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Recent advances in AI, computer algorithms, and automation applications across industries have generated hyperbolic discourses about disruptive technologies. Futurists envision fleets of driverless cars delivering human bodies, armies of robots taking over jobs, and advanced AI systems outgrowing their superfluous masters. Extending into science fiction, such predictions distract from scrutinizing contexts in which lesser versions of these technologies already proliferate and appreciating subtler, long-term implications. Particularly the interfaces of a rapidly expanding attention capitalism and its gamified operations warrant closer analysis. Here, demands for frictionless services and coordinated mobilities necessitate strict surveillance protocols and continued engagement with platforms that transform attention into revenue. More than the singular manifestations of, for instance, DeepMind's AlphaGo, AlphaGo Zero, and most recently AlphaStar, the current logic of accumulation desires the continued sociotechnical production of active participants in evermore data networks. The most lucrative and transformative AI systems of the future will rest on a gamified subjectivity, whose datafied claims to entertainment, movement, and income coincide with increasingly vertical corporate network structures.

Attention capitalism appeals to sensibilities of entertainment and, in no small part, competition. Applications therefore feature score-based systems, monetary and nonmonetary rewards, and certain privileges of access. Habit-forming interface design represents a crucial strategy whereby corporate platforms inject their on-demand services, automations, and AIs with life. To guarantee uninterrupted consumer experiences and efficient processing of goods and people, service environments are increasingly designed around concepts emulating "flow," a state that psychologist Mihaly Csikszentmihalyi (2009) describes as an "optimal experience" in which the constraints of the inner and outer world are suspended. Csikszentmihalyi derives his ideas primarily from athletes and artists, but anybody losing themselves in an enjoyable and challenging activity can relate. In Csikszentmihalyi hands, however, flow remains largely a phenomenological account, abstracted from social and historical context. A more critical concept of flow might follow Natasha Dow Schüll's (2012a) "machine zone," a space in which addictive algorithms, ergonomics, and built environments capture gamblers' attention. Dow Schüll grasps rising figures of machine gambling in Las Vegas and elsewhere not merely for flow's own sake, but rather as a result of bankrupt states betting on casinos to fill their cashboxes. In other words, flow must be theorized as a priced commodity, a history of deregulation, and a market that continues to show immense potentials for global capital.

The Gamification of Work

Roy Amara's oft-cited law on the effect of technology, "Amara's Law," states that "[w]e tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run" (Brooks 2017). Interpreting this insight for the present purposes means to clearly emphasize the limitations of contemporary AI, as computer scientist Judea Pearl (2018) recently demonstrated. As it stands, AI mostly involves pattern recognition, taskification, and the intelligent layering of deep learning (DL) and reinforcement learning (RL) applications. Rather than lessening the impressive achievements of IBM's Deep Blue and Watson or DeepMind's AlphaGo Zero, relativizing the immediate impact of these machines marks a crucial step toward delimiting their sociotechnical conditions of possibility. Instead of focusing on the ostensible intelligence in the context of machine learning, I suggest rendering more intelligible the scalable human and nonhuman configurations completing the codes that ultimately realize AI in society. Whether in the production of AI, DL and RL, the semi-automated mobility networks of Uber and Lyft, or the crowdsourcing brokerage Amazon Mechanical Turk (AMT), the success of these interfaces relies on generating and prolonging user engagement and, in turn, integrating that activity into more powerful circuits. Read in this way, then, Amara's long term scenario points to a normalization of contingent human-machine relations, configured to prioritize the interests of coders, owners, and investors of these networks. More than a mere design feature, gamification constitutes a force in realizing a subjectivity actively engaged in accelerating the automation of evermore work environments.

From a historical perspective, corporate practices of gamified designs to increase worker productivity are hardly new, as scholarship on capitalist cooptation of gamification sufficiently established (deWinter, Kocurek, and Nichols 2014). Crucially, Gamification is at once Foucauldian *dispositif* and Deleuzian control paradigm. As Mathias Fuchs explains,

Gamification as a *dispositif* or apparatus supports the current power-structure: gamification is used as an administrative measure, it is talked about on blogs and in academic journals [...] and it is applied to work as the rationale for propositions that contain a *promesse du bonheur* (wealth, health, end of suffering, reduction of the effects of aging) like religious salvation once did (Fuchs 2014, p.6).

Relatedly, gamification corresponds to what Deleuze might have had in mind when he wrote about societies of control (Deleuze 1992). According to Alexander Galloway, control must be theorized in conjunction with openness, as "labor is itself now play, just as play becomes more and more laborious" (Galloway 2012, p.29). Building on these insights, the present exploration merely shifts the focus of analysis to the relation between productive forces and various emerging forms of automation and AI. To this end, I survey trends in interface design evident in the context of the gig economy and computer games. Following the distinction between a phenomenology of flow and the materiality of the machine zone, the subsequent analyses develops the concepts of *integration* and *continuous engagement* as characteristic of a technocratic paradigm of doing more with less. Conceptualizing *integration* alongside *continuous engagement* enables a nuanced critique that incorporates monopolistic trajectories in informatic capitalism while staying attuned to the explosion of bustling communities evolving in the contexts of digital labor and online gaming.

Integration implies capitalist practices of mergers, acquisitions, and incorporation toward increased market share. Buying off competitors is commonplace for the leading technology firms Google, Amazon, and Facebook, whose consolidation efforts frequently manifest as aggressive takeovers and incessant copying of other platforms' key functions (Griffith 2017). Following the peculiar libertarian logic of Peter Thiel, "Under perfect competition, in the long run no company makes an economic profit [...]. The opposite of perfect competition is monopoly" (Cohen 2017). Contemporary examples adhering to this maxim include Facebook's implementation of the so-called "story feature," first developed by Snap Inc., whose owner Evan Spiegel refused to sell the company to the social media giant. Beyond this prolific case, Uber's adoption of food delivery options through UberEats and the rolling out of an Uber Visa Credit Card connect additional consumption behaviors to the ride-hailing experience.

Indeed, the various types of added programs within a platform speak to the emerging battles for consumer attention. In a recent communique, the streaming platform Netflix conceded that their latest addition to the popular Black Mirror franchise, the interactive viewing experiment "Bandersnatch," competes less with other streaming services, such as Hulu or HBO than with the bestselling computer game Fortnite (Stephen 2019). Fortnite, which created revenues as high as \$US300 million in April of last year alone (Biggs and Cox 2018), pioneered the so-called "Battle Pass," a feature that strategically rewards players for spending more time on their devices:

The Battle Pass system creates a sense of meaningful, purposeful progression that other games lack. Yes, it's true that if you just play a lot of *Overwatch* you'll get loot boxes which will get you skins and other prizes. But I would argue there's something a lot more gratifying about seeing a clear roadmap of where you're trying to go, in this case 100 tiers of reward items, where you can see exactly what comes next as you make progress. Ah, I'm only five tiers away from that glider, or I'm only twenty tiers away from that wicked John Wick skin. (Tassi 2018)

Other games, such as Psyonix' Rocket League were quick to integrate the feature. In similar fashion, Blizzard Entertainment's Battle.net platform now strikingly resembles the successful Steam model of a central interface from which different games, entertainment content, and social media can be accessed. While integration as a concept and a practice has implications for access, functionality, performance, and brand recognition, it remains distinguishable from in-game or in-app design geared toward maintaining and increasing the activity of players and workers, respectively.

Fortnite's battle pass, to some extent, blurs the lines between in-game experience and meta design while the notion of *continuous engagement* delimits a state in which a player is fully absorbed in a given activity. Csikszentmihalyi describes flow as an optimal experience: "people become so involved in what they are doing that the activity becomes spontaneous, almost automatic; they stop being aware of themselves as separate from the actions they are performing" (2009, p.53). At the core of this idea is a certain sweet spot between automated skill and difficulty level that renders the task at hand a surmountable challenge, whose progress registers subtly by way of frequent feedback. In other words, flow navigates a passage between boredom and frustration, guiding its subject toward a perception of seamless improvement. Achieving states of flow, however, is not merely an enjoyable

experience in itself, but also constitutes a highly desirable dimension of game development and application design. If the most captivating accounts of flow derive from professionals in creative and athletic industries, it remains somewhat unclear at which point flow ends and addiction begins. Dow Schüll observes the following about the exigencies of gambling: “While at play, individuals are continually in the position of making consequential choices—choices, that is, between right and wrong decisions, continuing a winning streak or ending a losing streak, ramping up or reducing their magnitude or speed and investment” (Dow Schüll 2012b, p.4). Thus, flow requires as little as frequent feedback on one’s choices—whether that choice is based on verifiable information or objective progress is secondary. Increasingly, strategies of *integration* and *continuous engagement* also unfold in the context of the gig economy.

Driving and Earning in the Gig Economy

In recent years, the phenomenon of the gig economy has come under scrutiny for a variety of reasons. While technologists and neoclassical economists celebrate the narrative of disruption (Sundararajan 2016), others have taken on the task of exposing in detail the questionable working conditions that coincide with algorithmic management and information asymmetries (Rosenblat 2018). If the gig economy remains at least according to traditional metrics a relatively marginal trend (Mishel 2018), its techniques and strategies nonetheless deserve attention as severe intensifications of decade-old waves of workplace deregulation, flexibilization, and surveillance (Sennett 2006, Boltanski and Chiapello 2006). Whether the gig economy is particularly new or a socioeconomic force to be reckoned with, it bears on the relation of gamification to artificial intelligence. In this constellation, economic activity is at the same time rendered playful and harnessed for the production of automated services and applications in AI.

Few other job descriptions epitomize the hybrid activity of work and play as seamlessly as the ride-hailing industry, a market dominated by Uber and Lyft. According to one Uber advertisement, the line between “earning” and “chilling” virtually disappears once drivers log into the app. Uber and Lyft strategically push narratives of “side hustles” and additional incomes to legitimize their business model of activating drivers exclusively as independent partners. Though trends toward contracting and outsourcing have pervaded the taxi industry for decades (Mathew 2008), the latest surge of critical reactions to the strategies of Uber and Lyft cannot be entirely explained away by citing technological exceptionalism. Rather, the increasing entwinement of algorithmic management and gamification indicate that sustained user engagement will remain an indispensable component of on-demand services and AI applications. In fact, the specter of full automation, serves to relegate drivers’ grievances to the realm of anachronistic class struggles. These predictions imply that no one will be driving for Uber, Lyft, not to mention conventional taxicabs in the near future, even though the official figures tell a different story. Lyft recently released its finances in a report that indicates the firm’s continued reliance on living labor. As a “Risk Related to Our Business and Industry” the firm promises to “attract new qualified drivers [...] and retain existing qualified drivers and existing riders in a cost-effective manner” (SEC 2019, p.20). Instead of discarding the current human-

machine interfaces of the gig economy as mere transitory phases that hide human workers in the technology, gamification conditions a late capitalist subjectivity that willfully participates in the networks of “artificial artificial intelligence.”

A reporter turned Lyft driver describes the ubiquity of gamification in the gig economy: “In the world of ride-hailing work, where almost the entirety of one’s activity is prompted and guided by screen—and where everything can be measured, logged and analysed— there are few limitations on what can be gamified” (Mason 2018). While some design features simply aim to improve drivers’ overall commitment to the service, others target specific behaviors and address concrete logistic problems, primarily relative shortages of drivers in certain areas. At times, these strategies might seem random, as the participant-observer notes,

Every Sunday morning, I receive an algorithmically generated “challenge” from Lyft that goes something like this: “Complete 34 rides between the hours of 5am on Monday and 5am on Sunday to receive a \$63 bonus.” I scroll down, concerned about the declining value of my bonuses, which once hovered around \$100-\$220 per week, but have now dropped to less than half that (Ibid.).

The dwindling bonus value illustrates the focus of ride-hailing firms to recruit novice or periodic drivers. Potential rewards are adjusted according to the amount of time a driver spends on the road. Moreover, the apparent randomness of challenges is not entirely without pattern, in that uncertainty serves a behavioral function: “Gambling uses variable reinforcement schedules—unpredictable intervals of uncertainty, anticipation and feedback—to condition players into playing just one more round” (Dow Schüll 2012b, p.4) Recalling Dow Schüll’s characterization, a level of unpredictability need not necessarily contradict the machine zone’s appeal.

Perhaps the most established type of gamification in the gig economy, however, are gradual performance-based rewards that register as improved ratings, bonuses, badges, and, in some cases, account upgrades.

Uber drivers can earn “Achievement Badges” for completing a certain number of five-star rides and “Excellent Service Badges” for leaving customers satisfied. Lyft’s “Accelerate Rewards” programme encourages drivers to level up by completing a certain number of rides per month in order to unlock special rewards like fuel discounts from Shell (gold level) and free roadside assistance (platinum level) (Mason 2018).

Though many researchers distinguish between monetary and non-monetary rewards, the lines are blurrier. Depending on the extent to which drivers participate in a given market, even non-monetary rewards could quickly yield real value. For instance, a passenger, unsure about a driver’s rating, might be swayed by encountering an “Excellent Service” or a “Late Night Hero” badge. Similar strategies pervade other gig economies, such as Airbnb or AMT. Both markets reward their most reliable users with upgraded accounts that correspond to real earnings: Airbnb turns its best home sharers into “Superhosts,” boosting their search placements and revenue per available rental. Meanwhile, AMT rewards its busiest micro laborers with a “Master Tasker” status that comes with eligibility to perform more valuable tasks. Despite the similarities in terms of general design features including challenges and promotions,

there may be something unique about driving for hire and the immersion that it affords.

As few stay on for more than a year, Uber and Lyft are constantly looking for ways to keep their drivers on the road for longer hours. Despite the deluge of stars, badges, and other rewards, an effective means to design *continuous engagement* is to create a seamless extension from the app interface to the car. Rather than overwhelming drivers with pings, alerts, and notifications, the interface aspires to be invisible. As Galloway puts it, “any mediating technology is obliged to erase itself to the highest degree possible in the name of unfettered communication” (Galloway 2012, p.62). Itself a mediation between driver and environment, the car already affords such a sense of erasure. Jean Baudrillard wrote, “Driving is a spectacular form of amnesia. [...] The defibrillation of the body overloaded with empty signs, functional gestures, the blinding brilliance of the sky, and somnambulistic distances, is a very slow process. Things suddenly become lighter, as culture, our culture, becomes more rarefied” (Baudrillard 1988, pp.9-10). Reports of drivers capture this experience:

It gets to a point where the app sort of takes over your motor functions in a way [...] it becomes almost like a hypnotic experience [...]. You can talk to drivers and you'll hear them say things like, I just drove a bunch of Uber pools for two hours, I probably picked up 30-40 people and I have no idea where I went. In that state, they are literally just listening to the sounds [of the driver's apps]. Stopping when they said stop, pick up when they say pick up, turn when they say turn. You get into a rhythm of that, and you begin to feel almost like an android (Hook 2017).

More than mere flow, this driver's testimony suggests an extensive system in which Uber and Lyft guide the supply of on-demand mobility. Through calculated schedules and determined vectors, riders and drivers are projected virtually toward an endpoint in what Paul Virilio calls an aesthetics of disappearance in which “there will be no longer anything but arrival, the point of arrival, the departure will itself have disappeared in the instantaneity of the projection” (Virilio 2008, p.110). Participating in this urban choreography, drivers continually contribute to the amassing of data points that, contrary to the ubiquitous science fiction of imminent driverless transportation, increasingly connect humans into nonhuman networks. To be sure, the plethora of data in the ride-hailing industry constitute a significant asset, particularly in the context of the often-invoked smart city, a vague vision of a computer-enabled, sustainable urban infrastructure.

The Sociotechnical Production of AI

Whether driving for Uber or working for AMT, users consistently feed corporate algorithms and therefore, to some degree, participate in the elimination of their own, living labor as a necessary dimension in the development of capitalism. Gamification and gification consequently foment concerns about accountability, ownership, and power in the emerging human machine configurations. Though the gamified freelance economies certainly speak to the enduring significance of work performed by humans, AI applications nonetheless gain substantially in scope and sophistication. Uber's massive data collection on drivers' behavior increases in value precisely because of the firm's quasi-monopoly status, which enables ever new

packaging of data points to feed its machine learning systems. Likewise, AMT grows ever more apt at scaling the integration of humans into its API, thus optimizing learning processes and improving its services. Rather than affirming transhuman theories of exponential learning (Moore's law) or even the Kurzweilian singularity, however, these advances remain appreciable within current epistemological frameworks. As suggested in the pages, the principal force underlying these systems has less to do with their allegedly transhuman intelligence than with how smoothly and coherently they integrate with existing sociotechnical networks.

Crucially, AI technologies, broadly construed, endow their owners with immense powers, and therefore warrant close scrutiny. After all, the immense data volumes on gig-economy servers of Uber, Lyft, and Airbnb combined with excessive market valuations and imminent IPOs grant these firms significant voices in future negotiations involving the movement of bodies and information in urban environments haunted by specters of climate catastrophe. In many cities, internet giants are already pushing their visions of sustainability, such as Alphabet's Sidewalk Labs division in Toronto (Summers 2018). Given the lucrative ambitions of controlling flows in the cities of tomorrow, it makes sense that Alphabet's DeepMind division has recently turned its attention toward Blizzard Entertainment's Real-time strategy (RTS) bestseller *StarCraft II*. As opposed to fixed maps and perfect information, RTS games involve high degrees of nonlinearity and uncertainty.

As Galloway notes, "RTS games focus on a multi-nodal ecosystem of flows and factories, resources and expenditures, secure zones and hostile frontiers. The RTS genre is thus informatic capitalism pure and simple. The genre displays how informatic media and informatic labor are essentially coterminous in today's world" (Galloway 2014). *StarCraft II*—and the original *StarCraft* for that matter—epitomizes this characterization. Upon choosing one of three in-game races, two competing players manage resources, advance technology trees, and command armies around terrains covered by a so-called "fog of war," a feature that renders the majority of the map invisible. Since information is always incomplete, opponents have to constantly decide and revise strategies. Precisely these features make *StarCraft II* increasingly attractive to AI developers in general and to applications in the context of on-demand economics and urban logistics in particular.

What separates AlphaStar, the AI that recently beat several *StarCraft II* pro players, from its predecessors, such as AlphaGo, is DeepMind's approach to devise several agents for different game scenarios that ultimately complement one another. Again, it could be argued that the real genius of AlphaStar is the scale of its application. That is, its vast network includes many agents that are continually updated by teams of DeepMind programmers with access to Blizzard servers. Moreover, the enterprise relies in large parts on the engagement and experience of players, as DeepMind feeds AlphaStar absurd amounts of hours of original replays from average and pro players. Thus, the community's strategic and inadvertent feedback is indispensable to a process that appears to have only recently begun.

The influx of data is secured through frequent updates of in-game units, gameplay mechanics, additions of *StarCraft II* campaigns, co-op modes, and arcade variations, and overall changes to Blizzard's interface. In short, *integration* and *continuous engagement* proliferate widely in yet another assemblage of corporate interests and

player-worker communities that sustains the production of AI. As pro-gamer Liquid TLO excitedly states after conceding defeat to AlphaStar, “It’s humbling knowing how many people are working on this project with StarCraft II [...] and hopefully StarCraft is going to be part of history when it comes to AI” (DeepMind 2019). In a tweet, Dennis Hassabis, CEO of DeepMind, elaborated that “while StarCraft is ‘just’ a (very complex!) game, I’m excited that the techniques behind AlphaStar could be useful in other problem areas such as weather prediction & climate modeling, which also involve predictions over very long sequences” (Newcomb 2019). The new alliances in AI technology raise concerns about modes of production and, eventually, about the utilization. As Galloway argues,

Greater value will be extracted for fewer and fewer wages. The kind of “multiplayer labor” scenarios, prototyped so well by the ad-hoc social groups that form easily in *WoW*, will soon be the norm for social and productive interaction; today’s guilds, raids, and clans will be tomorrow’s call centers, product development teams, and leadership groups. The Web is, in this sense, the world’s largest sweat shop, for it is the site of most unpaid labor in the world today (Galloway 2014).

It is unlikely that recent developments toward visibly increased user involvement in AI will lead to significant changes in the public imagining of economies and ecologies. Unlike many advocates of postcapitalist futures seem to believe (See Mason 2017; Rifkin 2015), the apparent open-sourcing of advanced technologies has little to do with a liberated future in which leisure activity reigns supreme. Instead, experiential forms of *continuous engagement* and infrastructural *integration* in the context of interfaces will continue to produce a subjectivity, whose increased activity unfolds without fundamental changes to socioeconomic organization, inequality, and ownership.

Conclusion

Against the background of inflated predictions about the future of AI, elucidating how respective applications are produced serves the important goals of historicizing and contextualizing. Specifically, the semi-automations of Uber, Lyft, and AMT disclose their inheritance to decade-old strategies of outsourcing and crowdsourcing in mobility and data processing industries. In this view, the frictionless platforms servicing urbanites and evermore data packages are hardly disruptions, but rather scaled complexes in which humans and their interactions are discretely coded into machinic systems. Crucially, and unlike a myriad of dystopian visions would have it, these trends register not as monotony or modern servitude, but rather as synonyms of entrepreneurialism, freelance contracting, and, as I hope to have shown, forms of gamification. In particular, a critical perspective on AI requires a concept of that identifies the relation of *integration* and *continuous engagement* toward a productive subjectivity. The scaled networks in the production of AI strategically create environments in which users oscillate between conscious activity and suspended self. While in some cases that activity is rewarded, it always produces value. Distributing that value could be key in designing AI around humans in the future.

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