

The following is the author's manuscript version

The final version is available online at:

<https://journals.sagepub.com/doi/10.1177/1367549417705605>

Please do not use this copy as a reference, this is provided as a pre-publication draft manuscript only, and may not match the final copy of this work.

'I am he. I am he. Siri rules': work and play with the Apple Watch

Journal:	<i>European Journal of Cultural Studies</i>
Manuscript ID	ECS-16-0007.R1
Manuscript Type:	Original Manuscript
Keywords:	wearable devices, play, labour, Apple Watch, failure
Abstract:	<p>In this article we will use auto-ethnographic accounts of our use of the Apple Watch to analyse a new type of ludic labour that has emerged in recent years, in which leisure activities are redefined in terms of work and quantifiable data.</p> <p>Wearable devices like the Apple Watch encourage us to share data about ourselves and our activities, dividing our attention in everyday contexts as 'quasi-objects' that need our input to hybridise work and play, offering opportunities to merge leisure and labour, but also the possibility for resistant practices in the interstices between function and failure.</p> <p>We combine perspectives from STS, media studies, and play studies, including the 'quantified self' and the 'Internet of Things' (Swan 2012), to argue that, while the Apple Watch moves us closer to merging with the machine, its inability to provide what it promises offers a way out - a more positive understanding of intimate, wearable computing technology.</p>

SCHOLARONE™
Manuscripts

1
2
3
4
5 ***'I am he. I am he. Siri rules': work and play with the Apple Watch***
6
7

8 **Introduction**
9

10
11 Dance, train, date, skate. Move, sprinkle, play, ride. Style, sing, cycle, kiss.

12
13
14 Travel. Introducing Apple Watch.
15

16
17
18
19
20
21
22
23
24
25 Congratulations on being one of the first
26 to own Apple Watch. We hope you'll love
27 it as much as we do. To get you started,
28 here are some fun things you can try for
29 yourself and share with friends.
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Fig. 1: Welcome message from Apple upon syncing the Apple Watch with the iPhone 5.

The opening quote comes from a series of videos on the Apple Watch webpage that sketch out a vision for the future of wearable technologies. Apple's short advertisements tell stories of imagined daily life in which the Watch has become an interface to connect and hybridise activities in new, playful ways: a kiss interrupted by a message from a friend; playing the piano while bidding on an auction for a

1
2
3 piano; buying an ice-cream for one child while holding another, and playing with
4
5 your partner while checking on the babysitter. Performative and informal play
6
7 (Sutton-Smith, 1997) merge seamlessly with chores, work and other labour, everyday
8
9 experiences fuse with our digital being — or so the ads entice us to believe. Whether
10
11 we are mothers, artists, dancers or professional musicians, the Apple Watch (or, the
12
13 Watch), so the advertising campaign tells us, will support — even *enhance* — our
14
15 everyday lives by making it possible to switch between work, romance, shopping and
16
17 socialising; between material and virtual, embodiment and interface, mobile and
18
19 situated.
20
21
22

23
24 Historian of technology Carolyn Marvin (1990) recounts how the development of
25
26 cinema, wireless radio, household electricity and telephony produced both hopeful
27
28 and dystopian responses, shaping public discourse beyond marketing, advertising and
29
30 philosophy, especially with regard to what we consider labour and play. The
31
32 fascination with ‘new’ media forms emerges again with the advent of *digital* and
33
34 *mobile* communications technologies — spanning modern computing and the internet
35
36 age, through to the development of the mobile phone. Digital technologies have
37
38 prompted discourses of utopianism. This can be seen from prognoses of the Internet
39
40 bereaving us of ourselves whilst giving us new ways of being through virtuality
41
42 (Turkle, 1997), changing our brains (Hayles, 2012) or making us less profound
43
44 thinkers (Carr, 2011). Google Glass, for instance, vied for an omnipresence (Tuters,
45
46 2015) that was never delivered because it was soon removed from the market due to
47
48 negative public perceptions; meanwhile, digital games are debated as a threat for
49
50 humanity, or a means for revolution (Rushkoff, 2013).
51
52
53
54
55
56
57
58
59
60

1
2
3 This is the field in which we encounter the Apple Watch — a material, digital,
4
5 mobile, hybrid, *wearable* device — imbued with all the attraction of something *new*
6
7 that lets us do new things in new ways. Considering its predecessors like the Newton,
8
9 or the Casio calculator watch, we can see how such imaginaries are predicated on a
10
11 masculine hyper-functionality that privileges labour over play, spectacle over critique.
12
13 For instance, an advertisement from the 1980s shows a husband leaving for work
14
15 while wearing a Casio Watch, as his wife stresses that the Watch means that *he* will
16
17 never have to remember anything again (Casio, 1986). In 1993, Apple released the
18
19 Newton, a still somewhat cumbersome personal device that delivered a specifically
20
21 personal promise: women, children, men and people from different ethnicities
22
23 depicted in Apple’s advertising showed that the Newton is ‘digital’, ‘personal’,
24
25 ‘magic’, ‘intelligent.’ The potential for the quantified self (Gilmore, 2015; Swan,
26
27 2013) — in which the self becomes subject to processes of quantification and
28
29 calculation — lies in these devices and the messages with which they are sold: they
30
31 are designed to make work *and* play more efficient.
32
33
34
35
36
37

38 This article introduces play as heuristic lens to reveal the moments in which the
39
40 diversity of wearable technology practices surface, drawing attention to how we, as
41
42 users and researchers, gather and present data to others and ourselves, as well as the
43
44 operation of that data in everyday contexts. These practices are situated and
45
46 embodied, blurring, disrupting and reinterpreting the boundaries between work and
47
48 play. Play, as we understand it, can be defined as a set of cultural engagements with a
49
50 plethora of activities that give users pleasure and stimulate creative thinking (Starbuck
51
52 and Webster, 1991). In terms of wearable interfaces like the Apple Watch, using play
53
54 as a heuristic lens for analysis, also offers ways to challenge, situate and reconsider
55
56
57
58
59
60

1
2
3 the emergence of the quantified self via playful activities such as competition,
4 performance, dating, gamification, and also cheating, hacking, failure and accident.
5
6
7 The activities can, in turn, challenge the narrative of the Watch as a functional labour-
8 saving device.
9
10

11
12
13
14 In this article, we consider the propagation of mobile wearable devices for self-
15 monitoring and self-sensing in this light. Wearable sensing technologies, at first
16 glance, seem to be a simple step towards personal-data positivity, inviting users to
17 acquire ambient data and other forms of measurable knowledge about their
18 performance, bodies and well-being. Self-data collection, marketed by wearable
19 technologies, merges the discourses surrounding the ‘quantified self’ (Swan, 2013)
20 and the emerging field of ‘critical data studies’ (Dalton and Thatcher, 2014), in
21 which the social, ethical and philosophical ‘neutrality’ of data, and especially big
22 data, is called into question (Kitchin and Lauriault, 2016 f.c.).
23
24
25
26
27
28
29
30
31
32
33
34
35

36 On the intimate end of data networks we find wearable technologies, collecting and
37 collating personal data while restructuring our everyday practices of work and labour.
38
39
40 Wearable technologies invite big data into an increasingly close physical encounter,
41 the Apple Watch rests against our skin, monitoring our heartbeats, tracing our
42 fingertips, counting our footsteps and tracking our location. Big data becomes
43 personalised, and the personal becomes big data — auguring new anxieties of control
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

55 Yet, play and work crucially situate the role played by wearable technologies in the
56 data cycle (boyd and Crawford, 2012), between the quantified self and big data. The
57
58
59
60

1
2
3 wearability of the Apple Watch means that as much as it is a data-based
4
5 epistemological intervention (Kitchin and Lauriault, 2016 f.c), the Watch is also
6
7 experienced on a hybrid plane between digitality and materiality that is (or has the
8
9 potential to be) profoundly playful. Emerging practices surrounding personal data-
10
11 gathering and wearable technologies are not homogenous. Certainly, users can be
12
13 reduced to data, quantified into a mass of numbers, gamified to the point of inertia;
14
15 but they can also, as we will argue, reflect upon, appropriate and moderate their data
16
17 as it emerges, particularly through play (Lupton, 2014; Nafus and Sherman, 2014;
18
19 Ruckenstein, 2014).
20
21
22
23

24 The 'ludification of culture' (Raessens, 2006, 2014) is intricately bound up with
25
26 digital media, which allow us to share and manage our activities in playful and
27
28 ambient ways. Playfulness has become an important aspect of many 'serious' daily
29
30 activities that were once considered time consuming, competitive and laborious. In an
31
32 age of digital media, play has become the steam engine (cf. Dibbell, 2006: 297) of
33
34 contemporary life (Deterding, 2015), and this phenomenon has altered the socio-
35
36 cultural fabric of our everyday experience — with mixed effects. On one hand,
37
38 mobile technologies can provide the opportunity for freer forms of play in physical
39
40 space and offer generally positive experiences for users (for example de Souza e Silva
41
42 and Sutko 2008). On the other hand, the negative impact of the gamification of
43
44 everyday life, (also described as 'ludifaction' by Kirkpatrick (2015)), stifles the
45
46 creation of alternative possibilities by merging logics of work and play together. It is
47
48 no longer clear where play begins and work ends.
49
50
51
52
53
54

55 **Autoethnographic Methodology**

56
57
58
59
60

1
2
3 Our autoethnographic approach serves as a method to provide data for analysis. This
4 is presented in the form of self-reflexive vignettes that describe our experiences using
5 the Watch, in order to ‘critically investigate the discourses that have constituted that
6 experience’ (Saukko, 2003: 85), while at the same time presenting a form of creative
7 research practice. This mode of practice addresses the challenges posed by wearable
8 technologies and data accumulation through reshaping narratives about wearable
9 computing and emphasising the range of lived and embodied experiences offered by
10 emerging technologies. A “co/autoethnography” (Taylor and Coia, 2009) supports
11 multiple positionalities, but also multiple intimacies and, vitally, a variety of critical
12 frames and critical selves, understood through the complex object that is the Apple
13 Watch.
14
15
16
17
18
19
20
21
22
23
24
25
26
27

28 As a wearable device intended for a single user, the Apple Watch is a source of
29 everyday experiences. It is a hybrid device that operates as map, toy, game, tool, and
30 fashion accessory. It mediates everyday life from personal style to health and
31 wellbeing (Lupton, 2014), from sleep management, to interpersonal communication.
32 It not only hybridises the “real” and the “virtual”, but also elements of everyday
33 experience that might previously have appeared quite separate (work and leisure are
34 two primary examples). As an interface, the Apple Watch connects us to others. But it
35 also requires us to interact with it (through touch, heartbeat, movement and voice) in
36 order to gather and generate data, to be in touch with the world. Such a personal
37 relationship between the individual, their body, and their device structures an
38 encounter that is unique to each user. It is shaped by situated elements like place and
39 location (Wilken, 2014), as well as touch, tactility, and other sensed interactions
40 between user and technology (Cranny-Francis, 2007). As our personal accounts show,
41 wearable devices that rely on skin contact, haptics and close physical proximity shape
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3 a particular narrative and generate a particular experience that is informed by prior
4
5 technologies, but also provide novel modes of encounter or resistance.
6
7

8
9 As such, autoethnography allows for a self-reflexive and creative response to lived
10
11 experience. However, according to Saukko (2002), in offering alternative
12
13 positionalities, it should also resist or shape the discourses that govern our lives.
14
15 Autoethnography complements analyses of wearable or otherwise intimate
16
17 technologies because these devices are intrinsically linked to identity, and everyday
18
19 life (Frissen et al., 2015). Our lived encounters can provide insight into the impact of
20
21 the Apple Watch (and related technologies) by highlighting the specific moments in
22
23 which dynamics of play or labour break down, where notions of the quantified self are
24
25 reinforced, or can be troubled through ludic performances that take shape *via* the
26
27 watch as a wearable, haptic and dermal interface.
28
29

30
31
32 Both play and autoethnography offer productive lenses that allow us to see our small
33
34 interfaces differently, and to move away from an understanding of the quantified self
35
36 as a phenomenon that makes users into ‘body-machines’ that produce big data
37
38 (Lupton, 2013). The critique offered here moves towards a more reflexive encounter
39
40 with the possibilities that wearable technologies can offer, which — to hark back to
41
42 Haraway’s ground-breaking manifesto (1991) — can make us more critical Cyborgs.
43
44
45

46
47 In the following section the three authors expose the ‘lived realities’ behind the
48
49 newness of the technology through re-enactments of their labouring, working and
50
51 playing with the Apple Watch.
52
53
54

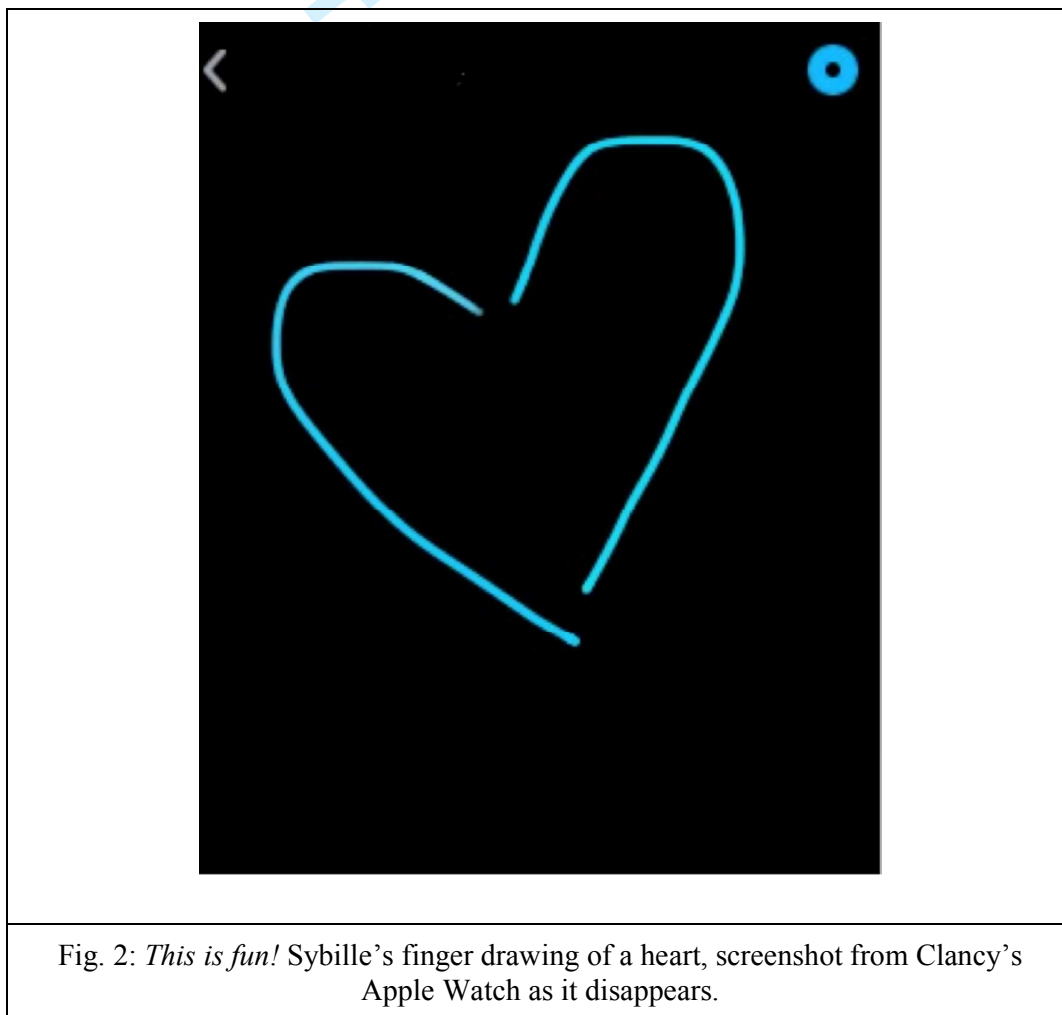
55 **You, love, technology and games: An autoethnography from labour to play**
56
57
58
59
60

1
2
3 *The watches have arrived! After weeks of anticipation, the parcel*
4 *has been delivered, and Clancy and I are sitting at our desks,*
5 *using scissors and hands to unbox the devices. The packaging is*
6 *rather large for such small items, but after removing it from the*
7 *bigger cardboard box it arrived in, we come to a white*
8 *rectangular box which contains yet another plastic box. In it rests*
9 *'the' watch, complete with two straps and a charger. [Sybille]*

10
11
12
13
14
15
16
17
18
19
20
21 Play starts as you unbox, opening the packaging and the watches, wrapping them
22 around your wrist, pairing them with your phone — pushing buttons randomly and
23 laughing in surprise at the tiny icons on the display. Some of these icons are familiar
24 — like the iTunes and email logos — a cognitive link between one media and
25 another. Other icons are less recognisable: an orange circle icon with a mini alarm
26 clock in the centre, or three mysterious circles that represent 'activity'. Play may be
27 hidden in mystery, as much as in surprise.

28
29
30
31
32
33
34
35
36
37
38 *A clock in a watch? I swipe left and see my appointments in the*
39 *calendar, moving forward day by day with each movement. Then,*
40 *swiping from top to bottom, I see the latest email messages, BBC*
41 *News, updates, and other stuff that has been fed to the Watch via*
42 *my phone. Then, when I touch the device differently, it shows my*
43 *heart rate: 69 BPM. Is that high or low? Better to Google that on*
44 *my computer... And then I push the other button on the side...*
45
46
47
48
49
50
51
52
53
54 *'Look at this Clancy, I can add you as a user and draw pictures to*
55 *send to you!' [Sybille]*

1
2
3
4
5 The screen interface affords a mode of haptic drawing using colourful squiggles.
6
7 Pressing on the screen, Sybille tries to write a small text to Clancy, using her finger as
8 a pen, but the new technology proves more difficult than expected, as Sybille's
9 fingers are relatively large for such a small interface. After several attempts, she
10 manages to send Clancy a drawing of a heart, and Clancy draws some flowers to send
11 back. The images appear on the screen and then fade away quickly, highlighting the
12 immediacy and ephemerality of the authors' contact.
13
14
15
16
17
18
19



1
2
3 *I see a camera icon and tap on it. To my surprise I can see my own*
4 *wrist with the Watch on it. My mind goes haywire: this is stranger*
5 *than fiction. How can the Watch see itself? Calmly, Clancy points to*
6 *my phone, sticking out of my bag with the camera pointed in the*
7 *direction of my wrist. It turns out that the Watch is transmitting the*
8 *image back to the phone. Ha! We laugh. It's all so new, but also so*
9 *silly. [Sybille]*

10
11
12
13
14
15
16
17
18
19
20
21 Suddenly, it seems that there this thing on your wrist that mediates, transmits and
22 measures what you do, what others do, and makes it possible to share all this data.
23 The Watch changes how you think (or don't think), accelerating connectivity between
24 self and watch as a bodily technique (Parisi, 2009), like game interfaces that move
25 with us and create new bodily habits. In the early moments of use, you don't know
26 precisely how it will work as a reciprocal interface intimately acquainted with your
27 body — what it will do to you, and what to do with it. It makes you feel conspicuous,
28 a performative and wearable interface that signals to others from your wrist, just as it
29 feeds back into your bodily, habitual activities.

30
31
32
33
34
35
36
37
38
39
40
41
42 *The Watch is a public statement that triggers reactions like, 'hey*
43 *you've got an Apple Watch, so cool, can I try it?' or 'why are you*
44 *wearing that thing?' — to which I duly reply that it is for research*
45 *reasons only, that it's for work. After a while, Clancy takes hers off,*
46 *but I wear it to the airport later that day. I feel a buzz at my wrist,*
47 *stating that I have completed my exercise by walking to the gate. I am*
48 *surprised. I had never thought of that in terms of exercise before, but*
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3 *will from now on. An itinerary from A to B has become 'sports'.*

4
5 *[Sybille]*

6
7
8
9
10 The excitement and confusion the Apple Watch brought us upon arrival — so often a
11 YouTube-celebrated moment of unpacking — is the result of the newness and
12 unfamiliarity of the technology. Such novelty brings with it a level of imagination and
13 play, the thrill of an apparently distinct experience. However, it also brings
14 disappointment as, of course, it partly remediates previous computer technologies that
15 have been domesticated and become mundane (Burgess, 2012: 30-1), building on
16 what came before through our prior engagements with earlier technologies. The
17 perception that the Watch can do more than it actually can (and is more open and
18 customisable than its predecessors) was observable as Sybille tried to figure out the
19 camera function. Playing with technologies — the act of randomly pushing buttons
20 and drawing pictures — creates friction when those pictures do not turn out as we
21 imagined (due, in part, to a small interface).
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37

38 What happens at the moment of our first encounter with a new interface is in essence
39 very similar to what seems to be a recurring pattern when any new technologies
40 emerge, when we are promised (by clever campaigns and media attention) that such
41 technologies will change our lives profoundly. The Watch is, as Apple modestly
42 claims on its webpage 'the watch reimagined' — it will become as 'individual as you
43 are' and '[t]o wear it is to love it'. Apple thus gives us the impression that the Watch
44 will give buyers a tailored experience that hybridises you, "love", and a new
45 technology. When we unpack the box we are expecting something very special,
46 housed in a tiny watch: a new experience, a new interface, a new bodily relationship
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3 between self and machine. Yet, as Haraway warned, '[i]t is not clear who makes and
4 who is made in the relation between human and machine. It is not clear what is mind
5 and what is body in machines that resolve into coding practices' (1991: 189).
6
7
8
9

10
11 *The Apple Watch wants to transform me into a string of numbers —*
12 *recording inputs, beats, degrees and latitude. A data set — driven by*
13 *code — it wants my mind and body to move one step closer to becoming*
14 *one with the machine. The experience is akin to a cyborgian dream:*
15
16 *'Me. The Watch. Together at last'. [Emma]*
17
18
19
20
21
22
23

24
25 This, at least, is the early promise of the device, the latest iteration of personal
26 computing rhetoric — that this machine will make you a better person, augment your
27 self-control, count up your words/hours/minutes/tracks/bytes/kilometres/calories. It is
28 reminiscent of personal organisers from the 1980s, whose two-tone screens demanded
29 input, records for safekeeping, data to justify their presence in the world. As Haraway
30 also warned us, in knowing the machine, we are no longer fundamentally
31 ontologically separate from it.
32
33
34
35
36
37
38
39
40
41
42

43 *Even in my scepticism, the Watch succeeds in defining me — its key*
44 *goal, to keep me thinking of my being through it, works (at least*
45 *initially) because of the subtle insistence of its constant demands,*
46 *vibrating lightly at my wrist, suggesting a delicate human touch. A*
47 *shiver. An urgent stroke. Am I standing as often as I should? Have I*
48 *taken enough steps today? Why doesn't it ask how much I'm eating?*
49
50 *When will the Watch (which feels like a mess of plastic, silicone, and*
51
52
53
54
55
56
57
58
59
60

1
2
3 *aluminium, full of mystery algorithms and acrobatic loops of colour)*
4
5 *recognise my achievements with a message of approval, marking —*
6
7 *quantifying — my movement as a measure of my self worth? No*
8
9 *longer my own muscles, my own flesh — my sore feet or racing pulse*
10
11 *are the property of Apple Inc. [Emma]*
12
13
14
15

16 As Emma observes, the device's haptic buzz upon her skin, and little *bink bink*
17 notifications, make her think of her first Tamagotchi — a ludic interface (Fuchs,
18 Russegger and Mañas Carbonell, 2013) that transformed into a labour of half-
19 attention demanding repetitive, apparently nurturing inputs, and which became less
20 and less playful and more like a chore over time. For her, the Watch appears to share
21 a media ancestry with (among other things), the virtual pet phenomenon:
22
23
24
25
26
27
28
29
30
31

32 *I used to have a Pikachu Virtual Pet, which the Watch resembles to*
33 *such an extent that in my mind they appear genealogically related —*
34 *mobile-screen cousins. A more sophisticated iteration of the*
35 *Tamagotchi, the Pikachu slept onscreen as I slept in my bed; got*
36 *cranky and threatening when I ignored it, and ran away for days at a*
37 *time, leaving behind an empty pixel landscape. Like the Watch, it*
38 *demanding constant tactility — one of the first consumer devices to*
39 *monitor physical movement (and marketed as an exercise toy) the in-*
40 *game currency, in 'watts', was generated by footsteps. As the Watch*
41 *now counts my steps, I wonder about the lost data on my (long*
42 *discarded) Pikachu toy — how many of my steps were counted up by*
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3 *the pedometer over those years? What to make of the labour I put in*
4
5 *just to feed the watts into the slot machine mini-game?*
6
7

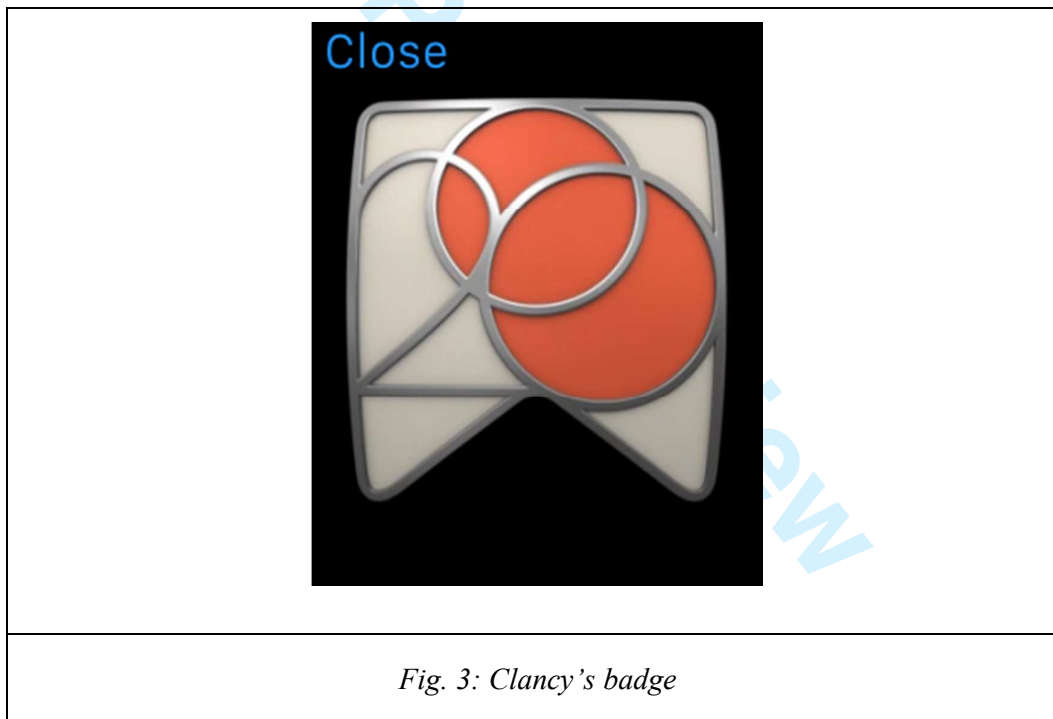
8
9
10 *Even my muscle memory links the two devices — because the*
11
12 *pedometer was badly designed, and the steps undervalued, a more*
13
14 *efficient method of amassing watts on the Pikachu required holding it*
15
16 *in my hand and using repetitive movements to activate the internal*
17
18 *pendulum. I spent hours shaking it in an action that now I find myself*
19
20 *auto-replicating with the Watch (the urge to aggressively tilt the face*
21
22 *to magically display the time happens almost without me noticing it).*
23

24
25 **[Emma]**
26
27

28
29 The Watch, sold as a tool (or toy) to ‘track’, ‘control’ ‘pay’, and so on (as Apple’s
30 short films tell us) is really just another repetitive mindless task ‘in ultramodern
31
32 getup’ (Benjamin, 1999: 116), extracting a surplus labour of leisure with every touch
33
34 or tap, in an ‘instant’ that mimics the reduction of labour to gestures and digits in time
35
36 (Benjamin, 2003: 331), for little real gain.
37
38
39
40
41

42
43 *I won a badge. Not a plastic or metal one that I can pin on my shirt, but a*
44
45 *brightly-coloured one that glows on my Apple watch, and can now be found*
46
47 *safely stored in a digital vault between my arm and my phone (where I can*
48
49 *return and see what I own). Achievements, my watch and my phone tells me in*
50
51 *the health settings, are things that I have earned ambiently through doing and*
52
53 *moving, speeding up and slowing down my steps, raising and lowering my*
54
55 *heart rate. [Clancy]*
56
57
58
59
60

1
2
3
4
5 After a time, when you complete the tasks set by the health app, or when you have
6 moved sufficiently to warrant special recognition, you may reach a state of
7 achievement, a euphoric reward for your effort and attention in playing throughout the
8 day. This achievement is measured in numbers, little strings of data algorithmically
9 restructured to resemble information (boyd and Crawford, 2012). This strange kind
10 of play has arisen in the scramble to transform Boy Scout badges into Apple Watch
11 badges (Deterding, 2015), to gamify motivation and make it contingent upon
12 intangible rewards. Work becomes playful labour — and then playful labour suddenly
13 requires no work at all.
14
15
16
17
18
19
20
21
22
23
24



49
50
51 *The best thing about my badge is that I did nothing to earn it. This is a special*
52 *kind of achievement without achievement, less an achievement than an*
53 *accident. The badge came as a surprise. Sitting down on a chair, waiting*
54 *patiently for a rendezvous, I felt the ever-more familiar *bink bink* of*
55
56
57
58
59
60

1
2
3 *something happening. Heartbeats and strange tracings from Sybille,*
4
5 *appearing and dissolving, something to ponder, to occupy my time, to return*
6
7 *in kind. But I look down and it is not the familiar blue of Sybille's hand, or the*
8
9 *warbled messages from Emma's Siri (who refuses to understand her), but a*
10
11 *bright, orange badge, edged with solid silver tracings marking out the number*
12
13 *'200'.*

14
15
16
17
18 *Congratulations!, ' it says, 'You have reached 200% of your daily move goal'.*
19
20 *A rush of emotion hits me as I realise I've won something. In the back of my*
21
22 *mind, pushed farther and farther away as I regard my new acquisition, I know*
23
24 *that this reward is a curious oddity to receive after sitting still for 15 minutes.*
25
26 *But this moment of sensibility is pushed away under an irrational*
27
28 *rationalisation: without knowing it, I played the system and it caved in; it*
29
30 *broke and I won a badge. [Clancy]*
31
32
33
34
35

36 Some, like Witkowski (2013) in her autoethnography of the location-based running
37 game *Zombie Run* (ZR), enjoy the challenge set by these apps, to go a distance, at
38 some speed, and see it playfully resurrected on the screen in 'real life', as Zombies
39 march the streets, and the gender relations of embodied material landscapes are
40 inverted. Yet, secretly, Clancy enjoys the other kind of achievement — where the
41 numbers are restructured by mystical forces and not by sweat and strain driven by a
42 competitive edge.
43
44
45
46
47
48
49
50

51
52
53
54 *The taste of victory is flavoured by beating the system, by renegotiating the*
55
56 *relationship between me and my watch beyond the Heideggerian question of*
57
58
59
60

1
2
3 *technology being a human activity (Heidegger, 1977) — the Watch becomes*
4
5 *its own activity that gives me badges whether I have worked for them or not.*
6
7

8
9
10 *Not me and my watch, not humans and technology, but hybrid networks drawn*
11
12 *by systems of relations, interfaces that can afford all manner of playful*
13
14 *retaliations. [Clancy]*
15
16

17
18 It is true, as Haraway warned, that we are no longer ontologically separate from the
19 machine — Clancy takes her badge as a representation of her own subjectivity. Yet,
20 the information that the machine gives us about ourselves, and the subjective tours
21 and detours it constructs with its data collections, aggregations and visualisations, tell
22 us more about how technology has always been a part of us and how we may engage
23 with it, rather than the knowledge it obscures. It's both funny and fun when it fails.
24 Playful affordances are embedded in the potential of the device itself. The
25 surveillance networks, drawn over our bodies, are flipped for the briefest moment,
26 when the technologies that uphold them offer a humorous glimpse at their data-
27 spectacles and gamified webs.
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42

43 Whatever the dystopian and utopian imaginings are for wearable technologies, in our
44 excitement we seem to forget that technologies don't just make us do things — we
45 also have agency and can make them work *for* us in specific ways. They respond to
46 our individual bodies and material practices: our touch, our voice. The Watch does far
47 more than just tell the time, it is a 'quasi-object' (Serres, 2007), only coming into
48 being when picked up and switched on, and when becoming a hybrid between user(s)
49 and other things. As soon as worn, switched on and touched, it starts processing
50
51
52
53
54
55
56
57
58
59
60

1
2
3 information from an assemblage of technologies, space-times and bodies. Just as
4
5 Michel Serres describes a ball as a quasi-object, which serves no purpose without
6
7 interaction, the Watch is ‘not an ordinary object, for it is what it is only if a subject
8
9 holds it. Over there (...) it is nothing; it is stupid; it has no meaning, no function, and
10
11 no value’ (Serres, 2007: 252). In the box, or left to charge at night, the Watch is
12
13 nothing, it only becomes something when we wrap it around our wrists.
14
15
16
17

18
19 Wearable interfaces invite us to engage, to mix work with play. In doing so, the
20
21 interactive transformability of digital user-interfaces (whose affordances invite users
22
23 to play with them) ‘absorb’ our actions into the interface. When a runner, for
24
25 example, interacts with an app on her phone-screen, this has an effect on how this app
26
27 looks, and how it displays data to her and others (Witkowski, 2013). This is a
28
29 reciprocal relationship - where the thing becomes us and we become the thing - in
30
31 ever-expanding facets of our lives. Thus, the digital has also brought play into the
32
33 distributed and networked space-times of the interface (Cermak-Sassenrath, 2015;
34
35 Fuchs, 2007)
36
37
38
39

40 **Where is my watch, where is my attention? From play to labour**

41
42 The new generation of tiny wearables has arrived, resized for our wrists. For now —
43
44 as the newest thing — they fascinate and entice us. We can wonder if they will take
45
46 over our lives or if they will they make our daily routines easier? Or we can also ask
47
48 if they will just make us work even harder, encouraging us to multi-task at an even
49
50 higher speed (Till, 2014)? These devices will continue to prompt such questions, at
51
52 least until they are no longer conceived as ‘new’, and have become a normalised parts
53
54 of our daily life, black-boxed (Latour, 1999) and embedded in less exciting domestic
55
56 practices (cf. Burgess, 2012).
57
58
59
60

1
2
3
4
5 Yet what remains is a push for an increasingly intimate and hybridised connection
6
7 between work, home, and leisure. As Sybille recently experienced during a holiday in
8
9 France, the Watch constantly alerted her to updates of a book she was co-editing for
10
11 work, prompting her to send e-mails instead of admiring the views. It only stopped
12
13 when she went off the grid, too deep into the mountains to be connected, forcing her
14
15 to disengage from work through its failure. In this sense the Watch, when working, is
16
17 “just the latest in a range of always on devices offering ample opportunity for work to
18
19 follow us out of the office” (Gregg, 2011: 18). Play, indeed, has become less
20
21 important once the newness has succumbed and the device has become another
22
23 ‘normalised’ actant in an assemblage in which data and bodies constantly and
24
25 ‘normalised’ actant in an assemblage in which data and bodies constantly and
26
27 intimately produce each other.
28
29

30
31 When the excitement of unpacking the device ceases and discourses of novelty
32
33 transform into the mundane (or even boring), the ways in which the Watch as quasi-
34
35 object infiltrates our daily lives become more obvious. Our everyday practices
36
37 generate stories (to echo Serres). Nothing so grand as the dystopian and utopian
38
39 visions of mechanised labour forces, or even so ambitious as the eternal memory of
40
41 the quantified self (Hoskins, 2013), these stories come partly into being through a lack
42
43 — or devaluation — of play (utility, futility, boredom and irritation) in which the
44
45 everywhere becomes the *everyware* (Gilmore, 2015).
46
47
48

49
50 Our earlier autoethnographic accounts described playful interlocutions with the Apple
51
52 Watch, demonstrating how hybrid relations between labour and play can emerge
53
54 through haptic wearable interfaces. However, as we have argued, these relations can
55
56 and do shift over space and time — particularly in the distance from the excitement of
57
58
59
60

1
2
3 play to the banality of daily life (Burgess, 2012). Here, beyond the fetish of the new,
4
5 the realm of ludification creeps upon us as *ludefaction* (Kirkpatrick, 2015), in which
6
7 labour processes infiltrate the everyday. Ludefaction denies the possibility of play by
8
9 shaping technological potential away from a mode of emergent creativity and critical
10
11 affordances, towards routinised data collection, whereupon our agency begins to be
12
13 dissolved (Ash, 2015).
14
15

16
17 The following section considers what happens when a wearable technology becomes
18
19 mundane, and reveals itself partly as an echo and accumulation of technologies we
20
21 already know (Burgess, 2012), triggering a continual labour-intensive rendition of the
22
23 desire to quantify ourselves. On the other side of play, when a new object becomes
24
25 familiar, we can find that, much as wearable technologies afford playful interaction,
26
27 they also generate work — as space and time is segmented into minute tasks (Ash,
28
29 2015), designed to keep our data moving and the machine running (Whitson, 2013).
30
31
32

33
34 The Watch engenders a haptic labour of learning and precision, recombined with the
35
36 embodiment of wearing, touching, and feeling the interface. Richardson (2012) argues
37
38 that technologies mediate and shape our understanding of space through the centrality
39
40 of embodiment. Using the iPhone as an example, she argues that to locate ourselves is
41
42 to tour and map through mobile media, to ‘corporeally realize’ a space of networked
43
44 interaction — in what Graeme Kirkpatrick describes as ‘matter-form’, and Richardson
45
46 has termed ‘intercorporealization’ (both terms also resonate with Serre’s
47
48 understanding of a quasi-object). The tactility of the iPhone, Richardson argues
49
50 further, is complicit in the ludification of experience — generating “a-space-of-one’s-
51
52 own” (Richardson, 2012: 139) through touch and the hapticity of the screen,
53
54 embedded in hybrid experience between virtual and physical planes (c.f. de Souza e
55
56
57
58
59
60

1
2
3 Silva and Sutko, 2008). Through its hybridity, the experience of the Watch counters
4
5 Huizinga's concept of the magic circle (cf. Huizinga, 1938), in that attentiveness
6
7 towards the device is 'sticky', messy rather than encompassing and clearly delineated.
8
9

10
11
12
13
14 The embodied location of oneself in space, through a device (Richardson's
15
16 intercorporealization) takes on a particular, and slightly different, tactile matter-form
17
18 with wearable interfaces like the Apple Watch. The Watch is therefore more than
19
20 recombinations and remediations (cf. Bolter and Grusin, 2000) of older interface
21
22 technologies, it also introduces new affordances that go beyond how the haptic has
23
24 previously been theorised, namely in terms of hand-eye relations and as part of an
25
26 ocular-centric regime (cf. Verhoeff, 2012). As touchscreens become re-iterative
27
28 through skin-contact, they become more compact — the author's devices are the
29
30 'women's' design, produced to fit smaller, 'feminine wrists'. Through touch, the
31
32 Watch now affords all manner of vibrations, pulsations and rhythms which combine
33
34 with sounds, alerts, alarms, that increasingly familiar *bink bink*, and the Siri voice
35
36 software adapted from the iPhone.
37
38
39
40
41
42

43 Where smartphones may locate us within complex networks through
44
45 intercorporealization, the Watch also shapes the way we locate within ourselves: from
46
47 eye to finger, from heart to skin, from ears to arm. Through intercorporealization —
48
49 self, device, space, tactility — we can see how Sybille experienced disorientation
50
51 when the camera from the phone meant that she could view herself from a third
52
53 perspective; Emma describes the Proustian familiarity of repeatedly shaking a digital
54
55 device; and Clancy, the pleasure of receiving a reward based on an embodiment that
56
57
58
59
60

1
2
3 didn't actually take place. This partial data flow produces a "digital double"
4
5 (Ruckenstein, 2014), which in the experience of Clancy is not only distanced from the
6
7 total self, but contains false data, constructed of labour or action that the represented
8
9 subject did not actually complete. The data double, here, is encountered playfully, and
10
11 the fun can be found in the deviation between the data depicted and the actuality of
12
13 the labour undertaken (or lack thereof).
14
15
16
17

18
19 Embedded in the haptic interface are distractions that, while once affording fun
20
21 *through* labour, can also funnel leisure back into work, the stickiness of the interface
22
23 attracting constant attention and playful interaction. However, even playfulness can
24
25 become laborious once this stickiness becomes frustrating and distracting. Clancy has
26
27 fingers too wide to properly use the screen — constantly inputting the wrong
28
29 passcode into the tiny touch interface. Heartbeats and disappearing finger strokes are
30
31 all well in play, but tapping on tiny buttons can also be a tedious and aggravating task
32
33 that seems interminable in failure, and is forgotten when finally accomplished. Emma
34
35 finds the repetition of input and the constant vibration on the wrist to be a labour of
36
37 attention, the demand for interaction ceases to feel like play (as the colourful candy-
38
39 like widgets might suggest it should be), and increasingly comes to resemble work.
40
41 Play and work are closely linked: both in repetition and tactility, and in the transience
42
43 of a touch that lasts only as long as it is embodied.
44
45
46
47
48

49
50 The Watch is a hybrid object that does everything and nothing, hyper-connected to
51
52 the multitude of forces that is the Internet of Things (Swan, 2012), highly suggestive
53
54 of ludic interactions, but ultimately — in the cyclical 'drudgery of labour' it demands
55
56 (Benjamin, 2003: 330) — it 'has no connection with the preceding gesture' (*ibid*). In
57
58
59
60

1
2
3 industrial factory work ‘the process of continually starting all over again exemplifies
4 the regulative idea of gambling’ (Benjamin, 2003: 331). The stickiness of the watch,
5 demanding attention through its haptic interface and intercorporealization, turns the
6 user into the isolated ‘worker at his machine’. This worker mechanically inputs by
7 reflexive action, but never sees the final output, the traces that appear on someone
8 else’s wrist, the mechanics that lie invisibly within the interface, or data that
9 disappears to someone else’s server. Less players, or even workers, and more like the
10 mindless gamblers ‘who live their lives as automatons...who have completely
11 liquidated their memories’ (Benjamin, 2003: 330-331), play can be transformed into
12 labour as we tap, swipe, move and stroke. Benjamin and Adorno both talk of the
13 labour of play, (Fuchs, 2014), except that here, between the watch and the user, labour
14 and the machine are not just producing, but also liquidating recollections that don’t
15 belong to the canon of digital memory (Frith and Kalin, 2015), embodied actions
16 that leave no after-image (Jameson, 1992: 76) — just the emptiness of repetitive
17 labour.
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

At the same time, play has not completely disappeared in the expansion of labour to the everyday. As the screen becomes smaller, embodiment extends in new ways, particularly compared to the smartphone. For example, the Watch affords play beyond hapticity in its curious rejection of touch and the emphasis on voice activated commands. Introduced after the Watch’s release to counteract the impracticality of the tiny screen, Siri has become a key feature in writing messages and taking notes using the Watch. The timbre of a voice box is now registered on the wrist, where the Watch becomes an intimate limpet, touching the skin, with sonic pitches and quavering sounds transformed into tiny digital text that vibrates on another wrist and

1
2
3 trills to announce its arrival. Just as there is something playful about touching the
4
5 Watch, and it touching back (Parisi, 2012). there is a playful aspect in talking to the
6
7 Watch, as a non-haptic gesture, and the Watch responding, as this experience between
8
9 two authors attests:
10

11
12
13
14 *I'm waiting outside for Clancy, who seems to be running late.*

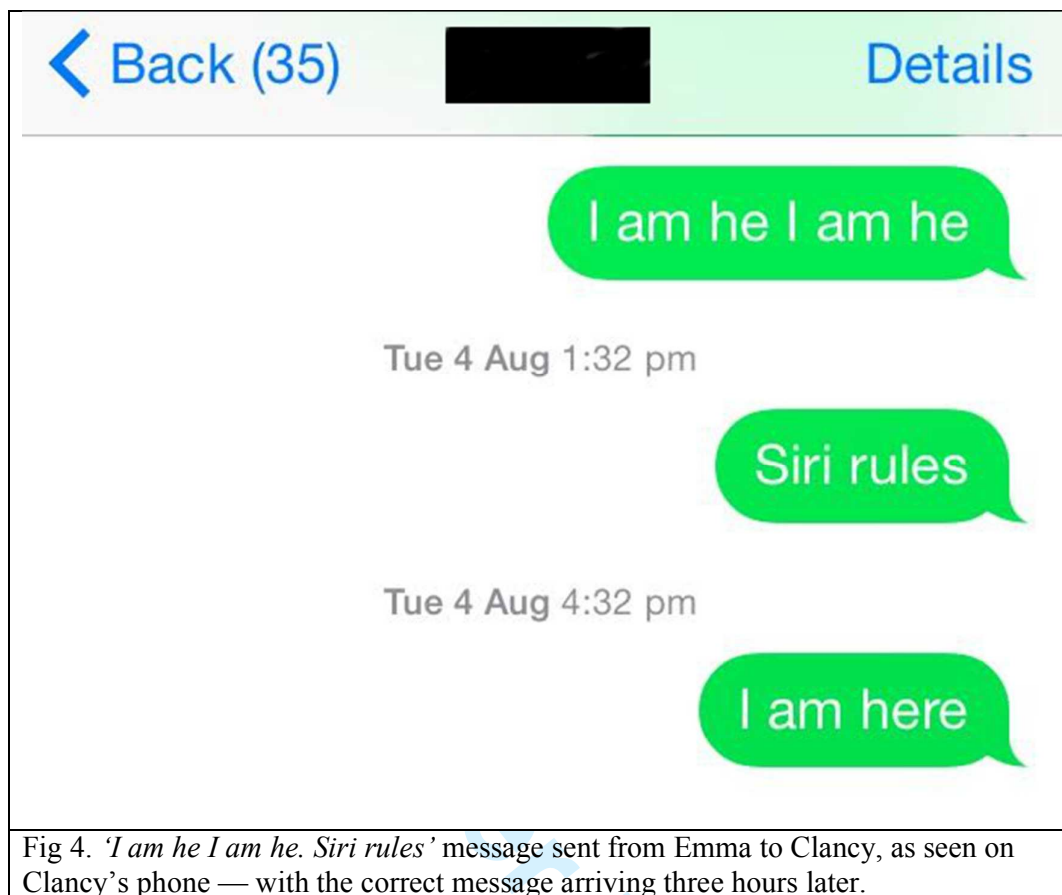
15
16 *Raising my wrist, I enter a few taps, then utter a short message into*
17
18 *the Watch to send as text: "I am here". Nothing happens. Trying*
19
20 *again, this time more loudly, "I am here". Again, nothing seems to*
21
22 *happen, everything vanishes from the screen. It would have been*
23
24 *better to just use my phone at this point, but I want fulfilment from*
25
26 *this distracting hitchhiker catching a free ride on my wrist.*

27
28
29 *Frustrated — both by the Watch and the delay - I say: "Clancy*
30
31 *sucks" [Emma]*
32

33
34
35
36 *Inside the building, my phone vibrates. Once, twice, thrice. On*
37
38 *silent, it rumbles the desk, falling still as I pick it up — a*
39
40 *biomechanical platform (Cranny-Francis, 2007) that is calmed by*
41
42 *touch interaction. Three rumbles, one swipe and I have received the*
43
44 *warped cryptograms sent by Emma:*
45

46
47
48 *"I am he. I am he. Siri rules."*
49

50
51
52 *Emma is here, but her data double says otherwise (Ruckenstein, 2014)*
53
54 *— at some point embodiment itself has become playful and laborious,*
55
56 *surprising and frustrating, all at once. [Clancy]*
57
58
59
60



Conclusion

In a way, Apple gave us what was promised: the ability to merge different activities to a greater extent, and in novel ways. However, to return to Serres' notion of the quasi-object, we sometimes regretted having picked it up and put it on — as the interrelationality between ourselves and the Watch demanded constant attentiveness to justify the existence of the Watch in the first place. Clancy sometimes wears the Watch when she's travelling to and fro, Emma took it off once and for all (reducing it to nothing again), and Sybille wears it all the time, managing its interruptions and playing with its possibilities. In that sense Burgess' (2012) analysis of the iPhone, and how such technologies become quickly mundane and ingrained in everyday life, still

1
2
3 holds for the Apple Watch: as the autoethnographies show, the watch quickly became
4 domesticated, part of our particular daily routines — it is not so much a question of
5 what a wearable technology can do, but whether we want it to do the things that it
6 does.
7
8
9

10
11
12 Even if the Watch does not provide all that it promises (and, in fact, frequently fails or
13 becomes a burden defined by drudgery and boredom), this may be more of a failure of
14 the marketing than the machine. Although it may not accurately convey a message, or
15 provide reliable data, its hybrid form suggests possibilities beyond the limited
16 quantification of daily life. When the Apple Watch fails, the play in the assemblage of
17 technologies, bodies and other materialities comes to the fore, and the possibilities for
18 resistance within such networks of control (Galloway, 2010) is revealed — in our
19 experience, the failures became opportunities to make personal interventions, to find
20 fun within labour, to achieve victory without work, and to reflect critically on
21 wearable technologies themselves.
22
23
24
25
26
27
28
29
30
31
32
33
34
35

36 Wearable technologies such as the Apple Watch invite us to merge work and
37 activities of leisure with an even greater enthusiasm and scope than our mobiles,
38 tablets and computers combined. Increasingly, such devices extend beyond the haptic
39 and the ocularcentric qualities of older devices, enabling us to locate ourselves
40 through intimate engagements with wearable interfaces. As we tap the Watch, it taps
41 back, hybridising our hands-free vocal commands, our heart-beats, our steps, our GPS
42 coordinates and our temporalities; our digital, virtual, and material experiences.
43
44
45
46
47
48
49
50

51 Furthermore, wearables (whether the Apple Watch, Fitbit, Jawbone, or other
52 personally attached devices) override distinctions between leisure and work, as well
53 as distinctions between different kinds of leisure (e.g. play, relaxation, hobbies and
54
55
56
57
58
59
60

1
2
3 sensory stimulation, (Stebbins, 1992, 1997), enabling us to combine a range of
4
5 activities in ever-changing ways, facilitated by the correspondence between device,
6
7 self, and world.
8
9

10
11 As our autoethnographies have shown, the relation between the user and the Apple
12
13 Watch continuously shifts the distinctions between play and labour, and our stories
14
15 demonstrate that the understanding of these technologies is increasingly ambiguous.
16
17 Exercise, for instance, can be interpreted as deconstructing traditional boundaries of
18
19 gender, space and embodiment (Witkowski, 2013), or as a ludefaction (Kirkpatrick,
20
21 2015) permeating everyday life, turning exercise into labour (Till, 2014). In this way,
22
23 play can maintain a role in the hybridisation of work and leisure, but can also
24
25 disappear, as the novelty wanes. That is not to say that play is merely a subset of
26
27 novelty, but rather that the affordances that uphold play — creativity, surprise,
28
29 accident, experimentation, possibility — can also be increasingly undermined by
30
31 overemphasising the Watch's role in regulating and quantifying our everyday lives,
32
33 making us work for it, rather than making it work for us.
34
35
36
37
38
39

40 **References**

- 41
42 Ash J. (2015) *The Interface Envelope: Gaming, Technology, Power*, New York and
43 London: Bloomsbury.
44 Benjamin W. (1999) *The Arcades Project*, Cambridge, Massachusetts and London,
45 England: Belknap Press.
46 Benjamin W. (2003) *Walter Benjamin: Selected Writings, Volume 4, 1938-1940*,
47 Cambridge, Massachusetts and London, England: Belknap Press of Harvard
48 University Press.
49 boyd d and Crawford K. (2012) Critical Questions for Big Data: Provocations for a
50 cultural, technological, and scholarly phenomenon. *Information,*
51 *Communication and Society* 15.
52
53 Burgess J. (2012) The iPhone Moment, the Apple Brand and the Creative Consumer:
54 From "Hackability and Usability" to Cultural Generativity. In: Hjorth L,
55 Burgess J, and Richardson I (eds) *Studying Mobile Media. Cultural*
56 *Technologies, Mobile Communication, and the iPhone*. Abingdon, UK:
57 Routledge.
58
59
60

- 1
2
3 Carr N. (2011) *The Shallows: What the Internet is Doing to our Brains*, New York:
4 W. W. Norton and Company.
- 5 Casio. (1986) *Casio Databank Watch Data-Cal Calculator*. Available at:
6 <https://http://www.youtube.com/watch?v=EIxc3ydLgE0> (accessed 10 Dec
7 2015).
- 8 Cermak-Sassenrath D. (2015) Playful Computer Interaction. In: Frissen V, Lammes
9 S, de Lange M, et al. (eds) *Playful Identities: The Ludification of Digital*
10 *Media Cultures*. Amsterdam: University of Amsterdam Press.
- 11 Cranny-Francis A. (2007) Ecce techno, or, suiting the biomechanical platform:
12 immersion and contemporary embodiment. *Visual Communication* 6.
- 13 Dalton C and Thatcher J. (2014) What does a critical data studies look like, and why
14 do we care? Seven points for a critical approach to 'big data. *Space and*
15 *Society Open Site*. United Kingdom: Society and Space. Available at:
16 [https://societyandspace.com/material/commentaries/craig-dalton-and-jim-](https://societyandspace.com/material/commentaries/craig-dalton-and-jim-thatcher-what-does-a-critical-data-studies-look-like-and-why-do-we-care-seven-points-for-a-critical-approach-to-big-data/)
17 [thatcher-what-does-a-critical-data-studies-look-like-and-why-do-we-care-](https://societyandspace.com/material/commentaries/craig-dalton-and-jim-thatcher-what-does-a-critical-data-studies-look-like-and-why-do-we-care-seven-points-for-a-critical-approach-to-big-data/)
18 [seven-points-for-a-critical-approach-to-big-data/](https://societyandspace.com/material/commentaries/craig-dalton-and-jim-thatcher-what-does-a-critical-data-studies-look-like-and-why-do-we-care-seven-points-for-a-critical-approach-to-big-data/) (accessed 10 Dec 2015)
- 19 de Souza e Silva A and Sutko D. (2008) Playing life and living play: How hybrid
20 reality games reframe space, play, and the ordinary. *Critical Studies in Media*
21 *Communication* 25.
- 22 Deterding S. (2015) The Ambiguity of Games: Histories and Discourses of a Gameful
23 World. In: Walz SP and Deterding S (eds) *The Gameful World*. Cambridge,
24 Massachusetts: MIT Press.
- 25 Dibbell J. (2006) *Play Money: Or, How I Quit My Day Job and Made Millions*
26 *Trading Virtual Loot*, New York NY: Basic Books.
- 27 Frissen V, Lammes S, de Lange M, et al. (2015) *Playful Identities: The Ludification*
28 *of Digital Media Cultures*. Amsterdam: Amsterdam University Press.
- 29 Frith J and Kalin J. (2015) Here, I Used to Be: Mobile Media and Practices of Place-
30 Based Digital Memory. *Space and Culture* 1.
- 31 Fuchs C. (2007) Transnational space and the 'network society'. *21st Century Society*
32 2.
- 33 Fuchs M. (2014) Gamification as twenty-first-century ideology. *Journal of Gaming*
34 *and Virtual Worlds* 6: 143-157.
- 35 Fuchs M, Russegger G and Mañas Carbonell M. (2013) Ludic Interfaces. In: Webber
36 N and Riha D (eds) *Exploring Videogames: Culture, Design and Identity*
37 Oxford, UK: Interdisciplinary Press.
- 38 Galloway A. (2010) Networks. In: Mitchell WJT and Hansen MBN (eds) *Critical*
39 *Terms for Media Studies*. Chicago and London: University of Chicago Press.
- 40 Gilmore JN. (2015) Everywear: The quantified self and wearable fitness technologies.
41 *New Media and Society* 1.
- 42 Gregg M. (2011) *Work's Intimacy*, Cambridge, UK: Polity Press.
- 43 Haraway D. (1991) A Cyborg Manifesto: Science, Technology, and Socialist-
44 Feminism in the Late Twentieth Century. *Simians, Cyborgs and Women: The*
45 *Reinvention of Nature*. 149-183.
- 46 Hayles NK. (2012) *How We Think: Digital Media and Contemporary Technogenesis*,
47 Chicago and London: University of Chicago Press.
- 48 Heidegger M. (1977) *Question Concerning Technology and Other Essays*, New York,
49 NY: Harper and Row.
- 50 Hoskins A. (2013) The End of Decay Time. *Memory Studies* 6.
- 51 Jameson F. (1992) *Postmodernism: Or, the Cultural Logic of Late Capitalism*, United
52 States: Duke University Press.
- 53
54
55
56
57
58
59
60

- 1
2
3 Kirkpatrick G. (2015) Ludefaction: Fracking of the Radical Imaginary. *Games and*
4 *Culture* 10.
- 5 Kitchin R and Lauriault TP. (2016 f.c.) Towards Critical Data Studies: Charting and
6 Unpacking Data Assemblages and Their Work. In: Eckert J, Shears A and
7 Thatcher J (eds) *Geoweb and Big Data*. Forthcoming: University of Nebraska
8 Press.
- 9
10 Latour B. (1999) *Pandora's Hope: Essay on the Reality of Science Studies*,
11 Cambridge, Massachusetts: Harvard University Press.
- 12 Leszczynski A. (2015) Spatial big data and anxieties of control. *Environment and*
13 *Planning D: Society and Space* 33.
- 14 Lupton D. (2013) Quantifying the body: monitoring and measuring health in the age
15 of mHealth technologies. *Critical Public Health* 23.
- 16 Lupton D. (2014) Apps as Artefacts: Towards a Critical Perspective on Mobile Health
17 and Medical Apps. *Societies* 4.
- 18 Marvin C. (1990) *When old Technologies Were New*, Oxford, New York, Toronto:
19 Oxford University Press.
- 20 Nafus D and Sherman J. (2014) This one does not go up to 11: the Quantified Self
21 movement as an alternative data practice. *International Journal of*
22 *Communication* 8.
- 23
24 Parisi D. (2012) When Screens Touch Back. *Flow*. Available at:
25 <http://flowtv.org/2012/11/when-screens-touch-back/>. (accessed 10 Dec 2015)
- 26 Raessens J. (2006) Playful Identities, or the Ludification of Culture. *Games and*
27 *Culture* 1.
- 28 Raessens J. (2014) The Ludification of Culture. In: Fuchs, Schrape, Ruffino, et al.
29 (eds) *Rethinking Gamification*. Lüneburg: Hybrid Publishing Lab.
- 30 Richardson I. (2012) Touching the Screen: A Phenomenology of Mobile Gaming and
31 the iPhone. In: Hjorth L, Burgess J and Richardson I (eds) *Studying mobile*
32 *media. Cultural Technologies, mobile communication and the iPhone*.
33 Abingdon, UK: Routledge, 133-151.
- 34 Ruckenstein M. (2014) Visualized and Interacted Life: Personal Analytics and
35 Engagements with Data Doubles. *Societies* 4.
- 36
37 Rushkoff D. (2013) Permanent Revolution: Occupying Democracy. *The Sociological*
38 *Quarterly* 54: 164-173.
- 39 Saukko P. (2002) Studying the self: from the subjective and the social to personal and
40 political dialogues. *Qualitative Research* 2.
- 41 Saukko P. (2003) *Doing research in cultural studies: An introduction to classical and*
42 *new methodological approaches*, London, UK and Thousand Oaks, California:
43 Sage.
- 44 Schiphorst T. (2006) Breath, skin and clothing: Using wearable technologies as an
45 Interface into ourselves. *International Journal of Performing Arts and Digital*
46 *Media* 2.
- 47
48 Serres M. (2007) *The Parasite*, United States: University of Minnesota Press.
- 49 Starbuck WH and Webster J. (1991) When Is Play Productive? *Accounting*
50 *Management and Information Technology* 1.
- 51 Stebbins RA. (1992) *Amateurs, Professionals, and Serious Leisure*, Canada: McGill-
52 Queen's University Press.
- 53 Stebbins RA. (1997) *Serious Leisure: A Perspective for Our Time*, New Jersey:
54 Transaction Publishers.
- 55
56 Sutton-Smith B. (1997) *The Ambiguity of Play*, Cambridge, Massachusetts: Harvard
57 University Press.
- 58
59
60

- 1
2
3 Swan M. (2012) Sensor Mania! The Internet of Things, Wearable Computing,
4 Objective Metrics, and the Quantified Self 2.0. *Journal of Sensor and*
5 *Actuator Networks* 1.
6
7 Swan M. (2013) The Quantified Self: Fundamental Disruption in Big Data Science
8 and Biological Discovery. *Big Data* 1.
9
10 Taylor M and Coia L. (2009) Co/Autoethnography. In: Lassonde CA, Galman S, and
11 Kosnik C (eds) *Self-Study Research Methodologies for Teacher Educators*.
12 Rotterdam, Boston, Taipei: Sense Publishers.
13
14 Till C. (2014) Exercise as Labour: Quantified Self and the Transformation of Exercise
15 into Labour. *Societies* 4.
16
17 Turkle S. (1997) *Life on the screen: Identity in the age of the internet.*, London:
18 Weidenfeld and Nicolson.
19
20 Tuters M. (2015) Through Glass Darkly: On Google's Gnostic Governance. In: Berry
21 DM and Dieter M (eds) *Postdigital Aesthetics: Art, Computation and Design*.
22 United Kingdom: Palgrave Macmillan.
23
24 Verhoeff N. (2012) *Mobile Screens: The Visual Regime of Navigation*, Amsterdam:
25 Amsterdam University Press.
26
27 Whitson JR. (2013) Gaming the Quantified Self. *Surveillance and Society* 11.
28
29 Wilken R. (2014) Mobile Media, Place, and Location. In: Goggin G and Hjorth L
30 (eds) *The Routledge Companion to Mobile Media*. New York and London:
31 Routledge
32
33 Witkowski E. (2013) Running from Zombies. *The 9th Australasian Conference on*
34 *Interactive Entertainment: Matters of Life and Death*. Melbourne, Australia.
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60