion is something that is primarily somatic and only subsequently mental, as William James argued, this turn directly to the body has scientific justification (James, 1884). But it also cuts out how emotions are experienced, and ultimately collapses the detection of affect into a broader infrastructure of digital physical monitoring. By contrast, touch-screens, buttons and emoticons employ the body in acts of physical self-expression. For instance, the *thumb* is used to press a smiley *face* on a keypad or manipulate a *facial* expression in an iPhone app. Conscious experience is at work in these types of feedback practices, but language and numbers are not.

Touch-screens, such as the iPhone’s, hold out a promise of ‘immediacy’ that is not available via semiotic representation (Kaerlein, 2012). At the same time as the interface is ‘disappearing’, so the dualism of mind and body dissolves into a form of embodied cognition and expression, where the user feels themselves at one with the machine. Schüll captures this in her description of gamblers entering ‘the zone’:

*Gamblers most readily enter the zone at the point where their own actions become indistinguishable from the functioning of the machine. They explain this point as a kind of coincidence between their intentions and the machine's response.*

(Schull, 2012: 171)

The methodological difficulty of capturing ‘moments’ of ‘experience’ without destroying them can partly be alleviated by turning feedback into a physical (but nevertheless conscious) practice, without resort to linguistic or numerical representation. iPhones are inevitably dependent on quite subtle dexterity, but with mood-tracking apps this may be as simple as a swipe of a smile or arrow upwards or downwards. Emotion can be channelled directly into the device with a sense of immediacy, without the subject having to reflect very much on ‘how do I feel?’. Purpose-built touchpads or larger touchscreens offer an opportunity for people in public spaces or service centres to physically express an emotion as they walk past. The designers of the Dubai Happiness Meter state that:

*Most respondents consider surveys time-consuming, with little or no benefit from partaking in the exercise. To address this, we needed to find a way to keep the interaction down to a ‘single tap.’*

 ‘Happiness Meter’ website

Or as an interviewee explained with respect to a mood-tracking iPhone app:

*The last thing you want to do is fill out a form… find a pen, get a pencil out. It was like no, that’s the last thing I want to do, so I wanted to make something was minimal interaction. You could just go up or down.*

What this suggests is that it is the physical affordances of the body, in combination with the physical affordances of the screen, that determine the contours of how valuation is to occur. Reducing affective capture to a ‘single tap’ or ‘just go up or down’ means that unreflective embodied expressions, often channelled into binary choices, become the norm for capturing experience.

This rapid, instinctive mode of dexterity can be seen as an integral feature of how valuation occurs in societies of control. Touching or swiping a screen allows feedback to occur with as little reflection or concentration as possible, while the individual is in motion. Contrast this ‘swiping’ with the carefully regulated gestures that Foucault described in the context of hand-writing classes of the 19th century, ‘whole routines whose rigorous code invests the body in its entirety, from the points of the feet to the tip of the index finger’ (Foucault, 1977: 152). It is different too from the mode of engagement required of something like a Tripadvisor evaluation system, where everything depends on selecting the right quantity of points, as opposed to a general expression of positivity or negativity.

However, this reliance on rapid, embodied forms of feedback also has some curious methodological implications. One device developed for real-time mood capture in the workplace invites employees to press either a smiling face or a frowning face on their way out of the workplace, to alert management to fluctuations in happiness. I asked the developer of this technology what would prevent a single employee pressing a button repeatedly, to which he replied:

*It doesn’t matter to us… the question is, why is someone or some people pressing this repeatedly at your company and not in the others… Yes, people could cheat but nonetheless, maybe that is factual. The key thing is that metric is useful for you to improve.*

Ultimately, the interface is presenting the embodied individual with a way to express their emotions however they see fit. If this means slamming a button extra hard (on a bad day), or perhaps holding a smiley button down (on a very good day), this ‘counts’ as much as acting in a more measured fashion, and arguably more so.

This example speaks of a third way in which mood-tracking interfaces can come to mediate conscious experience, with minimal interruption. This is where the interface takes on game-like qualities, in order to produce and sustain a form of immersive ‘flow’, while simultaneously capturing data on mood. Rather than invite the user to quantify their happiness, or simply tap a screen or press a button, some mood-tracking apps and websites seek to facilitate a more interactive experience, which might take them deeper into a state of ‘flow’. Moodscope, a website aimed primarily at those suffering from mood disorders, collects data on the user’s affective state by requiring them to click on playing cards to ‘spin them around’ until the word reflecting their current mood is shown. Happify, which aims to promote positive affect, combines mood-tracking with simple games in which the user shoots balloons representing different moods. The developer of one website which uses an interactive data-gathering method of this sort informed me that ‘somehow it seems to activate the brain to get a much more accurate summary of your real mood’.

**No representation without augmentation**

If one considers the simple phrase “I value you”, it can be heard in one of two ways. In its colloquial form, it is a statement of social commitment. In this sense, it has performative qualities, whereby a bond is re-affirmed in the process of being recognised. This is likely to have a positive effect, not only the strength of a relationship, but also on the affective state of the person ‘being valued’. In that sense it is an *augmentation*. But the phrase could also be heard with a critical or expert tenor, where a person is being valued via a test or audit of some kind. This performs a very different type of social relation, in which the valuer possesses some critical distance and authority over the valued. It requires a particular arrangement of social and material context, in order that valuation can be carried out in a way that is dispassionate and neutral (Boltanski & Thevenot, 2000). In this latter sense it is a *representation*.

The philosophical ambivalence of real-time mood-tracking means that both of these meanings are in play simultaneously. The user of a mood-capturing interface is *being valued*, but in two senses of that term simultaneously. She is being engaged with in a social, interactive sense, to the extent that her feelings *matter* to someone or something. As the developer of one mood-tracking app informed me ‘I just programmed it to ask me how I was and yet it still gave me that feeling of someone caring how I was’. And she is the object of a judgement or assessment, that results in a set of empirical facts that interrupt the flow of experience from time to time. One of my interviewees described the data produced by his company’s device as ‘the brutal fact that modifies what [the users] do’.

There is nothing entirely surprising about the claim that methodologies of quantification and observation *also* involve new forms of social relation and subjectivity. What is significant about real-time mood-tracking, however, is the uneasy parity that is granted to these two epistemological and methodological orientations, and how they are both recognised. The quest to make the user *feel valued* (and therefore more positive, less anxious, happier etc) and the quest to identify the ‘truth’ or ‘facts’ of those feelings operate in tandem with each other, although often with carefully-tended means of separation between the two. Let’s consider each of these in turn.

The very presence of an interface seeking feedback on ‘how you are’ might, under certain circumstances, prompt a positive affective response. Neuroscientists have shown that the image of a smiley face (even a plainly ‘fake’ smile) can have a positive affective effect on someone perceiving it (Sel et al, 2015). Interfaces are always already designed around some assumed affective state on the part of the user, before any interaction has occurred (Woolgar, 1990). Thus there is a saying that ‘nobody is really as happy as they seem on facebook, nor as angry as they seem on twitter’. Given the risk of individuals simply ignoring mood-capturing interfaces – a risk that is particularly acute with self-tracking apps – the need for them to *feel* inviting is fundamental. Ensuring that the user feels *positively towards the interface itself* is a necessary precondition of discovering whether they are feeling positively or negatively towards the rest of their immediate situation.

Apps which seek specifically to help people suffering with mood disorders understandably have a bias towards helping people become happier. Just the act of using them may also elicit a feeling of regaining control, for those who feel buffeted by their own mood swings (Martin, 2007: 179). Other self-tracking apps which seek to help individuals change their behaviour also have clear biases towards greater positivity and activity, and are unlikely to simply present users with data. Data needs to be presented to individuals in ways they can easily act on. One app developer told me:

*We’ve designed [the interface] not to be this aggressive bully but this friendly nudging kind of coach in the background that uses positivity and encouragement instead of negativity to help you reach your goals.*

A different app developer said that:

*I didn’t want it to feel clinical or blue and white, I wanted it to feel warm, like something you treasure because that’s you, that’s important.*

Equally, the designers of the sentiment-tracking interfaces in Dubai assume that it will contribute to making it the ‘happiest city in the world’. There appears to be a general positivity bias in many real-time mood-tracking interfaces, and in many cases there needs to be, in order for them to continue to be a conduit for flows of experience.

But while interfaces are already designed to harvest *certain types* of affective data, these needn’t only be ‘positive’ ones. The mood-tracking app, Moodpanda, functions as a social network, providing a platform in which users share ‘negative’ emotions and receive emoticon ‘hugs’ and other forms of comfort from other users. The affective bias is towards a sharing and recognition of vulnerability between strangers, typically teenagers struggling with everyday sources of unhappiness and anxiety. Mood-tracking which incorporates a ‘social’ (i.e. peer-to-peer) dimension involves its own forms of affective relationality, meaning that it is not only a technology that is asking ‘how are you?’ but other users that are keeping track of how someone is doing. Potentially, even a withdrawal from the technology can still thereby be traced. The developer of a mood-tracking website with a ‘social’ function explained:

*Even if you don’t want to [report your mood] because you’re feeling really down, the fact that you don’t do it is visible to your buddies. So what tends to happen is you get a lot of peer group support and peer group pressure because if your score drops, your buddies tend to ring and say what’s happening, what’s up. If you don’t do it, they get worried and you being aware that your friends are keeping an eye on you also affects your behaviour.*

Some of my interviewees expressed the hope that their technologies could also facilitate a form of self-discovery over the long-term, that was not dependent on the presence of other users, but was not simply about empirical representation either. Instead, a form of emergent, psychodynamic transformation seemed to be what was being sought. One interviewee said that the technology in question ‘educates you on what is an emotion’, while another said that ‘the idea was to direct and to guide the user, to start introspection’. A third suggested that it led users ‘to reflect on the idea that ‘look, I do something good and something good happens in return, and that feels good’’.

We might summarise these various claims by recognising that it is part of the teleology of real-time mood-tracking to achieve a form of *emotional augmentation* of one sort or another. To communicate an emotion across an interface of one kind or another is necessarily to transform it and grant it a distinctive type of social form, the parameters of which are not typically within the control of the user. Part of the appeal of this is that those parameters will also render that emotion preferable in some way (be it more positive, more acceptable, simpler etc), turning it into a different emotion. As Hochschild observes in relation to affective labour, ‘the very act of managing emotion can be seen as part of what the emotion becomes’ (2012: 21). If emotions are clues regarding what and who we value (Nussbaum, 2001) to track emotions must be seen, at least partly, as an existential search for ethical foundations for or transformation of the self.

This sense of valuation, as a relational and existential commitment, co-exists with the critical, *representative* sense of valuation, as the dispassionate exercise of judgement or measurement. Many mood-tracking technologies are inspired by or directly based upon affect scales developed by academic psychologists, such as the Positive And Negative Affect Schedule (PANAS).[[3]](#footnote-3) An interviewee who had founded a commercial mood-tracking company explained to me:

*The idea was always to measure in a way that is just a complete direct translation of whatever the academia is now embracing as the measurement of happiness.*

The work of positive psychologists, such as Martin Seligman and Daniel Gilbert, was mentioned to me by some interviewees as providing the initial ideas for the development of their technologies. Platforms that offer to help people improve or stabilize their mood, such as Happify and Moodscope, tend to publicize these scientific underpinnings, as a basis for their authority and potential appeal. But others tend to insulate the ‘experience’ of using the technology from the types of ‘theory’ that are informing it. The developer of one academic mood-tracking methodology informed me:

*The feedback that you [the user] get is deliberately also unrelated to our research hypotheses… all you’re getting was an outlook.*

The implication is that, in order to represent mood, there must be minimal augmentation of mood. The fear in this instance was that ‘informed’ subjects would start to adjust their behaviour in certain ways, which is of course precisely what most such apps (outside of academic contexts) are designed to achieve.

This epistemological ambivalence becomes starkest where the question of ‘social’ and ‘sharing’ dimensions are at stake. Where for some technologists, a social and/or playful dimension is crucial to drawing users towards an interface, holding them there, and getting them into a state of ‘flow’, others reported serious concerns about what all of this might do to the truth value of the data that was collected. In the case of one app, which sought to facilitate deep existential exploration of self, the developer told me:

*So the idea of the app is to be really totally private, so that it’s not shared with anyone, it’s for the user’s benefit only. And by doing that, the user will be able to express themselves with more accuracy and progressively be more and more honest with themselves*

Another explained that ‘I wanted it to be a private thing because I didn’t think the data would be *accurate* if you were sharing it [italics added]’. This invocation of ‘accuracy’, and its opposition to a relational account of mood, is a sudden resort to a behaviorist account of emotion, as something to be represented in a measured fashion. It also rests on a somewhat misleading notion of the interface, as devoid of any relationality. One of my interviewees switched between stressing that the data ‘belongs to the users’, and discussing the various ways in which his company could provide useful feedback to the users on their behaviour, without seeming to notice any apparent tension between these two ideas.

While the resort back to the pragmatics of representation, and away from the pragmatics of augmentation, may be epistemologically clumsy, it is also critical to how real-time mood-tracking can provide (e)valuations of a sort that can be attended to, contemplated and discussed. Unless ‘real-time’ is periodically punctuated and interrupted by the temporality of static representation, then it serves only to provide and augment constantly fluctuating values, but never a moment of *evaluation*, which is crucial if data is to facilitate authoritative decision. For Heidegger, this interruption occurs sporadically when a technology breaks, and suddenly requires critical scrutiny. Some sort of break-down in the tracking of ‘experience’ is therefore a precondition of ever attaining ‘objective’ evaluations, as opposed to constantly fluctuating impressions.

For the sociology of (e)valuation, a key question is how long does ‘real-time experience’ go on, before such a break occurs. In the ‘experience economy’, moment-by-moment experience is collected over time, crucially *delaying* the moment of analysis, a cognitive temporality that Hansen describes as ‘feed-forward’, in contrast to feed*back* (Hansen, 2015). Not every moment is judged, but it is stored for possible purposes of knowledge and judgement in the future. The question of how long should a mood be present, before an evaluation is performed, echoes the dilemma of psychiatric diagnosis of mood disorders, at the heart of which is ‘the need to differentiate between the mood that one has and the troubled personality that one is’ (Ehrenberg, 2010: 71). The appropriate length of delay between ‘flow’ and ‘judgement’ is really quite arbitrary. The American Psychiatric Association’s Diagnostic and Statistical Manual sets the duration at two weeks, but for no apparent reason other than consistency (Decker, 2013). Happify encourages users to check the data on their mood only every couple of weeks, so as to avoid fixating on it, thereby reducing the interactive benefits of the interface.

Beyond this, there is a more political (and arguably much more urgent) question. This concerns the likelihood that those emitting data on their ‘experiences’ will not be the same people who are privy to the subsequent evaluations that are generated (Andrejevic, 2013). Those having their moods and selves ‘augmented’ by interfaces, are often not the same people who get to witness ‘representations’ by interfaces. In this respect, focus on the ‘quantified self’ community may not offer a complete picture, as that movement has involved individuals tracking *and* knowing themselves, without the intervention of an expert. Mood-tracking apps are also relatively innocent in this regard, although one of their uses (it was suggested to me) is that users can take read-outs of their moods and show them to their doctor; an epistemological hierarchy is still doing some work here. Much of the time, the panopticons of the ‘control society’ involve one segment of the population expressing their feelings across interfaces, and another smaller segment of the population assessing the representations that result.

**Conclusion: unreflective valuation**

Economic sociology and (e)valuation studies have a tendency to privilege quantitative measures as organising technologies of rationality and capitalist organisation, with double-entry book-keeping as the foundational example (Carruthers & Espeland, 1991). One of the important contributions of (e)valuation studies, drawing especially on pragmatist sociology, has been to demonstrate the ways in which numbers (such as accounts, scores, rankings etc) are tacitly dependent on normative, critical and judicial capacities, both of actors and the technical resources which are available to them (Boltanski & Thevenot, 2006). This resonates with Foucauldian notions of discipline and government, which assume that certain actors (albeit, those rooted in particular centres of calculation) perform technical and empirical judgements, in order to represent situations in quantitative forms. Studies of ‘self-tracking’ and ‘quantified selves’ very often continue in this vein, looking at how qualitative, contingent and shifting aspects of self-hood become fixed in stable, numerical frameworks and codes.

The question posed by this paper is this: how might we understand and study (e)valuation in circumstances where the resort to judgement and objectification is viewed as something to be avoided and/or delayed? In particular, where value is deemed to reside in ‘real-time mood’ or ‘experience’, there is no immediately obvious way of representing and measuring that value. To inject a Cartesian, critical perspective upon ‘flows’ of ‘experience’ is to risk destroying them altogether, or at least damaging their value. One increasingly plausible option is to take a wholly behaviourist approach, and seek signs of ‘experience’ in the body, traceable behaviour and mineable data trails. This employs the capillary power of data capture to avoid any perceivable engagement with the quality or quantity of subjective experience. Another is to pose questions in ways that requires no critical distance or representation, but invites action across an interface: ‘how are you?’, ‘what’s up’?’, ‘how are you doing?’. Embedding binary questions in interfaces (such as smiley faces and unsmiley faces) allows data on affect to be captured without any need for critical distance: do you like this or not? Do you wish this to continue or not? Are you smiling or frowning? Where something like a happiness or customer feedback survey asks ‘*how much do you* value x?’, the binary question is ‘*do you or do you not* value x?’ The latter question does not require the user to adopt the same critical, Cartesian stance towards their situation, and therefore allows them to remain largely immersed within the experience.

This mode of real-time valuation has a number of distinctive features, which mark it out from many of the methods and instruments that the sociology of (e)valuation has tended to focus on. Firstly, evaluation traditionally depends on the ‘remembering self’ to reflect on a previous experience, in search of a judgement. By contrast, the embedding of interfaces in everyday life means that individuals can dwell in a constant present, with machines serving to store valuations for some future examination. Secondly, evaluation traditionally depends on a moment of critical reflection that assumes a separation of mental from physical being. Judgement might therefore become ‘disinterested’ as opposed to emotional or sentimental, in the way that a critic might seek a position that is valid for all (Kant, 2007). But the physical affordances of the touchscreen (of various pushable and swipeable designs) invite immediate, psychosomatic expression that can allow emotion to be performed and augmented (and possibly exhausted) rather than represented.

And yet without the circumvention via the detached, disembodied, remembering Cartesian ego, the measurement and capture of ‘value’ can no longer be posed in quite the scientific way that traditional methodologies such as accounting and economics have sought to do. The user has to be seduced by the interface, lured to act through it for their own benefit, and to remain in contact with it over time. A method that presents itself as a tool of discipline may either be ignored, abandoned or result in emotions being quashed in some way. Instead, it has to offer some desirable augmentation to mood. Hence, these valuation devices are also designed as ‘value-adding’ devices, or what early cyberneticians termed ‘teleological mechanisms’: they are unavoidably goal-oriented, rather than simply static measuring tools. In the same way that Foucault designated the human sciences as tied up with the politics of discipline, it is necessary to view the science of ‘real-time mood’ as unavoidably allied to the *control* of that mood.

**References**

Agre, P. 1994. Surveillance and capture: Two models of privacy. *The Information Society*, 10: 2, 101-127

Andrejevic, M., 2013. *InfoGlut: How Too Much Information Is Changing the Way We Think and Know*. Routledge.

Arvidsson, A., 2006. *Brands: Meaning and Value in Media Culture*. Routledge.

Baritz, L., 1960. *The Servants of Power*. Wesleyan University Press, Middletown, Connecticut.

Beckert, J., Aspers, P., 2011. *The Worth of Goods: Valuation and Pricing in the Economy*. Oxford University Press.

Beniger, J.R., 1986. *The Control Revolution: Technological and Economic Origins of the Information Society*. Harvard University Press.

Bergson, H., 2002. *Key Writings*. Bloomsbury, London.

Binkley, S., 2014. *Happiness as Enterprise: An Essay on Neoliberal Life*. SUNY Press.

Blanchflower, D.G., Oswald, A.J., n.d. A New View on the Measure of Performance.

Boesel, W.E., n.d. ‘Meaning-Making Through Numbers: Emotional Self-Quantification – Cyborgology’.

Boltanski, L., Thévenot, L., 2006. *On Justification: Economies of Worth*. Princeton University Press, Princeton.

Boltanski, L., Thévenot, L., 2000. The reality of moral expectations: A sociology of situated judgement. *Philosophical Explorations* 3, 208–231.

Carruthers, B.G., Wendy Nelson Espeland, 1991. Accounting for Rationality: Double-Entry Bookkeeping and the Rhetoric of Economic Rationality. *The American Journal of Sociology* 97, 31–69.

Colander, D., 2007. Edgeworth’s Hedonimeter and the Quest to Measure Utility. Middlebury College, Department of Economics.

Crary, J., 2001. *Suspensions of Perception: Attention, Spectacle, and Modern Culture*. MIT Press.

Crawford, K., Lingel, J., Karppi, T., 2015. Our metrics, ourselves: A hundred years of self-tracking from the weight scale to the wrist wearable device. *European Journal of Cultural Studies* 18, 479–496.

Davies, W., 2015. *The Happiness Industry: How the Government & Big Business sold us wellbeing*. Verso.

Decker, H.S., 2013. *The Making of DSM-III: A Diagnostic Manual’s Conquest of American Psychiatry*. Oxford University Press.

Deleuze, G., 1992. Postscript on the societies of control. *October* 59, 3–7.

Dresner, E., Herring, S.C., 2010. Functions of the Nonverbal in CMC: Emoticons and Illocutionary Force. *Communication Theory* 20, 249–268.

Ehrenberg, A., 2010. *The Weariness of the Self: Diagnosing the History of Depression in the Contemporary Age*. McGill-Queen’s University Press, Montreal.

Ewen, S., 1976. *Captains of Consciousness: Advertising and the Social Roots of the Consumer Culture*. McGraw-Hill, New York.

Foucault, M., 1991. *Discipline and Punish: The Birth of the Prison*, New Ed. ed. Penguin.

Franklin, S., 2015. Control: Digitality as Cultural Logic. MIT Press.

Fujiwara, D., 2013. A general method for valuing non-market goods using wellbeing data: three-stage wellbeing valuation.

Galloway, A.R., 2013. *The Interface Effect*. John Wiley & Sons.

Halpern, O., 2014. Cybernetic rationality. *Distinktion: Scandinavian Journal of Social Theory* 15, 223–238.

Hansen, M.B.N., 2015. *Feed-Forward: On The Future Of Twenty-First-Century Media*. University of Chicago Press, Chicago ; London.

Hansen, M.B.N., 2003. Affect as Medium, or the `Digital-Facial-Image’. *Journal of Visual Culture* 2, 205–228.

Hardt, M., 1999. Affective Labor. *Boundary* 2 26.

Harré, R., Secord, P.F., 1972. *The Explanation of Social Behaviour*. Basil Blackwell.

Hayek, F.A., 2005. *Use of Knowledge in Society*, The. NYUJL & Liberty 1, 5.

Heidegger, M., 1962. *Being and Time*. Blackwell, S.l.

Hochschild, A., 2012. T*he Managed Heart: Commercialization of Human Feeling*, 3rd Revised edition edition. ed. University of California Press.

Horning, R., 2016. Reacting to Reactions. The New Inquiry, 11th March 2016

Hookway, B., 2014. *Interface*. MIT Press, Cambridge, MA.

Illouz, E., 2013. *Cold Intimacies: The Making of Emotional Capitalism*. John Wiley & Sons.

James, W., 1884. What is an Emotion. *Mind* 9, 188–205.

Kaerlein, T., 2012. Aporias of the touchscreen: On the promises and perils of a ubiquitous technology. *European Journal of Media Studies* Autumn 2012.

Kahneman, D., Krueger, A.B., 2006. Developments in the measurement of subjective well-being. *Journal of Economic Perspectives* 20, 3–24.

Kahneman, D., Riis, J., 2005. Living and thinking about it: Two perspectives on life. *The science of well-being* 285–306.

Kahneman, D., Sugden, R., 2005. Experienced Utility as a Standard of Policy Evaluation. *Environ Resource Econ* 32, 161–181.

Kitchin, R., Lauriault, T.P., McArdle, G., 2015a. Knowing and governing cities through urban indicators, city benchmarking and real-time dashboards. *Regional Studies, Regional Science* 2, 6–28.

Kitchin, R., Lauriault, T.P., McArdle, G., 2015b. Urban indicators and dashboards: epistemology, contradictions and power/knowledge. *Regional Studies, Regional Science* 2, 43–45.

Konings, M., 2015. *The Emotional Logic of Capitalism: What Progressives Have Missed*. Stanford University Press.

Lamont, M., 2012. Toward a Comparative Sociology of Valuation and Evaluation. *Annual Review of Sociology* 38, 201–221.

Larson, R., Csikszentmihalyi, M., 2014. The Experience Sampling Method, in: *Flow and the Foundations of Positive Psychology*. Springer Netherlands, Dordrecht, pp. 21–34.

Lezaun, J., 2007. A market of opinions: the political epistemology of focus groups. *Sociological Review* 55, 130–151.

Lupton, D., 2016. *The Quantified Self*. John Wiley & Sons.

Manovich, L., 2001. *The Language of New Media*. MIT Press.

Marres, N., Gerlitz, C., 2016. Interface methods: renegotiating relations between digital social research, STS and sociology. *The Sociological Review* 64, 21–46.

Marres, N., Weltevrede, E., 2013. SCRAPING THE SOCIAL? *Journal of Cultural Economy* 1–23.

Martin, E. 2007. *Bipolar Expeditions: Mania and Depression in American Culture*. Princeton: Princeton University Press

McStay, A., 2014. *Privacy and Philosophy: New Media and Affective Protocol*. Peter Lang.

McStay, A., n.d. Now advertising billboards can read your emotions ... and that’s just the start [WWW Document]. *The Conversation*. URL http://theconversation.com/now-advertising-billboards-can-read-your-emotions-and-thats-just-the-start-45519 (accessed 9.1.15a).

McStay, A., n.d. Soon smartwatches will listen to your body to work out how you’re feeling [WWW Document]. *The Conversation*. URL http://theconversation.com/soon-smartwatches-will-listen-to-your-body-to-work-out-how-youre-feeling-38543 (accessed 9.1.15b).

Moore, P., 2014. Tracking Bodies, the “quantified self” and the corporeal turn, in: Cohen, B., Watson, M. (Eds.), *The International Political Economy of Production*. Edward Elgar, Cheltenham.

Moore, P. & Robinson, 2015. The quantified self: What counts in the neoliberal workplace. *New Media & Society*.

Nussbaum, M.C., 2001. *Upheavals of Thought: The Intelligence of Emotions*. Cambridge University Press.

Pickering, A., 2010. *The Cybernetic Brain: Sketches of Another Future*. University of Chicago Press.

Pine, B.J., Gilmore, J.H., 2011. *The Experience Economy*. Harvard Business Press.

Poovey, M., 1998. *A History of the Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society*. University of Chicago Press.

Schüll, N.D., 2012. *Addiction by Design: Machine Gambling in Las Vegas*. Princeton University Press.

Schull, N.D., 2016. Data for life: Wearable technology and the design of self-care. *Biosocieties*

Schwarzkopf, S., 2010. The Consumer as Voter,’’ Judge,’’ and Jury’’: Historical Origins and Political Consequences of a Marketing Myth. *Journal of Macromarketing* 31, 8–18.

Sel, A., Calvo-Merino, B., Tuettenberg, S., Forster, B., 2015. When you smile, the world smiles at you: ERP evidence for self-expression effects on face processing. *Soc Cogn Affect Neurosci* nsv009.

Shiffman, S., Stone, A.A., Hufford, M.R., 2008. Ecological Momentary Assessment. Annual Review of Clinical Psychology 4, 1–32.

Stark, D., 2009. *The Sense of Dissonance: Accounts of Worth in Economic Life*. Princeton University Press, Princeton, N.J.

Stark, L., Crawford, K., 2015. The Conservatism of Emoji: Work, Affect, and Communication. *Social Media + Society* 1, 2056305115604853.

Sunstein, C.R., 2015. *Choosing Not to Choose: Understanding the Value of Choice*. Oxford University Press.

Till, C. 2014. Exercise as Labour: Quantified Self and the Transformation of Exercise into Labour. *Societies* 4: 3, 446-462

Wittgenstein, L., 2001. Ph*ilosophical Investigations: The German Text with a Revised English Translation*, 3rd ed. ed. Blackwell, Oxford.

Woolgar, S., n.d. Configuring the user: the case of usability trials.

1. Valuation here refers to an expression of worth; evaluation refers to the ‘meta’ process of reviewing and summing up existing values – see Lamont (2012). [↑](#footnote-ref-1)
2. See [www.mappiness.org.uk](http://www.mappiness.org.uk) based at London School of Economics and [www.hedonometer.org](http://www.hedonometer.org) based at University of Vermont [↑](#footnote-ref-2)
3. PANAS is based upon a questionnaire, in which the subject is presented with 20 different affective states (e.g. ‘excited’, ‘hostile’, ‘upset’) then asked to evaluate how much these describe their own state, between 1 (‘very slightly or not at all’) and 5 (‘extremely’). It can either be used to assess current feelings or feelings over the past week. [↑](#footnote-ref-3)