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Abstract

There is a growing suite of commercially available analytics tools platforms use within the context of videogaming. Increasingly, these analytics tools are reliant on the capture of data pertaining to player activity—using machine learning techniques to parse these data and create subscription based “guide” services to assist players in their gameplay. This is often spruiked by marketers as a supplement to one’s gameplay and a method for improving one’s own performance. Looking at the example of DotaPlus, a recent kind of machine learning based analytics platform in the popular game Dota 2, this short essay argues that recent developments in gaming analytics might be understood as what Bernard Stiegler calls mmenotechnics—essentially technologies that shape human experience and perception in various, often commercially desirable ways. The theoretical argument I advance here is that the digital traces of player activity, captured and fed back to users in the form of DotaPlus guides, significantly alters the experience of playing Dota 2—done in a way that is economically desirable for the game’s developer.

Introduction

At present, the videogame industry places considerable focus on developing paratextual materials for games. As Mia Consalvo puts it in Cheating: Gaining Advantage in Videogames (2007), paratexts refer to the objects or materials related to (but not situated within) the immediate material context of the game (i.e., beyond or supplementary to the game’s software or hardware). These materials, as Consalvo sees it, have ultimately become central parts of gaming culture—shaping how we experience and perceive games. Moreover, they are of immense value to the game industry as a mode of deriving economic value from consumers. Consalvo has given a range of examples to date, including supplementary gaming hardware (such as GameSharks or modchips, preinstalled with game “cheats”), game magazines and guides (Consalvo 2007), and livestreaming websites (Consalvo 2017).

Increasingly, paratexts are taking the form of statistical or numerical interfaces and platforms, used for tracking gameplay activity of both the user and others (see Ash 2015; Egliston 2017). Indeed, this aligns with a broader tendency in the current moment to monitor, harvest, and aggregate data about our everyday mediated lives (seen through the popularity of recent movements such as the Quantified Self or Personal Informatics). These tools are provided (often as a paid service) by both game developers (e.g., Battlefield’s “BattleLog” app) and by third party software developers (e.g., WarcraftLogs in World of Warcraft). Generally, the goal in using these platforms is to re-shape player habits in an empowering or capacity building way (arguably so that players continue to play the game). As product developers often put it, such
applications give players the insights to reflect and improve upon their gameplay performance through surveillant practices (of our own and others’ gameplay activity).

Very recently there has been a trend toward statistical analytics software for games reliant on machine learning techniques. Broadly construed, machine learning refers to computing systems which improve their performance of a specific task over time (e.g., prediction or pattern recognition). This “learning” is often reliant on the capture and parsing of large amounts of user data, gathered using various forms of digital sensors – a form of surveillance.

Surveillance is a broadly understood term, and one that has gained much traction in the information age. Given the commitments to thinking about the mediation of user activity in gaming, I adopt John Gilliom and Torin Monahan’s definition of surveillance as “monitoring people in order to regulate or govern their behaviour” (2013: 2). This, as Gilliom and Monahan point out, can happen through the accumulation of data. This behavioural governance is often done in service of capitalism and the creation of economic value, following a logic of what Shoshana Zuboff (2015) calls “surveillance capitalism.” Indeed, surveillance capitalism is a crucial dimension of the infrastructures and economic viability of everyday platforms (Srnicek, 2016)—with data captured often fed back to platform developers to optimise experience for users.

To give a fairly mundane example, we often see this at work through everyday technologies like search engines or social media – platforms which capture (often covertly) the data traces we constantly emit about our various (mediated) activities, feeding the data back into the system as to create more precise, personally optimised experiences (for instance, the recent phenomena of targeted advertisements on social media platforms such as Facebook or Instagram based on our engagement with other web content). Indeed, as recent work (such as a recent issue of Information, Communication & Society, edited by David Beer [2017]) has pointed out, social media algorithms have profound agential capacities and potentials to shape our social worlds.

Machine learning techniques have been used elsewhere, also for commercial gain, within the context of modern game design. In an essay on games and surveillance, Whitson and Simon (2014) point out that modern games use sophisticated data collection and analysis to dynamically update gameplay in real time. An example is games that dynamically alter difficulty “in order to reduce… [players’] frustration and thus encouraging them to play longer” (2014: 312).

In this short essay I focus on a popular and recent machine learning based “guide” service for gameplay in the game Dota 2, called “DotaPlus.” In a surveillant way, this tool draws on the gameplay data of other players to generate up-to-date guides for users to follow. DotaPlus is marketed by the game’s developer, Valve, as a tool that provides (at the cost of $4USD a month) “opportunities for [player] improvement” (Valve 2018).

Launched in March 2018, DotaPlus appeared at a moment in Dota 2’s life where the playerbase was no longer growing. As such, Valve shifted its focus from acquiring new players to retaining and further monetising existing ones (indeed, such models have demonstrated immense success recently in Fortnite and its subscription-based monetisation model). In this way, after Srnicek, we can understand DotaPlus as a “product platform” (2016: 69-73)—that is, a platform where infrastructures and assets are owned by the developer and monetised by being “rented” to users for a subscription fee. In this way, DotaPlus is a platform in the infrastructural sense but also adheres to economic logics of platforms. Much like platforms more broadly, the expropriation of data is a key dimension—the continuous improvement that it offers to players is premised on the tracking, sorting, and arranging of user data.

I contend that the feeding back of captured data to users, in the form of paid software packages to improve gameplay performance, can productively be read through Bernard Stiegler’s philosophy of technicity and his perspectives on digital technologies and mediation. Specifically, I mobilise his account of “mnemotechnics” and human memory’s materiality. For Stiegler, there is nothing intrinsically “human” (or
something always technical) about human memory (and more broadly, nothing intrinsically human about our ongoing psychosocial developments and transformations). In a complex and wide-ranging series of arguments (Stiegler 1998), which I do not have sufficient space to rehearse here, he argues human life is ineluctably connected with technical forms. Yet one doesn’t “determine” the other; humans and technics exist in a composed complicity (existing in a condition of “technicity”). This technicity of human memory is the basis for how humans remember the past and anticipate their futures—a dynamic that is intensified by new media technologies, which look to shape our memory and perception in particular ways (what Stiegler refers to as mnemotechnics). Drawing from Stiegler, and through my look at DotaPlus, I argue that the surveillant collection and aggregation of gameplay data can be understood as mnemotechnics—shaping the experience of Dota 2 for users in a fashion that is distinct from existing ways of negotiating the game. Stiegler’s (2011) writing on technicity has an explicitly political character, and his work pays attention to power and the modulation of conscious perception in service of capitalism. Keeping with this dimension of Stiegler’s work, I suggest that the transformation of Dota 2 (through analytics) creates experiences that are desirable for players—which may, in turn, work to create economic value for Valve.

**Stiegler and Memory’s Mediation**

The concept of mnemotechnics is core to Stiegler’s thinking about the technicity, or fundamentally mediated nature of human experience. Before applying the concept of mnemotechnics to think through analytics and its interface with played experience, I introduce and contextualise Stiegler’s work.

Stiegler’s theorisation of mediated experience is in large part about temporal consciousness, or how humans relate to time (drawing from and elaborating on the work of phenomenologist Edmund Husserl). Specifically, experience as time consciousness for Stiegler is “about” an interplay among our perceptions (moments of immediate, impressional consciousness—or primary memory), recall (selectively remembering past experiences—or secondary memory), and anticipations (our forward-leaning expectations—or protention)—all of which are intimately related, and moreover mediated. To put it more concretely, for Stiegler, experience works as an interplay between our immediate perceptions and anticipations but is also shaped by the experiences that we have retained in our head (which can be selectively reactivated, shaping how we experience things). All this relation to time is mediated by artificial memory supports or technics (1998: 159)—what he refers to as “tertiary retention.”

As Stiegler writes, technics—tools, technologies, and so on—imply certain kinds of actions, and the continued existence of technics in our everyday lives enables the transmission of various kinds of memory or knowledge—amounting to the formation of societies and cultures. Our relationship with our artefactual environments—words, paintings, sculptures, television, film, videogames—shape individual and collective development. In short, technics are memory (1998: 254)—a proposition that ties into Stiegler’s broader argument that there’s nothing intrinsically “human” about human life; we exist in an ongoing process of mediated psychosocial transformation, or what Stiegler (after Gilbert Simondon) calls individuation.

The term “mnemotechnics” denotes for Stiegler a subcategory of tertiary retention, existing expressly to support memory. This is often in a way that benefits the economic interests of industrial or corporate bodies—such as the various media and technology industries. As I’ve pointed out in the preceding paragraphs, Stiegler’s view is that all human activity is defined in terms of its exteriorisations. In this context, mnemotechnics represents a shift in the ways (and implications of how) the human is exteriorised. Mnemotechnics, within the context of new media, represent in large part a massive conditioning of retentions and palpable shifts in how people live and negotiate their lives (see Stiegler 2010: 73). Specific forms of mnemotechnics, as Stiegler writes, create particular arrangements of retentions. As Stiegler (2011) sees it, this moulding of our experience and cognition results in a standardisation of our experiential and cognitive faculties—this conditioning of thought and action potentially economically lucrative for the media industries.
Machine learning based platforms might productively be cast as mnemotechnics. The interface between machine learning and various human activities is clear from existing work (see e.g., Bucher 2018 on social media algorithms). Dynamic, real time algorithms palpably and variously shape our social worlds—drawing from data harvested by digital sensors about various habits and activities, feeding back into our action and perception (see e.g., Adrian Mackenzie’s [2013] work on algorithmic machine learning, predictive software and the anticipatory regimes we internalise). To take the example of social media, data about our past activities online (e.g., our purchases or browsing history) determine the content posted in our news feeds—exteriorising memory to provoke commercially desirable modes of action and perception. As I show in the following discussion, machine learning tools—as mnemotechnics—have significant implications for the experience of Dota 2.

**Surveillance, Exteriorised Memory, and Play: DotaPlus**

DotaPlus is a paid subscription-based form of self-tracking software for the game *Dota 2*—provided and developed by the game’s designer, Valve Corporation. A major feature of the game is the “Plus Assistant”—a statistical overlay present in each ongoing match that provides dynamically updated information about the game, doing so by drawing on player data accumulated by the game’s developer.¹

There is an important relationship between these data and how players negotiate the game. In Dota 2 matches, players with DotaPlus are provided recommendations on how to perform ingame based on accumulated player data. This covers three main aspects of gameplay—item choice, hero choice, and skill builds. Items in Dota are a main mechanic of the game—they augment the power of one’s ingame character and are what enable one to ultimately win games. There are many items to choose from in Dota 2, and a significant part of being a skilled player is knowing which items are suitable for what context. The platform also directs players on which ingame character, or “hero,” one should select (in each game, players select from one of 115 unique heroes, all of which have their relative strengths and weaknesses). Some heroes are stronger against other heroes, and therefore a significant part of being a competent Dota 2 player is knowing which hero to pick and when. Skills are another significant part of Dota 2 play—referring to the ability points that players receive when they “level up” (a convention of many Role-Playing Games). Much like items or heroes, competent players know which skills to invoke and develop in particular circumstances.

Platforms like DotaPlus—as a form of mnemotechnics—radically reshape Dota’s retentive dynamics and, moreover, the phenomenological experience of play. To illustrate this, I will give two fairly mundane examples—outlining playing without and with the DotaPlus interface.

Without DotaPlus, the ability to effectively play the game is heavily reliant on the cultivation of knowledge and somatic memory. Having played 3000 games, I know—in playing as Xin, the Ember Spirit, pitted against Akasha, the Queen of Pain—that I should skill the “Sleight of Fist” ability. I know to prepare to use it when I see Queen of Pain perform a particular (albeit very small, 0.33 second) animation to cast her “Shadow Strike” ability. She hurls a projectile at my hero, and I cast Sleight of Fist—giving me a very brief 0.2 seconds of invulnerability and allowing me to evade the harmful effects of Shadow Strike. I exercise my knowledge of the game, based on my past experience, to negotiate the game skilfully (see Figure 1).

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¹ Like many other proprietary machine learning techniques, such as the algorithms used by Google, Facebook, Amazon, etc., Valve completely blackboxes its proprietary machine learning system (as such, I do not offer a description of how the platform works).
Using DotaPlus offers users a very different experience. The software provides recommendations on what has been statistically determined as the most appropriate item or skill build given the circumstances of a particular game. For example, I see an enemy has picked the highly evasive “Anti-Mage” hero, and the game recommends me “Blood Seeker”—whose main gameplay mechanic is immobilisation. The game represents a mnemotechnical exteriorisation of the knowledge one would accrue through playing Dota 2 for many hours, understanding the game’s many mechanics and the appropriate contexts in which to use certain abilities, heroes, or items. I anticipate the future and remember appropriate strategies through the statistical interface of DotaPlus.

According to Valve, such platforms allow players to reshape—in a positive, empowering, or capacity building way—the cognitive and somatic styles involved in play. This is done—as they see it—by giving players access to the most effective and context appropriate techniques, reducing the need to draw on accumulated memories of how to play (based on extensive firsthand experience). Not wanting to oversimplify how DotaPlus shapes gameplay, we might also think about some of the more knotty, complicated and antagonistic relations between players and DotaPlus. This is made clear by looking at discussions in the game’s community (such as in web spaces like Reddit/r/Dota2, the game’s subreddit) about the extent to which the platform facilitates skilful play. In one discussion thread, users point out that DotaPlus deskills players by replacing the need for accumulating the cognitive or somatic competencies required for playing Dota 2. Others suggest that the platform offers such a significant advantage it might be seen as unfair and “pay to win.”

To take stock of my argument so far, I’ve made the case that DotaPlus as a mnemotechnical system of surveillance reshapes the retentional dynamics of playing Dota 2—creating new interplays between memory, perception, and anticipation. More concretely, I have argued that DotaPlus—a platform very much about surveillance—transforms the experience of gameplay. This changing up of Dota 2’s experiential or cognitive character can be both capacity building but also—as the game’s community has underlined—detrimental to the activity of participating in Dota 2 as a played contest and worthwhile activity.

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2 See e.g., https://bit.ly/2zs8sAQ.
As mentioned earlier, Stiegler’s account of mnemotechnics is concerned with power and the mediation of memory as a device of global consumer capitalism. For Stiegler, the mediation of memory via mnemotechnics provokes homogenised (and commercially desirable) memories of the past and expectations of the future (producing what Stiegler [2011] calls “psychopower”). In more recent work, appropriating Stiegler to think about videogames as part of a 21st century media attention economy, Ash (2015) argues that games’ retentional dynamics are carefully manipulated by designers to produce economically desirable styles of play. Some games require more of a capacity to recall (e.g., harder games that capitalise on continued engagement—such as his example of Street Fighter), some less (e.g., more mainstream games like his example of Call of Duty). The takeaway here is that different games, marketed to different players with different aptitudes and attitudes toward gaming, variously mediate the interplay between perception, anticipation, and memory in order to drive maximum consumption of the game.

We can think of DotaPlus in a similar sense, working to provoke continued consumption of Dota 2. I suggest this happens in two ways. Firstly, Dota 2 is an exceptionally difficult videogame to master. While many players revel in this difficulty (see happyd0nut 2018), as videogames become more mainstream and widely consumed, there is a need to design for accessibility and a broader audience. DotaPlus reduces the need to cultivate somatic and cognitive skills, minimising the need to draw on an extensive range of past memories to play with any degree of success. Indeed, as work by Kirkpatrick (2015) has suggested, “hardcore” games (like Dota) not only denote a very specific way of playing but invite a very specific kind of player (i.e., usually technologically proficient young men)—sidelining those who do not have the socioeconomic privilege to dedicate many hours to practicing a videogame as to play it masterfully. By changing up Dota 2’s retentional dynamics (i.e., devaluing the emphasis on having a vast knowledge of the game’s mechanics and ability to recall them to negotiate the game), Valve is also changing up the identity of Dota 2 as solely accommodating hardcore players (a likely response to gaming’s broadening audience).

Other aspects of the interface—which similarly draw from a repository of Dota 2 gameplay data—work to compel particular, economically desirable forms of gameplay. We might think here of the “goal” feature of the PlusAssistant, which compares players’ current performance to that of similarly skilled players at that point of the game. The game’s interface (with DotaPlus activated) monitors and presents performance in real time, during the play of the game (see figure 2). Several different aspects of gameplay are monitored, which are shown as scores in the top left corner of the game’s screen. These are “LH” (last-hits, the number of enemy, computer controlled characters killed), “DN” (Denies, the number of allied computer controlled characters killed), and “NW” (net worth, the total accumulated resources of one’s character). During each game, the player is scored on their performance and is given a “goal” to work towards. This goal is dynamically updated based on what the game perceives the player’s skill level to be and the time of the match (a LH/DN/NW goal at 2 minutes will be much lower than a goal at 45 minutes). The player’s performance is essentially compared to the performance of similarly skilled players at that particular point of time in the game. The player’s score goal is accompanied with a small colour-based visual indicator of performance. This takes the form of either an upwards facing green arrow (which displays if the player is doing better than their goal) or a downwards facing red arrow (if the player has not met their target).

Through this interface, players negotiate the game through the gaze of perceptions and somatic memories, but also through the statistical interface in the corner of the screen—constantly referring back to it and trying to keep the score “in the green.” Indeed, as Ash’s (2015) work has shown, games commonly enrol players into continued play through the promise of improvement. Ash’s argument is that by investing significant effort in learning how to play a game, players will likely continue to play (and invest money in) new iterations of that franchise. We can think of DotaPlus similarly—pushing players into a regime of continued play, practice, and significant time investment as they learn to play more competently—enabled through Valve’s harvesting of Dota 2 player data. This might encourage continued use and financial investment in the game (through purchases like ingame microtransactions).
Conclusion

Through the example of DotaPlus, this short essay has argued that machine learning based gaming analytics tools (which draw significantly from data of player activity, accumulated through Valve’s surveillance of Dota 2 players) considerably shape the experience and performance of play. I suggest that DotaPlus represents a way of monetising Dota 2 as a free-to-play game and, moreover, changes up how we phenomenologically experience gameplay as to strategically produce subjects more likely to continue playing and potentially spending on ingame microtransactions. To understand the implications of DotaPlus I have drawn on Stiegler’s concept of mnemotechnics—which underlines how new orientations of human experience and phenomenality (that is how past, present, and future appear through technics) are conditioned through largely digital, ubiquitous, and commercial technologies.

It is my hope that the provocations and theoretical argument developed in this short essay further contribute to game scholars’ understandings of the interface between surveillance and the experience of play—many of which have been rehearsed in this journal (see the 2014 special issue on “Gaming and Surveillance”), and elsewhere (see e.g., a range of work done around the game World of Warcraft in particular [Glas 2013; Taylor 2006], focusing on the intersection of paratextual software and surveillance of user activity in competitive play environments).

Moreover, given that data tracking is becoming ever more so central an aspect of our everyday lives, and to our ludic activities, understanding the practices, techniques, and technologies involved, as well as some of their implications, is expected to be of relevance to scholars studying games in the current moment and future to come.

References
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