GAMIFIED HARVESTING OF THE COGNITIVE SURPLUS

Jeff Howe once described crowdsourcing as 'distributed labor networks [...] using the Internet to exploit the spare processing power of millions of human brains.'[29] Obviously, the tone here is a far cry from the claims of a sharing culture and the empowerment of the individual. Instead, it is more reminiscent of the network of human batteries in the movie *The Matrix.* In this dystopian fiction, the world as we know it is merely a 'screen saver' to keep the human brains happy and entertained while their bodies are producing the energy needed by the robot overlords.

When we leave the *virtual* reality of Hollywood behind to look at the *actual* reality of early twenty-first century digital platforms, it turns out that, instead of using the waste body heat of people to run machines, it makes much more sense to use their 'waste processing' power to augment machines with cognitive and creative skills they can't muster otherwise. It is the inversion of Engelbart's goal to augment the individual human intellect. Now humans augment the machine.

Since the widespread dissemination of networked computing made it feasible to *harvest* brainpower on a massive scale, people started thinking about how to put this new and renewable resource to good use – and centralised platforms play a key role in the management of the aggregation process. One of the most influential figures in this field is the Guatemalan computer scientist Luis von Ahn, now a professor at Carnegie Mellon University. In the year 2000, at the age of 21, von Ahn developed the technique of CAPTCHAs to prevent 'spam bots' from opening up email accounts.[30] Since then, users have to decipher artificially distorted words, which computers are not able to read, in order to prove that they are humans.

> [...] CAPTCHAs constitute a viable mechanism to harness large amounts of human mental effort. After exactly 1 year of running the system, humans had solved more than 1.2 billion CAPTCHAs, amounting to over 440 million suspicious words correctly deciphered. Assuming 100,000 words per book (400 pages, 250 words per page), this is equivalent to over 17,600 books manually transcribed.[31]

Within five years, about 200 million CAPTCHAs were being typed everyday and von Ahn 'started to feel bad, because each one was wasting 10 seconds of someone's time.' In a very clever twist, he therefore introduced reCAPTCHA in 2007. The new version of the program now showed the user two words, one to which the answer was already known (in order to test the trustworthiness of the user), and another

29 Howe, 'The Rise of Crowdsourcing', *Wired* (2006).
30 CAPTCHA is an acronym of 'Completely Automated Public Turing Test to Tell Computers and Humans Apart.'
31 von Ahn et al. 'reCAPTCHA', *Science* Vol. 321, Issue 5895, (2008): pp. 1465–1468.

10 Typical pop-up dialogue of reCAPTCHA, used to tell humans and computers apart.

one to which the answer was unknown but sought after. If humans had to spend brainpower to solve CAPTCHAS anyway, it might as well be for something productive – in this case help Google with scanning books, recognising house-numbers for Street View or, more recently, street signs for its fleet of self-driving cars.

While von Ahn's invention is a great example of 'wasted' human brainpower put to good use, it is problematic that most people don't even realise that they donate their cognitive capacities to Google. This form of *indirect crowdwork* shows that if work is broken down into tiny bits and distributed across the web, it is sometimes not even recognisable as work anymore. In 2005, von Ahn published his Ph. D. thesis on what he now called 'human computation.'[32] In the introduction he wrote:

> We focus on harnessing human time and energy for addressing problems that computers cannot yet tackle on their own. [...] In this paradigm, we treat human brains as processors in a distributed system, each performing a small part of a massive computation. Unlike computer processors, however, humans require an incentive in order to become part of a collective computation. We propose online games as a means to encourage participation in the process.[33]

And indeed, von Ahn created several such 'Games With a Purpose', as he called them, that successfully motivated people to contribute their cognitive skills to solving tasks that could not be automated. One of them was the 'ESP Game', which in 2006 was acquired by Google and then continued under the name 'Google Image Labeler.'[34] The purpose of the game was to get people to provide descriptive labels for the content of images to make them accessible for search engines. It did that by randomly teaming up two volunteer players, showing them the same image at the same time, and awarding them with points when they both quickly typed in matching descriptions. The game was quite popular and provided not only tags for images but also created data-sets for machine learning processes aimed at training algorithms to become better at image recognition. Von Ahn reported that as of July 2008,

32 von Ahn, *Human Computation* (2005).
33 *Ibid*. p. 11.
34 'ESP' stands for extra-sensorial perception, the so-called 'sixth sense'. The most popular of von Ahn's Human Computation applications is the language learning app Duolingo.

200,000 players had contributed more than fifty million labels.[35] They had contributed their time, not because of altruism or because of financial rewards, but because the researcher had taken his cues from video games and managed to make the work seem fun.

According to von Ahn, it took seven million human-hours to construct the Empire State Building and twenty million human-hours for the Panama Canal, while the time that people spend playing the Microsoft Windows embedded card-game Solitaire was estimated to be in the billions per year.[36] Such attempts to fathom the amount of 'wasted' brainpower, or the latent potential of 'spare cycles', with astronomic calculations are a reoccurring theme in the crowdsourcing literature. Internet guru Clay Shirky wrote in his book *Cognitive Surplus* that it took 'only' about one-hundred million man-hours to create Wikipedia (as of 2009) while Americans alone watch two-hundred billion hours of TV each year.[37] In a TED from 2010, Shirky expressed this idea even more poignantly: 'There are a trillion hours a year of participatory value up for grabs.'[38]

The game-designer and author Jane McGonigal is juggling with equally mind-boggling numbers. According to her, the accumulated time that people played World of Warcraft reached 5.93 million years in 2011 – that is just for this one game alone – but people also spent 3.5 million years with the puzzle game Bejeweled and 250,000 years with Microsoft's ego-shooter Halo.[39]

From how they describe this new resource, one has no reason to doubt that Shirky, McGonigal and von Ahn only have the best of intentions. All three of them are concerned with putting the 'cognitive surplus' from gaming to good use for humanity, in one way or another. Shirky explicitly wants to funnel at least a fraction of the otherwise 'wasted' time in front of the TV into more productive, social, communal and civic minded projects such as the open-source, non-profit, activist, geospatial citizen journalist platform Ushahidi. McGonigal is radiant with optimism as well and wants to use the 'cognitive surplus' to 'fix a broken world' and 'make it into a better place,' by tackling challenges in areas such as health and ecological sustainability.[40]

But two things are striking if not deeply worrying about this new paradigm: First of all, it introduces a macro-economic efficiency calculation into the private life of people – the time during which they are not contributing to the GDP through conventional work but recovering from it. Leisure time, formerly characterised by being free of the imperative to be productive, is now regarded as a waste for society when it is not contributing to 'world saving' crowdsourcing projects based on communal and civic minded engagement. The question is: Do we actually want to live in a society where every minute of free time that does not feed content back into a digital platform is being regarded as wasted? The second aspect that I find worrying is the question: who is in the end actually going to 'grab' that participatory value? And how to ensure that the 'cognitive surplus' actually benefits social projects instead of profit oriented digital labour platforms? The socially spirited harvesting of the cognitive surplus, so often advocated in management literature, sometimes seems to function like a Trojan horse, distracting from the profit-orientated application of the same methods.

In his book *Cognitive Surplus* Clay Shirky builds on the work of Yochai Benkler's concept of 'commons-based peer production'. Benkler and Shirky both dismiss the classic economic model of the 'homo economicus', a human guided only by rational self-interest, as a short sighted way to explain all that motivates humans. They both show that in many social contexts, money is not the best incentive to guide and reward human behaviour.[41] Shirky writes that instead of using extrinsic monetary incentives, systems to harness the cognitive surplus should be designed to appeal to intrinsic motivations, especially to the generosity of people. Shirky believes, and he offers many examples to support this view, that if people have the opportunity and the choice, they will generously contribute their free time to projects that are meaningful and social.

Luis von Ahn and Jane McGonigal don't believe in money as the best incentive to guide behaviour either. But instead of trying to convince people to do volunteer work, they employ game mechanics to motivate the crowd. In the face of more and more stakeholders trying to harvest the cognitive surplus, McGonigal predicted that '[T]he competition for participants will be fierce, and not all projects will thrive.'[42] The various projects will have to, as she argues, engage the crowds on a deep emotional level in order to make them not just passively watch but actively contribute in an engaged and persistent ways. It is essentially the same problem that MIT's Thomas Malone is contemplating on in regard to 'collective intelligence' – 'how do you motivate people to do the things you want them to do?'[43] (See chapter 1.5)

The difference between McGonigal and von Ahn, who both design systems with *fun* as the core incentive, is that she hopes for real world changes in behaviour that are meaningful to the participants and persistent for companies and society outside of the game, while he primarily wants to 'grab' data that can only be created by human cognitive skills. That data is then made useful for the public, and for Google, but is also used to train machines. While Shirky is an advocate of what I call

35 von Ahn/Dabbish, 'Designing Games with a Purpose' (2008): pp. 58–67.
36 von Ahn, *Human Computation* (2005).
37 Shirky, *Cognitive Surplus* (2010): p. 10.
38 Shirky, 'How Cognitive Surplus Will Change the World', TED talk (2010).
39 McGonigal, 'Gaming Can Make a Better World', TED talk (2010).
40 McGonigal, *Reality Is Broken* (2012).
41 Benkler and Shirky both refer to a study that showed the adversarial effects of making parents pay a fine when they didn't pick up their children from day-care centres on time: Gneezy/Rustichini, 'A Fine is a Price', *The Journal of Legal Studies*, 29 (2000): pp. 1–17.
42 McGonigal, 'Engagement Economy', Institute for the Future (2008).
43 Malone, 'The Future of Work with MIT's Thomas Malone', interview with *The Economist* (2013), available on YouTube.

Volunteer-based Crowdwork, where people consciously donate their labour, von Ahn and McGonigal are proponents and active design practitioners of what I call *Indirect Crowdwork,* where people are not really aware that they are providing labour for someone else – or in fact that they do work at all. McGonigal and von Ahn both use *Gamification* as their method to enable and incentivise *Unpaid Indirect Crowdwork*.

Since its coinage in 2008, the term 'gamification' has quickly evolved from yet another internet buzzword into an influential and much applied method. It means the application of game design mechanics in non-game contexts in order to influence people's behaviour.[44] Something that was hitherto not a game is *'gamified'* through the introduction of various feedback mechanisms such as *points*, *badges*, *levels*, *achievements* and *leaderboards*. The typically public comparison of *performance statistics* plays a crucial role in gamification, which is why the technique relies heavily on *big data* technology. In the words of German media scholar Niklas Schrape: 'While the big data techniques are the governor's tools to watch over their subjects, gamification mechanisms are the means to regulate their behaviour.'[45] All behaviour that is meant to be influenced through gamification first of all has to be automatically tracked through various sensors or through input devices fed by the users themselves. Thus constant feedback about their performance is analysed on the respective platform and signalled back to the users, together with information about how well they do in comparison to their peers or their own previous records. Gamification aims to change behaviour not through punishment but through repeated positive feedback for every little increment of improvement. It can be seen as the modern day digital application of B. F. Skinner's behaviourist set of methods, which were based on continuous positive feedback as a means of control through conditioning.[46]

Most people know from experience (or at least from observation) how addictive games can be, especially video games, and the astronomic numbers of aggregated playtime listed above speak volumes. An important reason why games are so captivating, motivating and satisfying is that they are very good at creating a state of constant *flow*, the peculiar state of mind that was extensively studied by the Hungarian-American Professor of Psychology Mihály Csíkszentmihályi.[47] The state of flow is characterised by an intense and focused concentration on the present moment, a merging of action and awareness, a loss of reflective self-consciousness, a sense of personal control or agency over the situation or activity, a distortion of temporal experience, and the experience of the activity as intrinsically rewarding. For Csíkszentmihályi, the state of flow is a key to happiness and it can be experienced in many areas of life, in making music, juggling, drawing, programming, and especially in playing video games. On top of the characteristics above, computer games enhance the effects of flow with those of competition and perceived perpetual progress through 'levelling up' – quantified and expressed in points and shared with other players. Through various feedback mechanisms, gamers always have the feeling of getting better, of gathering more points, of climbing up the leaderboard and thus of gaining more reputation among their peers. In the parlance of gamers, an 'epic win' is always within reach. As J. C. Herz, the first game design columnist of the *New York Times,* had already observed in 2002, long before the term 'gamification' existed:

> As in Slashdot's 'karma' system or eBay's reputation ratings, 'levelling up' is a big motivating factor for players: It's the game's way of validating their cumulative accomplishments with something quantifiable, if not tangible. [...] The accretion of value in persistent worlds changes the psychology of leisure: You haven't 'spent' 1,000 hours playing a game; you've 'built up your character'. You've made progress! Accretion transforms idle time into something that feels industrious. It turns spending into earning.[48]

Gamification has become a very successful manipulation technique to motivate and control the masses; the frequent-flyer programs are the most common example, others are Nike+ and Foursquare. In many cases, gamification is used to foster loyalty between a brand and its customers: in the context of crowdsourcing, however, gamification is used to get the crowd to do work it wouldn't do otherwise, to do it more efficiently and to engage with fellow crowdworkers in certain ways valued by the crowdsourcer. It has become a tool to keep workers highly motivated without having to pay them. As Gamification propels competition and ambition among those at the receiving end of that method. It transforms the actual loss of time (and sometimes money) into a feeling of constant achievement and progress. But even if gamification is meant to serve a perceived higher purpose, like health and ecologic sustainability, it is still ethically problematic, because it does not appeal to reason but tries to nudge the masses in the perceived right direction (from the perspective of the crowdsourcer that is.) It is therefore closely related to (and a method of) the so-called Nudge Theory in behavioural science, political theory and economics. 'Nudging' is a form of policy with which the state tries to influence its constituents not by appealing to their reason with good arguments but by employing psychological tricks, supposedly in the citizens' best interest.[49] The most prominent advocates of nudging, behavioural scientist Richard Thaler and legal scholar

44 Deterding et al., 'Gamification: Toward a Definition', *CHI* (2011). See also: Bunchball whitepaper, 'Gamification 101' (2010).
45 Schrape, 'Gamification and Governmentality', *Rethinking Gamification* (2014): p. 34.
46 Catania/Harnad ed., *The Selection of Behavior: The Operant Behaviorism of B. F. Skinner* (1988).
47 Csíkszentmihályi, *Flow: The Psychology of Optimal Experience* (1990).
48 Herz, 'Harnessing the Hive', *Esther Dyson's Release 1.0* (2002).
49 In 2010, the coalition government under David Cameron set up a so-called Behavioural Insight Team (BIT), aka the 'Nudge Unit'. In 2014 also Angela Merkel started to build a nudge unit. See: Neubacher, 'Alchemie Im Kanzleramt', *Der Spiegel*, 36 (2014). Klug, 'Nudging: Wie Frau Merkel uns hilft, die bessere Wahl zu treffen', *Deutschlandradio Kultur* (2015).

Cass Sunstein, have described the method as 'libertarian paternalism.'[50] The individual citizen retains its freedom of choice but is gently pushed into the 'right' direction by a caring state (or a platform provider).

Because of its manipulative power in the business context, media philosopher and games scholar Ian Bogost has suggested to substitute the term 'gamification' with 'exploitationware.'[51] And Evgeny Morozov said, when he was asked about gamification at a talk he gave at the LSE in London in 2013: 'We should not think about making gamification better, we shouldn't use it at all. I think it is evil.'[52] One of the most important arguments against gamification for social purposes is the same that is used by Shirky and Benkler against monetary incentives: The intrinsic motivation to do something out of social responsibility or altruism, for example donating blood or organs or voting in an election, is 'crowded out' – replaced – by extrinsic rewards, no matter if it is money or virtual points.[53]

On top of that, there is an element of deliberate deception involved when it comes to the profit-oriented applications of gamification. It is difficult, not to side with Bogost and Morozov when reading what Gabriel Zichermann, a salesman of gamification, teaches on the topic in a management book published by O'Reilly Media:

> That truism underlies the last basic lesson of games in the real world: no matter what the player thinks, the house will always win a well-designed game. Just as any honest casino manager will tell you, while the illusion of winning is vital to motivating use and play, actually winning is much harder than it seems. Broadly speaking, this has implications not only for players, but also for those of us charged with building and designing great user experiences. As markets gamify and consumer demand for fun, engaging, and creative experiences increases, you have a fundamental choice: either be the house, or get played. Trust us, you want to be the former.[54]

Zichermann – in contrast to McGonigal, von Ahn and Shirky – is not at all bothered with socially beneficial ends of gamification. He openly promotes it as a technique to trick customers, to get them to spend more money than they want or to work for free. He takes advantage of the effect that by replacing real money with virtual currencies, the crowd can no longer keep track whether it gets a fair deal or not: 'If you don't have a ton of cash to give away as an incentive (who does?), status is an excellent alternative. It is a great driver of loyalty, not to mention a player's fiscal behavior (and, over time, you can bet it is a whole lot cheaper). A gamified program with a status benefit needs far fewer monetary, physical, or even real-world-redeemable rewards.'[55]

Zichermann uses his book on gamification to promote himself as a marketing consultant specialised in this technique of crowd manipulation and in doing so, he stands in the tradition of Bernays' *Propaganda* (see chapter one). Zichermann's approach to gamification, especially if applied in the for-profit work context, falls into what Matthew Fuller and Andrew Goffey have described as *Evil Media*.[56] It is a stratagem in the contemporary media landscape that uses the infrastructure of an online platform to cunningly take advantage of its users.

Zichermann's design philosophy (if we want to call it that) for developing gamified platforms is truly remarkable, at least in its frankness – the goal to exploit one's users is rarely stated so explicitly in public. It is pertinent in the context of this book, because it ties into the ethics of designing crowdsourcing platforms for creative work in several ways. First of all, the platforms for creative crowdwork that I will discuss in chapter four use various gamification mechanisms to incentivise the crowd and influence its behaviour. Furthermore, creative crowdwork is typically organised in form of contests – thus, there is not just a layer of gamification woven into the platforms – these workplaces structurally take the form of gambling. When it is 'well-designed' in Zichermann's sense, 'the house', or the platform, always wins: for the individual workers, it remains a game of chance to actually get paid for labour done in advance. Keeping up the 'illusion of winning is vital' for the platform, while 'actually winning' must be 'much harder than it seems.' Zichermann is very clear about the fact that the platforms he has in mind are in the game to generate a profit while its users have to be fooled so they don't realise that the odds are against them. It's what Zichermann frames as the 'fundamental choice': either exploit or get exploited. In Zichermann's worldview, those who are designing the system are in direct antagonism to those who are supposed to use them. Obviously, this is a far cry from the design ideals of system designers such as Douglas Engelbart, who wanted to augment the users' intellect and it adds weight to Stallman's argument that corporations can not be trusted to act in the best interest of their users. If we recall the design ethics of Ivan Illich and especially Lucius Burckhardt (outlined in the introduction), design objects can be evil, especially 'when they foster our dependence on systems that ultimately pillage our resources.' In that sense, what Zichermann promotes, are systems that are indeed *evil by design*.

50 Thaler/Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (2008).
51 Bogost, 'Persuasive Games: Exploitationware', *Gamasutra* (2011).
52 Morozov, 'The Folly of Technological Solutionism', London School of Economics (2013).
53 Frey/Jegen, 'Motivation Crowding Theory', Journal of Economic Surveys, 15 (2001): pp. 589–611.
54 Zichermann, *Gamification by Design*, (2011): p.13.
55 *Ibid*. p. 10.
56 Fuller/Goffey, *Evil Media* (2012).