Techniques of Use: Confronting Value Systems of Productivity, Progress, and Usefulness in Computing and Design

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ABSTRACT

This paper turns to one of HCI's central value systems, i.e. its commitments to usefulness and the ideal that technology enables social progress, productivity, and excellence. Specifically, we examine how the seemingly "positive" ideal to make technology "useful" – i.e. to build systems and devices that advance social and technological progress – masks various forms of violence and injustice such as colonial othering, racist exclusions, and exploitation. Drawing from ethnographic research, we show how design and computing methods from design thinking to agile theory and entrepreneurial approaches in tech production and higher education are the latest techniques in the cultivation of useful bodies on behalf of the state, the corporation, the university, and the economy. Aligning with feminist, critical race and critical computing commitments, this paper offers a genealogical approach to show how injustice and violence endure, despite and because of a narrative of progress and positive change.

CCS CONCEPTS

• CCS; • **Human-centered computing**; • **Human computer interaction (HCI)**; • **HCI theory, concepts and models**;

KEYWORDS

labor, exploitation, genealogy, usefulness, productivity, progress, colonialism, racism, paternalism, violence, injustice

1 INTRODUCTION

"The word use radiates potential even if we tend to associate the useful with the charmless and unadorned." –Ahmed [1]

Use is a (if not THE) central guiding principle of Human-Computer Interaction (HCI). Indeed, the centering of use (and users) in the design and computing process has been key to how the field

has legitimized its early as well as continuous interdisciplinary endeavors as different from but no less relevant than computer science and engineering. HCI has come to be known as a well-regarded field valued on its own terms and worth investing in precisely because its designers and researchers had identified upon its inception the relevance of "user needs" and usability, often for the purposes of product design. Well beyond concerns of usability, HCI research has become known not only for advocating on behalf of "users" but also for collaborating with "users" as co-designers and participants in the design and engineering process, for attending to the politics of use and design, and for studying complex cultural, political, and social processes of technology use in everyday practice. While the field has arguably moved beyond use by exploring the multifaceted ways in which people relate to technology (other than use or its binary non-use), the focus on use and users remains central to how HCI frames what makes it unique as a human-centered field [75]. In other words, the field carries legitimacy and attracts students and funding alike not because it advances computer science per se (at least not at its main premise), but because it promises to improve on technology and computing by making it not only more usable, but more "useful": more democratic, more humane, and more social.

It is this premise of HCI as a virtuous endeavor (and what this very premise might render invisible) that we aim to center in this paper. Specifically, we turn our attention from use itself to the field's *techniques of use*, i.e. its value system of usefulness (of technology as enabler of social and human progress, productivity, and excellence) that governs the field and shapes what is designed and how, who and what method/approach is considered "worthy" of inclusion, what gets published and is considered a valid contribution as well as what work gets funded and recognized via awards and citations.

Our focus in this paper is less on how HCI has changed "for the better," but instead on what endures and what oddly remains the same, despite and exactly because of a feeling of rapid change, productivity, and progress [23]. We argue that techniques of use continue to govern the field, its methods and design decisions in ways that often go unnoticed, exactly because they operate through "positive feelings" and the promise of progress and productivity. We examine how the imperative to make oneself (one's life, one's work, one's thinking) "useful" overworks, exhausts, and exploits some more than others – those deemed unfit, useless, or unable are caught up in a sheer endless loop of self-improvement and feelings of hope, envy, anger, and despair. Feminist technology researcher Mel Gregg highlights how computing and design have played a central role in the ways in which the imperative to make oneself useful and productive is a form of exploitation that operates via feelings of pleasure and control (as in: gaining pleasure from getting a sense of control over one's time and life). "Software platforms, wearable devices, and time management tools," Gregg shows, are

the "end of a long line of delegated logistical work that has been the burden of some bodies in some places to bear more than others" and the "pleasure of being productive" that some get to experience comes at the expense of others deemed not "yet" productive enough [[40]: 128-129].

While Gregg's focus is on platforms and time management apps, our particular ethnographic account in this paper centers on design and computing methods from design thinking to agile software development and entrepreneurial approaches in tech production and higher education. These methods, many of which have been shaped by HCI researchers in crucial ways and are often understood via "positive" notions of human-centeredness, have become central to the cultivation of useful bodies. We align here with prior HCI research that has shed light on the various forms of violence that seemingly innovative and well-intentioned methods of design and engineering, promoted as democratizing access [28], centering the human [23, 61], and as empowerment and future making [79, 98], produce and reproduce. Such methods normalize inequality and injustice and postpone change in the present, exactly because they are understood as enablers of "better" (e.g. more participatory, in-clusive, and innovative) futures [60]. We show how these methods have taken a central place in the cultivation of useful bodies on behalf of the state, the corporation, the university, and the econ-omy. Portrayed as enablers of usefulness (e.g. by turning people into innovative, agile, fast, and productive agents of change), these methods legitimize over-work, exhaustion, and highly precarious and often racist and sexist environments in a range of work and educational contexts and settings. They frame the demand placed on individuals to make themselves useful (on behalf of the investor, the state, the university, science) as both necessary and hopeful. They help cultivate "potential," "ready," "productive", and "agile" bodies, spaces, and organizations useful for investors, the state, the corporate university, and the fields of computing and design.

1.1 Techniques of Use

We take central inspiration from the feminist and critical race philosopher Sara Ahmed and her historical and anthropological theorizations of *techniques of use* [1]. By techniques of use, building on the philosopher Michel Foucault (e.g. [33]) as well as the feminist and disability justice advocate Rosemarie Garland-Thomson (e.g. [86]), Ahmed refers to "disciplinary technologies" that moralize the exhaustive use of "a subject's potential."[1] She demonstrates this, for instance, via the analysis of the design of classrooms and schools in ways that moralized peer supervision and self-discipline as well as the discourse of the "able body" that framed colonized subjects and the poor as lacking and useless. Throughout this paper, we pair Ahmed's insights (alongside adjacent work in critical comput-ing and feminist anthropology) with ethnographic observations of "usefulness" in design and computing.

Importantly, Ahmed offers a *genealogy of use* to unpack how use became a moral obligation dating back to the periods of Western

colonization via the construction of "useful" bodies in the colonies and amongst the working class in the West *and* how this particular "use of use" has endured and shows up in various corners of life today. Land and people in the colonies were framed by colonial powers as useless, undeveloped, and wasted, and thus available to be appropriated and educated [1, 31]. By framing common land as wasted and waste as an active process of neglect and that to "waste one's own was to cease to have property rights," colonial appropriation was justified as a virtuous project, which connotes positive feelings of "making useful" and a language of "care" [[1]: 47]. The widespread adoption of utilitarian thought (for instance, advanced notoriously by Jeremy Bentham) framed the poor in both the West and the colonies alike as idle and therefore as a danger to modern progress, health and happiness. Schools and education from the 17th way into the 19th century were organized as "intellectual and moral engines" to produce able bodies and minds. This transformation of the "idle body" and redirecting it towards "useful ends" was framed as a social problem and the elimination of uselessness as producing positive effects and as a moral obligation. Eliminating uselessness framed land and bodies as carrying "potential" and in doing so justified exploitation and exhaustion. In this way, use has become a technique for shaping worlds as well as bodies, i.e. use became a powerful technique of control that portrays the demand placed on individuals to render themselves useful (on behalf of the nation, institutions, and the corporation) as promising and hopeful – as advancing the modern project of progress itself.

Building on the insights of disability studies, Ahmed – turn-ing towards our own field – analyzes how this *technique of use* is central to methods of usability engineering and user-centric de-sign. Don Norman's infamous user-centric design approach, she unpacks in detail, is focused on *how to use something* but not on *who can use something* – it is as such focused on the design for a body with assumed abilities and capabilities. In many ways, HCI has come a long way and an earlier reliance on usability and utility (and on useful bodies) have been challenged by and complemented with alternative approaches from continuous efforts to center the emotional, playful, embodied, aesthetic, somaesthetic, and felt ex-periences in technology use (e.g., [8, 19, 37, 38, 51, 88]) to more recent justice-focused design and research initiatives that challenge ableist, sexist, and racist processes of computing and design (e.g. [4, 13, 15, 21, 22, 25, 27, 34–36, 66, 70, 76, 98]). Indeed much has been written about how HCI and the fields of design and computing broadly have changed, often with an implicit assumption of "for the better." In contrast, in this paper, we re-center what is often per-ceived as negative or as what slows the field down; racism, sexism, ableism, heteronormativity, ableism, and capitalist exploitation are largely framed as "outside" problems (that can be solved) rather than central issues in our field. We argue that it is this silencing of what is viewed as "negative" and "outside" the core concerns of the field that produces and reinforces injustice, inequality, exhaustion, and exploitation.

1.2 A Genealogical Approach

In a provocative piece titled "Beyond the User: Use and Non-Use in HCI," Christine Satchell and Paul Dourish [75] highlight how

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[1]Foucault theorizes power as operating not always and not necessarily via a gruesome sovereign, but via discrete technologies of control that infiltrate everyday life; it operates by regulating conduct via self-discipline, routines, and observations. Ahmed expands Foucault's theorizations to examine the differential violence disciplinary power inflicts upon those deemed lacking based on racist, sexist, and ableist narratives of excellence, success, and productivity.

HCI's focus on (and obsession with) use and users is governed by a utilitarian morality, i.e. the underlying aim of the field is the construction of a moral subject, a "good" user who is eager and compliant with the technology and engineering process. Our aim is to pick up where this piece left off more than ten years ago by examining how techniques of use – as a mode of governance in computing and design – continues on, even if the field has moved "beyond the user." With this particular analytical approach of attending to the endurance of use, we follow – via Foucault whom Ahmed builds on – a genealogical approach. A genealogical approach pays attention to the recuperations, the reanimations, and the recombinations of past formations in the present [32, 33]. This approach is different from "tracing" how the past continues into the present in a linear and progressive fashion. Rather, it refers to the study of how multiple forms of power and control co-exist and operate at once [80]. It means attending to the ways in which various forms of violence and exclusion (e.g. colonialism, sexism, ableism, racism) are often considered as belonging to the past and/or as a non-issue for future-oriented fields of design and computing, when in fact they are reanimated and recombined in the present [60]. Importantly, a genealogical approach pushes against inevitability and despair. By unsettling the present (and the violence that endures despite a sense of progress) our underlying aim is to open up fields and practices of computing and design towards how things could have been and still can be otherwise [45, 57].

With this approach, we align with continuous efforts in HCI to provide reflective accounts of the field, but offer a slight shift in attention. The 2000s, in particular, witnessed a series of writings that offered reflections on the field. Two prominent pieces, for instance, proposed "three waves" [20] and "three paradigms" [50] of HCI, tracing early foundations and various trajectories of the field. While they differ in their intent and focus and engage ambivalently with the very notion of the paradigm, both pieces argue that HCI has experienced a gradual "opening" and broadening of the field beyond an early cognitivist and/or utilitarian "paradigm" [20, 73, 78]. At times, this very "opening" of the field has been framed as driven less by the decisions of its designers, engineers, and researchers themselves, but more by technology's (seemingly natural) progression. This includes, for instance, Jonathan Grudin's notion of the computer "reaching out" beyond the workplace [41] and Mark Weiser's stipulation of the advent of ubiquitous computing [93] – the computer "disappearing" into our walls and pockets and mundane corners of our lives [93]. Bødker describes HCI's "Third Wave" as research and design approaches that emerged precisely in response to technology becoming increasingly embedded in complex cultural, societal, and political processes [20].

Our approach aligns with commitments to reflect on and historicize the field, but departs in where we place our emphasis; rather than following or tracing technology's "reach" or how the field progresses, we aim to interrogate the value systems that govern it. This genealogical approach might lead to or support approaches such as reflexive design [78] or value-sensitive design [36], but its primary focus is different; its key aim lies in attending to the structural and systemic issues that design and computing produce and reproduce rather than on individual or specific values embedded in design. It entails interrogating normalized and often unquestioned ideologies that govern computing and design such as the portrayal

of technology as inherently or "naturally" facilitating progress and positive change (see Dourish's theorizations on HCI's ideological foundations for a related argument [30]).

A more recent line of work has been centrally concerned with broadening the "canon" of HCI itself. This includes, for instance, work that demonstrates how feminist, humanistic, and a wide array of adjacent critical sensibilities have long already shaped the field, even if these sensibilities and commitments were not necessarily always named as such, e.g. [7, 10–13, 59, 71, 74]. One of the key interventions of this work is to show that approaches, methods, and theories historically often considered "outside" of or of "no value" to or even "negative" for the field have in fact been central to its development and knowledge production, from early ethnographic research of IT work, corporations and organization [82] to approaches in design that challenge value systems of utility and efficiency, e.g. [29, 38]. In an attempt to push back on the notion that critique is "useless," "negative" or even "harmful" for design and computing, research and design that does not attempt to produce "implications for design" per se is often framed in terms of its unique, "positive" value and indeed "usefulness" for the field (see [9, 13, 72] for critical reflections on this issue). It is the continuous demand placed on individual researchers and designers to articulate their usefulness to the field and to the interests of design and computing (and by extension the tech industry and economic productivity), we argue, that is part of and further enables the economization of our field, i.e. the channeling of its aspirations and interventions for the economic interests of investors, corporates, and the state [52, 60].

Our contribution in this paper is two-fold. First, by interrogating value systems of usefulness that govern design and computing, we attend to the violence that is produced and reproduced and yet often rendered invisible by a narrative of progress, productivity, and usefulness. For the purposes of this paper, we refer here to less noticeable forms of violence such as exhaustion, overwork, postponement of happiness, racialized exclusion and unpaid labor. We focus specifically on how histories of colonial and racialized othering operate via techniques of use. Second, we align with and intend to further amplify recent efforts in HCI by attending to what is often perceived as "negative" – that which is seen as standing in the way of technological and societal progress and that which feels embarrassing and shameful such as the field's complicity in processes of systemic racism, sexism, ableism, and economization, e.g. [34, 35, 44, 47–49, 76, 77]. We show how a value system of usefulness actively silences and discredits voices and bodies who experience the "negative" as violence and injustice on an ongoing basis.

2 METHODS

This paper draws from multi-sited ethnographic research conducted by the two authors across varied professional, bureaucratic, corporate, and technological sites in Indonesia, Singapore, Hong Kong, China, and the United States. Our particular focus has been on how the promise of technological progress and transformation becomes operationalized via a latest suite of globalized design and computing methods including but not limited to agile programming, design thinking, start-up incubation, and entrepreneurial approaches to production. In this paper, we zoom in on how a particular affect (a

feeling) of positive change gets attached to computing and design methods and tools, and the specific consequences and violence this process produces. The multi-sited ethnographic method allows us to examine how a globalized value system of positive change, productivity, and usefulness is produced and reproduced in practice [62]. We draw from the sensibilities of multi-sited design to highlight specifically the sociomaterial processes of design and computing tools and methods, as they mobilize ideals of productivity, collaboration, agility, and equality [94].

For the purposes of this paper, we draw from three data sets. First, the ethnographic data presented on Indonesia draws from the 1st author's 18-month long ethnographic research and participant observation between 2018 to 2020 with engineers at a state research and innovation agency called Agency for the Application and Assessment of Technology or Badan Badan Pengkajian dan Penerapan Teknologi (BPPT) in Indonesian in Jakarta, Indonesia and its partnership with the multinational technology companies IBM. Tasked by the Indonesian administration to direct a Nationwide Artificial Intelligence plan, BPPT has embarked on a multiyear partnership with IBM to develop various applications for reducing fraud, addressing annual forest and peatland fires, and Covid-19 detection and modelling. Second, we draw from a subset of findings from the long-term ethnographic research by the second author in the South of China, focusing specifically on her work with a group of young, lower-class Chinese men laboring in the global manufacturing and supply chain industry that spanned the years of 2012-2016. Third, we include both of the authors' experiences as members of a humanities research laboratory initiative called 'Humanities Collaboratory' at the University of Michigan between the years of 2016-2019 which we had joined and received funding from as researchers and writers for four years. We include these reflections on our experiences in the "Humanities Collaboratory" to make a crucial point; the forms of violence perpetuated via techniques of use we encountered in China and Indonesia could easily be interpreted as representing an "Other"; when we presented preliminary findings of this research, we often received comments like: "this would never happen in Europe." OR; "of course this happens in authoritarian China." OR; "this is happening in Indonesia because of corruption." The third case demonstrates that techniques of use have shaped (Western-centric) research institutions just as much and with no less violence. Our underlying aim is to highlight how techniques of use govern a range of settings.

We thematically analyzed our data based on interpretivist and inductive techniques of situational analysis [26] such as open coding and situational mapping to highlight themes of governance, labor exploitation, affect and aspirations as they unfolded in and across our sites of research and work. While each author conducted individual ethnographic research, we discussed preliminary findings during weekly communication throughout our fieldwork engagements and worked closely together on writing and data analysis during our time in the Humanities Collaboratory. Following ethnographic research and our work in the Humanities Collaboratory, we spent an additional six months collaborating on analysis, ethnographic memo-ing, and writing. During weekly meetings, we reviewed analytical memos that we developed based on our field notes and other empirical materials to unpack what we viewed as new laboring subjects across our field sites. Across later rounds of analysis, we iteratively revisited and refined our interpretations to develop some of the paper's key themes around exhaustion, productivity, agility, and usefulness, as detailed in the sections below.

3 MAKING "ON-DEMAND" BUREAUCRATS USEFUL FOR INDONESIA (CINDY LIN)

In an inaugural address to the people of Indonesia in April 2019, President Joko Widodo detailed a particular vision for his country's bureaucratic future [85]:

When we send a message through SMS [short message service] or [WhatsApp], we can see when they are sent and when they are delivered. Our job is to guarantee [that the programs] are delivered, not just sent. I don't want bureaucracy that just keeps sending things. I want and I will enforce a bureaucracy that makes deliveries.

This technocratic vision to make Indonesia's bureaucratic and scientific agencies newly "useful" via technological methods and value systems of speed, agility, and deliverability found uptake in some of the country's most respected state science agencies. During fieldwork with one such key agency, the Agency for the Assessment and Application of Technology (hereon referred to as Badan Pengkajian dan Penerapan Teknologi (BPPT) in Indonesian language), I (Cindy) met Rajah (anonymized), a junior systems engineer tasked with developing a web platform for monitoring peatland fires and other kinds of natural and man-made disasters in Indonesia. Rajah graduated with a geography and computer science degree from one of the country's most prestigious universities before joining a multinational digital start-up for two years. His parents, who are also civil servants, encouraged Rajah to join the public sector instead for job security and pension funds. At the age of 27, Rajah has worked for BPPT for two years and has grown concerned about how his working hours were spent. Reflecting on some of the recent shifts in Widodo's government offices, Rajah explained that, "I like Widodo's move of bringing in more millennials and tech start-ups into the cabinet because it is these enterprises who will make Indonesia modern and forward-looking ("maju" in Indonesian language). I have worked in a start-up before and when compared to my time as a civil servant, that is the speed we need to have in order to catch up."

Just recently, Nadiem Makarim, an Indonesian Harvard MBA graduate and CEO of one of Southeast Asia's most widely used ride-share app Gojek, had become a member of the Presidential Cabinet. "This is an unusual move for an Indonesian president," Rajah explained, given that the political elite had mainly consisted of military cadres and the president's family members. This new direction, Rajah argued, was necessary, given that, in his view, "Indonesia lacks the entrepreneurs they need for progress, innovation, and development. I think our government needs to be more like these platforms – transparent, efficient, and productive. Nadiem will help us make Indonesia successful like Gojek, and help fix some of the urban infrastructure problems that Indonesia has long suffered, which the government has not." The ride-share company Gojek, which promotes itself as Indonesia's 'super-app' has raised $10 billion USD of investment in the last six years– capital that has partly enabled the development and modernization of Indonesian road infrastructure, urban logistics, and mobility capabilities. Tech entrepreneurs like Nadiem are the kinds of citizens that are

deemed "useful" for the nation and the state's aim to speed-up its governance processes as Rajah explained it: "What I mean is that we need a young, energized, and smart diaspora of Indonesians like Nadiem. They have the knowledge we need to reinvent Indonesia's bureaucracy because it is too slow and too. . . you know, corrupted."

Portrayals of Indonesia, and Indonesian governance in particular, as "slow" and "corrupted" has been a common story as told by international development agencies such as the IMF (International Monetary Fund) and the World Bank, with Indonesia's political elites portrayed as engaged in a wide variety of corrupt acts from the 1960s to 1990s, ranging from money laundering to reducing business permit barriers for close family members and friends. A younger generation of people working in state bureaucracy like Rajah see themselves working alongside Indonesia's "young, energized, and smart diaspora" who can – via the tools and value systems offered to them by computing and design – overcome Indonesia's (often understood as shameful and embarrassing) image of corruption, and at last "solve" the nation's development problems. Building an on-demand bureaucracy was understood by many who worked alongside Rajah as a vehicle not only to advance Indonesia but also to make themselves and the government agencies they worked for "useful" on behalf of the nation – it challenged what Rajah and others saw as an "older generation" and their corrupt networks maintained through kinship, informal relations, and economic arrangements that benefit and remain loyal to the political elites.

Joko Widodo's project to make Indonesian bureaucracy "productive" and market competitive (via the values of speed and deliverability associated with tech platforms) is motivated by long-held political commitments to reform an "older" paternal patronage system that dates back to the New Order (1966-1998). A 32-year political period, the New Order was ruled by a paternalistic political figure named President Suharto. During his ruling, Suharto cultivated a hegemonic form of masculinity in Javanese culture called 'bapak', which set the mark for what it means to be a modern, male leader during the New Order [17]. Bapakism ('fatherism' in English) confined women to domestic arenas and acted as a leader to younger men; ensuring that social stratifications registered the sovereign rule of the male authority or as Suharto calls himself "the father of the nation" [64, 69, 81]. This paternalism was rooted in the ways in which President Suharto offered concessions to his own banks and domestic monopolies, to in turn receive their political support in exchange for protecting them from external competition. State-owned enterprises and close business affiliates had great access to the country's largest credit sources, exposing the economy to external shocks during the Asian Financial Crisis in 1998. The financial crisis revealed an epidemic of patronage and protection of capitalists bred by the paternalistic rule of President Suharto himself. In reaction to critiques, Suharto justified "this is not corruption, rather the dispensing of government handouts is one of the personal prerogatives of the Javanese (the ethnic majority in Indonesia) ruler". Nonetheless, he later took on IMF's $43 billion bailout package - placing the country in further public debt - and accepted both IMF and World Bank's conditions of removing government corruption in official tenders. More precisely, this required Indonesian state officials to eradicate the use of legal state power to benefit particular individuals or groups, even if they were undertaken out of relations and kin, and open itself to the impending forces of liberalism that would expose the country further to market competition and deregulation. These neoliberal reforms occurred alongside the democratization of the polity with Suharto's fall. The adoption of technologically-enabled agility and productivity software and tools promise in Indonesia's context to at last achieve what Rajah and many others have longed for quite some time – a liberal, democratic polity emptied of corruption that has shamed and placed the nation behind.

At state agencies like BPPT, the quest to revamp Indonesian governance has manifested via the adoption of a series of computing tools and methods, specifically centered around agile software techniques and daily performance measures. These tools are deployed with the aim to enable a quick and efficient quantification of who in the agency provides "useful" knowledge and labor that contributes to the advancement of state science. The underlying aim is nothing but a complete bureaucratic overhaul of Indonesia's 4.6 million civil servant workforce that will make itself responsible as the agent of its own circumstances, and tune in to market forces. This, as per the vision of BPPT, would allow Indonesia to take action and rework not only its national state agencies, but also its global image as portrayed by the World Bank and IMF. Yet as I will show next, I will unpack how the multinational corporation IBM played a central role in this project of upgrading Indonesia's state science agencies. IBM's endorsement of design and computing methods from design thinking to agile development further legitimized desires for and rendered hopeful the demand placed on individual bureaucrats to speed up and quantify their work.

3.1 Desiring Productivity and Measuring Usefulness

The IBM Garage Methodology (hereon referred to as IBM Garage), a consultancy platform that introduces clients to agile methods, design thinking, and DevOps (an integration of software development and IT Operations to ensure continuous software development) was first contracted by the state agency BPPT in October 2019. BPPT hired IBM to develop the agency's capacities in AI (Artificial Intelligence) as the nation's new "AI Innovation Centre." Accordingly, the director of BPPT read President Widodo's call for on-demand service delivery and the push for Indonesians to become useful innovators as an opportunity to retrain civil servants in BPPT into data scientists. To do this, the director of the agency contracted IBM's services to lead a digital transformation program that would teach BPPT how to think like an agile start-up. The promised transition from a paternalistic organization to cutting-edge AI start up is best captured in IBM Garage Method's promotional slogan: the "SPEED OF A STARTUP AT THE SCALE OF AN ENTERPRISE". Viewed not only for its obvious marketing promises, the technological leapfrog for Indonesia here is not so much the promise of creating massive warfare infrastructures or railways, but the adoption of a mentality of speed and scale to make bureaucracy useful to its citizens and the nation.

To achieve this transformation in attitude and mindset of civil servants, IBM introduced 15-minute daily standup meetings to BPPT, a typical method found in agile software development cycles. Standup meetings changed how junior engineers demonstrate their

own usefulness to colleagues and senior engineers. Over a period of three months, IBM and BPPT members would meet each other in virtual stand up meetings to update each other about what they have done yesterday, what they intend to do on that day, and if they faced any obstacles or as IBM developers called it "blockers". This exercise also required that participants quantify in advance how long they would take to finish a given task, such as programming the front end UX in JavaScript. The IBM Garage team, which composed of 13 designers, developers, and cloud architects from IBM Asia Pacific, led the sessions by commending those who have done their tasks before their deadlines. Many of the junior engineers employed by BPPT turned to these techniques to demonstrate and differentiate their contributions (and usefulness) to the agency from the older employees. This included the demonstration of speed and delivery of immediacy measured through finishing tasks within a set period of time. To render oneself useful meant to show precisely how many hours one had worked, which was different from the bimonthly or trimonthly meetings BPPT used to organize that rarely provided a progress update in terms of hours. Infrequent meetings also had created a product backlog so huge that junior engineers ended up completing what senior engineers have not efficiently delegated as the deadlines closed in. Furthermore, senior employees had often assigned new projects or tasks to juniors, as they were unaware of the workload juniors had, who were too afraid to defy the tasks delegated by senior male engineers. By adopting methods of agile software development and management, junior engineers like Rajah hoped to transform BPPT finally into the kind of productive and useful state agency the Widodo presidency had envisioned, exactly because these processes enabled the quantification of their work productivity.

For the junior engineers, the stand-up meetings were opportunities to enact a non-hierarchical structure for managing assignment and complaint that was different from the paternalistic structures the senior engineers had enacted. Stand-up meetings required all participants to speak, and no one participant was privileged to speak more or before the other as had been the case in the meetings run by their senior colleagues. From IBM's perspective, such rules would make a meeting more efficient. No matter the intention, the "more efficient" meeting structure opened up space for complaints to be aired without offense. On two occasions, Rajah and his other junior colleagues raised the issue that they were not given an official assignment for the BPPT-IBM partnership and therefore, could not claim performance credit for their work. IBM developers registered this absence of official assignment as a "blocker" that deterred junior engineers from completing programming tasks. The official recording it as a blocker on the online work management tool called Trello that IBM used held Rajah's supervisor responsible for the progress of the project rather than junior engineers. In the process, the management tool and its usage by IBM had successfully translated inter-generational tensions and complaints into the legible language of work productivity. Meetings like these became a technique to air various forms of dissatisfaction with current work arrangements, framed as hindering productivity and business as usual.

3.2 Techniques of Use, Marketability, and Neo-Paternalist Violence

In early 2010, Budi, a close friend of Rajah, joined BPPT excited about the technology-driven changes afoot at the agency. But between 2018 to 2020, the time of my fieldwork, BPPT faced a number of pressing challenges. A tightening research budget eliminated much needed funds for state researchers and engineers like Budi and Rajah. Furthermore, a merger between BPPT and two other research institutes in 2019 removed the authority of BPPT's director in disbursing funds to various departments, a move that some BPPT staff interpreted as breaking patronage ties between senior and junior engineers and researchers. Researchers now had to compete to obtain funding from external sources and became exposed to external market forces. It was at this point that President Joko Widodo's plans to replace more than 300,000 civil servants with AI to create a more "agile" government raised fears of the loss of stable employment and pensions amongst the state agency employees and led to an increasingly precarious work environment.

As these processes of precarization were unfolding, many of the senior employees across BPPT aimed to demonstrate their continued relevance and productivity via IBM tools and specifically by adopting a start-up-like mentality such as the demand to develop minimum viable products (MVP). MVPs, typically aimed at attracting early-adopter customers and seed funding as well as validating first prototypes, were here deployed to speed up public service delivery such as the prediction of peatland groundwater level - an important factor for calculating fire risk during Indonesia's dry weather season - and deployment of fire prevention resources to areas at risk. One of the on-site IBM developers pitched these MVPs as follows, "The whole IBM garage method. . . started from the U.S. In Silicon Valley. All the start-ups have a great idea, a business hypothesis, and they want to grow the method and test it in the market. It's a method, a way of thinking. . . a lean method. So the IBM Garage Method is hypothesis driven, quick testing, and it's the market you are testing on." If state engineers adopted and adapted to lean production and rapid development cycles, or as IBM promised, bureaucrats would be able to develop technical solutions that were market competitive, which in turn would allow them to move away from the previous paternalistic regime that has once protected corporate actors from external market forces and regulation.

Budi and Rajah often told me how they felt envious of the rapid economic progress of neighboring countries Singapore and Thailand, whose governments they understood as lean and efficient. They understood their work with IBM as an opportunity to shed paternalism and to overcome feelings of envy. Rajah would occasionally turn to me and invoke my Singaporean citizenship after we had attended lengthy meetings with senior colleagues, "I bet none of the meetings in Singapore's government offices would last this long. We barely achieved or finished anything. Malu saja ('this is embarrassing' in Indonesian language).

The promise for BPPT in other words was that MVPs would upgrade and transform the skills of junior engineers, which would in turn, transform the global image of Indonesia: efficient, lean, agile and anti-corrupt. Junior engineers like Budi perceived such "agile techniques" as ideal instruments to educate state engineers

to become flexible and tech-savvy workers. And yet, despite these hopes, challenges in the interactions between junior and senior state engineers remained as the older generation continued to enforce strict hierarchy and in-person relationships – or as Budi put it: "Bureaucracy is the older generation. Flexibility is absent in the older generation," which Budi defines as senior staff members who entered BPPT under the leadership of German-trained engineer B.J. Habibie who exercised paternalistic rule over junior engineers. "When I am in the office, I will have to attend a discussion or be pulled by seniors into a chit chat or presentation or to do things for others – all of these are unproductive for me," Budi's refusal to chat or do favors for seniors shaped his own re-identification with a young and more productive worker who is in search for a new labor ethic. Budi explained further, "I get tired of being asked to do many things in order to get something back. I prefer to be independent and choose how I spend my own time." It was Budi's desire for and his inability to detach himself from the work style and mindset of senior engineers and their associations with an older style of political leadership that led him to believe that agile methods are crucial for reproducing a new generation of engineers.

Despite the increasing precarization and deskilling of work via data science in the state agencies, young engineers like Budi considered the adoption of entrepreneurial methods and time management techniques as fundamentally hopeful as they promised a future of efficiency and equality via the dissolution of paternalistic hierarchies and structures. These techniques channeled feelings of envy and lack as experienced by the young state engineers into hopes for a political future freed from Indonesia's corrupt past – a history that they felt they can now intervene in. The feminist literary critic Sianne Ngai defines envy as "a naked will to have. In fact, it is through envy that a subject asserts the goodness and desirability of precisely that which he or she does not have." [[63]: 35]. Here, senior engineers are perceived as holding back bureaucratic organizations from achieving speed, flexibility, and productivity, as they signified the continued endurance of paternalism that makes a corrupted third-world country "forever" caught in crisis. The adoption of agile software and time management techniques then were fundamentally aimed at the cultivation of a particular mindset of agency and control – that via the adoption of technological methods and tools the nation and its history of corruption itself could be overcome by turning its engineers and state agencies into agents of speed, productivity, and efficiency typically associated with modernity and progress. While the adoption of agile software allowed junior engineers to sideline senior colleagues, both were made precarious: junior engineers believed they needed to work more to compete with senior engineers, who in turn feared they no longer had a place in the new Jokowi administration. In the process, old and new forms of paternalistic structures endured, often masked behind a narrative of disruption, intervention, innovation, and youthful masculinity.

In the years following President Widodo's re-election into the cabinet in 2019, Widodo began harnessing youth culture and its proximity to tech entrepreneurship to refashion the paternalistic structures of Bapakism [99]. This included the removal of senior civil servants from administration and their replacement with a younger workforce of millennials. For instance, in his recent move to delegate 7 out of 12 so-called Indonesian "millennials" as expert advisors to his cabinet, Widodo justified his decision as a move to incorporate "out-of-the-box ideas and leaping breakthroughs towards development." By employing a younger generation with little to no connection with Suharto and his affiliates, Widodo aimed to signal that his new administration was now cleared of corruption and patronage. Neo-paternalism today is infused with qualities of being youthful and disruptive and therefore useful for the future image of the nation. The rise of a useful bureaucratic class is thus not a story of the disappearance of older paternalistic structures, but the persistence of paternalism that has now refashioned itself into youthful agents of efficiency, speed, and productivity who desired to reinstate forward-looking progress as a historical fact.

4 INCUBATING USEFUL "QUALITY" CITIZENS FOR CHINA (SILVIA LINDTNER)

When I (Silvia) first met Liang he had just started an unpaid position at the then brand-new Huaqiang incubator space (华强众创空间huaqiang zhongchuang kongjian in Chinese) in the city of Shenzhen in China's Southeastern province of Guangdong. The incubator is located on the top floor of a seven-story building, nestled in the city's infamous electronics markets of Huaqiangbei (华强北). The incubator belongs to Huaqiang Group, a state-owned enterprise (SOE) founded in the 1980s. Huaqiang Group was one of the early key organizations whose workers, many of whom were migrants from other parts of China, helped build Shenzhen into what the Chinese Communist Party (CCP) today refers to as China's hub for "high-tech" and "indigenous" innovation. In the early 80s, SOEs like Huaqiang were given a fairly freehand by the central government in Beijing to experiment with China's economic and social transformation as it was moving into the so-called postsocialist era, following Mao Zedong's death. Migrants from other parts of China came to Shenzhen and began working for SOEs like Huaqiang, attracted by the promise that it was now permitted "for some to get rich first" as Chairman Deng Xiaoping had famously legitimized China's partial opening to capitalist market processes, e.g. [67, 90]. In the 1990s, the CCP declared Shenzhen a success; its mode of experimentation with neoliberal capitalist market processes from entrepreneurship to privatization and foreign direct investment (FDI) were declared a model for the rest of China. In other words, Shenzhen, with its production and trading hubs like the Huaqiangbei electronics markets, was the engine for China's transformation, providing the supply chains and the social imaginary of Chinese people as economic (rather than political) citizens that were crucial to build and sustain "made in China" –China's manufacturing and design industry that has produced for the last three decades the majority of global end-consumer electronic devices from Apple iPhones to hoverboards.

Liang came to Huaqiangbei much later, in 2008. By then, the state-owned enterprise Huaqiang Group had transformed into a major real estate business whose main revenue stemmed from renting out its buildings to the vendors, traders, and producers of Shenzhen's manufacturing and design industry. By then, the CCP's aspirations too had changed. Following China's entry into the WTO in 2001, the CCP began promoting a transformation from "made in China" to "created in China," urging its citizens to upgrade China's production of low-quality products and so-called fakes

Figure 1: Joko Widodo introduces the seven new members of his 12-member Presidential expert staff on the veranda of the Presidential Palace on November 21, 2019. They sat on colorful bean bag chairs, evoking a kind of start-up aesthetic or as national news media called it "the preferred office for many of the world's millennials". [JP/Seto Wardhana], via The Jakarta Post. (https://www.thejakartapost.com/news/2019/11/22/step-aside-boomers-heres-jokowis-new-millennials-team.html.

into the production of intellectual property, patents, innovation, and eventually data-driven products and AI systems. The idea was that upgrading China's industrial production and by extension its products would also upgrade (and rebrand) the nation as a site of creativity, innovation, and entrepreneurial agency [60, 97]; the promise was that China would no longer merely execute the manufacturing of products invented elsewhere, it would take charge and indeed lead what the next generation of technology products and systems would look like, both nationally and globally. Liang came to Shenzhen during a time when exactly this transformation of China's national technology production and its global image was unfolding. It is through Liang's story (which I will detail in what follows below) that we begin to notice the violence many people in China, especially those already precarious and deemed unfit to participate in China's future making endeavors, have experienced when the CCP began endorsing a particular kind of technological value system that has long been propagated by well-known and highly prestigious centers of tech innovation and technology research in the West; the promise that methods of design and tech production from design thinking to entrepreneurial and agile approaches to software and hardware development would cultivate "innovative" citizens invested in making themselves "useful" on behalf of the nation and its economic and technological success,

especially in international comparison. These techniques of use are not a sharp rupture from past demands placed on Chinese people to self-transform from revolutionary into economic subjects in the 1980s [60, 97]. The methods deployed in incubator spaces–by way of promising participation and democratized innovation–reframe such techniques of use as hopeful and promising.

Liang didn't go to high school. His parents were migrant workers and were in no position to afford him the necessary time and financial resources to thrive in China's competitive high-school environment. "I went to middle school in Nanshan (district in Shenzhen), but that was it," he told me, "I couldn't get into high school, because I didn't take the entrance exam. Then I came to Huaqiangbei in 2008. There are many people like me here." When Liang spoke of "people like me," he referred to a generation of young Chinese men from lower-class backgrounds who had come of age alongside the city's aforementioned transformation. They had found the electronics markets of Huaqiangbei to offer them access to an intergenerational network that provided them with informal education and a social support structure that was crucial to their survival in an increasingly precarious labor market [58]. "Huaqiangbei was my education. It was like a school, basically," he explained this to me, "My education was apprenticeship and learning-by-doing." Liang's experiences in Huaqiangbei became deeply intertwined

with his identifications with the label of a low-class entrepreneur, who – while considered inferior by others – was proud of his accomplishments in the manufacturing industry: "We are not about theory here [in Huaqiangbei]. We are about doing. . . People in Huaqiangbei, to be honest, are inferior. They are weak, that's why they need to collaborate and look for partners. So they do well on resource integration. It's not theoretical here. It's all real. We just do things. It's about interpersonal communication and relationships. You can't learn this in books. That's Huaqiangbei culture."

It was his embedding in "Huaqiangbei culture," maintained through an informal network of local and international business relations, that had enabled Liang to start and sustain his own small business, plugged into Shenzhen's global supply chains, for several years. The male-centric support structures that revolved around a making-do mentality in Shenzhen's manufacturing industry had enabled Liang to survive in a rapidly changing social and economic environment that had removed pretty much all of the socialist infrastructures and value systems that once had provided workers protection from exploitation (I explore elsewhere the specifically gendered aspects of who was able to thrive in this particular environment and the extraordinary struggles women working in the same industry continue to face [60]).

But by the time I met Liang, "Huaqiangbei culture" was changing. The new Huaqiang incubator/maker space where Liang and I first met in 2015 was a key indicator of this change. The Huaqiang incubator/maker space had opened not even six months after China's prime minister Li Keqiang declared in January 2015 a new national policy that directed provincial and municipal governments to support the opening of "incubator/maker spaces for the people" (众创空间zhongchuang kongjian in Chinese). These spaces, so the prime minister, would instill a spirit of "self-entrepreneurship," "self-making," and "agility." They would empower Chinese citizens to "make things happen." There was a sense of urgency in how the new policy was framed by the CCP; China was experiencing its first significant economic slow-down since the 1980s market reforms. In other words, the model of economic development that had produced "Huaqiangbei culture," the Shenzhen miracle, and what many Western commentators and policy makers had begun to celebrate as a model of economic development (often centered around the notion that China had lifted millions out of poverty), the model which men like Liang were at times able to align themselves with in order to guarantee their own survival, this model was no longer working, according to the party's leadership. The point of the 2015 "incubator/maker space for the people" policy was precisely not to provide support for people who had co-produced the Shenzhen miracle and labored to implement China's economic transformation up until the early 2000s. On the contrary, the key aim was to induce in people the desire to – once again – transform themselves into another kind of self-reliant economic change maker, who'd prove useful for the nation (and by extension for the CCP), but this time narrated and legitimized by the kind of techno-optimistic phrases and tropes that had long been tied to Western computing and design methods; these new techno-urban spaces would produce Chinese men (promotional materials of the campaign at the time solely featured young Chinese men as the new "model innovator") who radiated optimism and potential, who would put their experience in manufacturing to good use to "scale

up", to "reach the next level," to attract venture capital, to produce ideas that were patentable.

Following the central government's directive, SOEs like the Huaqiang Group, alongside municipal and provincial level governments, turned older and often unused spaces in their possession into "incubator/maker spaces for the people." The aim was to position their business, their district, or their province as leading and successfully implementing the government's "incubator/maker space" initiative, which in turn would grant them financial resources and political support from Beijing. A gradual urban transformation began taking place over the duration of several years, with "new" models of technology production infiltrating into the pre-existing fabric of electronics production, global trade, and mass manufacturing. Several of Huaqiangbei's key SOEs equipped their buildings with similar spaces – makerspaces, coworking spaces, incubator spaces or hybrids thereof. The co-existence of the city's old "made in China" model alongside this "new" model to technology production that promised (at last) to enable China's full transition to "created in China" was key in inducing in young men like Liang a desire to "upgrade" themselves into the kinds of makers and innovators that "fit" these new work spaces and who'd render them useful.

At the same time as the markets of Huaqiangbei were gradually "upgraded" as described above, the city of Shenzhen also witnessed the build-up of entirely new innovation parks. One such project was the new "technology ecosystem" park in Shenzhen Bay (深圳湾Shenzhen Wan in Chinese), located in the district of Shekou, which was managed by the SOE China Merchants. Shekou's urban feel differs significantly from that of Huaqiangbei's, whose tight building structures, narrow alleyways, and hectic streetlife many of the foreign start-ups I met during my research would often describe to me as allowing them to develop a "feel" for and an entry into the machineries of contemporary industrial production. In contrast to Huaqiangbei, Shekou is characteristic for its wide streets, luxury gated housing compounds with lush greenery, glamorous outdoor malls, and entertainment parks. In 2016, the city's first design museum "Design Society" (设计互联sheji hulian in Chinese) opened its doors in Shekou, trailing just behind the completion of the new building of the Chinese Internet giant Tencent, whose grandiose architecture (designed by the American architecture firm NBBJ) framed the new "technology ecosystem" park of Shenzhen Bay. The technology ecosystem park would soon feature offices for rent and a new line of incubator and coworking spaces amidst trendy boutiques, coffee houses, and restaurants.

When I visited the new technology ecosystem park in 2015 when its construction was almost complete, I met and interviewed some of the first Chinese tech businesses that had been able to afford the high rent and had already set up shop. They told me that they had managed to successfully make the transition from being a Huaqiangbei entrepreneur (like Liang) to a Shenzhen Bay entrepreneur. How would working in a different district make you a different kind of entrepreneur, I wondered. Becoming a Shenzhen Bay entrepreneur, they explained to me, meant "shedding" and "letting go" of your Huaqiangbei past – a past suddenly associated with "useless" talents and skills and with what the nation deemed embarrassing: informal, grey electronics production culture that straddled the lines of illicit experimentation and branded goods for a large global market [67], and that had produced what both many in the West

Figure 2: Left – Former Industrial Space turned Incubator Space; Right – Floor Space in Huaqiangbei Electronics Markets (where Liang worked)

and the Chinese government itself would decry as the kinds of low quality products that held China back from becoming a truly innovative nation. Letting go of this past and overcoming feelings of shame and embarrassment associated with being framed "useless" was reserved for those who managed to transform themselves into Shenzhen Bay entrepreneurs seen as enablers of a bold, globally recognized, and optimistic China. Becoming a Shenzhen Bay entrepreneur, thus, meant to become – what the CCP refers to as – a "quality" citizen, i.e. individuals who saw their "use" in detaching themselves (and China) from a past that the CCP had associated with feelings of embarrassment and humiliation.

The political discourse of "quality" (素质suzhi in Chinese) surfaced in the era of China's partial colonization by Europe in the 19th and early 20th centuries. Until today, the Chinese government refers to this period as China's "period of national humiliation." Since its partial colonization, Chinese politicians have variously used the notion of "quality" to attribute China's failure to modernize to the "low quality" of its people. It has been used, in other words, to induce in Chinese people desires for self-upgrade into modern, "civilized" (文明wenming in Chinese) people who act on behalf of the nation and the CCP invested in re-establishing China's "rightful place" as a leader in and of global relations (China's "rightful place" that it had held - so the CCP - before its colonization). In the years following China's entry into the WTO in 2001, the Chinese government began attaching the notion of "quality" to Western-centric ideals of individual authorship, creativity, and innovation [60, 97]. In other words, becoming a "quality" Chinese citizen who the CCP invested in and the nation would be proud of would be one who raised venture capital funds, who wrote patents, who created intellectual property or copyrighted creations. In other words, the CCP continues to invoke China's partial colonization to instill feelings of embarrassment in citizens. These feelings of individual lack and embarrassment co-produce desires for self-upgrade among men like Liang. Many of these men would talk about Chinese manufacturing

and about their work with a sense of embarrassment; "Shanzhai [Chinese word for copycat] production is just so embarrassing" was a common phrase, I heard over and over.

4.1 Techniques of Use and their Violence

By the time I met Liang in 2015, it had become clear to many people working in China's manufacturing industry that their survival now hinged on their ability to self-transform into these newly useful, quality citizens. Urban neighborhoods such as Shenzhen Bay and "new" spaces of production like the incubator/maker spaces were all meant to induce in people desires to accomplish this "upgrade" of the self. The self-upgrade promised not only that individuals freed themselves (and China) from enduring colonial tropes of Chinese as "other," as backwards, low-quality, fake, but also to be deserving of the state's attention and of economic and social investment. Incubator spaces and their particular modes of tech production, shaped by commitments to bootstrapping, entrepreneurial agility, and speed, were ideal instruments in implementing this technique of use, i.e. they celebrated certain Chinese as carrying potential (for investment, for the nation, for the future) while continuously excluding others deemed not good enough or even useless. The incubator/maker space, in other words, becomes a machine for adjusting the self, for putting the self to use. Incubators train people to see themselves through a language of "unique skills" that had previously been dormant and that can and should be activated to attract investment. The kind of exhaustion and exploitation many experienced in this "entrepreneurial factory" [60] that celebrates certain people and skills as useful, while excluding others as useless, is masked behind techno-optimistic tropes of excellence, progress, and innovation. "The very feeling of not being good enough can be overwhelming," Ahmed reminds us, "a person might feel useless in advance of trying to do something: bodies can shake from the effort not to confirm that judgement that they will not be able to do something. . . Uselessness can travel through us from the fingertips

where we touch a surface, shaking the core of our being" [[1]: 66-67]. Liang hints at this overwhelming feeling of being deemed useless when he described how inevitable it had become to remake himself into a Shenzhen Bay entrepreneur, and yet how impossible it was for somebody like him, who was socially tied to a very different place, a place whose current configuration was no longer of use:

We understand our position well. We can't go to Shenzhen Bay yet. You can't just go there with nothing. Everything is expensive there, like labor and rent. So you need to think about where you are [positioned in society.] Shenzhen Bay is new. The government and other organizations are supportive of it. It's about brand development there, about going IPO, which is risky. When you go there, it's a process of turning black to white... it's very different from Huaqiangbei. Here people are emotionally attached to the place. Like me, I don't want to leave. It's almost like a village.

The personal costs of transitioning to Shenzhen Bay, as Liang describes it in the quote above, are high; Liang would give up solidarity, which –albeit far from ideal and plagued by various forms of class and gender discrimination– provided him with a certain capacity to survive the highly precarious and exploitative structures of globalized industrial production. Many of the people I met in my research stated that they had no other choice than detach themselves from the collective networks tied to these "old" neighborhoods now deemed "embarrassing" and in need of upgrading into something newly useful. These neighborhoods were either transformed via urban renewal projects and the integration of "new" tech spaces as described above or they were torn down. Built in their place were "innovative" technology parks like Shenzhen Bay, displacing many people deemed backwards, useless, and low quality (素质低suzhi di in Chinese). What was dismantled in the process was not only a particular form of urban sociality, but also grassroots collectivity. What Shenzhen Bay promised in their place was national and potentially even global recognition and investment; the Chinese citizen transformed into a successful, modern entrepreneur celebrated by the media, invested in by venture capitalists, and granted the support and attention from the state.

It was this demand to render oneself useful on behalf of the nation that legitimized overwork, exhaustion, low pay, and the dismantling of solidarity. In contrast to Liang's "old" business, his position at the new Huaqiang incubator/makerspace was unpaid and associated with no status. The incubator catered predominantly to the at the time growing influx of foreign makers, start-ups, and investors, who saw in Shenzhen, and in the electronics markets of Huaqiangbei in particular, an opportunity to experiment with scaling the promises of open source hardware and the maker movement into mass production, finance speculation, and infrastructural and even political change. Incubators like the Huaqiang incubator/makerspace pitched themselves as creating exactly the kind of bridge into Shenzhen's supply chains and mass production that foreign start-ups and makers desired to "hack" and "tinker" with. For people like Liang, the hope was that these connections and attachments to foreign (at the time mostly Western and predominantly white) start-ups and makers would help them to become the kinds of useful, quality entrepreneur and maker that they served; the kinds of makers and innovators that produced IP, data-driven smart products, and globally celebrated and recognized tech futures. Over the years of my research in Shenzhen between 2012

and 2018, I met many young Chinese men and women who, not unlike Liang, had accepted similarly precarious and exploitative arrangements: free or low-paid labor that demanded overwork and normalized exhaustion. Many of them endured these conditions, exactly because they hoped to be seen as one of China's celebrated future makers, i.e. useful and optimistic citizens who were (at last) given entry into a global class of tech innovators who made their nation proud.

5   MAKING THE HUMANITIES USEFUL (CINDY LIN AND SILVIA LINDTNER)

In 2015, the provost office at the University of Michigan launched a new initiative called the "Humanities Collaboratory" aimed at "creat[ing] new models of humanities research." The initial focus was centrally placed on how to envision a more collaborative and interdisciplinary line of work in the humanities. Via the initiative, the university made available generous funds for faculty to submit proposals and implement this new collaborative vision. One of us got invited to join a group of faculty colleagues in the humanities and helped put together a proposal. Our successful grant application ended up funding six faculty and three PhD students (including the first author) over the duration of three years to research and write together for the duration of three years. For the two of us, this model of scholarly work was eerily familiar; indeed, fields of HCI and information science have become successful enterprises and degree granting programs because much work has gone into legitimizing them as scientifically rigorous endeavors that promise to make technology not only usable, but also useful to industry and governments alike. With much ambivalence, we watched as our own interdisciplinary models of collaborative lab-based research and our field's suspicion of critical and humanistic work as negative [9, 13, 72] seemed to be the very model for this experiment that aimed to transform and render useful our campus' humanities.

Over time, the language and programmatic activities of the initiative itself made clear that it wasn't just aimed at getting humanists to collaborate in new ways, but to incubate and test (in a laboratory style fashion as the name itself suggests) a model of humanistic scholarship that would be newly attractive to investors and parents/students alike – humanities made useful. The initiative was in many ways one of our university's responses to ongoing criticism launched at higher education broadly but at the humanities in particular (way beyond our own institution) for they supposedly lacked relevance and use; theory and history wouldn't help students get jobs, so the story often went; what they needed to learn was how to take action, to become entrepreneurial change makers and make things happen, and to develop technological or scientific solutions to complex societal problems. The Humanities Collaboratory promised to prototype exactly that; a "new" humanities put to use for things that "mattered." And what mattered had of course already been shaped by the neoliberalization of the university itself, i.e. an institution that employs less and less tenure track faculty, but an increasing number of precarious lecturers and adjunct instructors, all of whom are portrayed as serving first and foremost "student needs," corporate interests, market demands, and donor preferences [42].

This was brought home while we attended one of the annual internal conferences the Humanities Collaboratory put on, mostly aimed at demonstrating the initiative's success to the university administrative bodies that had provided funding. Each funded lab got a slot to present its accomplishments on stage. One of the presenters was a fellow pre-tenure colleague in the humanities. With him on stage was the group of mostly female graduate students who had been working under his PI-leadership, carrying out the task to scale a humanities project. This was beneficial, for everyone, the humanities colleague elaborated; the students would have a portfolio piece that would make them more attractive on a competitive job market, and the scholarship itself would "scale." Switching in tone, he continued to elaborate, that this experimentation with his own work had led to an altered relationship to his father – an engineer who had never been able to relate to his son's professional work, until now. "You know," he explained, "even just the language of the lab, and me being a PI, made immediate sense to my dad. He was so proud!"

In the afternoon portions of the event, the graduate students who had become involved in the newly established labs funded by the Humanities Collaboratory were invited to speak, which included the first author (Cindy Lin), whose perspective we turn to in what follows:

When I (Cindy) had originally been asked to speak on the panel, I had felt a sense of ambivalence. As a PhD student in HCI/Information that regularly engages in the kinds of collaborative writing, laboratory research, and grant writing that the Humanities Collaboratory championed were of course not novel experiments, but were fundamental to how our field operated. I had felt excited about participating in one of the funded labs, because it would allow me to work with both senior and junior humanistic scholars, an opportunity that presents itself rarely. On the panel, I talked about what I felt like were some of the key benefits of the collaborative model: shared recognition between junior and senior scholars as well as a built-in structure of support. The other grad students on the panel spoke about similar "benefits"; but what transpired was that so much more was at stake for them in the humanities. My peers spoke of extreme job precarity and a highly competitive job market and a sense that there was no other option than reinventing themselves by adopting a model of fast-paced scholarship and of quantifying output that is so common in our own field. The hope was that the Humanities Collaboratory would enable these students to position themselves the way our scholarship in HCI/Information is often read; as an innovative and productive take on humanistic scholarship.

What transpired from the many conversations we (the two authors) had following this event and from our work for several years in the Humanities Collaboratory broadly was how our own university's leadership and administration had begun to deploy a technique of use via a seemingly promising model of collaboration and innovation. Experiments like the Humanities Collaboratory allowed the university to forgo any structural changes as they offloaded responsibility and struggle for survival onto its most precarious members. These investments in individuals to turn themselves into competitive job seekers were made in lieu of enabling institutional change such as direct investment in the humanities by supporting faculty and students in their ongoing work, in tenure-track positions, and foregrounding education over profit.

6 DISCUSSION: NEGATIVE FEELINGS, USELESSNESS, UNHAPPINESS, AND INJUSTICE

"Can we rewrite the history of happiness from the point of view of the wretch? If we listened to those who are cast as wretched, perhaps their wretched-ness would no longer belong to them." – Ahmed [[1]: 17]

In this paper, we have shown how design and computing methods from agile software development to design thinking and entrepreneurial tech production are techniques of use deployed by the state, institutions of higher learning, and tech corporations alike; they are central enablers of channeling people's feelings, hopes, and desires into the cultivation of productive, useful, and happy citizens, workers, students, and teachers on behalf of the state, the corporation, and the university and their respective ambitions to attract investment, students, and the "right kind of" workers. We have unpacked how techniques of use are not primarily aimed at creating innovative products, but at producing "positive" feelings. They redirect "negative" feelings of envy, embarrassment, lack, and anger into "positive" feelings such as optimism about the future, the promise to overcome "embarrassing" pasts from paternalistic structures to colonial exploitation, and a sense of control about one's life and work. In this process, structural issues of injustice are framed as private emotions and personal feelings that can and should be controlled, tamed, and overcome by individuals themselves. In other words, the demand placed on individuals to turn themselves into "useful" subjects is internalized as a personal problem that can be corrected if one adopts "simply" the right attitude, i.e. by attaching "positive" feelings to one's work, employer, and nation and by committing to "positive" values such as productivity and progress.

In this process, resistance and solidarity become less possible. Consider, for instance, how the junior systems engineers in Indonesia do not unionize or complain publicly about how they have been treated unfairly; instead, they turn to work management tools and standup meetings to document their work hours and manage complaints. Similarly, there is no collective resistance to the ongoing gentrification of Huaqiangbei in Shenzhen that demands social and economic self-transformation of the people who have built its manufacturing and design industry over the last decades; when people turn to coworking spaces, tech incubators, and makerspaces in the hopes to shed a past deemed embarrassing, feelings of anger, disappointment, and hope are channeled for the interests of investment, real estate, and governance. And graduate students turn towards a fast-pace, entrepreneurial model of scholarship not because they believe the restructuring of the university is just but because these computing-influenced modes of production promise that they can overcome economic instability and job precarity. We suggest that such forms of depoliticization that are enabled by digital technology and that undermine solidarity and collective action and activism require careful study and attention. Such future research is particularly pressing for a field such as HCI that tends to differentiate

itself from computer science and engineering fields via narratives of do good, justice, and change.

Throughout, we have shown how those framed as "lacking," often shaped by racialized, colonial, and disciplinary tropes of "other" and "uselessness," get caught up in a vicious cycle of desiring what they are denied. Sara Ahmed refers to this process as the "injustice of happiness," i.e. a form of coercion, that appears voluntary, to follow conventions of leading the good life, the modern life shaped by ideals of progress, productivity, and happiness. The perpetual postponement of the good life for those deemed unfit (the colonial "other," the "lazy" working class, the "negative" humanist, the "feminist killjoy," the "unhappy queer," the "angry Black woman") is a form of violence by demanding of some to endure inequalities and injustice in the present on behalf of others, of a "better" future, and the interests and needs of the state, institutions, and corporations.

Design and computing methods and tools have become the latest techniques (in a long array of technologies) that enable such forms of violence and injustice via the cultivation of "positive feelings." We began this paper by outlining how techniques of use, i.e. a value system that moralizes "usefulness" and productivity, govern the field of HCI, including what is considered a contribution and worth supporting, despite a sense that we have moved "beyond use." Indeed, the legitimacy of the field rests in many ways on this very production of positive feelings attached to design and computing. This is visible in a narrative of "do good" (and we'd add "feel good") that – as information scholar Joyojeet Pal has poignantly observed – leaves intact the very structures of inequity and injustice it promises to "solve"; as Pal observes: "The notion that lack of technology, and not the lack of resources or structural scaffolding, is the main impediment to enabling a more just society not only overvalues the technology artifact but, more dangerously, can offer an excuse for why institutions need not act" [[68]: 715]. It is likewise visible in continuous attachments to ideals and frames of technology as enabler of development and inclusion, which foreground individual change (e.g. by promising to empower individuals to turn themselves into the kind of modern, happy, and productive citizens their state, workplaces, and educational systems demand). Such techniques of use not only leave systemic issues of racism, sexism, and ableism intact, they also undermine concrete alternatives by "deepening our dependency on oppressive structural conditions" [[43]: 3].

Taken together, we have argued that the attachment of "good" and "positive" feelings to design and computing itself is a form of injustice that silences and normalizes violence suffered by those deemed not "yet" productive, useful, able, agile innovators and change makers.

Ahmed reminds us that there are risks involved, when we confront such structures and processes of injustice. For instance, challenging a rhetoric of progress and positivity can easily be dismissed as "mere" expressions of envy, laziness, or anger. It might also be harder to confront certain problems when powerful institutions – from universities to interdisciplinary fields like HCI – use activist commitments to justice for self-branding and for the purposes of attracting investment. Confronting the institution or choosing to disengage can feel like self-sabotage and like committing yourself "to a path that leads eventually to

your own cessation" [1]. So, how do we counter what has become so entrenched and seemingly impossible to extract oneself from?

6.1 Not Getting Used to It: Attending To Negative Feelings

"We need to think about unhappiness as more than a feeling that should be overcome. Unhappiness might offer a pedagogic lesson on the limits of the promise of happiness." –Ahmed [[2]: 217]

Silvia was recently up for tenure promotion and Cindy is preparing her job market materials while we are finishing the write up of this paper. Along the way, we have been variously told – often by well-meaning colleagues and mentors – that getting "there" (e.g. tenure, the tenure-track job) entails giving up on certain ideals in the present. In many ways not unlike the people we have met in our ethnographic research and work – in incubators in China, in refashioned science labs in Indonesia, and in the Humanities Collaboratory – we too have been called upon to channel our commitments to justice and critical work in ways that do not jeopardize future employment, future citations, and recognition. Ahmed describes how the modern university has been particularly powerful and successful in cultivating such forms of redirecting critical and feminist commitments towards what serves the interests of the institution: "away from certain kinds of work, away from certain stances, away from words even: do not do a feminist project, that will not get you very far; do not do race, race is too narrow; race and gender are often framed as too narrow" – "We learn that in order to secure a future, you might have to give up on certain possibilities in the present." [[1]: 194]

If one manages to "fit" in the system (get tenure, get the job, etc.), it is easy to "get used to it," because we have learned how to benefit from the production of use (of making ourselves useful). And yet, there will be – along the way – moments where we refused those instructions, where we started on less used paths. For instance, experiences of burn-out, exhaustion, violence, and feelings of emptiness, lethargy or disillusionment (some of which we documented in this paper) are all sign-posts that in fact we can't get used to precarious and exploitative work environments covered up underneath a rhetoric of feel good, do good, progress, and happiness. Rather than overcoming such "negative" feelings, they might serve as shared entry points into crafting an alternative university, alternative commitments in our research fields, and alternative ways of relating to technology. We need to do this work collectively, Ahmed reminds us; "otherwise deviation might simply mean cessation, institutional death, reaching the end of the line, not having enough support to keep going." [[1]: 196] "Not getting used to it" refers to the willed and collective work "not to reproduce an inheritance, not to create the same old shape."

In the context of HCI, this could include tracing histories and "legacies" of the field that do not feel "so good," e.g. the field's complicity in capitalist value accumulation, its valorization of Western-centric modes of creativity and innovation (and adjacent affinities with the tech industry), its structural racism, and its evaluation metrics that champion quantity and productivity. This work begins from the understanding that not everyone is granted to participate in the "good" legacies of the field in the same way; that some have

to work harder, exhaust themselves more, and endure injustice to work themselves into, and fit dominant stories of progress and positive change. If we pay attention to this form of labor that is necessitated of some more than others (as we have attempted to do in this paper), we begin to notice that a seemingly inevitable system of progress and forwards-movement requires that we all continuously nurture it and that it therefore can be otherwise [60].

Attending to negative feelings, and the structures of inequality and injustice that give rise to these negative feelings, does not mean pessimism or loss of hope, as feminist scholars have long argued [1, 86]. "Both optimism and pessimism involve the temporality of the promise," Ahmed agues, "they see the future in terms of what it promises to deliver or not deliver." [[2]: 171]. The anticipatory logics of optimism-pessimism either make people endure struggles and violence in the presence by continuously postponing "better futures" or create feelings of inevitability and doom. Instead of framing "negative feelings" as something to overcome, along a trodden path of a forward movement, we follow feminist and critical race scholars who urge us to attend to the structures and systemic inequalities that reproduce these "negative" feelings. If we stop approaching negative feelings as something to overcome, we might learn a great deal about what continues to reproduce injustice, unhappiness, and negative feelings.

To attend to these negative feelings entails considering how feelings of anger, grief, and envy, when expressed by marginalized people, tend to be shut down, shoved aside, refused, and shunned away. When social, economic and racial inequalities manifest in negative feelings, people of color, LGBTQ communities, and disabled individuals are asked to manage and restrain such feelings, precisely because they threaten to reveal unequal conditions and injustice. For instance, prior research has shown how Black men on predominantly white university campuses have to actively restrain their emotions in order to get along with white colleagues and not be cast as the "angry black man" [94]. The framing of computing and design as capable to overcome such processes of "unhappiness" (e.g. in the form of exclusion, racism, sexism) is exactly what covers up the social relations and structural issues that produced them in the first place.

We argue that justice in computing and design is seldom accomplished by harm reduction or the reduction of pain alone [16], which reproduce the anticipatory logics of progress that continue to justify violence in the present. There is a tendency in HCI to rush to a solution and to recuperate the field, e.g. by identifying some of its "bads" and fixing them. Justice, by contrast, centrally involves a deep interrogation and understanding of enduring racism and sexism and other injustices rather than rushing to overcome them. Attending to "negative" feelings at the site of technology use and production is not hopeless or pessimistic, even if it doesn't feel good, it is a form of justice work; it is a commitment to learn from and listen to the bodies and sites that experience negative feelings. It is a commitment to sitting with (uncomfortably so) rather than simply overcoming and fixing injustice, violence, and pain.

We turn once more to HCI and a recurring tendency to frame critique of entrenched structures of exploitation (enabled by computing and design) as negative (as a detour, as slowing us down, as hindering progress and tech innovation). Rather than framing critique as just as "useful" and "productive" as technology design

for the purposes of the "progression" of our field, our aim in this paper has been to stick with and begin from – rather than overcome – the so-called negative. Critique does at times produce feelings of unease and discomfort, but that's exactly its purpose as the anthropologist Webb Keane reminds us: "The aim of critique is *to open up what we can imagine.*" While critique might not feel good and disrupt stories of "do good" and "betterment," that's exactly its point. The point is to show how only some get to attach themselves to stories of progress that feel "good," while those who speak up about the violence and exploitation that they experience are continuously excluded. Indeed, the most hopeful aspects of technology research and design might well be not its promises of progress and positive change, but its recent calls to attend to its racist, sexist, ableist, heteronormative, and exploitative structures, e.g. [13, 15, 22, 25, 34, 46, 47, 49, 55, 65, 66, 70, 74, 76, 79, 83, 98]. The genealogical approach we have followed in this paper aligns with these ongoing efforts in our community by attending to enduring structures of injustice and violence. A genealogical engagement with our field's past and presence breaks with a tendency to trace (the same old) lineages and stories of linear progression; it challenges the persistent colonial ideal of progress as a historical fact and a moral project; it is when we turn to our field's complicities and injustices that we can open up our imagination towards other sociotechnical worlds and notice how technology can be otherwise.

ACKNOWLEDGMENTS

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