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University Hackathons: Managerialism, Gamification, and the Foreclosure of Creativity

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A thesis submitted in partial fulfillment for the degree of Master of Science
at Virginia Commonwealth University.

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Abstract

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FORECLOSURE OF CREATIVITY

By Anthony Logan Clary, M.S.

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science at Virginia Commonwealth University.

This research presents a generative critique of hackathon events held in the contemporary research university. Through the analysis of cultural imaginaries and embedded techno-political forms, it works toward an assessment of whether these events support, foreclose, or redirect ideas of the future that might otherwise challenge technocratic, accumulatory, and/or hierarchal organization. Informed by institutional histories and firsthand field research at events, dynamics of entrepreneurialism, gamification, and techno-solutionism are extrapolated and problematized. Ultimately, this research draws on a historical materialist approach to understanding how and why hackathon events have flourished in the university setting. Corroborating recent theories of platform capitalism, vectoralism, and the "hacker class," this research uses critical genealogy and ethnography to problematize events and caution against the coercive filtering and funneling of creative energies at the hands of capitalist pressures.

Introduction

This study seeks to investigate innovation cultures situated in and around hackathon events held within the university setting. Broadly defined, hackathons are sites of collaborative and, often, competitive rapid-prototyping pursued toward the goal of solving technical and, increasingly, socio-technical problems or challenges. As a subtype of the larger rapid-innovation-event umbrella, the modern university-based hackathon represents the latest iteration of the hackathon form, evolved from a lineage of events dating back to the late 90s. With the rise in popularity of the hackathon format in the university setting, events have increasingly been deployed across former disciplinary boundaries (Kos, 2018). That is, no longer are all hackathons themed exclusively as computer programming or computer engineering events. Increasingly, events have expanded their scope to include a wide range of disciplinary themes. Ecological, medical, health, legal, and policy hackathons are now commonplace across the hackathon landscape, with more niche hackathons scattered throughout. This study's goal is to investigate, problematize, and generativity-critique this ongoing expansion, informed by ethnographic fieldwork conducted in the university hackathon setting.

Thus far, the literature on hackathon events provides a variety of interpretations and evaluations. For the proponents of events, hackathons are often lauded as student-recruitment tools and sites of pedagogical utility. Increasingly, scholars and educators have praised the events and encouraged their proliferation (Briscoe & Mulligan, 2014; Clark et al., 2015; Page et al., 2016; Platt, 2017). Stemming from more critical perspectives, events have been criticized for a variety of problematic and exploitative tendencies. Tracing the lineage of rapid innovation events from their origins among open-source software communities, events have increasingly

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taken on a "competitive rather than collaborative" nature via co-option by commercial enterprises (Richterich, 2017). Events have also been identified as sites of entrepreneurial subjectivization (Irani, 2015). In other words, it is suggested that events act as sites that produce a particular type of entrepreneur-innovator, elaborated elsewhere as subjects particularly vulnerable to subjugation via investment influences (Goldstein, 2018). Perhaps most glaringly, events have been critiqued for their exploitation and naturalization of "free labour" (Gregg, 2015; Zukin & Papadantonakis, 2017). Especially within the university setting, event participants are providing their time and ideas as labor for little, if any, direct material compensation beyond the potential of event prizes.

Supplementing the established literature on hackathon events, I seek to elaborate and evaluate the tensions raised by the diversification of event themes. Contending that hackathon events are historically embedded within overtly technical paradigms of thought and institutional bodies, I seek to highlight the clash of imaginaries and structural realities as events extend their purview into realms of social and socio-technical innovation. Electing a theoretical framework that seeks to subvert the ontological divide of the social versus the technical (Feenberg, 1991; Winner, 1989), this research intends to evaluate the encounters of cultural imaginaries and embedded techno-political structures towards the goal of producing a generative critique of the university hackathon form. This approach assumes that politics manifest and proliferate themselves not through human action alone, but also through the institutions and technologies that compose our material world. Towards this end, I propose three major research questions: (1) How are hosting institutions structuring hackathons and hackathon culture? (2) Do rapid innovation events support innovations that are not easily categorized as techno-fixes? (3) To what extent do hackathon events support, foreclose, or redirect progressive ideas of the future?

This research situates itself by foregrounding an analysis of the institutions that surround contemporary hackathon events, namely, the university. Section 1, "History," reviews critical histories of early computer communities, the university, and of Major League Hacking (MLH). Establishing critical histories of these structuring institutions, I provide the groundwork needed to address the first research question. Section 2, "Entrepreneurialism & Disruptive Innovation" explores the staging, management, and strategies of innovation in and around events. Depicting the inner-working of events for the reader, section 2 builds upon section 1 to address the nature and limits of innovation under university hackathon events. Section 3, "Gamification," depicts a well-criticized, but pervasive phenomenon deployed within and around hackathon events. Importing more serious implications of neoliberal governance and biopolitical control, section 3 readies us for a discussion on the abstract implications of events and surrounding institutions. Section 4, "Discussion: Techno-Politics, Technosolutions, and Techno-imaginaries," returns to the original research questions in order to concretely discuss my assessment of events. Delivering the main points of my critique and overarching implications, I make my case against the university hackathon event and its surrounding institutions.

Hackathons seem likely to continue in their growth and popularity. While events have won hard-fought progress along lines of diversity and inclusivity (Kos, 2018), this expansion is likely to produce novel problems while proliferating detrimental aspects already embedded within events. This research contributes to a body of critique against hackathon events, advancing a preliminary critique of the cultures, structures, and technologies that make up the event landscape. In conducting field research of event presentation, the influence of the university, the encroachments of entrepreneurialism, and design strategies like gamification emerged as three major objects of analysis, eliciting discussion on the tensions and

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contradictions of contemporary university events. Despite the critical nature of this work, this research is driven by an admiration for the amazing outcomes of human collaboration and innovation, outcomes that extend far beyond simple products or techno-fixes. Yet, in that valuation, this research also strives to critique those dynamics which detract-from, co-opt, or otherwise coerce the creative energies and imaginaries employed at and through hackathon events. It is in the critique of these threats that this paper hopes to provide the catalyst for change, change that fights for an unfettered flourishing of imagination and collaboration across an expanded notion of innovation circles.

Research & Methods

Over the course of my research, I attended and observed 3 local hackathon events. Being there, among the bustling crowd of participants and organizers, it was quickly apparent the sort of collective effervescence that arises in these communal spaces. As students showcase their prototypes and proposals *en masse*, there is palpable electricity in the air. The coming-together of creative minds, competitive spirit, and technical invention infuse the space with an energy that exudes excitement and a sense of innovative progress. To best examine the motivations and interactions of participants at these events, within the context of the general atmosphere surrounding them, I have conducted an ethnographic investigation including semi-structured interviews and field research.[1] By supplementing observations at these events with the more intimate reflections acquired through one-on-one, semi-structured interviews, I sought to connect overt presentations of self with the internalized constellations of identity, affect, and imaginaries that shape participation.

Field research took place at a public research university in the Southeastern United States. In total, I attended 3 hackathon events hosted over two years. All events followed a similar structure: opening ceremony, approximately 24 hours of development/hacking time, an expo event to showcase products, and a closing ceremony including the announcement of winners. Because events spanned over 24 hours, in-person observation times varied. For all events, I attended the ceremonies, the expo, and a portion of the development/hacking, with attention to observing the rhythms of activity at different hours of the day and night. Events were

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[1] I have intentionally utilized the term *field research* over *participant observation*. As Babbie (2013) relays, "field researchers need not always participate in what they're studying, though they usually do study it directly at the scene of the action" (p. 328). During the course of fieldwork, I both interacted directly and observed from afar.

always held in the same university building, though the utilization of space varied slightly from event to event. Each event was based on a theme or centered around a primary sponsors' challenge. One event was sponsored by a prominent shipbuilding company, another was themed on power and electrical grid innovations, and a third event focused on sustainability, energy efficiency, and public health.

Interview participants were recruited via convenience sampling, by in-person recruitment at events and by word of mouth. Snowball sampling was also utilized by referral from the original interviewees. All interviewees had experience directly attending, organizing, and/or judging a hackathon event. A total of six semi-structured interviews were ultimately conducted. Basic demographic descriptors of interviewees can be found in *Table 1*, below. All interviews were conducted and recorded in private settings with the expressed consent of the interviewee. To help ensure the privacy of interviewees, personally-identifying information was scrubbed from each recording before transcription. The average interview length was 63 minutes.

Table 1. Interviewee Demographics

Interviewee	1	2	3	4	5	6
Age	26-32 years old	18-25 years old	>32 years old	18-25 years old	18-25 years old	18-25 years old
Gender	Female	Female	Male	Male	Male	Female
Race/Ethnicity*	White/Caucasian	Asian	American Chinese	White	White	South Asian
Occupation	Professional	Student	Academic	Student	Student	Student

*Race/Ethnicity as verbatim reported by interviewee

Interview guides were composed in advance of each interview session with open-ended questions designed to elicit responses on a variety of topics relevant to the study's research questions. The iterative construction of interview guides was based on methods advanced by Herbert and Riene Rubin (1995) in which they remark that "the continuous nature of qualitative interviewing means that the questioning is redesigned throughout the project" (pg. 46). As field

research progressed, I was able to focus more attention on topics of interest while deemphasizing topics of decreasing relevance to the research questions. While the interview guide helped in structuring each session, open-ended questions functioned as topical probes and interviewees were always encouraged to speak at length about their thoughts, experiences, or opinions not anticipated by the guides. In this way, I encouraged the research process to unfold organically and my focus evolved alongside the evidence encountered in both field research and interviews.

To parallel the iterative and continuous approach to qualitative data collection, I pursued an inductive approach to theorization in the analysis of data. This study combined analytical strategies common to ethnography and case study research. Borrowing from ethnography, I sought to allow the "accurate description" of events and accounts from interviewees to provide the main narrative and evidence for theorization (Babbie, 2013, pg. 333). From the case study model, this research focuses attention on a "particular instance" of a social phenomenon (Babbie, 2013, pg. 338). As field research progressed, I was careful to identify any recurrent categories and themes that emerged via the repeated study of in-depth field notes, field recordings, interviews, and event media. Through the multiple iterations of this type of study, the analytical objects of institutional influence, entrepreneurialism, and gamification began to stand out as key concepts that could address the research questions posed at the outset. With these objects as signposts, the sections to follow cast a wide net over the range of phenomenon occurring at university hackathon events. It is my hope that the descriptive vignettes that accompany these topics illuminate the ways that real, observed experiences intersect with the more abstract figures of theory and history.

History

Hackathons: A Brief History

The term *hackathon* is reported to have first appeared in mid-1999, used to name two independent events organized by the respective groups of software developers at OpenBSD and Sun Microsystems (Briscoe & Mulligan, 2014). These early hackathon events, held within the relative confines of companies' development communities, proved to be useful in organizing and facilitating rapid development among what was, at the time, still a domain with "a high barrier of entry" (Hainline, 2016). Whatever early barriers existed to dissuade hobbyist development, they would quickly disappear, following deeper trends along the lines of Moore's law and growth in affordable computer technology. The modern hackathon form was long since preceded by communities of hobbyists, professionals, students, and educators often conglomerating around the dense computational clusters housed in university computer science and engineering departments. Following the trajectory of the university's infiltration and reorganization by neoliberal and business forces, university computing cultures would likewise lose the heading of early communal visions of computation and networks. As we undertake the task of tracing the history of hackathon events, it is vital to acknowledge that this history is deeply intertwined with both the histories of the university and computing cultures more broadly.

Jon Gottfried (2014), who would go on to become a co-founder of Major League Hacking (MLH), argues that the concrete roots of hackathons can be traced back to 1975 with the advent of computer clubs. Computer clubs such as the "Homebrew Computer Club," that would incubate the likes of Steve Jobs and Steve Wozniak, formed as hobbyist groups focused on shared interests around early personal computer technology (Markoff, 2005). Other computer

clubs sprouted up across the nation in the coming years, paralleling the rise of personal computers and the historical movement now termed the "microcomputer revolution." This revolution stood in contrast to a previous era dominated by room-sized mainframes. Despite the rise in occurrence and popularity of these clubs, Gottfried (2014) wagers that an early atmosphere of platform heterogeneity discouraged the widespread proliferation of such organizations.

Despite the reality of the microcomputer revolution, this techno-masculinist narrative, of what Joy Rankin (2018) calls the "Silicon Valley mythology," only provides part of the picture of the birth of modern computing. The 60s and 70s were also the era of time-share computing, described as "networks emerged neither from individual genius nor from the military-industrial complex; rather, they were created for---and by---students and educators at universities and public schools as civilian, civic-minded projects" (Rankin, 2018, pg. 4). These types of systems have tended to fade with time from the historical narrative surrounding the rise of personal computing and the world-wide-web, yet to discount their significance would be dishonest and detracting to the diverse populations that made modern computing what it is. Besides, the history of time-share systems and their embeddedness in research universities points to a lineage of collective innovation formed out of the material and social resources of these institutions.

The time-share lineage is not the only probable precursor to hackathon events, nor the only example of university parallels. Programming competitions, demo parties, and LAN parties all represent other likely forerunners (Briscoe & Mulligan, 2014; Gottfried, 2014). Competitive programming, in particular, has origins that precede the birth of computer clubs. The International Collegiate Programming Contest (ICPC) "traces its roots to a competition held at Texas A&M in 1970" (ICPC, 2016). The ICPC has continued to the present day, encompassing

an impressive half-century lineage that speaks to the persistence of university-sponsored programming. LAN parties and demo parties also seem reasonable siblings to hackathon events, each representing marathon-gatherings of technology enthusiasts focused on respective interests for video games and software cracking. There is little doubt that all of these events owe their origins to the hacker culture and ethos that emerged in the 1960s and 1970s, specifically in the confluence of university computer-science programs and the import of 1960s counter-culture (Levy, 2010; Markoff, 2005; Turner, 2010; Zukin & Papadantonakis, 2017).

As time went on, the market tended towards platform-compatibility, as the influx of IBM PCs and an army of derivative products both lowered the cost to the consumer and encouraged cross-compatibility (Reimer, 2012). A decade later, the term "hackathon" was coined, but early events were still a far cry from the events of today. Hackathons still tended to dissociate their identities from the motives and interests of startups and businesses. Gottfried (2014) describes early events as characterized by "building communal projects, collaboration, and building interesting new applications." Some events even fostered "anti-startup" sentiments, wary of infiltration by business motives (Gottfried, 2014; Wong, 2007). This was in spite of the fact that many early hackathon participants worked as professionals for either tech startups or businesses. Eventually, business adoption caught on. So was born the official "hackathon" namesake. Facebook began hosting internal hackathons as early as 2004. Yahoo followed in 2006, hosting "hackday" (Gottfried, 2014; Richterich, 2017; Zukin & Papadantonakis, 2017). Gottfried (2014) pins Yahoo's "hackday" as perhaps the first event truly resembling the hackathons of today. Featuring workshops and opening the event up to the greater developer community, the event began to explore interaction with wider populations.

In 2007, "Startup Weekend," a hack event composed of approximately 70 people working on a single idea, made the connections to startup ventures explicit (Arrington, 2007). Startups and businesses began to realize the utility that events could provide in the realms of idea-generation, networking, and talent-identification. As events spread and popularized, they grew in both scale and scope. By the early 2010s, a range of thematic or "focus-based" hackathons had emerged (Briscoe & Mulligan, 2014). Examples of hackathons for music, business, sustainability, corruption, poverty, health, civics, "do-gooding," and more have proliferated ever since (D'Ignazio et al., 2016; Zapico, 2014; Zapico et al., 2013). This proliferation has made clear that the hackathon form is conducive not only to the development of technology but all manner of projects and disciplines. As argued by those who laud hackathons as profound pedagogical tools, hackathons are excellent vehicles to immerse participants into the world of entrepreneurial presentation (Clark et al., 2015).

PennApps in 2009 and Mhacks in 2010 ushered in the modern era of the university hackathon (Gottfried, 2014; Warner & Guo, 2017). In just a few years, between 2009 and 2014, university hackathons grew from humble beginnings among a few universities to a widespread phenomenon observable across at least 37 events in the spring of 2014.[2] The current literature on hackathon events lacks a satisfactory historical account of how events rose to such popularity in such a short time. However, to speculate, there is substantial evidence to suggest that this growth was fueled by: (1) higher education's continued investment and incentivization of entrepreneurial and STEM education (Giroux, 2007, 2014; Mirowski, 2011; Roth, 2019); (2) the adoption of neoliberal management styles by university administrations (Giroux, 2014;

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[2] This is a minimum estimate based on events that Major League Hacking was tracking at this time (Major League Hacking, 2014a).

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Mirowski, 2011); (3) the presence of significant material support made available to organizers; (4) the availability of a *cheap* and plentiful labor force (i.e. students) (Gregg, 2015; Irani, 2015; Zukin & Papadantonakis, 2017).[3] I argue that these phenomena begin to elaborate on the explosion of university hackathon events in the early 2010s. More importantly, the exploration of these trajectories informs my original research question, exploring the structural influences enacted on university hackathon events by the institutions that host them. As will become apparent, the compatibility between hackathon events and the research university is more than coincidental and appears inextricably tied to the history of the university and its status as a sociotechnical asset to capitalist political economy. Towards that end, and elaborating the phenomena above, we require a brief critical genealogy of the research university.[4]

The University: Professionalizing to Entrepreneurial Institution

As the primary institution hosting hackathon events, the contemporary research university is key to understanding university hackathons. In what follows, I explore some of the most salient historical trajectories of the research university so as to understand how they synergize and intersect with hackathon events. Through the work of critical university scholars, I explore a body of recent interventions into the modern research university, particularly with a focus on the so-called "neoliberal turn" within the university (Giroux, 2014; Meyerhoff, 2019; Mirowski, 2011; Roth, 2019). These neoliberalizing tendencies are crucial to understanding the presents status of research institutions, and therefore the hackathons that they host. However, as Boggs and Mitchell (2018) argue, these analyses, important as they are, tend to moralize the

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[3] Here, I gesture toward Patel & Moore's (2017) use of the term *cheap*, emphasizing materials, populations, and strategies that are valued dispensable or exploitable by capitalist political economy.

[4] Scholar Eli Meyerhoff (2019) has argued for the use of "critical genealogy" as a tool for deconstructing romantic narratives that obscure the real histories of institutions.

current situation of the university as a fall from some imagined golden age of the post-WWII university. These critiques of the neoliberal university tend to conclude with some nostalgic call of regress to a time when things were *less bad*----specifically for liberal arts education and tenured faculty (Donoghue, 2018; Ginsberg, 2011; Tuchman, 2009). In contrast, Boggs and Mitchell (2018) ask us to reconsider the story of the research university and, specifically, the *American* research university as an institution that has *always already* been complicit in projects of class composition and scientific management. This bears significant implications for how we understand the university hackathon phenomenon, indicating that contemporary events signify the tail end of a long history of managerial class projects.

The contemporary research university is largely shaped by managerialism, entrepreneurship, and increasing privatization. All three characteristics parallel academic understandings of the neoliberal class project and neoliberal governance. However, some of these characteristics, specifically managerialism and the related phenomenon of scientific management, can be traced back at least as far as the colonial colleges that prefigured U.S. research universities. Tracing these long standing motives of the university help us to understand cultural and organization continuities spanning far longer than generational politics and highlight how we ended up with our current institutions. As Sharon Stein (2017) has stated, "public [research universities] remain both dependent on and vulnerable to the imperatives of accumulation that were established during colonization." In line with our techno-political framework, an understanding of how colonial projects could remain so deeply embedded in the organization and mission of the university, helps us to understand surface-level phenomena through a more critical lens. Signposting the trends of managerialism, scientific management,

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and meritocracy that we will discuss throughout this work, these histories give weight to the university's role as a longstanding accomplice to capitalism.

The concerted cultivation of a professional and managerial class and the development of managerial sciences within institutions of higher education have been in motion since at least the colonial colleges of early America, preceding the rise of the modern research university. As Mark Paschal (2013) elaborates in the description of these early colonial institutions, the prime aim of these schools was in the cultivation of a ruling elite:

> . . . [colonial] colleges tended to serve two primary purposes: to imbue men with the basic moral and social knowledge necessary for later advanced professional training, and to provide discipline for the youth of the wealthy . . . a third purpose ---- to bring legitimacy to the speculative plans of town fathers on the frontier ---- helps account for the tremendous number of new colleges chartered (and sometimes founded) once British rule could not stymie westward expansion (Paschal, 2013).

Gary Roth (2019) compliments this description further, emphasizing the disciplinary composition of these institutions, with fields such as the humanities, social sciences, and agricultural sciences predominating. The social sciences in particular, fulfilled the managerial need for "the demographic and business transformations then sweeping the country" (pg. 65). While still a long-shot from the modern research university, these early colleges would plant the seeds for long-running and deeply-embedded objective of the university: to socialize and teach the future managers of society. As we will later investigate, this trend finds continuities today in the "hacker-class" that I argue hackathons excel at producing.

Over the 20th century, publicly-controlled institutions came to predominate the higher education sphere (Goldin & Katz, 1999, pg. 49). Goldin & Katz (1999) gesture to how this was achieved by defining educational knowledge----especially that of the engineering disciplines----

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as a "public good." This definition would parallel a large subsidization of public institutions by the state. These trends reflect shifts in governance via the state, wherein techno-social development emerged as an aspect of strategic statecraft (Mirowski, 2011). By the 1960s, and likely earlier, this coalescent strategy was apparent in concrete rather than purely abstract terms. As Eisenhower popularly warned of the "military-industrial complex," the phrase was revised from a warning against the rise of a "military-industrial-academic complex" that was already well established by the time of its utterance (Giroux, 2007, pgs. 14-15).[5]

If public forewarning of the military-industrial complex was a red flag of what was to come, then the Cold War era saw this crisis fully realized. "The intersection of Department of Defense, Pentagon, and research university interests resulted in massive amounts of funding and shifted the fiscal nature of universities' state patronage from land-grant, agricultural resources to the huge war chest of the defense establishment" (Chatterjee & Maira, 2014, pg. 17). As these once-external influencers made new bedfellows with university departments, changes in the focus and direction of research would be irreversibly made on the basis of funding opportunities (Moore, 2008, pg. 37). This continued for some time, but as the Cold War ended the influx of R&D funding partially subsided. Nevertheless, the intelligence and defense community continue to express financial interest in university research in the present, specifically in social sciences related to national security and the increasingly relevant fields of cybersecurity (Zwerling, 2011). Hackathons have seen their share of support in propping up this legacy, often by way of secondhand contact with prominent corporations contracting for the U.S. military. This was

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[5] One of the chief ironies of Eisenhower's warning is that his administration was as much responsible this build up as any other (Stone & Kuznick, 2013).

manifest in my own, notably small research. The first hackathon I observed was primarily sponsored by a military shipbuilder with active multi-billion dollar contracts with the U.S. Navy.

Sandra Harding (2008) reviews how the withdrawal of Cold War era funding from research universities spelled significant changes in the intra-dynamics of university research. By this time, researchers within universities had been fully exposed to and enrolled in governmental and corporate strategies of management. As federal funding diminished, administrators and researchers turned to the already globalized regime of privatized science to maintain the affordances that four decades of militarized science had established (Mirowski, 2011, pg.114). These changes ushered in the neoliberal turn within the university. Utilizing the corporate management styles already afforded to it and the broader class project of neoliberalism, research universities became increasingly subject to the strategies of neoliberal governance: privatization, commodification, free trade, and deregulation (Giroux, 2014). Under this new governance, the university would come to more resemble a corporation than the institution it had once been.[6] The figure of the "academic entrepreneur" emerged as the archetype for the scholar-researcher under this new regime, with management's categorization of academic labor redefined as based on *need*, rather than as a "public good." As such, faculty would become "valuable only for the money and prestige they bring, and not for the education they [could] offer" (Giroux, 2007, pg. 103).

With university administration now organized via the principles of corporate management, administrations have become perhaps the principal target of criticism for scholars who would challenge the system. Both Mirowski (2011) and Meyerhoff (2019) have made the

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[6] This type of language is reflective of the romantic, nostalgic appeals that I criticized earlier. The difference, I hope, is in my intent on crafting a *critical genealogy* from the outset.

argument that the product of university administrations today is not so much the cultivation of spaces and support for the production of knowledge, but, on the contrary, the "*production and promotion of ignorance*" (Mirowski, 2011, pg. 320). This is not to say that universities do not still provide space for the production of knowledge, but that we must be specific about *what kinds of* knowledge they produce and what kinds they foreclose. As ideological adherence to the *marketplace of ideas* subsumes epistemic belief in the university, it has been argued that an ironic effect of domain narrowing and quality diminishment can be observed across published research (Mirowski, 2011, pg. 321). Marketplace ideology suffuses hackathon events and their surrounding cultures. As we will explore later on, there exists obvious parallels between the so-called "promotion of ignorance" above and the foreclosures of hackathon ideas on the basis of market viability. With the overall effect of foreclosing and filtering any idea that is not obviously profitable, hackathon events reproduce a similar effect of diminishment for any real diversity of ideas.

I have charted this brief, but critical, history of the university in order to highlight institutional pressures and motives that inform research university of the present. As we progress through the argument presented below, the historic-material trajectory of the university informs hackathon events across multiple levels. With their historical commitments to managerialism, material regimes, neoliberal governance, and positioning of certain research as "public good," research universities are predisposed to produce the types of entrepreneurial subjectivities that uphold and reinforce those same *virtues*. The university hackathon event flourishes and is upheld on the shoulders of these longstanding trajectories. While other surrounding institutions----as we will explore in the next section----also impinge their motives on hackathon events, the university's influence is unrivaled in the inertial strength of its longstanding class projects.

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Hackathons: In the Present

Setting the stage through a confluence of neoliberal, managerial, and entrepreneurial pressures, this brief history informs the explosive growth of hackathons over the course of the 2010s. One syndicating platform, Major League Hacking (MLH), has emerged to monopolize the network. MLH first appeared on the scene in 2013, with hackathon events having already experienced some mild success across North American campuses. Two developer evangelists, Mike Swift and Jon Gottfried founded MLH and uncontestably christened it the "official collegiate hackathon league" (Major League Hacking, 2014b). MLH found relatively humble beginnings in sponsoring just a few hackathons per semester and creating an in-house ranking system to apply the sports season motif to university hackathon events. Curating a list of standings each season, MLH tracked schools' rankings based on student participation points and "merit points" based on winning projects (Nguyen, 2019). Over a few short years, MLH accrued more partner organizations and expanded its sponsorship of university hackathon events. In 2016, the organization became a 'Certified B Corporation,' a third-party certification that seeks to officiate the business as a for-profit enterprise that is quasi-legally accountable to its community (B Lab, 2020; Major League Hacking, 2020). By 2020, MLH was annually involved with approximately 130 discrete hackathon events across North America.

What MLH provides to events is not easily discernible at first glance. MLH is certainly not *running* 130 events each academic year. The league functions to effectively syndicates events and provide event support in various forms. What MLH provides to event organizers boils down to a few major items: an open-sourced guide and budgeting recommendations; promotion of events and intercollegiate scoring via the mlh.io portal; long-distance mentorship; a few sponsored rewards from big names like GitHub and Google; loanable hardware development

kits; and, a bubbly host to represent MLH and infuse the event weekend with some energetic

zest. By contrast, the logistical work of events is left to university organizers----overwhelmingly

comprised of students. Securing a venue, itemizing an event budget, and recruiting major event

sponsors are all the responsibility of local organizers before even submitting an application to

MLH. With events ranging dramatically in scale, from 150 to over 1000 attendees, the logistical

coordination of events ranges from difficult to tremendous undertaking. As one faculty

supervisor indicated in an interview:

> "the norm for hackathons is that they're student-driven . . . and these are major events, you have
> a couple hundred people spending more than 24 hours together in a space. From an organizing
> standpoint, there's a lot that goes into that . . . student organizers, who have a passion for the
> subject matter and the events, spend the vast majority of their time working on logistics . . . they
> spend more time on that than the content of the event."

For organizers new to planning an event of this scale, perhaps the most critical resource that

MLH provides is an open-sourced organizer guide that collects planning steps and considerations

in a wiki-like format. The guide is accompanied by a budget worksheet and website boilerplate,

both of which provide frameworks to expedite the time-consuming tasks of funding and

promoting an event. The organizer guide is provided as an open-source document licensed under

a creative commons attribution license. Users are free to edit, remix, or add to the document so

long as they give credit to Major League Hacking. The guide has been cooperatively composed

in version control style common to developers, with users 'committing' changes and project

managers coordinating which changes and document divergences to merge or scrap. In the

current configuration, MLH retains ultimate control of what is and is not added to the guide.

Thriving off of the event attendees, who are simultaneously users, customers, and

workers, Major League Hacking (MLH) takes the form of what Nick Srnicek (2017) has titled

the "advertising platform." In effect, the profit line of an advertising platform is in its ability to maintain and cultivate an extractive apparatus that maximizes the capture and valorization of activities and attentions taking place under its umbrella (Srnicek, 2017). MLH profits on its position as the middleman between university organizers and large corporate sponsors that hope to gain access to nascent developers. For corporations seeking to bolster their platform-models, there is no better time to cultivate brand allegiance than while students are in the throes of learning and experimentation. While MLH emerged in part by gamifying hackathons via the intercollegiate sports motif, ranking and scoring seem to have taken a back seat in recent years, with 2019's season standings fairly buried in MLH's blog. With a laundry list of corporate and big tech sponsors now behind them, the startup venture appears to be paying its dividends, perhaps allowing the business to relax on some of its more superficial promotional strategies. There is little doubt that MLH enacts significant influence on the structure and organization of member events, but how much remains a subject of further analysis, below. While MLH has certainly emerged as the face of university hackathon events, we must be cautious to not mistake a cultivated brand identity as the locus of collective motives and institutional trends. Towards an investigation of what lies beneath this influential but surface-level facade, we turn our attention back to university-sponsored entrepreneurialism and the *staging* of innovation events.

Entrepreneurialism & Disruptive Innovation

Privileged by the current politics and economics of the university, entrepreneurship is the prime phenomenon by which hackathon participants are socialized into the specific professional roles of the "hacker" or creative class. Via a process of entrepreneurial dressage----that molds and disciplines would-be entrepreneur-innovators----hackathons wittingly and unwittingly contribute to the production of specific subjectivities on the part of their participants. As a living and breathing environment, we must remain critical of the ways that events are constructed and staged to particular ends (Gómez-Cruz & Thornham, 2016). The setting, schedule, and minutia of university hackathons all combine to curate a specific experience for attendees. The mentoring stage, the expo event, and the final awards ceremony stand out as particular moments in which entrepreneurial citizenship is trialed and rehearsed (Irani, 2015). This citizenship celebrates "transnational cultures that orient toward Silicon Valley for models of social change" (Irani, 2015, pg. 801). As a cultural continuity of the older "Californian ideology," we can identify the way that the synergies of "cybernetics, free-market economics, and counter-culture libertarianism" continue to inform the privileged positionalities of the so-called "techno-intelligentsia" (Barbrook & Cameron, 1996). Within the information economy of the present, these ideological sub currents inform the socialization and production of particular class strata that prop-up the immense demand for techno-solutions (Morozov, 2013; Wark, 2019). Often inheriting the libertarianism of their precursors, these new techno-intelligentsia or "hackers" demarcate themselves through *action* rather than deliberation. As stated by Lily Irani (2015), "the hackathon celebrates the entrepreneurial actor who experiments in a world characterized by complexity and *drives past contestation* toward demos that mark experiments in progress" [emphasis mine](pg. 801).

The emphasis to "move fast and break things" was a common encouragement across events, inherited from Facebook's now antiquated internal mantra (Taneja, 2019). This message was also confirmed by both interview participants and by Major League Hacking's outward-facing presence. Mike Swift, one of MLH's co-founders, proclaims, "you don't learn to hack by **listening**, you learn to hack by **doing**"[sic.](Swift, 2017). In reaction to the slow pace of democratic deliberation and coalition building, *action*, successful or not, is elevated to a virtuous status (Irani, 2015). From interviews, it is clear that many participants, and especially hackathon organizers, are primarily motivated by good intentions. For them, entrepreneurship offers the promise of an actionable route. "Entrepreneurship can be seen as noble, socially meaningful engagement---a means by which one can effect change in society … a way for someone to 'make an impact'" (Goldstein, 2018, pg. 40). The insidiousness of this route is how entrepreneurial cultures select and prune ideas as viable or non-viable, with the prime criteria focusing on the bottom line for investors. The routinization of creative energies by entrepreneurship is simultaneously a product of and windfall to neoliberal modes of government. As a self-selecting community, entrepreneurial status effectively forecloses ideas and energies that are not willing to bend to the neoliberal tenets of deregulation, privatization, and a morality decided by the marketplace.

For individual participants, these abstract phenomena play themselves out in the messages, interactions, and validations that they experience while in and around events. Socialization, after all, is largely a product of the micro-level social exchanges that inform us of norms, procedure, and manner (Goffman, 1978). Most saliently, I wish to demonstrate three primary ways that entrepreneurial dressage occurs within events: 1. the expectations and forms of presentation common to events; 2. the ways that students are guided, directed, or discouraged

by event mentors; and 3. the deployment of rhetoric and ideology, like that of "disruptive innovation." As I argue, these dynamics are enabled and reinforced by the event's situation within the university setting. Throughout the discussion, I continue to signpost these connections, further illustrating the emergence of entrepreneurialism from the specific socio-technical amalgamation of the contemporary research university.

On Display: Participant or Product?

Set on the ground floor of a multi-story atrium space, the architectural setting of events seems to mirror the tiered and all-encompassing gaze of the exhibition stage. On the expo floor, rows of tables are arranged with teams claiming their assigned spots, ready to showcase the products of their work. Presenting in waves or heats, with 20 or so teams presenting at any one time, the hall is filled with participants, judges, and onlookers and the room buzzes with the excited and nervous tones of overlapping chatter. Sparing only room for judges to circulate from one group to another, the paths between tables act as the arteries fueling and inciting the performance of each group on their path. With most events limiting judges to just 5 minutes per team, the expo event exhibits a sort of frenetic heartbeat, with a 5-minute cadence of activity. A pattern emerges: judges circulate, teams pitch, judges question, teams answer, and judges move on, rinse and repeat… Joined by student onlookers or non-officiating mentors, judges and crowd combine to form a small audience for an idea pitch.

Assigned to a table, not known in advance, teams are tasked to construct a small stage upon which to present their idea or product. Many teams bring along monitors and laptops to provide an audio-visual component. Interactive demos, informative PowerPoints, user interface mock-ups, and code-sprawled terminals commonly fill the displays. Some teams complement a setup with carefully-curated trifold boards, reminiscent of the science fair. Others provide

functional prototypes, resembling some Frankensteinian monster and built from some combination of cardboard, LEGOs, 3D printed parts, breakout boards, single-board computers, and peripherals. A cast of team members assembles front and center ready to deliver their pitch to each judge. From team to team, the onlooker can spot variations in their visual presentation. Some teams, obviously weary from sleep deprivation and caffeine overstimulation, act out a labored energy as they deliver their pitch. Others emerge in full business attire, fully primped and preened, having strategically dedicated time to rest and grooming in preparation for their pitch.

Like the favoring of professional and manicured team members, there is a great appeal for teams to produce some likewise polished physical product. As one interviewee expressed, there is a general feeling that projects with some physical component are much more likely to succeed. For example, one event's final presentation stands out as an example of "wow-factor" attached to a good physical prototype. Presenting an object-recognition cane for the blind, the device was aimed at nearby objects and the object's name rapidly appeared on the demo screen. The audience was noticeably excited, with "Oohs" and "Aahs" emanating from the crowd. One commenter in a nearby row exclaimed, "Wow, that's fast!" There is something truly magical about a good demo, and a physical device is all the more likely to produce that "wow" moment. In another example, the prevalence of 3D printed objects lends itself to understanding this fetishism. In the worlds of hackathons, maker spaces, and rapid innovation laboratories 3D printing has reached a sort of ascendant status in recent years, with likely ties to the technology finally reaching pricing accessible to hobbyist-grade consumers (Pontin, 2018). 3D printing meshes neatly with the larger fantasy of events, to create *something from nothing* in ludicrously short amounts of time. Therein lies the trick, because in reality, *this belief is fantasy* as it

continuously neglects to acknowledge the vast material structures that set the stage for these sorts of events and innovation to take place in the first place.

Just as physical prototypes can be used to capture the attention of audiences and judges, the show put on by a team is another focal point of intent in their wager to win favor with judges. From observations, it is clear that some teams, often the more experienced ones, have placed significant energy into crafting the presentation of their product at expo. After all, even the most technically ingenious product may be appraised as trivial without the proper *sell* to judges. Taken in the larger context of the current tech industry, the expo or exhibition event is an emblematic element of introducing, showcasing, and marketing the latest and, purportedly, greatest tech of the moment. Likewise, the energy and effort dedicated to the presentation of an idea or product mirrors the position of the contemporary academic, who either successfully embodies the academic-entrepreneur, trading autonomous knowledge discovery for funded research dictated by the highest bidder, or *perishes* (Giroux, 2007). For many projects, the presentation stage makes or breaks its success. Presentation, therefore, merits the immense amount of preparation and attention that many teams provide it. For these students, entrepreneurial dressage has already imbued an understanding that their presentation and their person are appraised as products.

When the presentation or imaginary of a product or idea becomes the most significant criteria of its valuation, solutions that *present* definite and self-evident answers tend to be privileged. For theorists like Evgeny Morozov (2013), this tendency represents a widespread phenomenon known as "technological solutionism" in which solutions tend to be favored and pursued "more because of the sheer awesomeness of our digital tools than due to the genuine need to rid our public life of . . . incoherencies and imperfections" (pg. 354). The privileging of technologies only on merit of their "sheer awesomeness" or novelty too often results in the

overshadowing or missed-opportunities of ideas that would address the root causes of an issue or problem. For example, during my observations, one team's product stood out as an exemplary case of techno-solutionism and the avoidance of acknowledging root causes. Seeking to curb the ever-increasing cardboard waste produced by e-commerce and site-to-door shipping, one team pursued a strategy of bioremediation using mycelium spore stickers, intended to accelerate cardboard decomposition in landfills. The idea's overt simplicity manifested itself as eloquence, concealing the hidden complexity of bioproduct manufacturing. From a bioremediation perspective, the idea was brilliant, but it was shadowed by neglect to ever consider the root cause of the problem----that the consumption habits exhibited by many in the global north are excessive to *need* and result in excessive carbon footprints. Solving the latter problem is, of course, far more difficult, but that's part of the point. Techno-solutionism describes this widespread tendency to privilege the flashier and the often-easier solution offered by new tech.

In the present, techno-solutionism extends pervasive pressure across institutions of government, industry, and education. It seems only logical that innovation cultures would also be at the mercy of this tendency, purposefully cultivating it to make its participants more competitive. As a continuity of its longstanding goals, the university is complicit in the propagation of techno-solutionism and does so on a rationalistic basis of manufacturing students as a competitive market entity. As a result, hackathon participants and students more broadly are valued and negotiated as products. The exhibition stage glaringly brings this valuation to the fore, but there remain still other ways that participants are steered and socialized.

Mentors or Managers

Once the 24-hour countdown begins and teams get down to the "hacking," event mentors begin to circulate across the event spaces. Sometimes towering over a team's table, other times

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sitting to converse, and sometimes only virtually present via the event's Slack or Discord chat, a periodic visit from one or more mentors was something that teams would come to expect, at least during daylight hours of project work. For each event, the composition and organization of mentors varied slightly. For one "Power the Future" event, a whole team of their energy company developers stood by to consult. For them, a presence as technical experts and consultants meshed neatly with the overall event challenge, tasking participants to develop apps relevant to power management and delivery. For another event, the primary event sponsor, Newport News Shipbuilding, an active U.S. military contractor, would provide its team of engineers to guide students to build a 3D model navigation solution for glove-laden workers in the field. The third event, EarthHacks, provided a different team of mentors, composed of a more varied selection of university faculty, local entrepreneurs, and sponsor representatives.

Mentor presence was something that at times was welcomed by teams and at other times appeared as a nuisance. This relationship often seemed related to the experience or tenure of a team, with the more experienced more likely to be annoyed by a mentor's intrusion. On more than one occasion I witnessed teams or a representative team leader respond to a mentor's inquiries with guarded responses, as if suspicious of why the mentor needed to know so much. On the other hand, teams who were "lost" or still undecided on a project hours after the beginning of the competition, would often look to mentors for serious help and encouragement. Mentors themselves varied in terms of both their confidence and approach to advising participants. Some acted as purely technical advisors, helping to troubleshoot coding errors; many would assess and advise projects on purely financial bases; and still others would take on the role of the critical pedagogue, engaging students with difficult questions about their work. Despite these differences, interactions between participants and mentors largely mirrored those

of student-teacher interactions, with students deferring to or at least feigning interest in mentor advice. Already socialized to a *banking model of education* university students are largely expectant of the teaching style in which they are treated as passive objects, expectantly-imbued with knowledge by the privileged subject of the educator (Freire, 2000). The hackathon mentor model, more often than not, followed suit in what is already a common practice across universities.

Sometimes, however, the entrepreneurial dressage and steering enacted by mentors, especially those non-academic entrepreneurs, was blatantly overt in its "bottom line" of attracting investors. While shadowing one business executive mentor, I observed him flatly respond to a team proposing a free service to the end-user, "Yes, but how is this going to create a profit for potential investors?" In one of the few situations I ever observed a team member display verbal frustration with a mentor, the participant responded, "But what if we aren't interested in turning a profit?" The executive mentor was taken aback, but continued in his attempt to convince the team that market viability was key to successfully bringing a product to stage. The back-and-forth continued, but ultimately climaxed with a clear move into conversation of political economy, with a frustrated team member indicating that perhaps they weren't pursuing a project under capitalism. This was the only time in my entire fieldwork that I heard the utterance of the word "capitalism." I did not see any sign of this team on the second day of hacking, nor did they present at the expo event. In a fleeting moment of *actual* disruption and rupture, we catch a glimpse of the way that events and mentors tend not to support projects and ideas outside the motives of accumulation and profit.

Mentor engagement styles and demeanor clearly took many different shapes, but the outcome of their interactions with participants tended to produce the same outcome. Mentors

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tended to exert unilateral pressure on teams to *improve* whatever idea, concept, or plan they had at the time of a mentor's visit. So long as a team would permit a mentor to linger, the scripted interaction would play itself time and time again, wherein, by virtue of their elevated status, mentors imparted *their own* vision for the potential of a team's project. These visions were as varied and diverse as mentors, which is to say not especially----with mentors across events mostly male and overwhelmingly involved with business or the university. Within the already stifled pool of imaginaries imported to events, one could still notice differences in project visions, just as one might expect differences in business pitches from a crowd of entrepreneurs. The irony, though, is that despite any narrowed differences in imaginaries and intent, the results for participants was near always the same. Cast in an elevated role, the mentor's pressure and influence on teams is managerial in nature. Already heightened by the circumstance of students expectant to instructor authority, the mentor's positionality tends to validate their contribution, regardless of its underlying intent. And despite differences of intent, the techno-solutionist pressure exerted by the event at large acts to further filter the mentor-initiated *improvements* a team might make.

Image 1. A meme shared on an event Discord chat.

Participants were well aware of the influence and authority exuded by mentors. Circulated through event Discord and Slack chats, comments or memes, like the one above, expressed the tendency for participants to drop their ideas completely in preference for a mentor's. For events where the mentors would go on to serve as judges, the benefits of adopting their advice were obvious. Much like the real world, it's often easier to just take the advice of your manager than risk a threat to your compensation. For other events, with a fairer division of interest, adopting mentor advice was still seen as a rational route, reinforced by a mentor's meritocratic elevation. In reality, sentiments like the one above were expressed tongue in cheek. Few, if any, teams were dropping their ideas outright. Instead, the tendency across events was for mentors to *steer* projects towards a proclaimed viability, in line with whatever their personal vision of viability meant ---- profitability, efficiency, or sustainability being the most common formulations. Reflecting back on the neoliberal management styles that now dominate research universities, it seems only congruous that these same managerial practices are adopted and

rehearsed within event activities. Participants, after all, are largely attending to become more experienced in the *ways of the trade* and to develop their skills as competitive professionals.

Disruptive Innovation

For those who don't already buy-in to or are explicitly aware of marketplace ideology or the neoliberal spirit, "disruptive innovation" acts as a rhetorical tool towards the same end. The term was frequently spoken during opening ceremonies and was a favorite keyword of the university's innovation incubator department, holding close ties to hackathon events. Most interviewees were aware of the term and offered similar understandings when asked. For one, disruptive innovation meant, "going into an industry or sub-industry and pretty much flipping it over with a whole new set of eyes----like, 'let's try this way; doing it differently.'" Another defined it as, "doing things in a way that people haven't thought of before, that kind of turns things on their head a little bit, and that goes against traditional ways of creating products or businesses." But how does this differ from innovation and invention as it has always been? The textbook definition of disruptive innovation emerged from Clayton Christenson's 1997 work *The Innovator's Dilemma* and is more specific in its definition than these inherited understandings. "For Christensen, [disruptive innovation] refers to a product or service that initially takes root in smaller markets with lower gross margins, but that once established, can eventually displace more established competitors by providing a more efficient or desirable means of addressing a broad need" (Goldstein, 2018, pg. 28). Christenson's concept, plain and simple, defines the course of a *successful* idea within the marketplace. For my interviewees, their understanding of disruptive innovation seemed redundant. Dropping the 'disruptive' descriptor seems to do little in changing the meaning, suggesting that it could have been left off in the first place. Instead, this

usage points us more toward the way the innovation more broadly has become embroiled with the ideological image of the marketplace.

The redundancy alluded to above is in effect because of the way that marketplace ideology has already subsumed notions of creativity and invention. To be fair, there is a real affective excitement to marketplace creativity. It is inherently competitive and makes promises of fame and fortune to those who can win out. The rhetoric of disruption empowers individuals with a feeling that they may be personally responsible for ushering in the *next big thing*. McKenzie Wark (2019) identifies this belief as an ideological myth necessary to propping-up what they call the "hacker class." For Wark, the hacker class represents a distinctive classhood of our present political economy and is marked by its essential role in supplying the creative work necessary for the continued function of the information economy. This ideological subscription, then, emerges not only from the personal empowerment it provides for individuals but also out of systemic pressure imposed by macro politico-economic forces. In terms of broad creative power, disruption enacts foreclosures on the front of imaginaries, but simultaneously presents other openings via a hijacking of disciplinary diversity.

Hosted by the university, hackathons and surrounding cultures maintain access to w wide-breadth of academic disciplines. As I briefly gestured towards in my earlier history of the university, the saliency of individual disciplines and their centrality to the university have changed significantly over time. And while a larger trend in the corporatization of science has in many ways shifted the academy's monopoly over disciplines (Mirowski, 2011), it has not yet diminished the unique nature of disciplinary variety encompassed under the university umbrella. On the surface, this preservation seems likely due to the sheltering of liberal arts studies in exchange for the general education curriculum they serve to fulfill. On another count, the liberal

arts disciplines continue to prop-up and remain enmeshed with managerial sciences, upon which technical and professional fields depend despite the privileged invocations exclaimed by their evangelists. This is all to say that universities provide a unique enclave for the continuity of diverse disciplines and growth via the establishment of new inter-disciplines. This provision seems to spite the corporate management styles, neoliberal policies, and techno-fetishism that have in the recent half-century subsumed academic administration. Unfortunately, this preservation reflects the much deeper subsumption of creativity and intellect on a scale not previously seen.

As McKenzie Wark (2019) claims, in their recent work, *Capital is Dead: Is This Something Worse?*, "distinctive about an information political economy is the way it instrumentalize[s] difference rather than sameness" (pg. 13). This claim follows from a deeper elaboration of the configuration of our present political economy, "one based not only on a scarcity of things but also on an excess of information" (Wark, 2019, pg. 5). To commodify and make valuable something that is so blatantly abundant, the generation of information *novel* enough to attract the claim of intellectual property becomes the objective of any stakeholder seeking to garner a profit within this economy. The roles and forms that this generation takes on are extensive. Workers of any cultural industry----coders, creatives, engineers, academics, producers, etc----are implicated in this dynamic. So central has the pursuit of producing and capturing novel information become, that the defining objective of any *platform* is to attract, centralize, and extract more and more totalizing amounts of user activity (Srnicek, 2017). The goal for many is to create an extractive ecosphere in where you are never-not the subject of data capture. Arguably, Google (or Alphabet Inc., more specifically) represents the single most successful player in this game. For the digital native who has naively foregone any qualm of

privacy, Google has constructed an empire of extractive apparatus extending to nearly every aspect of one's existence, save reading your thoughts. That one is in the works. Seriously.[7]

Universities, as a physically centralized nexus of disciplines, are a perfect grounds for interdisciplinary experimentation. With myriad disciplines potentially at the disposal of university events, the combinatorial possibility for projects is truly immense. This is the essence of what hackathons and surrounding innovation cultures encourage as engines in the production of *difference*. The rhetoric of disruption helps to facilitate the interdisciplinary combinations sought as the fuel for commodifying novel information. And yet, not all combinations are actually desired. If a combination doesn't sufficiently instrumentalize, codify, or record information in a way conducive to valorization, it is unlikely to be deemed sufficiently valuable. On the other hand, if a combination is actively hostile to the information economy, it may be deemed as less-than-valuable and is likely to be subject to discouragement and filtering. Entrepreneurial dressage and techno-solutionism are two such filters that excel at steering and frustrating energies antithetical to profit and, specifically, informational accumulation. To a certain extent, these two tendencies seem powerful and pervasive enough to corral the creative energies of events but to suggest that they are the only coercive forces in place would be misleading. In some sense, these tendencies are enacted upon subjects from the outside-in, from mentors and teachers alike. More insidiously, there are still more infectious forces at play at hackathon events, forces that work fundamentally from the inside-out. Towards this end, we must turn our focus to the phenomenon of gamification and deeper tendencies of biopolitical control.

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[7] https://www.media.mit.edu/projects/alterego/overview/

Gamification

Hackathons as Games

Hackathon events exist as games in their own right. Our discussions of managerialism, innovation, and the information economy have led us toward a cautionary argument against neoliberal forms of governance. Among other pitfalls, this form of governance threatens to enroll subjectivities into permanent states of production. Insofar as strategies go, one particularly effective way to achieve this is via the proliferation of games in the service of capital. The result is a tendency that many theorists call "gamification" (Cherry, 2011; Deterding et al., 2011; Fuchs et al., 2015; Kim, 2018; Llagostera, 2012). The clearest definition of gamification is stated as "the use of game design elements in non-game contexts" (Deterding et al., 2011). Begging the question of how we should qualify "non-game contexts," this qualification is, admittedly, a value judgment. The many proponents of gamification take no issue with applying the method as widely and as liberally as is possible. With goals to engage, retain, and keep-active the turn to gamification as a design strategy follows the longer history of scientific management's flirtation with playfulness and fun. As a contemporary design strategy, gamification synergizes well with the goals of the attention economy and platform-driven businesses. For critics, gamification is a wolf in sheep's clothing. Masquerading under the guise of fun and entertainment, gamification functions to captivate attention in an addictive regime of biopolitical governance and platform-driven capitalism. As we will explore, the gamified nature of hackathon events and the prolific adoption of gamification as a design strategy reveals its complicity with the objectives of entrepreneurialism and the university.

Competition is perhaps the most overt indicator of gamification within and across

hackathon events. Most events are premised on teams vying in a timed innovation contest to

produce the ostensibly best app, device, API, and/or business proposal. Founded on the motif of

intercollegiate competition, Major League Hacking has utilized this tendency since its origin. For

every event, challenges function to stage and regulate the competition of events. In setting

challenges, organizers and judges are able to delimit the scope of projects and align them to

evaluatory rubrics for judging. Concealed until the opening ceremony of events, events employ

the element of chance in an attempt to level the playing field for participants. By hiding

challenges until the last moment, organizers hope to discourage teams from gaining a

competitive edge before the event. Ultimately, this use of *chance* functions as an ideological

ploy, much like the myth of the hacker-turn-vectoralist billionaire. In contradiction to this aim

and as I observed across multiple events, serial attendees are perfectly capable of reusing pieces

of a project across multiple events. Certain software systems are impressively flexible in the

information that they can organize, transform, and display. The clever refacing of a front-end or

graphical user interface is often enough to mask the repurposing of a codebase. During my

fieldwork, I observed at least one attendee reusing elements of their codebase across all three

events attended. For one event, a web app visualized rental prices and safety metrics across the

city via a top-down geographical database; for another, the database leveraged a rooftop space

calculator to estimate the potential for solar panel installations; at a third event, the app expanded

the solar panel estimates and integrated household emissions metrics. This example informs a

great deal on the elements of competition and *chance* taking place at events. First, the element of

chance employed at events is contradictory. Far from fraternizing with randomness, the *chance*

of surprise challenges manifests as another form of control and staging. Second, the employment

of *chance* perpetuates a myth of the level playing field that does little more than to privilege those with a head start. Finally, this participant's reuse of a codebase signals that what events hold at stake, for many, are the opportunities to evangelize and/or iteratively develop a piece of software that they have some personal investment in.

Event challenges and individual projects are not the only event dynamics that mobilize personal investment via competition. Competition also functions as a strong motivator and arbiter of achievement (Zichermann & Linder, 2010). Beyond the more overt competitive stage, events proliferate competition by way of achievement signaling or token economies (Raczkowski, 2014). At every event there is at least one serial attendee who peacocks their commitment to events with the display of their MLH sticker-badges (see *Image 2,* below). Designed to form a brickwork-decoration, the badges signal merit based on commitment to event attendance. Comments and impressions overheard from event attendees assert that badges are far from trivial. On the contrary, they represent many unpaid and sleepless weekends of work, and other attendees recognize this. Dovetailing the grade and resume-based rating of students within the university, the use and display of tokens anticipate attendees' participation in meritocracies. The badge of achievement is as much motivator as it is another means of dressage and socialization for future members of the hacker class.

Image 2. MLH Stick-badges, earned from 'demoing' at official events.

The gamified nature of events further lends itself to the allure of these exceptional environments and deeply imbues events with a sense of ludic, or playful, activity. Following our earlier discussion on the staging of events and the suspension of reality (Gómez-Cruz & Thornham, 2016), the vibrant and carnivalesque atmosphere of events lends itself to a feeling of the extraordinary. Indeed, MLH events are open about their flirtation with playfulness, including secondary challenges in the form of karaoke contests, cup-stacking, and miscellaneous mini-games for participants to blow off steam. MLH and event organizers are dutiful in their attempts to make events fun and to produce a pleasurable experience for participants, knowing that the more pleasurable event will attract more attendees into the future. In promoting a marathon-type event, characterized by sleep deprivation and caffeine stimulation, events take advantage of a range of perverse pleasures. One of my interviewees recounted his first hackathon experience, where he consumed so much caffeine that he became sick and was ultimately unable to complete his project. This didn't deter him forever, though. He was back at it the next year, ready to

exercise the nocturnal habits so common to programmer, hacker, and gamer lifestyles. Bouts of sleep sickness are weighed against moments of euphoric flow, fulfilling the caricature image of the insomniac-hacker illuminated by a code-filled screen. For the career programmer, this image foreshadows a lifetime of always-online, on-call work in the 24/7 world (Crary, 2013).

As work and play are blurred for hackathon attendees, they are gently exposed to the unfavorable circumstances of contemporary work. The blurring of work and play is a tendency informed by longer histories of managerial science, with approaches like Toyotism or *Kanban*----otherwise known as *just-in-time* production----actively motivating workers by building "feel good" processes into production methods (Dyer-Witheford, 2015; Marxist Internet Archive, 2018). In the 21st century, many startups have been exceedingly brazen in their attempt to integrate play into the workplace, with toys and games as common to the environment as cubicles and desks. These flourishes to already privileged working environments reaffirm the normalized encroachment of gamification into the workspace. Beyond the walls of white-collar workplaces, gamification is more likely to manifest itself in the form of the competitive quota, growing more pervasive alongside a societal fetishization of numbers and metrics. The pervasiveness of gamification in applications and software ensure that even workers who still retain a work-life division are likely to experience its effects. As a design strategy, gamification is employed by hackathon participants and real-world tech professionals alike, aiming to attract and retain users to a platform.

Gamification as Design Strategy

At all hackathon events I attended, I observed projects that pursued gamification as a legitimate design strategy towards the end of attracting and retaining end-users. Commonly, this tendency manifested itself as an application's integration of a points-system, whereby a user's

engagement with the platform nets them points in competition with other users. In part highlighting a cultural obsession with competition and the fetishization of metrics, the leaderboard-style of motivation is a figurehead for an entire regime of designed addiction. While none of my interviewees were familiar with the term "gamification," the prevalence of the phenomenon across projects and events suggested that the strategy is already naturalized into curriculums of design thinking. In charting the way one team and mentor pursued gamification as the crucial element of their project, we can begin to understand why the tendency is pursued so commonly and how it synergizes with neoliberal tendencies that we have already touched upon.

Hackathon themes or challenges that intended to change or influence people's behavior were the most likely to utilize gamification. For example, EarthHacks, as an event focused on corporate sustainability, public health, and energy efficiency, saw the majority of its projects focused on promoting better behaviors among, or *for*, its end-users. One EarthHacks team arrived organically at a corporate sustainability project intended to incentivize employees to adopt sustainable behaviors like using refillable water bottles, biking, or carpooling to work. Peaking the interest of one mentor, the team was challenged as to how they would incentivize employees to stick with these behaviors. After suggesting monetary rewards and prizes, a different mentor encouraged the team to think of more attractive incentives that just money and objects. What if, instead, sustainable behaviors were incentivized by offering time-off to employees in exchange for their accumulated points? To this suggestion, the first mentor effectively scoffed, "is that a realistic idea?" Could a company *actually* be expected to exchange valuable labor-time for the promotion of sustainable behaviors? The team was ultimately

dissuaded to find rewards that would be more attractive to a company and be wary of any form or feature that might detract from the *bottom line*.

In the end, the managerial steering and entrepreneurial dressage of the first mentor won out. The team's final proposal and prototype app kept the original sustainable behaviors but decided that vouchers and coupons for local businesses would be the safest reward to incentivize corporations to adopt the platform. Although originally proposed, time proved the limitation on the team's ability to integrate a full leaderboard system into their application prototype. With gamification defining the basis for this project's utility, it offers a clear example of the way that gamification acts as the backbone to realizing viable outcomes. As well, this project reiterates the ability of mentors to steer a project toward perceived business viability. The combination of these effects resulted in a platform model that provides far less benefit to the end-user. The original, more generous compensation for participants----which is not to say *fair* compensation----was ultimately disowned so that the central aim of behavioral regulation could be preserved. This is evidence of the larger threat of gamification. Even its most well-intentioned uses are hinged upon a belief that the behavioral regulation of users is merited and that the designers of such systems are justified to administer that regulation.

Critical scholars like Fuchs, Fizek, Ruffino, & Schrape (2015) have suggested as much, stating that "gamification belongs to a set of methods that aim to regulate individuals and society . . . gamification allows for effective behavior regulation via positive feedback" (p. 25). This definition, with its instigation of behavioral regulation, highlights a much larger body of critique that identifies and problematizes gamification as a strategy in the pursuit of neoliberal governance via a framework of Foucauldian biopower. Scholars have not shied away from opportunities to make these connections known, both in relation to gamification and

contemporary games more broadly. Divided between two types, "anatomo-politics" and "macro-biopower," Foucauldian biopower is utilized to explain the tendencies to enact discipline and order on individual physical bodies and the governance of biology on the scale of populations, respectively (p. 124). In their connection to how these forces serve capitalist accumulation, Dyer-Witheford & De Peuter (2009) make clear the scale and seriousness that game mechanics impose on behalf of constellations of power:

> . . . game machines have served as ubiquitous everyday incubators for the most advanced forces of production and communication, tutoring entire generations in digital technologies and networked communication. The game industry has pioneered methods of accumulation based on intellectual property rights, cognitive exploitation, cultural hybridization, transcontinentally subcontracted dirty work, and world-marketed commodities. Game making blurs the lines between work and play, production and consumption, voluntary activity and precarious exploitation, in a way that typifies the boundless exercise of biopower (p. xxix).

While Dyer-Witheford & De Peuter (2009) are directing their critique specifically at video games, they are not alone in highlighting the broader connections. For example, the work of Jennifer R. Whitson (2014) further elaborates on the use of gamification as governance. Whitson's analysis provides a sophisticated tracing of the evolution of governance theories. As a starting point, she elaborates Foucault's construction of governance as the process and means by which order and organized mobilization are achieved via *production* rather than *dominion* (in the historical sense of corporeal discipline and punishment). Continuing, she implements the contributions of Gilles Deleuze (1992) and his ruminations on *societies of control* to implicate the extent that the permeation of automated and consumptive spheres have resulted in the replacement of civil society by consumer society (Whitson, 2014, p. 343). In the context of the hackathon, we observe one real-world figuration of these trends. In their liberal adoption and

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implementation of gamification, participants become party to enabling a regime of governance that hybridizes neoliberal market logic and behaviorist orchestration. Compounded by the techno-solutionist blinders that privilege products above people, designers are led to pursue behavioral regulation unilaterally decided on by the marketplace and in the stead of democratic input on the part of the end-user. In the worst cases, we arrive at a situation where the end-user is dehumanized and reduced to little more than an attention input (Cherry, 2011), just as the hackathon participant is reduced under the forces of managerialism and continuous work. As aptly described by Steven Conway (2014), the user----free laborer----is diminished to something resembling an object, whose only need is indefinite engagement. Users begin to resemble little more than zombies and the process of gamification is recast as a process of zombification. Zombification applies not only to users but also to the designers and institutions using these methods. Dull and lifeless, creative work under the paradigm of gamification is sapped of vibrancy and instead resembles the cold, dead husk of something once imaginative.

Attention as Commodity, Platform Capitalism or Worse

How did we get to such a bleak outlook? To review, the contemporary global north inhabits an era of unprecedented profit gained by the "free labor" of advertisement-based revenue and platform-based accumulation (Dyer-Witheford, 2015; Srnicek, 2017). For those in the profit-seeking business, it is no mystery as to why allure, engagement, and retention are prized so highly within business ventures. Gamification is only one strategy through which designers and inventors may pursue those ends. But, as we have seen, the most insidious outcome of these strategies is the dehumanization of users and the undercutting or omission of democratic input. Despite a huge body of critique (Cherry, 2011; Conway, 2014; Fuchs et al., 2015; Kim & Werbach, 2016; Walz & Deterding, 2014), many persist in lauding gamification as

an unproblematic strategy for work and education (Dale, 2014; Dicheva et al., 2015; Hamari et al., 2014; Kapp, 2012; Kumar, 2013). The essence of the problem is much deeper than a surface level manifestation like gamification. As we previously reviewed, university staff and administrators permit and pursue hackathon events because of their utility in preparing students for real world practices and professions. Preceded by its long-standing lineage of preparing a managerial middle class, the university has little gripe with preparing the privileged class of tomorrow. As we stated from the outset, the university maintains long-standing complicity with projects of class composition and capitalism more broadly.

For some theorists, there is the suggestion that whatever name we want to give our political economy of the present, we have now entered a new territory that may be worse than capitalism of the past. This is the argument of McKenzie Wark (2019), whose theorization of the "hacker class" we have already generously utilized. Wark's larger argument----which, admittedly, requires more buy-in than her ruminations on the hacker class----is that the information economy, global logistical networks, and trajectory of financial capital have culminated in the emergence of a vectoralist class ruling above the traditional capitalist. For Wark, the vectoralist class exerts power and control beyond physical property-owning capitalists of the past, "The dominant ruling class of our time no longer maintains its rule through the ownership of the means of production as capitalists do. Nor through the ownership of land as landlords do. The dominant ruling class of our time owns and controls information" (pg. 5). Enabled largely by the capacities necessary to manage and maintain global logistic flows of commodities and communications, the world's wealthiest owners of today own not just physical structures of production but more broadly entire vectors of info-content and info-movement.

Wark (2019) is being intentionally provocative with her argument. More than the declaration that capital has reorganized into yet another new technical composition,[8] Wark is challenging the dogmatic adherence of critical theorists to the continuity of capital. Challenging critics to think what it would take for us to believe that we have moved beyond capitalism, with an emphasis on what it might look like for the worse. The thought experiment is useful in probing the limitations of contemporary critical theory. The full scope of Wark's challenge extends well beyond our focus here. I argue that we need not accept all of Wark's suppositions to utilize her elaboration of vectoralism and the immense labor demand for the hacker class. To that end, I think that the evidence that we have reviewed speaks largely for itself. The utility of the hackathon to the university is premised upon the value that events bring in their staging of idealized imaginaries of entrepreneurial innovation. The university strives to supply the middle and upper classes of labor, just as it has always done. It is no secret that fields like computer science, engineering, and business, to highlight only some, are actively trying to produce entrepreneurial subjectivities. Towards this end, events utilize the resources readily available to them, namely the material resources of the university. A population of expert-style educators, a reserve of fresh disciplines, and a corpus of design and innovation strategies all combine to supply and shape events to very particular ends. Part by luck and part by strategy, Major League Hacking emerged to profit off of this very particular set of socio-technical circumstances. This is the start-up way and it is no coincidence that MLH so resembles the factor and form of the *successful* projects that hackathons incubate. This patterning hints at our punchline. University hackathons are engines in the production of difference, all while maintaining more of the same.

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[8] See necro capitalism, communicative capitalism, cognitive capitalism, platform capitalism, neoliberal capitalism and/or computational capitalism to explore the scope of frameworks that are trying to grapple with so-called "immaterial labor."

Discussion: Techno-Politics, Technosolutions, and Techno-imaginaries

Reflecting on our primary themes, we have a lot to consider altogether. We have dedicated time to exploring critical genealogies of the university and hackathon events. We explored entrepreneurialism within events and its interplay of managerialism and disruption. We further elaborated on how events exude the strategy of gamification both inside and out, and how this gamification plays into the hands of neoliberal governance. Each one of these themes is worthy of a thesis-length investigation in its own right, but I have chosen to cover them all in combination. While this wide-coverage discourages us from exploring any one aspect in excruciating detail, it *does* provide us with the possibility to discuss the grand and aggregate implications of the university hackathon phenomenon. It further allows us to think in a wider-temporal continuum about hackathon events and their adjacent cultures, past, present, and future. The history section lends itself to thinking about the past, in the form of the historical, material precursors to hackathon events; our analysis and anecdotes of current events provide us a window into the present; and my discussion of imaginaries and implication, below, looks to the uncertain future for events. Returning to my original research questions, I hope to concretely discuss my findings concerning each question and to elaborate on the broader implications of each.

1. How are hosting institutions structuring hackathons and hackathon cultures?

Quite simply, my argument is that hackathons are fully imbricated within the present objectives of the research university and are more-deeply contingent upon the historical missions and trends that have shaped the modern research university. The hackathon is just one manifestation of longstanding energies and motives circulated within and through the university.

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It has been arrived at not by some sort of fatalism, but by a process akin to evolution. Those loyal to marketplace ideology might arrive at a similar conclusion, announcing the proliferation of hackathons as proof of some social-Darwinian triumph over other ideas of the marketplace. That view, however, is misguided in its Spencerian devotion to "survival of the fittest." It too blindly assumes that the measure of *fitness* is indicative of some *a priori* good. On the contrary, and as Darwin understood, *fitness* is a relative criterion determined by the environment in which the competitor finds itself. The hackathon event and university reflect these self-selecting and self-reciprocating tendencies manifest themselves via the competitive environments that they actively cultivate. Events inherit the full weight of the university's unflattering history, impinged upon events in the form of neoliberal, accumulatory, managerial, meritocratic, and entrepreneurial pressures.

The university hackathon is only a subset of the greater hackathon phenomenon, but it is the most prolific. The Major League Hacking platform and similar events have exploded since they emerged nearly a decade ago, not because they revolutionized the gestalt of invention and innovation circles, but because they mobilized longer-standing energies in and around the university. Since at least the defeat of the student-worker coalition in the 1960s, the neoliberal regime has ravaged the university: financializing the opportunity-cost of higher education to the point that even its privileged attendees are tethered by debt-bondage long after their graduation; gutting the liberal arts for all but their contributions to managerial science and as false flags to commitments of inclusivity; ensuring a state of precarity for all but the most-vetted of faculty; and, divvying out apportionments of university research and administration to privatized interests. Some of these trends act as direct valorizations for capital, the remaining function as means of governance. Under the neoliberal regime, the need to profit from the university is

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rivaled only by the need to preserve and protect its manufacture of the cognitariat or "hacker class."

Universities supply hackathon events with pre-packaged subjects, tapping into the immense supply of eager young students, with hopes of making it big or even just acquiring a respectable job. Already subject to entrepreneurial impressions like the notion of the self-brand, university students are familiar with the expectation that they will need to "set themselves apart from the crowd" to remain competitive in the cut-throat world of meritocracy. In a contradiction that characterizes so much of neoliberalism, the autonomy of the self-branded individual is contrasted by deference or expectancy of managerialism. Accustomed to lecture coursework in which they are treated as passive vessels and the professor is privileged as a reservoir of knowledge, students are already well socialized to act under the guidance of others. Insofar as the lean model of the MLH-like hackathon can kill two birds with one stone, faculty members are easily and often utilized to act as mentors and judges for events. Importing their roles as experts, meritocrats, and academic entrepreneurs, they are well suited to fill in the ranks of managers when the business sponsors are thin. When possible, though, events open their doors to external entrepreneurs and sponsoring professionals, reflecting the more prolific ties of universities with their surrounding corporate environments.

With little qualm about accelerating the pace of privatization, Major League Hacking has provided a framework for universities that play on underlying motives of streamlining the university-to-corporate pipeline. This makes perfect sense insofar as the goal of the university is to prepare and place students into managerial or, at the very least, privileged roles of capitalist class hierarchy. As institutions, universities represent immense regimes of fixed capital, organized to continue the circulation of knowledge workers in the information economy of the

global north. The pressure to conform to the objectives of this regime is codified into the curriculum and contracts that discipline university workers composed of faculty, staff, *and* students. In a synergism that sometimes more resembles parasitism, platforms, like MLH, increasingly thrive off of the captive and convenient audience that universities churn through on a 4-year basis. What students learn during their relatively short time at university, will inform their behaviors and imaginaries on the scale of their lifetimes. It is with those stakes that the university gambles, favoring profit and expansion over emancipatory instruction.

2. Do rapid innovation events support innovations that are not easily categorized as techno-fixes?

In beginning this research, I arrived with assumptions that the failure to include disciplines beyond the STEM camp was a significant handicap to events and their infrequent commitment to progressive causes. However, I came to abandon the idea of event redemption through disciplinary inclusivity. For starters, while the *pure* hackathon aimed at computer scientists and computer engineers still predominates the scene, there is no shortage of hackathons that break from these traditional disciplines. Medical, legal, policy, ecological, arts, humanities, and social science hackathons have all taken place, some more regularly than others. There *is* a tendency for these disciplines to secondarily-inform the focus to create innovative technologies (i.e. digital technologies) at these events, but there are many exceptions. For example, Hacks for Humanity runs annual events hoping to create "a paradigm shift in technology development, giving everyday people the power to co-build the 'next big thing' that may affect our lives" (Hacks for Humanity, 2017). It sounds great. Maybe *this* is the emancipatory hackathon I've been looking for. But no, a review of years of winning projects reveals applications and rapidly-prototyped hardware solutions that more often than not implement *humanity* on the basis of a

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niche market to be targeted. The ecologically-focused event I attended was much the same. The organizers of that event were very cognizant of attracting a diversity of disciplines and promoting community-responsive projects, but the event's final products just resembled more of the same.

21st-century capital has a great deal of experience in subsuming progressive ideas and turning them into products. Greenwashing, pinkwashing, or rainbow-washing are all common examples, respectively representing the hijacking of ecological, feminist, and LGBTQIA+ signs, symbols, and concerns in the attempt to woo customers. University hackathons have the potential and are in many ways predisposed to produce products and services for novel markets, born out of the disciplinary combinatory of the campus. Techno-solutionism or tech-fixes are the tendency, but not the rule. Perhaps the most insidious characteristic of the hackathon event is its malleability. At its heart, the Major League Hacking hackathon guide frames a community event contingent upon the material resources of a large institution, like a university, and the financial resources of *external* sponsors. MLH *kindly* offers itself as a sideshow merchant, acting as the middleman between organizers and a pool of branding placements served in the form of stickers, t-shirts, caffeine products, and platform promotion. In evaluatory terms, MLH's involvement with events is worthy of significant critique in its own right, especially in the way that its syndication may lead to a homogenization of events. However, with consideration for limits of time and scope, I have sought to dedicate more focus to the impingements of the university. Future research would likely find analytical rewards in the further critique of Major League Hacking.

I have been led to conclude that hackathons are capable of producing more than just novel digital technologies. Events hinge on their ability to produce commodities, yes, but the

information economy has learned how to "instrumentalize difference rather than sameness" (Wark, 2019, pg. 13). The product that can piggyback a nuanced disciplinary idea on some shiny-new tech takes advantage of the techno-fetishism that characterizes many contemporary markets. Developer kits, rapid prototyping equipment, and the immense material resources of the university make overnight innovation more possible than ever before. The sheen and slickness of new tech obscure but do not foreclose projects that fail to leverage digital technology. Business models, policy, law, entertainment, care, and more all represent analog terrains that hackathons can and do commodify. Innovation ideologies like disruptive innovation, design strategies like gamification, and a culture of entrepreneurialism all lurk in the shadows to steer ideas and participants towards accumulatory ends. More deeply, the ideas and products of individual hackathons matter less than the impact they have on real, live participants. Aggregately valued by the cost of education and the mountains of money contributed by sponsors, the real investment of events is in the working subjectivities that events seek to shape and hone. In more ways than one, university hackathon events hinge on their ability to produce commodities.

3. To what extent do hackathon events support, foreclose, or redirect progressive ideas of the future?

I have, at many times throughout this essay, harped on McKenzie Wark's (2019) statement that one "distinction about an information political economy is the way it instrumentalize[s] difference rather than sameness" (pg. 13). I have emphasized Wark's description not because it is a unique take, but rather because of its elegance is approaching a very abstract body of theory. The case study of university hackathons informs deep concerns about the nature of science, knowledge, and subjectivity under advanced capitalism. With consideration for abstract concepts like the 'general intellect,' social brain, or socio-technical

imaginaries, we approach the disturbing idea that capital has infiltrated and employed science, knowledge, and consciousness. Many thinkers have toyed with this idea (Berardi, 2017; Dean, 2010; Dyer-Witheford, 2015; Jasanoff & Kim, 2015; Lazzarato, 1996; Terranova, 2000; Tronti, 2019), since its anticipation by Karl Marx (2005) in his *fragments on machines*:

> It is, firstly, the analysis and application of mechanical and chemical laws, arising directly out of science, which enables the machine to perform the same labour as that previously performed by the worker. However, the development of machinery along this path occurs only when large industry has already reached a higher stage, and all the sciences have been pressed into the service of capital; and when, secondly, the available machinery itself already provides great capabilities. *Invention then becomes a business, and the application of science to direct production itself becomes a prospect which determines and solicits it.* [emphasis mine](pg. 704)

On these subjects, Marx and contemporary thinkers are grappling with the ramifications of increasingly abstract labor, occurring at the level of subjectivity and knowledge. This is the realm of immaterial or reproductive labor, in which social relations, customs, and culture are all enrolled in the service of capital. The threat of this encroachment is that there ceases to be an *outside* to circuits of production and consumption. The expansion of gamification and its underlying motives of biopolitical governance is just one form of this tendency. The result is the zombification of imaginaries on an unprecedented scale. All living activity----and, as some argue, non-living activity (Bobby Banerjee, 2008; Wark, 2019)----is subsumed into regimes of accumulation. For imagination, this is a death knell, as potentials and possibilities that might threaten capital are foreclosed from the outset.

This case study of university hackathons illuminates just one setting in which possibility is subject to discipline by the forces of entrepreneurialism and neoliberal governance. In building a case against the university, I have shown that many of the faults of hackathons are inherited from the contemporary higher education system. I am not alone in this assessment. To quote

Franco 'Bifo' Berardi (2017) in regards to the neoliberal subjugation of knowledge, "the educational system is changing in its nature: in the spirit of neoliberal reformation, it is no longer the space for the integration of technical skills and humanist culture. It is being transformed into a space of mere acquisition of specialized knowledge, a space where individualism and competition are cultivated to the detriment of solidarity and consciousness" (pg. 210). In my assessment of my final research question, it would seem that the university hackathon event *is* guilty of foreclosing or redirecting progressive ideas of the future. Much of this guilt events inherit from the university, which forecloses and redirects socio-technical imaginaries on a far grander scale than does any singular event.

University hackathons mobilize more energy toward the cultivation of disciplined subjectivities than they do toward experimentation with emancipatory imaginaries. Only the latter holds the potential to unshackle us from the totalizing subjugation of the general intellect. To speculate on whether these events can be redeemed, I gesture towards the larger questions of whether or not the university can be redeemed or if that redemption is even worth pursuing. Scholars involved in projects of critical university studies and more recent figurations of abolitionist university studies might argue that redemption is beyond the purview of useful energies. Instead, a deconstructionist approach would offer us a better chance to salvage what is good from these communities and institutions and to scrap the technocratic encumbrances that prioritize growth over community. The task of figuring alternatives to these institutions is an immense one and we have at our disposal centuries of radical thought to draw on as a resource. These truly generative projects, beyond critique such as this, are the projects that *actually matter*. So long as those projects aim to support and cultivate a plurality of worldviews, imaginaries, and

ways of being, beyond the delimiters of growth, merit, and competition, they will have set their

vision for possibility well beyond our own.

Considerations & Limitations

My criticism of hackathon events may, regrettably, be taken as a form of attack on event participants and organizers. However, this was not the intent of this research. From the outset, I have intended to critique the socio-technical composition of university hackathon events. The product of this activity has intended to be a critique that foregrounds change. This is not to mistake critique with doing the hard work of enacting change. Change must emerge from a constitutive body of stakeholders, those who would be the benefactors of emancipatory reform or revolution. Throughout my research, I more than once was taken aback by the thoughtful and sometimes outspoken approaches and ideas of students, organizers, and faculty sponsors. Many of the organizers I engaged with, especially those who helped bring about the EarthHacks event, were extremely conscientious about both the material realities of their event and the higher goals of this communal activity. The point of advancing a sociotechnical critique is to look beyond just well-intentioned individuals and towards the greater whole that emerges from the combination of institutions, social phenomenon, material infrastructures, and human actors. This type of critique, therefore, implicates more than just good-intentions, common though they may be, and seeks to root out those phenomena that constrict and foreclose certain pathways of creativity, invention, and imaginaries.

Considering my positionality as a cis-gendered white man, I must concede limitations that may have hindered a better understanding of hackathon events and their participants. Although my interviewees were fairly diverse, my small sample size is not nearly large enough to generalize the plurality of hackathon participants around the United States and the world. Nor can a geographically-limited sample of events inform this larger reality. The larger consideration that haunts this research is that I, as a student, as a researcher, am embedded and complicit to the

"hacker class" that I have tried so desperately to warn of. As I have argued throughout, academia and its strictures foreclose untold numbers of imaginaries and knowledges that escape or threaten its historical *modus operandi*. To borrow from anthropological theory, I am humbled by the immense realm of the intangible and the unknown-unknowns that shroud understanding in sublime uncertainty. When I speculate about imaginaries it is with a nod toward these vast terrains of unknowability. I believe that we must strive to be more comfortable with intangibility, even though and precisely because it casts doubt on the epistemological supremacy of any singular worldview.

Conclusion

The larger point that I have tried to illustrate is that hackathons events thrive on and are infused with entrepreneurialism and specific design strategies and tendencies, like techno-solutionism and gamification. These dynamics privilege the very specific business models of startups and platforms. While this does not mean that events completely foreclose other business models, I argue that this privileging reflects the very specific socio-technical regime of the present, specifically as it relates to *big tech*, the *information economy*, and the multitudinous dictionary of *prefix*-capitalism(s) that prevail as descriptions of our present political economy (Wark, 2019). Hackathon events, likely without recognizing or being aware of these critical views, serve as functionaries to a sociotechnical apparatus that incubates and fuels the creation of a "hacker class" via the phenomenon of startup-culture, where "quantity over quality" takes the stage as guiding mantra. As McKenzie Wark (2019) has theorized, the belief that one might become the next IT billionaire is an ideological myth necessary for the continuation of such info-logistical oligopolies. The overwhelming majority of hackathon participants and university students will not become tech oligarchs; capitalism and meritocracy foreclose this possibility from the outset. Their training, however, in pursuit of this myth, *will* prepare them as a very valuable type of labor. Fulfilling the immense demand for "creatives," the hacker class acts indispensably toward the endless task of producing and commodifying novel information.

In fine form, hackathon events find a more-than-convenient home within the university. The university as an institution has, after all, immense experience as an incubator for the managerial class and as a legitimizer of intellectual property. Within the historical present of the university, one that has been taken over by corporate management styles and captivated by the figure of the academic entrepreneur, hackathons figure as an organic extension of the neoliberal

figurations of governance. For those who hold little critique of capitalism and meritocratic regimes, hackathons appear as logical and well-positioned opportunities for educating the managerial class of tomorrow. For participants, events provide a rational, fulfilling, and genuinely fun way to bolster their resumes, CVs, and, more broadly, cultivate the self-brand that they are expected to produce during their time in university. The experiences of fun and play blur insidiously with work, foreshadowing the erosion of work-life boundaries that lies ahead for many of these future professionals. The populations that universities hold in supply for events, represent, as per the business perspective, an immense market to be tapped. The founders of Major League Hacking recognized this and built a successful business off of the phenomenon, embodying and simultaneously fueling the startup-form that has excelled under conditions of platform capitalism.

It is clear that university hackathons produce a great many things. They bring together great minds with a passion for building, constructing, and creating new things. They increasingly involve students from a diversity of disciplines, setting the stage for novel interdisciplinary projects to unfold. And, they encourage students to envision themselves as empowered actors, vying for change in the here and now. *But*----and it's a big "but"----these events too often constrict the field of imagination and possibility by fettering it to motives of profitability and accumulation. They fail to offer real inclusivity and often neglect to ask *who* they innovate for. To this end, they only produce novelty in the aftermath of foreclosure and filtering. The university is guilty of the same. The realm of knowledge, information, and creativity should not be for sale, nor should it be gate-kept by experts, academics, or business people. The techno-libertarian who dominates the marketplace landscape that I have critiqued would likely agree. Contradictions like these occur time and time again because we fail to face the embeddedness of

politics within technology itself, beyond human-will alone. In this neglect, the ability to enact

emancipatory socio-technical change is too often mired in misplaced reform. This is the real

shame, because of the unbound potential that might be realized through the critical and

emancipatory application of technology. When we begin to take our relationship with technology

seriously, we will also begin to see the real potentials of building not just people in the service of

technology, but technologies in the service of all people.

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