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Hacking Imaginaries: Codeworlds and Code Work Across the U.S./Mexico Borderlands

By

Héctor Beltrán Jr.

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

In

Anthropology

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Charles L. Briggs, Chair  
Professor Aihwa Ong  
Professor Daniel Fisher  
Professor Patricia Baquedano-López

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## Abstract

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Drawing on ethnographic fieldwork conducted between 2014 and 2016, this dissertation investigates emerging forms of hacking and tech entrepreneurship by moving between key physical sites in Mexico and the San Francisco Bay Area. The anthropology of hacking has shown that European and U.S.-based advocates of F/OSS (free and open-source software) regard formal politics as counter-productive to their technical craft, which is aimed at liberating information and technology. Anthropologists have mostly focused on an undifferentiated hacker community precisely because hackers themselves claim that markers of difference are irrelevant to their social and technical organization. But what happens when practices of hacking challenge the boundaries of colorblindness and intersect with constructions of race, nation, and class?

To examine how the shifting politics of hacking influence models for technology-driven capitalism, I conducted participant-observation in hackathons and co-working spaces with self-identified “hacker-entrepreneurs.” At one level, my dissertation makes a comparative analysis of how communities positioned on separate sides of the U.S./Mexico border use their “code work” to make modifications to established technological and entrepreneurial protocols that themselves aim to redress economic injustices. On another level, as these two tech communities coalesce by participating in events aimed at empowering a Latina/o collective, I show how Latinidad gets constructed (and contested) across hierarchies of race, nation, and class.

Scholars have long been interested in social protests and movements among Latina/os and in Latin America. I find them in unlikely places—in spaces normally thought to be advancing capitalistic accumulation. My research shifts from thinking about technological capitalism in terms of abstract models and focuses instead on the logics and subjectivities people use to structure their everyday work and social lives. I look at one phenomenon that might ordinarily be broken up into different anthropological domains (technology, racialization, capitalism, global economy) and consider how they all come together by focusing on hacking/entrepreneurship as a critical site of academic inquiry.

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## [0] INTRODUCTION

### [0] *TODOS CON EL MISMO CHIP*

In 2014, *El Chico Partículas* [The Particle Boy] became a household name in Mexico and subsequently gained eminence across the world. At age 17, he had built the world's cheapest particle accelerator. The miniature model cost less than 1,000 pesos (approximately \$50 US dollars) to make, and he's proud to tell you that it took him 8 months, 23 days, and 19 hours to construct the accelerator. "I would start with what I could find: cables, wires, aluminum, PVC pipes," Cristóbal Miguel García Jaimes says.<sup>1</sup> If the thrifty approach and time-management skills he takes to his innovations are not enough to impress audiences, El Chico Partículas can tell them about how he spends his weekends. He works with local youth close to his native San Miguel Totolapan, Guerrero rebuilding old computers and teaching young people to code. "Qué tal si el próximo genio de la computación está en la sierra!" [What about if the next computer genius is in the hills[of Mexico]!] he exclaims. San Miguel is described as having strong Nahuatl roots, and Guerrero is one of the most marginalized states in Mexico.<sup>2</sup> He goes on to describe San Miguel as, "un pueblo con mucha hambre, en cuanto a alimentos, pero también con mucha hambre en cuanto a superación." [a town with a lot of hunger, in terms of food, but also hunger in terms of achievement.] In the multiple interviews Cristóbal has given about his project and his origins, he is quick to point out that his case is an example of how in places like San Miguel there is "talent," not just violence (as popular media accounts would have you believe), and that with enough will and education anybody can "salir Adelante." [get ahead in life.]

El Chico Partículas's humble origins and sense of overcoming is not lost on government entities, either. He is a poster boy for the government's "Mexico Conectado" project, which promises to end the digital divide across the country by "connecting the disconnected"; government agencies promise to provide computer and internet access to marginalized populations or communities "in need." The project establishes *nodos* [nodes] or *puntos* [points] across the country where young people can gain access to the promised technological infrastructure that will help them "get ahead" in life. In addition, the nodes are meant to help participants equip themselves with other life skills, namely those that the government sees as fundamental to succeeding in the global information economy workforce.

At the "original" node, HUB iLab Veracruz in the city of Xalapa, Cassandra, 23, works with her tech startup team to polish up their demo pitch for Re-Active, a mobile platform that combines thermo-therapy and electro-stimulation to allow users to reduce chronic body pain using their smartphones. They'll be presenting Re-Active at the upcoming "Week of the Entrepreneur" in Mexico City, a week-long national event aimed at bringing together Mexico's investors, politicians, tech community, and young entrepreneurs to boost Mexico's tech startup ecosystem.

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<sup>1</sup> All quotes translated from Spanish by author unless otherwise noted.

<sup>2</sup> At least it is described as "having strong Nahuatl roots" in popular media. The amount of people who identify as indigenous or speak Nahuatl is minimal.

Cassandra is one of many young Mexican entrepreneurs working feverishly at iLab to develop their ideas that might resolve pressing societal problems with the use of technology, but also with the hopes that their startup companies might attract the attention of venture capitalists or startup accelerators. Ideally, their startup idea might scale to become Mexico's Facebook, Dropbox, or Amazon, the iLab rhetoric tells them. As recent university graduates with training in engineering, design, and business brainstorm to come up with the next business technology innovation, they do so under the gaze of model entrepreneurs such as Mark Zuckerberg, Steve Jobs, and Jeff Bezos, whose images and inspirational quotes can be found decorating iLab's walls. Together with witty tech wisdom such as "Just Google It" and writeable walls where anybody can start brainstorming startup ideas on a whim, the modern, playfully-designed 4-story building opened its doors in January of 2014 with tech "innovation" and "disruption" in mind; iLab was designed as a space where young entrepreneurs, in teams of 2-6, can quickly generate, validate, and take their tech startup ideas to the market, where they might generate revenue (and perhaps also "make the world a better place") by "disrupting" the way a particular industry works.

Not surprisingly, "inglés y computación para todos" [English and computation for all] is a phrase one frequently finds on promotional materials for the nodes. The phrase indexes the overarching *todos con el mismo chip* [everybody with the same chip] initiative proposed by the government. The nodes are meant to be the physical implementation of this government "reform." Much of my ethnographic labor takes place within this original "node" in Veracruz and traces how subsequent nodes are modeled after this one in other Mexican states, with corresponding "hackerspaces" and "hacker schools" (more on these spaces and the government initiative in the next section).

In a video interview with Cristóbal he transitions into what seems to be more of a propagandist invitation from the government than a story about his particle accelerator.<sup>3</sup> His tone changes as he invites the audience to take action:

Por eso, hoy quiero invitarlos a estar conectados con el mismo chip en los puntos 'México Conectado,' invitarlos a creer y crear. A inspirarnos, y hacer que las cosas que parecen imposibles, sean posibles. Porque por cada joven que tenga pasión por inventar y aprender, tendremos un futuro talento más. Pensando en el progreso de nuestro país.

[For these reasons, today I'd like to invite you to be connected with the same chip at the 'Mexico Connected' points, [I'd like to] invite you to believe and to create. To inspire, and make things that appear impossible, possible. Because for every young person that has the passion to invent and to learn, we will have one more future talent. [We are] thinking about the progress of our country.]

El Chico Partículas attributes his success to his technical ability, but more so to his willingness to try hard and find a way to create his own opportunities: "A esto me refiero cuando digo que no se necesitan superpoderes para concretar cosas, simplemente basta con la voluntad y la convicción de hacerlas y echarlas a andar. Ése es el camino." [This is what I am referring to when I say you don't need superpowers to make these

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<sup>3</sup> Interview available online: "Historia de 'El Chico Partículas' Orgullo MX." [https://www.youtube.com/watch?time\\_continue=9&v=2sBymy3aSxo](https://www.youtube.com/watch?time_continue=9&v=2sBymy3aSxo)

things real, you simply need to have the will and the conviction to make them happen and get them going.]

Perhaps more importantly, he makes clear that his indigenous and marginalized background had had no effect on his ability to *salir adelante*. When he attended Prepa 6, a prestigious and competitive public high school affiliated with UNAM (The National Autonomous University of Mexico), he says, “me dí cuenta que para que los proyectos se hicieran realidad, ya para alejar de las cosas malas, negativas — como las burlas de mis compañeros cuando me llamaban Indio — yo tenía que prepararme.” [I figured out that in order for the projects to become a reality, I had to distance myself from bad things, negative things – like the ridicule from my peers when they called me Indian – I had to get ready.]

That El Chico Partículas’s story has gained prominence is not surprising. Not only has he accomplished a notable project, but he also represents the progressive, forward-thinking “modern” subject Mexico would like to have represent their future-thinking agenda. In the previous quote he confirms that he did not let people hold him down when they called him *Indio* [Indian]; in order to focus on his technical projects, he had to overlook the racism of his classmates. Even if he might identify with his “Indianness,” or the indigeneity that makes up his *mestizaje* (the purported mixing of Indians and Spaniards), it is also a part of Mexican identity that “modern” subjects in Mexico learn to tame or “leave behind.” At least this is a position that nation-building discourses have convinced them to occupy.

That is, El Chico Partículas reassures his audience that his positionality falls in line with Mexico’s 20<sup>th</sup> century national project of *mestizaje*, which posits the Indian as primitive other and at the same time, as the very essence of the nation (Lomnitz 2001; Yeh 2015). Alejandra Leal Martínez (2016) refers to this conundrum as the “specter of the Indian,” the idea that the *Indio* is the uncivilized, primitive, and incommensurable “Other” that permeates the “future-thinking” mestizo; the *Indio* thus prevents the “cosmopolitan” mestizo and the nation to become fully “modern.”<sup>4</sup> In her interviews with middle-class “creative” workers in Mexico City, one of Leal Martínez’ respondents, speaking of street vendors, says, “All Mexicans, in some way, carry it integrated in their chip—cheating and corruption” (2016:556). The respondent reiterates stereotypes about the urban poor but quickly slips into speaking of “all Mexicans,” convinced that that the backward, cheating, corrupt “Other” is capable of peeking through at any moment, firmly “integrated in the chip” of every Mexican citizen. If this “specter of the Indian,” the fear that the primitive Other might become manifest from the hidden layers of the chip, then the government’s *todos con el mismo chip* [everybody with the same chip] has rightly anticipated Mexican citizens’ anxieties and proposed a solution to reprogramming that chip.

Thus, the celebration of “modern” engineers, scientists, and entrepreneurs becomes part of Mexico’s nation-making project to stage the potential of technology to fulfill the promise of progress. The production of these socio-technical imaginaries is mobilized to deal with uncertainties and contingencies that have animated tensions

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<sup>4</sup> For an analysis of how neoliberal discourses, national imaginaries, and aspirations to a Euro-American “modernity” come together to blame indigenous people for failing to become “modern,” see Briggs and Mantini-Briggs (2003). For an analysis of how new “modernities” in Mexico are always constructed in relation to new “traditions,” see García-Canclini (2009[1990]).

between old and new, traditional and modern, technical and non-technical – all fraught with racial ideologies. The promise of *entrepreneurial* engineers and scientists helps to promote a political agenda where young people are asked to appropriate neoliberal discourses about taking initiative, being self-satisfied, not waiting for government, and being “socially conscious” (Urteaga 2012).<sup>5</sup> These “new” anxieties about the future are performed by “the state,” as nodes are constructed here but not there; they’re also performed by young people within and across these nodes as they appropriate state discourses but also actively develop particular modes for constructing and inhabiting futures in Mexico.

This connection between entrepreneurial subject-making and neoliberal nation-making is not specific to Mexico. Describing projects across Asia and Africa that present entrepreneurs as drivers of forward-thinking, large-scale social change, Lilly Irani states, “These projects cast entrepreneurs as collaborative rather than agnostic, technical rather political, and constructive rather than complaining” (2015:803). The model entrepreneurial hacker thus emerges as a valuable subject in the Mexican political-economic landscape, where the majority of young people exist disconnected from institutional support and need to provide for their health, work, education, and security (Reguillo 2010; Valdez 2009). About seven million young people ages 14-29 in Mexico are either looking for employment, not enrolled in school, or fall under the broad category of “not economically active” (Instituto Mexicano de la Juventud 2010). Only a minority is connected to institutional circuits that allow them to make decisions about their livelihoods; nevertheless some opt for working “by the project,” in the “here and now” and “in their own terms” (Urteaga 2011). Some claim to belong to a generalized “generation of disenchantment,” stating, “They fooled us, we did what they told us and in the end things aren’t the way they told us they would be” (García Canclini and Cruces 2012:xviii).

Perhaps more interesting, then, is to think about similar stories about other young people in Mexico that have not gained the same prominence as that of El Chico Partículas’s story. About a three-hour drive from San Miguel, another interview was taking place at around the same time that El Chico Partículas received his *Premio Nacional de la Juventud* [National Youth Prize] in 2014. In this interview, the interviewee was explaining how his rural school, where he was studying to become an elementary education teacher, functioned on a day-to-day basis.<sup>6</sup> At the *escuela normal* [“normal” school], the students function on a self-sustaining model, growing crops for themselves, cleaning after themselves, and engaging in theoretically sophisticated conversations about pedagogical methods they plan to implement when they become teachers. One of the requirements to enter this rural school, the interviewee claims, is to come from a family of *campesinos* [working-class farmers], or at least from a poor family. This type of rural school has historically been at the forefront of social movements; their students hold a commitment to redressing social inequality by using innovative pedagogy to address issues of racism and class inequality as part of formal education.<sup>7</sup>

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<sup>5</sup> I explore the use of “neoliberal” further in the methods section and in *Hacking\_Imagaries*[4][4].

<sup>6</sup> Interview by Daniel Hernández. Available online: [goo.gl/joMYQs](http://goo.gl/joMYQs)

<sup>7</sup> I use “formal” education to refer to education within the classroom. In Mexico, *educación* [education] frequently refers to manners; *tener buena educación* [having good education] means you are well-mannered. Differentiating those who have “good education” from those who don’t is also directly to

The interviewee did not give his name, but it was perhaps because he was afraid to do so. He was speaking from Ayotzinapa, Guerrero, the town that made world headlines because of the 43 students that had gone missing from his school on September 26, 2014. While the case is still officially “unresolved,” the students are still “missing” and many accounts link federal forces for the direct involvement in the incident, claiming that the Mexican Army was responsible for kidnapping and murdering the students.<sup>8</sup>

Like El Chico Partículas, this future teacher at the escuela normal in Ayotzinapa sees a brighter future for young people in Guerrero. Along with his student colleagues, he works directly with a younger generation to implement self-sustaining projects aimed at achieving a more egalitarian future at the same time that he interrogates the underlying structures responsible for the inequalities in the first place. He is quite reflexive regarding how his school’s intervention is perceived by the government: “Hay una tendencia a el desmantelamiento de este tipo de educación porque no responde obviamente al modelo económico implementado hoy día por este gobierno.” [There’s a tendency toward the dismantling of this type of education because it obviously doesn’t align with the economic model implemented today by this government.]<sup>9</sup>

Unlike El Chico Partículas, however, this anonymous interviewee’s interventions are not of the “technical” kind – the interventions that might help Mexico arrive on a global stage, or perform the modernity necessary to be part of this “modern” collective. In other words, El Chico Partículas demonstrates his drive to take initiative, to “break rules” and be rebellious, in the sense that he doesn’t follow standard curriculum and makes do with the “tools at hand,”<sup>10</sup> but he isn’t perceived as being nearly as threatening as the student teachers in Ayotzinapa. We get a sense of this difference and the two very distinct positionalities with the following comments by the anonymous interviewee:

El estado siempre ha visto a Ayotzinapa como un foco rojo, no solamente en Guerrero pero en toda la nación. Porque aquí, los que estudiamos aquí, se nos da la facilidad de ponernos al tú por tú, con quién sea, de responderle a quién sea, de mirar a los ojos a quién sea, de saber defendernos.

[The state has always seen Ayotzinapa as a red light, not only in Guerrero but in the entire nation. Because here, we who study here, have the ability to stand up to anyone, to whoever, to answer to anyone, to look at anyone eye to eye, to know how to defend ourselves.]

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connected to classism and racism. For example, saying “provecho” [“take advantage of” or “enjoy”] before a meal is seen by some as “good manners,” but I’ve also heard others refer to this phrase as something only “poor people” say.

<sup>8</sup> The mass murders caused national scandal, protests, and political commentary. For a collection of texts from Mexican and other Latin American scholars addressing the incident, and criminalization of particular youth across Latin America more broadly, see Valenzuela 2015.

<sup>9</sup> Padilla (2013) shows that “escuelas normales” are a direct product of the Mexico’s 1910-1920 revolution and gained prominence in the 1930s as part of a push for land rights and worker’s education and political consciousness. Known for their political radicalism they garnered frequent intelligence reports from Mexico’s *Secretaría de Gobernación* (Ministry of the Interior).

<sup>10</sup> Levi-Strauss’ (1973 [1962]) debates the difference between the bricoleur and the scientist/engineer.

This quote resonated with me in particular because of the “mirar a los ojos a quién sea” [to look anyone in the eye] comment. It sounded very similar to a phrase that was recurrent in the interviews I conducted with administrative leadership at the co-working space where I conducted research in Xalapa. These administrators frequently mentioned how the students that they had recruited to the coding/entrepreneurship bootcamp initially were not able to look people in the eye. After iLab’s technical and entrepreneurial training, however, they were able to look them (the administrators) “in the eye.” They used this phrase in particular to refer to the participants they had recruited from lower socio-economic brackets.<sup>11</sup> The government-sponsored space for creativity and economic productivity was also a space for the cultivation of individual and collective “empowerment,” so long as the empowerment, that ability to look the other “in the eye” was learned and rehearsed within the confines of the co-working space.

## [1] HACKERS AND HACKATHONS

This dissertation explores the myriad ways that an “innovative culture” becomes central to resolving Mexico’s social ills. In particular, I highlight how innovation is linked to technological development and what other kind of development is left out in the process. I investigate how young people like El Chico Partículas become model technical and entrepreneurial subjects in nation-building projects; more specifically, my ethnographic probe is aimed at the way young people are invited to learn computer programming, “coding,” as a way to resolve societal problems. For the Mexican government, setting up “nodes” across Mexico, where young people learn how to code, with the “todos con el mismo chip” [everybody with the same chip] displayed prominently in their newly constructed co-working spaces, is an efficient and scalable way to “develop,” “modernize”, and appear economically competitive. These spaces are not always set up, however, by governmental or even by private entities. Many times, the co-working spaces, hacking spaces, makerspaces, and even the hackathons are organized by young people themselves, some of whom are very critical of the state institutions and disassociate themselves from these entities very explicitly.

The hackathon is a ritual event for the hacker-entrepreneurs. In a span of 48-72 hours, participants are expected to meet partners, develop a mobile application related to an organizing theme (e.g. healthcare, transportation) into a viable tech startup company, and pitch their startup to investor-judges. The pitch must convey why the startup is an innovative project, what problem it is resolving, and most importantly, that it is scalable and economically viable in the current market. By choosing the hackathon as a research site, I build on work by scholars who have analyzed the event as a microcosm of Silicon Valley dynamics, where participants perform mercurial allegiances and work in focused, high-innovation cycles meant to mimic free-market business processes (Jones, Semel and Le 2015). At my research sites, young hackers and entrepreneurs (usually between the ages of 20-35) learn startup methodologies,

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<sup>11</sup> Coincidentally, the iLab administrators also referred to these participants as “from the mountains,” the same phrase El Chico Partículas uses.

brainstorm and prototype their products, and develop “pitches” that they use to present their startup ideas.

I use the term “hacker” to refer to someone who loves to program computers in the spirit of playfulness and exploration and who disassociates from capitalistic or technocratic motives.<sup>12</sup> My focus is on the hackers who have the technical skills to put in the “code work,” and my aim is to add texture to the contours of everyday hacker practices, inside and outside of the hackathons and hackerspaces, without reifying the “hacker.”<sup>13</sup> (See *Hacking\_Imagaries*[2][1] for genealogy of “hacking” and the “hacker.”) Of course, not everybody fits into this “hacker” identity and category so neatly, which is why I use the term “hacker-entrepreneur” to show how many research participants navigate domains that seem contradictory: a hacker-world aimed against capitalism and an entrepreneur-world that advances capitalist practices. Thus, instead of presenting simplified versions of coders/hackers as either duped neoliberal subjects or empowered coding heroes, I explore ethnographically how young people in Mexico navigate processes of self-making and being-made.<sup>14</sup> How is that they fill co-working spaces and hackathons with meaning, hope, and critique? I attempt to answer this question without losing sight of the overarching political economic processes at play.

Recent scholarship has looked away from the Euro-American hacker lifeworlds and focused on hacker communities in the Global South (Chan 2013; Takhteyev 2012). My goal is to add nuance to an undifferentiated “global” hacker community at the same time that I add complexity to the “*Mexican* hacker,” and more importantly, to investigate how the shifting meanings of hacking are a sign of significant technical and political change (Coleman and Kelty 2017). By putting in the code work alongside a heterogeneous and shifting group of hackers within and outside of the hackathon, across different hackerspaces, and by spending time with them in their daily lives, my ethnography highlights the ways young people position themselves in relation to narratives that promote the “promise of technology” (Shankar 2008).<sup>15</sup> How do their practices index the ways in which they learn to function inside of a neoliberal economy by using different

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<sup>12</sup> Kelty (2008) uses the term “geek” to avoid subversive or criminal connotations and to be more inclusive of the lawyers and activists sympathetic toward free and open-source software (F/OSS) endeavors. I prefer the term “hacker” for those who have the technical proficiency to do the computer coding; moreover, I found this is how hackers identify in Mexico.

<sup>13</sup> I’ll use “hakerspace” and “co-working space” interchangeably throughout the dissertation unless their distinction matters for conceptual work at hand.

<sup>14</sup> The dual process of self-making and being made comes from Ong’s (1996) work, where she takes issue with Rosaldo’s (1997) conception of “cultural citizenship,” claiming that this framing makes it seem like cultural citizenship can be unilaterally constructed and that minority groups can escape the cultural inscription of state power and other forms of regulation that define that very modalities of belonging. “Rosaldo’s concept of cultural citizenship indicates subscription to the very liberal principle of universal equality that he seeks to call into question” (738). Thus, Ong defines cultural citizenship as a dual process of self-making and being made, where cultural practices and beliefs are produced out of the *negotiating* the often ambivalent and contested relations with the state’s hegemonic forms and civil society’s regulatory regimes.

<sup>15</sup> Similarly, Davidson (2011) explores how youth navigate the lived space of Silicon Valley, and cultivate selves and aspirations that align with the “techno-civilizing” process. For place-based ethnographies of how youth of color navigate Silicon Valley in relation to white, middle-class aspirations, see also Ramirez (2007) and Best (2006). For historical and sociological analysis on how the Valley’s tech economy intersects with the politics of race and labor, see Pellow and Park (2002), Pitti (2003), Zlolniski (2006). For more optimistic views on California’s technological future see Pastor (2018).



resources and by appropriating the discourses of flexibility and self-management while they remain outside of formal routine employment? By exploring my research participants' multiple, overlapping, and contradictory relationships to the *hackerworlds*, I aim to highlight critiques that emerge about neoliberal work life from these "other" hackers or code-workers (Amrute 2016). Hackers in Mexico immerse themselves in the "coding sublime," navigating the politics of making and not making at the same time that they re-interpret coding logics, such as "loose coupling," to re-organize their relationships with entities who produce value from their hacking.<sup>16</sup> As they negotiate their new subject positions and conditions, Mexican hackers create a collectivist response of alternative meaning-making (and code-making) to fill an overarching neoliberal program with substance, meaning, and materiality.

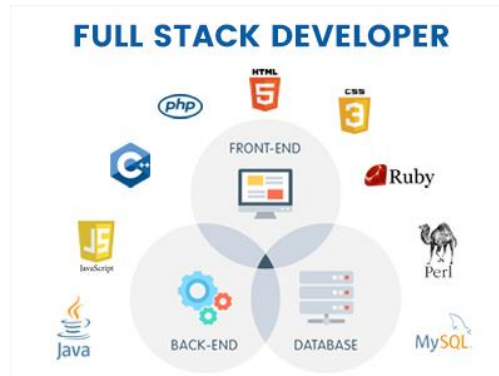
To highlight how they do so, I dive into the codeworlds myself to take seriously the labor implicit in coding and the joy my research participants experience when they put in the *code work*; and I take even more seriously how and why the codeworlds that we navigate are constructed in the first place. In order to this, I propose a form of inquiry I call "navigating the ethnographic stack."

## [2] FULL-STACK ETHNOGRAPHY

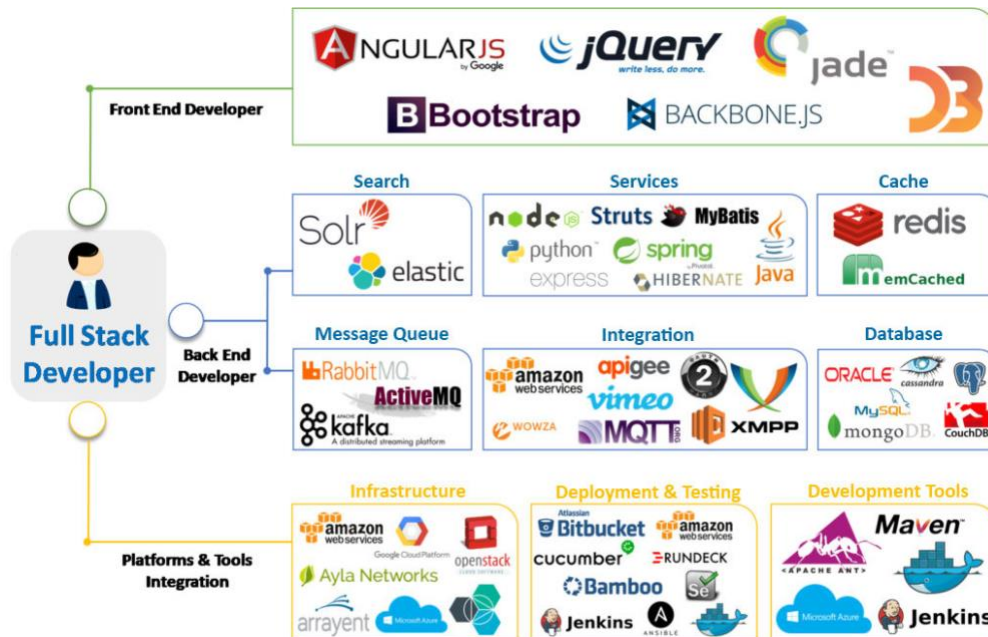
In order to understand what I am proposing with this form of inquiry it's important to understand two interrelated concepts from the world of computing: the "full-stack developer" and "the stack." In the world of professional software development, a full-stack developer is a programmer who shows interest and mastery in all facets and layers of software development. A common way to describe a full-stack developer, for example, is as someone who can write code for both the back-end of a project (e.g. databases, architecture, hardware) and the front-end of a project (e.g. graphical user interfaces, web applications). Below (see Figure 1) are three diagrams that show the different layers of a software project that a programmer should be able to navigate in order to earn the title of "full-stack developer":

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<sup>16</sup> I explore the concept of "loose coupling" and how it is mobilized by my research participants in *Hacking\_Imagaries*[1][3].



## Full Stack Development



[Figure 1] 3 diagrams from different sources which show different layers of “the stack.”

As Figure 1 shows, “the stack,” and the corresponding technologies and protocols that a “full-stack developer” must be adept at navigating, differ in definition and complexity. In the first image, we’re presented with a few key programming languages that make up the interrelated components of the stack; by the third diagram the layers, languages, tools, and platforms have multiplied. It’s important to note that these diagrams were pulled from websites meant to prepare software developers for interviews and from organizations that promise they can teach programmers how to become adept in one or more of these layers of the stack. The increasing number of technologies in each of the diagrams references the highly-competitive worlds into which job-seekers must enter with legible and flexible “skills” (Gershon 2017; Martin 1999; Urcioli 2008), but also that “the stack” morphs and shifts according to how each layer is abstracted and arranged in relation to other layers.

Thus, “the stack” here refers to the interrelated and interdependent layers of hardware components and software protocols that make the high-level computations and programs possible.<sup>17</sup> More abstractly, to move from the bottom of the stack (e.g. machine code) to the top of the stack (e.g. programming languages and systems) means to traverse the corresponding circuits, microchips, and computer code that can be part of each “layer of abstraction” that makes up the system. Social scientists who research new technologies (and their liberatory promises) have proposed that in order for marginalized populations to completely infuse their worldviews and future aspirations into a system, they must become involved and be adept at navigating all layers of “the stack.”<sup>18</sup> Only by fully and comprehensively participating in this way, can we increase our ability to “make the technology speak in the way that we desire” (Edward Lewis 2016:242).

This “infiltration of the machine” is one anthropologists have taken seriously. Building on the concept of the “cyborg,” in the 1990s a proposal for “cyborg anthropology” aimed to examine ethnographically the boundaries between humans and machines and their shared visions for the differences that constitute those boundaries (Downey and Dumit 1998).<sup>19</sup> In the early days of software engineering, scholars worked with nascent coders to understand how they created worlds “inside of the machine,” located themselves inside of “it,” and on the flip side, saw themselves as machines, locating “it” inside of themselves (Downey 1998; Turkle 1984).<sup>20</sup> More recently, anthropologists have looked at the way humans and machines seem to merge, where humans are carried into a phenomenological world, “the machines zone,” a state of absorption characterized by continuity and flow (Schüll 2012). But to look forward we must look back; this line of inquiry dates to anthropologists who called for other scholars

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<sup>17</sup> Technically, and more fundamentally, in computer science a stack is a linear data structure that serves as a collection of elements.

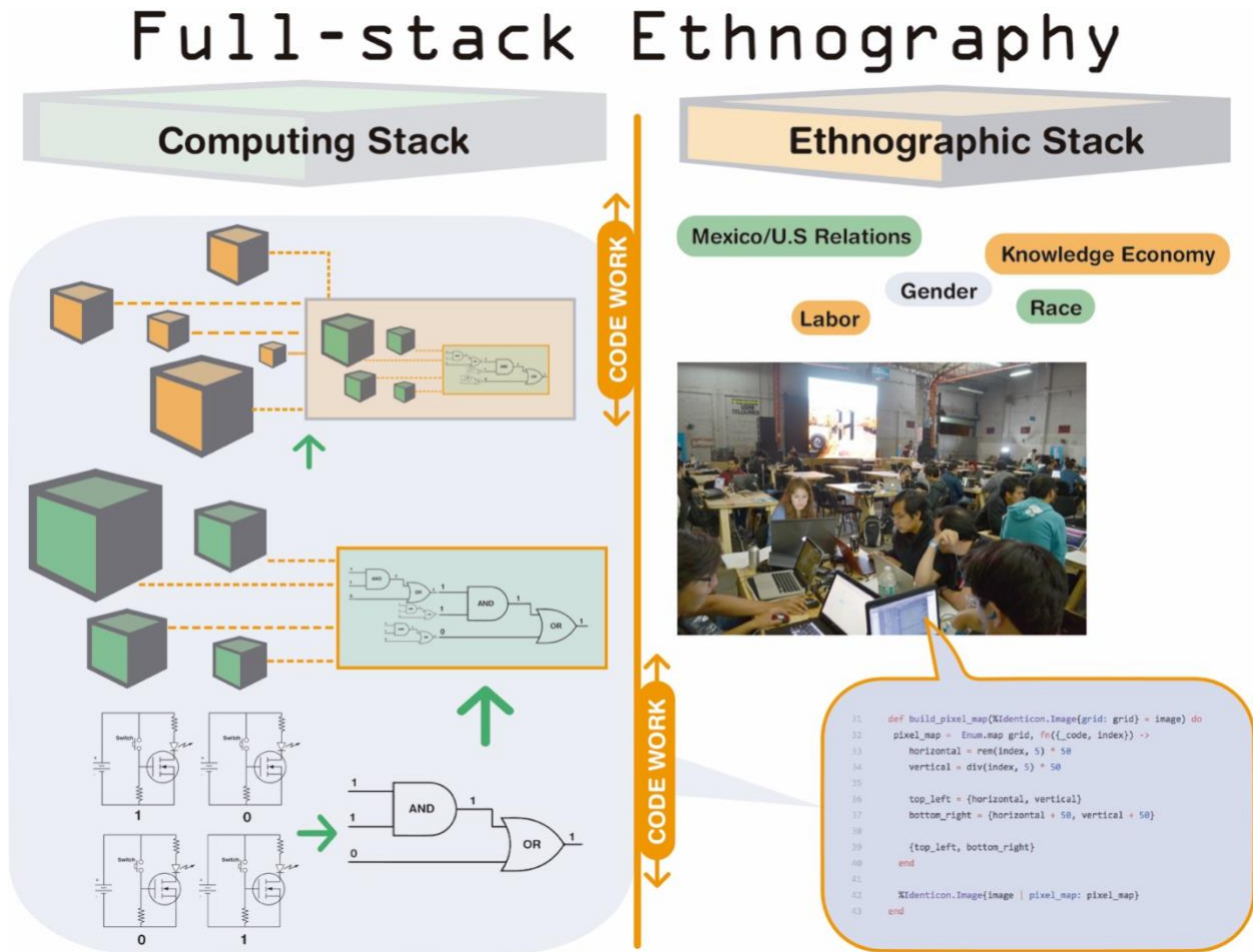
<sup>18</sup> Coincidentally, C. Wright Mills in *The Sociological Imagination* says that “The capacity to shuttle between levels of abstraction, with ease and clarity, is a signal mark of the imaginative and systematic thinker.”

<sup>19</sup> Clynes and Kline (1960) first theorized the “cyborg” as a human-machine hybrid in the service of the U.S. space program’s mission to integrate humans with extraterrestrial life-support systems.

<sup>20</sup> For a genealogy of “flow,” see Braman (2016).

to become familiar with vocabulary of information theory and take seriously the possibilities and effects of systems thinking and doing (Bateson 1972; Mead 1968).<sup>21</sup>

My proposal for “navigating the ethnographic stack,” or adopting full-stack ethnography as a methodology, takes on this call by treating the ethnographic world as a site that can be explored by shuttling between different layers of abstraction (see Figure 2).



[Figure 2] Model for navigating the ethnographic stack.

In Figure 2, the left side of the diagram represents one interpretation of the stack. The idea is that one can navigate the stack in the codeworlds by building up from lower-level components. On the bottom left-hand corner, we have MOSFETS (metal-oxide-semiconductor field-effect transistors), the most common transistors that ultimately produce the 0 and 1 bits, which are fed into logic gates used as Boolean operators (e.g.

<sup>21</sup> Helmreich (2007) takes on this call to propose a “transductive” ethnographic mode, as opposed to an “immersive” one, for an anthropology of the hypertechnological.

AND, OR, NOT) underlying computer programs. These logic gates are then assembled with other gates which become components used by other programs, and ultimately larger-scale systems, which are used by other systems, and so on. This is a more abstract representation of “the stack,” with the idea being that each configuration of elements becomes a component to be used by other component. The corresponding internal implementation of that element is abstracted away and largely irrelevant to the other components that use it.

On the right side of the diagram, the “ethnographic stack” represents a similar layering up of abstractions. From the perspective of an ethnographer looking to conduct “participant-observation,” the code work that takes place along the left side of the diagram might simply appear as code on a computer screen (bottom right). But this same kind of code work is used to shuttle to the next layers of the ethnographic stack: the hackathons and then the higher-level systems/processes in which these take place (e.g. knowledge economy, capitalism, U.S./Mexico relations). That is, the “code work” refers to both the ways in which (1) research participants use the logics underlying software systems to navigate the codeworlds and its corresponding “stack” and (2) the parallel technique with which an ethnographer might make sense of social and political systems underlying hackathon dynamics.

The navigation of these parallel stacks might resemble what Bruno Latour describes as the opening up of “black boxes.” That is, a proposal to understand how scientists and engineers place black boxes around their scientific objects, covering up the people at work, the decisions, the completion, and the controversies that went into making them (1987:4). Or it might resemble the way in which anthropologists concerned with “infrastructures” point toward “practices of conceptualization that come before the construction of the systems themselves and which are engineered into them” (Larkin 2013:332). Researchers across the social sciences propose “ethnographies of infrastructure” (de Certeau 1984; Star 1999) and proposed practical “tactics” for navigating these infrastructures (Burrell 2009; Seaver 2017). These approaches share a preoccupation with deciphering the relation between humans and machines, or what might be called “nonhuman” entities. I’m less concerned with the separation of the human and the “non-machinic” or deciding whether these are “actants” or not, and more with the dynamic relationship between the elements involved in their own “co-production” (Latour 1999). Thus, instead of dwelling on where to locate “the social” (the hackathons might be the obvious choice here), my proposed model highlights the “peculiar movement of re-association and reassembling” (Latour 2005:7) involved in each of these domains.

The “code work” thus signals the dynamic action that elements become entangled in as collectives of hacker-entrepreneurs design arrangement of elements at the same time that they use the logics involved in these particular arrangements to think about the different layers of the systems; the code work is “good to think with” – for research participants and for ethnographer – about how one moves from MOSFETs to logic gates, but also about how hackathons relate to elements such as “race” and “gender” as socio-technical systems are constructed.

Proposing the ethnographic stack as an analytic and form of inquiry also doubles as an invitation for coders and non-coders alike to use “ethnography” as the effective trade language required to do the crucial border-work required of complex problem-

solving. How do research participants navigate the codeworlds, where they construct programs using underlying coding and design principles? How is this “code work” projected onto other domains in the hackerworlds, their social and professional where they differentially position themselves in relation to “hacker” selves? How do these become good to think with, about the institutions and systems that function as elements in state-driven infrastructures that spatialize unequal opportunities.

### [3] THE AZTEC TIGER

In Mexico, the “tech startup boom” has manifested itself in the form of tech hub spaces like iLab, tech accelerators and incubators, co-working spaces, startup weekend and hackathon events, and “demo days” where young entrepreneurs pitch their ideas to a panel of judges and potential investors. Key actors certainly design these spaces and events with California’s Silicon Valley in mind as the prototypical model of innovation and disruption.<sup>22</sup> However, evolving “tech startup ecosystems” across Latin America take on divergent forms and implement different practices based on local needs, visions, and political-economic climate.<sup>23</sup>

Across Mexico, the tech startup scene has surfaced in parallel to hype from economic analysts that Mexico is set to emerge as the “Aztec Tiger.” President Peña Nieto’s administration took office in 2012 and quickly orchestrated an ambitious “reform” agenda, addressing labor laws, tax reform, the public education system, and the telecommunications industry. Together with a last-minute labor reform from the previous administration that grants foreign corporations greater freedom to hire and fire Mexicans at low wages, enabling maquiladoras (factories that import material and equipment on duty-free and tariff-free basis for assembly, processing, or manufacturing and then exporting) to once again set up shop, critics say Peña Nieto has effectively helped to change Mexico’s image from drug war zone to free trade poster child. Peña Nieto’s “reforms” are aimed to move Mexico beyond low-wage factory jobs and toward an entrepreneurial economy. Developmentalist narratives claim that Mexico is producing graduates in engineering and technology at rates that “challenge” its international rivals, including its main trade partner, the United States. University enrollment in general has tripled in 30 years to almost 3 million students who want to join Mexico’s “growing

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<sup>22</sup> Turner (2006) traces the mostly white, middle-class, affluent “counter-culture” that developed a way of thinking, speaking, and approaching work life that spread from the research university to the Silicon Valley. Likewise, Saxenian (1996) concludes that the “culture” of the Silicon Valley, an “open system” where tech workers were encouraged to consistently change jobs and share stories of success and failure, was ultimately responsible for the Silicon Valley’s dramatic success over Route 128, an area in Boston that counted with similar resources. The “California ideology” is used to reference these cultural markers and the term is usually traced to media scholars Richard Barbrook and Andy Cameron (2009). For place-based ethnography of the different communities that comprise the Silicon Valley see English-Lueck (2002).

<sup>23</sup> There has been notable activity from the startup community in Chile. See Dávila (2016) for ways in which Latin American professionals (especially Chileans) distinguish themselves from others in Latin America when developing creative or capitalistic projects. For further commentary on these dynamics see Beltrán (2017a).

middle-class.”<sup>24</sup> According to popular discourse, Mexico has become a top producer of “raw engineering talent,” but it lags far behind in basic measures of innovation, such as number of patents, scientific papers published, and research and development investments.<sup>25</sup>

To respond to these calls for Mexico to emerge as an innovation hub, iLab and the nodes being constructed across the country aim to move Mexico toward an entrepreneurial economy. The nodes fit into the larger Mexican political-economic landscape as spaces to keep these recent graduates busy, as a potential generator of companies that will create jobs for them and their colleagues, and as the type of institution that will help Mexico emerge on the “global innovation stage”. Peña Nieto’s government created the National Institute for the Entrepreneur in 2013 specifically to support entrepreneurial ventures and micro, small, and medium businesses (“MiPyMEs” in Mexico). MiPyMEs not only contribute to 52 percent of Mexico’s gross domestic product (GDP), they are the source of innovation and an axis of competitiveness for the national economy, according to Mexico’s Secretary of Economy. Indeed, government funding and interests have been a main catalyst of the “tech entrepreneurship movement” in Mexico. Not surprisingly, state government offices can be found on the first floor of iLab, and politicians frequently drop by to hear the latest startup pitches and take pictures with the teams. At the “Week of the Entrepreneur” event held in Veracruz in 2014, it was peculiar to see a full lineup of politicians on stage as representatives of an “entrepreneurship” event.<sup>26</sup>

Contemporary Mexico offers a critical site to explore how cultures and imaginaries of “innovation” and “disruption” collide with practices of “protest.” Thus, the title of my dissertation, *Hacking Imaginaries*, clearly plays off of the multiple readings: imaginaries of “hacking,” and hacking those “imaginaries.” For the latter, the dissertation is aimed at hacking the imaginaries of the “hacking” itself, but also the corresponding imaginaries of nationalism and difference in which practices of hacking are themselves embedded. The “imaginaries of hacking” reading of the title builds on the concept of social imaginaries (Appadurai 1996; Taylor 2002) and the work of scholars who present a framework for sociotechnical imaginaries, or the “institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology” (Jasanoff 2015:5). Just like the imaginaries of hacking that become manifest throughout this dissertation, these sociotechnical futures are typically grounded in visions of social progress and techno-optimism (Mosco 2004; Sims 2017). On the other hand, the reading of the title as the hacking of these imaginaries, plays on

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<sup>24</sup> For an analysis of how middle classness has become a powerful category for self-identification as well as the reference for ideal subject-citizenry, see Heiman et al 2012.

<sup>25</sup> Newspaper article titles such as “The Comeback Kid,” “Mexico Makes It,” and “The Rise of Mexico,” give a sense of the recent cheers for Mexico’s sudden emergence on the global stage (see for example *The New York Times* article by Friedman 2013). *The Economist* (2012), for example, predicted that by 2018 “Made in China” would become “Hecho en México” [Made in Mexico].

<sup>26</sup> This is in comparison to the events I was used to in the San Francisco Bay Area. This has to do with the fact that the events in the U.S. are mostly sponsored by private companies. But even at events that were partly sponsored by government in the U.S., it was rare to encounter the amount of “political types” one did at the events in Mexico. More on the constitution and construction of this “political class” in the next section.

the constructions of “hacking” as a mode of technological intervention (see *Hacking\_Imagaries*[1] and *Hacking\_Imagaries*[2] for further explanation and genealogy of the term) that promises to interrupt these imaginaries, and their corresponding visions of nation-building, progress, and social change.<sup>27</sup>

Thus, research participants in my study differentially embody the “imaginaries” and/of “hacking.” El Chico Partículas and the burgeoning hacker-entrepreneurs within the nodes, for example, take on very different positionalities from the Ayotzinapa teachers, and they are framed very differently by state discourse and institutions. One group gets to stay alive; the other group doesn’t. Curiously, within the technological nodes and within the escuelas normales (or even the more “anarchist” hacker spaces), the anti-government sentiments and disenchantment with political economy parallel each other.<sup>28</sup> Indeed, one frequently encounters everyday talk about how corrupt the government is in Mexico, from the practices of elected officials to encounters with traffic police officers.<sup>29</sup>

Instead of treating corruption as a dysfunctional aspect of state organizations by studying these practices, the discourse of corruption turns out to be a key site through which “the state” itself is discursively constituted. On the bureaucratic level, Akhil Gupta argues that “corruption” is much more visible at the lower levels because it is here where lower-level officials raise funds in small figures and on a daily basis from a very large number of people, whereas higher-level state officials raise large sums from the relatively few people who are able to pay them (1995:384). Gupta employs the discourse of corruption to show how it becomes a means for the state to be imagined by an Indian public. The discourse of corruption across my research sites also provides an ethnographic entry to examine how the state is constructed. On the other hand, the construction of the state, quite literally – the co-working spaces are not only sponsored by the Mexican government but in some states, they build their offices within the space itself – provides further opportunity to examine the “games” being played from both sides.<sup>30</sup> That is, the constructions of co-working spaces and other physical structures

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<sup>27</sup> I’m aware of recent critiques of the over-use of “imaginaries” concept and framework. The term has purportedly become a catch-all phrase for asserting social collectivity and claiming broader relevance (often with limited ethnographic data) and has become a substitute for the term anthropologists always try to circumvent, “culture” (Stankiewicz 2016). I state my position in relation to this critique in *Hacking\_Imagaries*[2][6]. Suffice to say, intervening in the “imaginaries debate” is beyond the scope of this dissertation.

<sup>28</sup> These sentiments point to feelings of “disenchantment” scholars have found working with youth in Mexico (García Canclini and Cruces 2012; Urteaga 2012), and more generally, the expressions of loss of hope for the future and loss of faith in the neoliberal project that other anthropologists have found in contemporary contexts (Riles 2013). Reviewing recent anthropological theory, Cantero (2017) finds that ethnographic explorations have consistently unpacked a persistent disenchantment with the fruits of contemporary political economy.

<sup>29</sup> Yeh (2018) also finds this “corruption talk” frequent in her ethnography with middle-class publics along the U.S./Mexico border. The “petty bribery” traffic stop constitutes a genre its own right, but Yeh shows how this corruption talk becomes an opportunity for members of a middle class public to perform their legalistic morality and position themselves differentially from others to whom this “first-rate citizenship” is not necessarily accessible (157). For an analysis on how ordinary citizens are able to carry out a range of financial practices while complying with politicians’ corrupt maneuvers, see Villareal (2014).

<sup>30</sup> Here I take inspiration from Briggs (2008) proposal, building off of the quote by Wittgenstein (1953) on boundaries and games, to take a flexible, playful approach to boundaries to enrich the games being played on both sides of walls/borders/boundaries. Although Briggs is discussing disciplinary boundaries



where hackathons take place provide an opportunity to examine how the state constructs itself discursively and materially through “reforms” aimed at developing a technological and entrepreneurial class (I explore this especially in *Hacking Imaginaries*[1][1]), and ethnographic work (navigating the ethnographic stack) within these spaces allows us to explore how subjects differentially position themselves in relation to these “reforms” while they fill these spaces with meaning, hope, and critique.

#### [4] RITUALS AND YOUTH

Hackathons and co-working spaces provide a critical site to examine “new” strategies that “the state” uses to re-invent and re-constructs itself with rituals and performances whose patterns are recognizable across time. The use of technology by state entities to advance underlying political agendas is not new and has been theorized in other contexts. “Techno-politics” (Joyce 2003; Mitchell 2002) refers to a mode of politics that functions through invisibility. Grounded in liberalism, governmental bodies seemingly leave citizens to be, to go about their everyday affairs without intervening. Instead, government seeks proxies in technological regimes—building sewers and other infrastructure, network and phone lines, conducting censuses—which are seen as technical and outside of political processes. Achille Mbembe (2001) writes about the simulacral language that was part of an aesthetics of power in African postcolonial dictatorships. The simulacral language was used by the state and accepted by citizens but it was devoid of referential meaning. This system worked not because it generated legitimacy, but because it provided specific events that dramatized state power and therefore reinforced it. Brian Larkin (2008) found a similar pattern in Nigeria: technology is used as part of political rule, and state-sponsored projects—roads, bridges, radio, any “new” technologies—are linked to events, to spectacular rituals that are meant to produce particular types of affective responses. Not only are state officials always present in the mediated representations of these projects, before and after they are built (and even if they never are!), but the repetition of this pageantry in films and across different media is meant to produce, address, and train a modern subject how to react to these awe-inspiring projects.

In Mexico, these rituals are similarly marked by the presence of state officials at hackathons, followed by mediated images of the officials with burgeoning hacker-entrepreneurs and their “new” technologies. Moreover, these politicians always seem to be the “same” politicians, in that they’re always from the same party. For much of the 20<sup>th</sup> century, Mexico was ruled uninterruptedly by one political party. From 1929 to 2000, the *Partido Revolucionario Institucional* (PRI) [Institutional Revolutionary Party] held power,<sup>31</sup> constructing itself around the ideals of the Mexican Revolution and re-

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to discuss the benefits of academic research, I follow by taking seriously/playfully the borders and boundaries constructed across research sites throughout this dissertation.

<sup>31</sup> The part underwent restructuring and namings. In 1929 it was formed as the Partido Nacional Revolucionario (PNR), in 1938 it was dissolved and renamed Partido de la Revolución Mexicana (PRM) and in 1949 was dissolved and renamed PRI.

inventing itself until it became the representative of, what many scholars call, “institutionalized revolution.”

But even if the entire Mexican political system was essentially ruled by one party, the party revolved around leaders and groups with diverse ideologies. Larissa Adler Lomnitz et al. (1990) point to three main ideologies that the party used to describe itself: “boldly traditional,” “traditionally revolutionary,” and “revolutionary institutional.”<sup>32</sup> To continue the same structure and organization under the guise of different campaigns, the authors highlight how presidential campaigns are carried out as political rituals. Even before the party’s presidential candidates are chosen, there is tactical maneuvering and strategizing between “*hombres del presidente*” [men of the president] and “*hombres del sistema*.” [men of the system.]<sup>33</sup> The distinction between these two groups is one that reveals which subjects will emerge as the “politicians” (those who will maintain close relationships to the future president) and which will emerge as the “technicians” (those who will assure the system continues). When the presidential candidate arrives at a particular location to deliver a campaign speech, for example, the performance is not meant to impress attendees, but the candidate himself. That is, it’s a chance for the organizer of the event to demonstrate how masterfully and efficiently he (they are usually men) can execute a flawless event; it’s his opportunity to demonstrate to the presidential candidate and the PRI how much he belongs in the privileged “political class” made up of the “men of the president” and “men of the system.”<sup>34</sup>

By treating the campaign events in Mexico as a type of political performance, we get a sense of how national power is dramatized and how it is part of an orchestrated effort by government entities.<sup>35</sup> In addition, it shows how particular sectors of the population play a role in these dramatizations. Adler Lomnitz et al. (1990) analyze each campaign as a cycle of this political ritual as it goes from phase one (framing a “problem” that needs to be resolved) to phase four (where the candidate stages “dialogues” with special interest groups). The groups that are deemed crucial to the campaign are constructed through these stagings; we see the emergence of “women,” “indigenous people,” “youth”: their projected prominence within these events indexes the extent to which the campaign will align these groups with the “problem” to solve.

With President Peña Nieto’s campaign, it was clear that “youth” held a central place in his “solution” to national “problems.” The entrepreneurial nodes constructed across the country would purportedly show that the political party was indeed staying true to its promises. “Technology for young people” was a promise that translated across borders, as was clear when U.S. President Obama visited Mexico after Peña Nieto took office. Speaking from the plaza of Mexico’s iconic National Museum of Anthropology in Mexico City, he announced to Mexican citizens and the rest of the world that “a new Mexico is emerging” and that he sees “in Mexico’s youth an

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<sup>32</sup> Original article in Spanish. All translations to English by author.

<sup>33</sup> Terms used by Adler Lomnitz.

<sup>34</sup> It’s also important to note that even audience members might be considered “men of the system.” “Acarreados” is the term given to citizens who sell their presence and cheers to the highest bidder. There’s a famous joke from the era of Carlos Hank González. A few campesinos are cheering “Viva Juan González” and one of the politicians approaches them and says, “It’s *Hank* González, not *Juan* González.” One campesino responds, “For a sandwich and a drink, I’m not learning German!”

<sup>35</sup> For an analysis of how this national power is co-constituted with ideologies “nationalism” across time, see Lomnitz 2001.

empowered generation because of technology.” From a space that houses Mayan murals, giant Olmec head statues, and Aztec calendars stones, Obama made clear that celebrating “Mexico’s ancient civilizations and their achievements” was important, but that it is “old attitudes that stifle progress and new thinking” and that “...as our modern world changes around us, it’s the spirit of young people, your optimism and your idealism, and your willingness to discard old habits that are no longer working that will drive the world forward.”<sup>36</sup> The nodes being erected across Mexico served as material symbols that could index “modernity,” and the young people within them would now be representatives of global, modern subjects that perform their “coming of age.”<sup>37</sup>

Members of the “youth” constituency in Mexico also take notice of this call to become “modern.”<sup>38</sup> El Chico Partículas, model modern participant and leader of the nodes as well as model entrepreneurial technical citizen, tells his audience how he entered different contests pitched by the government’s entrepreneurship institute, and he finally “was able to obtain the national youth prize, in the category of science and technology, a recognition that was awarded by the president of the nation.”<sup>39</sup> Indeed, Peña Nieto personally delivers awards to the winners of this annual award. An important part of these award ceremonies is the photograph that appears prominently in media outlets, with the president and his entourage handing the award to burgeoning entrepreneurs, the “youth” who will drive the country toward modernity. These photographic sessions are a game in itself, with photographers receiving offers from folks who want to appear “close” to the president (Adler Lomnitz et al. 1990:77), the president and his group deciding who they want to appear close to (and thereby confirming who are the “president’s men” or who his important groups are. This photographic game is one I explore ethnographically throughout this dissertation, as it allows me to highlight how the “game” is played on both sides.

To highlight one example and the nuances it reveals, the research participants with whom I worked once appeared in a highly circulated “selfie” photograph that Peña Nieto posted to his Twitter account, surrounded by my research participants, all smiles. I had mixed feelings when I saw the Twitter post, and had to reconcile how I could be protesting the disappearance of the 43 missing students from the Ayotzinapa and the corresponding response from Peña Nieto and his government one minute, and trying to work with and find the “resistance” from young hacker-entrepreneurs who held no reservations appearing so nonchalantly with the President in a time of protest and outcry from Mexican citizens.

I quickly realized, however, that I was falling into the same trap of essentializing subjects and superficially reading forms of resistance (or submission), of trying to categorize practices that neatly fit into legible subjects who were either “duped

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<sup>36</sup> For full transcript of speech, see <https://obamawhitehouse.archives.gov/the-press-office/2013/05/03/remarks-president-people-mexico>

<sup>37</sup> Similarly, Dávila (2016) highlights how shopping malls and the consumers that claims a place within them become symbols of modernity across Latina America.

<sup>38</sup> For an analysis of how Mexico new versions of Mexican “modernity” are always invented in relation to new “traditions,” see García Canclini (2009 [1990]). For anthropological writing on how “traditions” are always invented in the present, and the politics behind research on “invention of traditions,” see Briggs (1996), Jackson (1989).

<sup>39</sup> “logré obtener el premio nacional de la juventud, en la categoría ciencia y tecnología, el mismo reconocimiento que era por parte del presidente de la república.”

neoliberal subjects” or “empowered coding heroes.”<sup>40</sup> In reality, the young people in the photograph were playing their own games, quite consciously, and just like it was common to hear some of them reproducing the popular discourse about Mexico joining the new knowledge economy or the rise of a Mexican creative or middle class, it was also common for some of them to critique “the state” for its policies and projects. Sometimes, these seemingly different, or contradictory “voices” came from the same person. Another major goal of this dissertation, then, is to understand how young people, who navigate multiple borders and ideologies, reconcile these seemingly contradictory stances and the conditions that create these subjectivities and positionalities in the first place.

In this sense, my research builds on anthropological work where both ethnographer and research participant shuttle between differing, incomplete, and multifaceted viewpoints that offer more complex understandings of ever-changing social realities by navigating “borderlands” characterized by tension, struggle, conflict, and ambiguity (Rosaldo 1989). While I deal with some of the same markers of difference (class, race) that constitute the borders these anthropologists try to deconstruct, I ask how some of the anthropological concepts and theories might change when focusing on a population immersed in new technologies? At the same time, one must be cautious to not over-emphasize the effect or the newness of “new” technologies. Empowerment by means of new technology and machines is not a new idea, or a new political campaign by a government, in the Mexican case or otherwise. In a speech by another “revolutionary party” Mexican president, Manuel Ávila Camacho, he says:

Máquinas y escuelas será la divisa de nuestro empeño. Máquinas para facilitar, activar y aumentar las faenas de nuestros campos...Y también escuelas. Escuelas para enseñar el manejo de las máquinas de que hablo, sin que las máquinas se apoderen del corazón y el cerebro de nuestros hombres. [Machines and schools will be the badge of our endeavor. Machines to facilitate, activate and augment the work of our fields...And also schools. Schools to teach us how to use these machines I speak about, without those machines taking control of the hearts and the brains of our men.]<sup>41</sup>

This was a speech from 1945. Nearly 70 years later, the rhetoric sounds similar, machines (computers in this case) and schools (nodes in this case) to learn how to manage these machines. The key difference is that “the fields” have now been transformed into the information technology fields, and that in this new *todos con el mismo chip* [everyone with the same chip] campaign, there is a weakened skepticism toward the machines – we no longer have the fear that the machine might “take control of the hearts and the brains of our men,” as Ávila Camacho expresses. In this later phase of history, in the new iteration of the revolutionary party, the machinic “chip” is

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<sup>40</sup> For recent anthropological work that has attempted to deconstruct this binary, and instead looked at how coders’ subjectivities are embedded within classed and nationalized structures, see Amrute 2016.

<sup>41</sup> Quoted in Cardiel Reyes (2011)

welcomed. The state's call is not only for young people to manage these new machines, but to embody the chip, the "brain" of the machine.<sup>42</sup>

Thus, my research departs from previous studies on borders, borderlands, and the new geographies and subjectivities created by distinct "cultures," whether these cultures exist within the same bounded space or not.<sup>43</sup> My research participants themselves cross geographical, linguistic, "cultural," disciplinary, professional, and ideological boundaries — and they do so while immersed in the codeworlds. By focusing on the way that the underlying logics of the machines, that is, the actual coding logics that my research participants learn as they code their projects aimed at resolving the problem at hand, I highlight how these logics become integrated into the way of thinking (and re-thinking) their own positionalities within "the state," and their social relations with institutions that make up their social world.

Contrasting with the relative lack of attention to racial, national, and gender inequalities in Latour's formulation, women of color immersed in cyborg politics (Haraway 1991) and intersectional perspectives (Anzaldúa 1987) have used borderlands frameworks in weaving "between and among" oppositional ideologies to propose a way of moving they refer to as "oppositional consciousness," a "differential mode of consciousness functions like the clutch of an automobile, the mechanism that permits the driver to select, engage, and disengage gears in a system for the transmission of power" (Sandoval 2000:58). This vocabulary invites us to think alongside the machines and the systems to decipher structures of inequality. Kim Fortun suggests (2014) that while Latour has made science vernacular and thus accessible to ethnographic study, his work tends to privilege practice over structure, at times leaving the political-economic largely absent.<sup>44</sup> Moreover, she states, "In the insistence on the meso— a sociology of association — cross-scale interactions and structural conditions seem to be written off... I must call gentlemen's engagement, coming together around controlled vocabulary meant to cut across difference" (2014:315). In order to learn the practices and techniques that might intervene in the long-standing structures of inequality, theorists of social movements suggest we start with grassroot efforts, *on-the-ground*. My proposal for full-stack ethnography suggests we might look *in-the-code* without losing sight of the political-economic; instead of cutting across difference, an exploration of "hacking" across the borderlands enables us to think about how difference is structured and re-structured across space.

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<sup>42</sup> Schüull (2012), Turkle (1984), and others explore this man/machine relationship and I address these dynamics further in *Hacking Imaginaries*[1].

<sup>43</sup> Anzaldúa (1987) developed the concept of "borderlands" for the space and subjectivities constructed out of the colonial relationship between the U.S. and Mexico, and Pratt (1992) develops the "contact zone" to demarcate social spaces where disparate cultures class and grapple with each other in asymmetrical relations of power. For an overview on concepts that have emerged from anthropology in trying to conceptualize these "encounters," see Faier and Rofel 2014.

<sup>44</sup> If Latour's work has made science accessible to researchers then it has also made "technology" accessible, since Latour makes no distinction between "science" and "technics." (1987:131)

## [5] SITUATING THE GLOBAL

A challenge of this dissertation is thus to look in the code while highlighting the heterogeneity of hacker and hacker practices within Mexico, paying particular attention to matters of class, social, and racial inequality, but also of the larger political economic processes that are not bounded by location or a particular nation-state.<sup>45</sup> In other words, the challenge is to illuminate what exactly is different about Mexican hacker-entrepreneurs at the same time that we pay attention to how they perform their belonging to a “global” hacker community. How do hacker-entrepreneurs navigate national and ideological lines, as well as other dimensions of difference, as they attempt to construct and manage pockets of autonomy within and across the spaces and institutions in which they participate?<sup>46</sup>

Without losing sight of the particular and the contingent, my proposal for full-stack ethnography builds on concept work and ethnographic methods that look to provide a way for researchers to immerse themselves in “the global” without first reifying it. Classic studies of “globalization” attempt to grasp the interconnectedness of the world; scholars try to speak to new space-time configurations that create (or are created by) complex mobilities and interconnections.<sup>47</sup> Whether we believe grand theories about globalization or not, we know that scholars of “the global” struggle with trying to define and construct disciplinary objects that are then granted some sort of mobility and form of circulation, whether the objects (or subjects) are people, commodities, images, ideologies, or the anthropologists’ favorite, “culture.”<sup>48</sup> This view of globalization, as constant accelerated movement and being everywhere at the same time, permeates everyday discourse about globalization. Xavier Inda and Renato Rosaldo survey approaches from diverse disciplinary angles to conclude that theories of globalization consist of: 1) Speeding up of flows of capital, people, goods, images and ideas across the world, 2) intensification of links, mode of interaction and flows that interconnect the world, 3) stretching of social, cultural, political, and economic practices across borders that make possible action at a distance, and 4) heightened entanglement of the local and the global (2002:10). Scholars struggle with methods to construct and follow the “flows” around the globe, but we don’t necessarily get definitions or concepts that decipher what exactly is “global” or “modern.” Anthropologists use ethnographic studies to show that flows are not just ethereally floating across the globe but always reinserted and reinscribed in specific cultural environments, localized in very specific time-space contexts.

Inda and Rosaldo claim that these studies show that territorialization and deterritorialization are not two separate processes, but that they go hand in hand; cultural subjects and objects are lifted from fixed spatial locations and relocalized in new

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<sup>45</sup> I hope Anthropology has moved away from producing studies that frame groups as bounded by “culture” (for a discussion on classic studies in this direction see Gupta and Ferguson (1992).

<sup>46</sup> Coleman (2017) proposes the rubric “weapons of the geek” (playing off of Scott’s (1985) weapons of the weak) to point to a shared set of cultural practices, sensibilities, and political tactics that connect diverse “hacker” communities.

<sup>47</sup> Harvey (1989), for example, advances theories that frame globalization as a process that leads to the shrinking of the globe, a space-time compression that permeates economic and social life.

<sup>48</sup> Marcus (1995) proposes a method for “multi-sited ethnography” where researchers can follow people, things, metaphors, plots, stories, allegories, biographies, conflicts, etc.

cultural settings (2002:12). Emphasizing the specific, the particular, has always been the discipline's claim to fame, and this has been a favorite approach for anthropologists to study the global. In fact, Anna Tsing argues that the charisma of "the global" was introduced by anthropologists in order to transition away from the overzealous and nonreflective localism they were often accused of (2000:338). Thus, the turn to "the global" aligns with disciplinary moves to not only be self-critical but to produce the world-class subjects that were no longer incarcerated by culture or by place.

Anthropological theories thus continue to blur the local/global binary when conducting fieldwork in "translocal" sites.<sup>49</sup> From these frameworks, we do move in one productive direction—one that departs from the usual studies that conclude Globalization = Americanization = Westernization. By moving away from hegemonic "middle-to-periphery" models, we discover that for Sri Lankans, Indianization might be more worrisome than Americanization, as Japanization might be for Koreans; we learn that globalization is not a western project but a global one.<sup>50</sup> This approach also helps us hone in on a methodology that is not at the grand-scale abstract theorizing level but also not so particular that it loses sight of the "bigger picture." If every situation is "global," though, how might an anthropologist deploy an ethnographic study at a specific site? What is a proper methodology for studying the global on the ground? What is it that an ethnographer of "the global" should observe?

An early ethnographic study that allowed us to explore the situatedness of "cheap labor" and how it fit into the global was Patricia Fernandez-Kelly's (1983) exploration of maquiladoras in Ciudad Juarez, Mexico. Based on fieldwork in the late 1970s, Fernandez-Kelly's study could be read as anthropological study of development, looking at the world as a "web of historically related political and economic events, in which underdevelopment of certain areas is viewed in inextricable relation with the development of others" (1983:1) instead of thinking about development as if some nations were more developed and others needed to "catch up." Thus, Fernandez-Kelly worked in the maquiladoras herself but also tied her study to global processes, showing, among other things, the general and particular circumstances that enabled the implementation of the Border Industrialization Program, the impact of multinational investments on local labor markets, the correspondence between these local markets and two specific branches that dominated the maquiladora activities, and the ways in which the function of household structure determined labor supply vis-à-vis requirements of international capital. Thus, without becoming absorbed by the

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<sup>49</sup> Literal travel, physically getting up and moving, is no longer a prerequisite for critique, irony, or distance from one's own social and cultural milieu (Clifford 1997:4). Appadurai (1990) is most famous for promoting the imaginative as the basis to rethink the global. For him, the imaginative is not merely fantasy, simple escape, or an elite pastime (4). Instead, he says, let's rethink imagination as social practice, as a form of work, as a form of negotiation between sites of agency and a globally defined field of possibility. The imaginative is now real and concrete. Multiple worlds are constituted by historically situated imaginations of persons and groups spread around the globe (7). Appadurai's global world is composed of –scapes (ethnoscapes, technoscapes, ideoscapes, financescapes, mediascapes) that are the building blocks of imagined worlds. Global flows occur in and through growing disjunctures between these –scapes, and the relationship of various flows to one another, as they constellate into particular events and social forms, are radically context dependent. Thus, his overall project is to "provide economical technical vocabulary and rudimentary model of disjunctive flows to move toward social theory of postmodernity that is adequately global" (21).

<sup>50</sup> Appadurai 1990:6

specificity of her site, she made connections to “the global assembly line” (1983:191), or showed how the women in the maquiladoras were bound to women in Singapore, Hong Kong, Italy, Puerto Rico, etc.

Also based on fieldwork in the late 1970s, Aihwa Ong’s (2010[1987]) ethnographic study of factories in Malaysia showed how young rural women were entangled in launching Malaysia as a “tiger economy.” Her study is notable for turning investigations of economic development away from Marxian class struggle and instead toward Foucauldian analytics of power.<sup>51</sup> While Ong focuses on specific critical elements, such as gender, tracing the “deconstructions and reconstructions of gender in the shifting webs of agency and domination within the family, the labor system, Islam and the wider society,” (221) she refuses to oversimplify the intricacies of export industrialization and insists on the interconnectedness of culture, economy, gender, religion, and class in a situated analysis of global capitalism. Together Fernández-Kelly’s and Ong’s works not only unpacked “cheap labor” and the “global assembly line” by engaging themes of gendered and class subjectivities, technologies of power, and modes of resistance while insisting on situated articulation of global technologies, politics, and ethical subject-formation, but also moved anthropology toward a new methodology, a new way to engage “the global” by using in-depth ethnography that observed on-the-ground practices.

Further conceptual work has enabled anthropologists to respond to commonsense conceptions of globalization by proposing methodologies that treat “the global” as a space of inquiry defined by the analyst her/himself.<sup>52</sup> To move away from simplistic linear progressions (from modernization to globalization), reductions of wholes to parts, or micro vs. macro analyses, Stephen Collier and Aihwa Ong’s (2005) project is in dialogue with what Gilles Deleuze and Félix Guattari (1987) call an “assemblage,” a contingent ensemble of heterogeneous elements and diverse practices that is divided along axes of territorialization and deterritorialization. In this framework, a territory can be geographical, political, or conceptual, and it is continuously changing in a configuration of various interrelated assemblages.<sup>53</sup> Deleuze and Guattari push social

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<sup>51</sup> Foucault develops his analytics of power across his texts, most notably in *History of Sexuality: Volume 1: An Introduction* 1990 [1978], *Society Must be Defended: Lectures at the Collège de France, 1975-76* 1997[1976], and *Discipline and Punish: The Birth of the Prison* 1979[1975]. Briefly, he proposes that we move away from trying to find centralized, “big P” power and instead focus on (1) how relations of power can be observed at power’s “extremities,” (2) how power moves and passes through bodies, and (3) what it means to think about power to as having positive effects and a productive role, instead of reducing power to models of repression.

<sup>52</sup> Collier and Ong (2005) summarize that the responses to conceptions of globalization fall into three types of analytic analyses: 1) Grand statements of new order of things or shifting macro-processes, e.g. “network society,” 2) “Localities” that are articulations with, effects of, or dynamic responses and resistances to global forces, and 3) Reconstituted categories of social sciences in new forms, e.g. “global culture” or “-scapes” (3).

<sup>53</sup> To understand the interplay between territorialization and deterritorialization, Deleuze and Guattari offer the metaphor of the wasp and the orchid. We can think of the wasp and the orchid as heterogeneous elements that couple when the wasp pollinates the orchid. In this “becoming-wasp of the orchid and becoming-orchid of the wasp” (13), the wasp is deterritorialized, becoming a piece in the orchid’s reproductive system, and also reterritorializes the orchid by transporting its pollen. In this interlink, the two “becomings” bring about deterritorialization of one element and reterritorialization of the other, but this isn’t about imitation or resemblance, it is about encoding and decoding in this particular milieu. It is also isn’t about transformation, as the wasp and the orchid continue on their lines of flight (movements of



scientists to move away from thinking in terms of “structures.” At the core of their concept work is the idea of the rhizome, which has no beginning or end (only a middle), is not defined by points and positions but by lines of segmentarity and stratification as its dimensions, and is made up of continuous self-vibrating regions of intensity. Thus, instead of trying to describe the world in terms of some structure, we can think of the multiplicity of interconnected practices and actors as a continuous “self-vibrating plateau.”

An analytics of global assemblage thus allows a researcher to stay close to practices that rearticulate and reassemble material, technical, and discursive elements in the process of remaking particular contexts. These particular contexts, localities, or “field sites” can be treated as a particular nexus of situated and transnational ideas, institutions, actors, practices, that may be variously drawn together for solving particular problems. For anthropologists, these “global assemblages” are sites for formation and reformation of anthropological problems, domains in which forms and values of individual and collective existence are problematized or at stake, in the sense that they are subject to technological, political, and ethical reflection and intervention (Collier and Ong 2005:5).

An analytics of “global assemblage” doesn’t mean that the global is free-floating everywhere, but that global forms are limited or delimited by specific technical infrastructures, administrative apparatuses, or value regimes, and not by vagaries of social or cultural fields (Collier and Ong 2005:11). The “social” for a global assemblages analyst does not refer to sociological analysis (“society”) but to specific range of knowledge forms, modes of technical intervention, and institutional arrangements (Collier 2005:15). Instead of thinking of grand shifts in society or culture we can analyze specific phenomena that articulate such shifts, phenomena we may call the “actual global,” phenomena which are abstractable, mobile, and dynamic.<sup>54</sup> Thus, to use global assemblage as a unit of analysis means to think of the global as broadly encompassing, seamless, and mobile, and to think of the interaction of heterogeneous elements and practices as unstable, partial, and situated.<sup>55</sup>

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desire that escape an established constellation and effect new assemblages), having intersected here to form relays in a circulation of intensities that push deterritorialization even further.

<sup>54</sup> These phenomena—essays in Collier and Ong’s collection explore technoscience, systems of administration and governance, and circuits of licit and illicit exchange, for example—cut across and reconstitute classic social science abstractions such as “society,” “culture,” and “economy.”

<sup>55</sup> In *Hacking Imaginaries*[4][4], I explore further how to deploy such an analytic toolkit to understand the global forces that constitute “Neoliberalism.” This approach moves away from all-encompassing Neoliberalism “package” (see Collier 2009; DeHart 2010; Hoffman 2010) and instead things about the neoliberal as a logic of governing for optimal outcomes, an array of techniques is mobile, abstractable, and flexible as it migrates from site to site, interacting with various assemblages that cannot be analytically reduced to “Neoliberalism.” (Ong 2006)

## [6] NAVIGATING THE ETHNOGRAPHIC STACK

The ethnographic stack takes inspiration from a “global assemblage” analytic toolkit. It grounds an ethnographic examination of contemporary phenomena by advancing what might be described as “mid-range” theorizing. That is, the framework allows the analyst to avoid falling into the trap of grand-scale, abstract theories, but also avoids the possibility of getting lost in the minutiae of everyday life. It allows the researcher to “hover over surfaces of life.”<sup>56</sup> Hovering above the surfaces of everyday coding life one sees that the spaces are mostly dominated by male-identified subjects. Navigating the ethnographic stack means that I pay attention to how collectives attempt to claim representation and autonomy within institutions and state-driven infrastructures that spatialize unequal opportunities by strategically creating nodes across the country. At the same time, Mexico itself becomes a “node” within a larger capitalistic system that attempts to profit from the coding already being conducted within these pockets of gendered labor.

To navigate the ethnographic stack then, I participated along with my research-participants, joining in on “hacking” to understand how meaning is created on-the-ground, but also hovered over their “hacking” to understand how technology development, capitalism, state, gender, and racial formations come together. Throughout the dissertation, I extend the full-stack ethnography framework by using encounters, in-built reflexivity, and looping findings from the “code work” back into the ethnographic stack in order to develop analytics that privilege the construction of difference and politics alongside the making and use of technology.<sup>57</sup> To begin, I found it important to also take “deep dives” into the code itself. This was due to the fact that, having been immersed in the codeworlds myself for many years, I recognized what it meant to be “in the zone” and become consumed by coding logics.<sup>58</sup> After spending extended periods of time with my research participants, inside and outside of the hackathons, I started to recognize how the logics underlying the programming, the organizing principles that made up the lower layers of the stack, were being operationalized by my research participants to rethink their relationship with “the state,” and institutions and spaces they navigated. Focusing on these underlying logics allowed me to focus on what really was “new” about these forms for organizing and relations in formation without becoming overly captivated by the technology industry’s “hype cycle,” the assumption that the only things worth studying are the “newly” released (Boellstorff 2014).<sup>59</sup> Thus, I observed practices, discourses, and logics as I moved through different layers of this “ethnographic stack.”

In order to make connections to how my research participants were making sense of their coding as they projected their livelihoods into the future, I found Susana

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<sup>56</sup> Thoughts on “mid-range theorizing” in conversation with Aihwa Ong in U.C. Berkeley seminar, Spring 2013.

<sup>57</sup> Fortun (2012) proposes the loop (which is of course a computing term) as a way to turn ethnographic findings back into the experimental ethnographic system.

<sup>58</sup> Schüull (2012) writes about a similar “machine zone” state with gamblers in Las Vegas.

<sup>59</sup> Sims (2017) uses “disruptive fixation” to analyze the cycles of optimism and idealism that accompany the transformative potential of breakthrough technologies. Mosco (2004) explores the endurance of this technological longing and the accompanying imaginaries of new technologies that are produced.

Narotzky and Niko Besiner's (2014) work on "the economy" particularly useful. Their framework moves beyond classic anthropological works on exchange and value<sup>60</sup> to redefine "the economy" as the mutual constitution of value, crisis, and hope. That is, they re-center "the economy" on the social-cultural aspects that emerge as valuable in particular contexts ("value"), as people project life into the future around objective and subjective possibilities ("hope"), and decide what is a "life worth living" under conditions of radical uncertainty ("crisis"). Thus, in addition to observing my research participant's practices (including their coding) across my research sites, I also probe for their vision in relation to their livelihoods and the prosperity of Mexico as a nation, and a global Latinx community.<sup>61</sup> In my interviews, I asked questions such as: "How do you see this startup fitting into your future life plans? What do you think are the risks involved in launching this startup? How do you think this startup can help Mexico? Latinxs?"<sup>62</sup> My aim was thus to highlight how these "hopeful" coding subjects come together in the name of hacking-entrepreneurship to construct the economy and their position within and across national borders.

While focusing on the underlying logics of the technologies is important, so is the imaginative investment of both the state and citizens in these technologies (Larkin 2013). Even in the midst of a "culture of breakdown," where technologies and institutions never work and citizens blame the state, citizens come together to develop technological projects and feel a sense of solidarity and national *communitas* (Larkin 2008). And even if nobody, neither the politicians nor the citizens, believe the project will bring progress or even be completed, the performance continues. As these young people are asked to appropriate neoliberal discourses about taking initiative, being self-satisfied and socially conscious, how do new forms of "co-working," "risk-taking," and "hacking" emerge as they plan their future livelihoods in a precarious state and economy?

In the anthropological tradition, my ethnographic labor remains attentive to the specific and the particular, and takes seriously claims of difference. As scholars study the dynamics of hacker collectives that claim to speak to existent forms of power by creating de-territorialized movements, it is important to investigate the work being done by "other" hackers to re-territorialize these movements. How do *Mexican* hackers (and people living in Mexico at a particular historical juncture) engage politics more directly? How do Mexican *hackers* (and subjects who differently position themselves in relation to the joys and opportunities of hacking) develop new forms that incorporate the market logics of competitiveness, agility, and risk with anti-capitalistic stances? My research in Mexico aims to contribute to this research trajectory by investigating how Mexican hackers work to re-territorialize a hacker identity by developing practices that look

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<sup>60</sup> See for example Malinowski 1961 [1922] and Mauss 1990 [1925].

<sup>61</sup> I explore the construction of a "global Latinidad" within my research sites in *Hacking Imaginaries*[3].

<sup>62</sup> My questions came after I had established enough rapport, and when it was clear that we were on the same page, or at least working toward similar goals. As Shryok (2016) notes, "we tend to do our best ethnography when the people we work with have developed their own sense of what we are doing and why it is important." Anthropologists have found research sites where the practices and discourses of their research participants parallel and intersect with their own, in what we might call "echo chambers" (Boyer 2013). For a debate on using ethnography as a "boundary object" across professional spaces, see MacDougall, Susan (2016). For analysis on the politics for asking and interviewing in ethnographic projects, see Briggs (1986, 2007) and Paredes (1977).

different when they intersect with the aspirations to pursue livelihood within a precarious state characterized by incessant violence, corruption, and impunity.

As an anthropologist with a computer science background, I answer these questions by exploring how hacker-entrepreneurs use their “code work” to make small reinventions to established protocols that themselves aim to redress economic injustices using expert methodologies and corresponding material technologies. By focusing on the nuanced ways research participants contest (and construct) new forms of software development across the U.S./Mexico techno-borderlands, my dissertation contributes to debates about technology, racialization, capitalism, and the global economy that might ordinarily be broken up into distinct knowledge domains.

In order to navigate the “ethnographic stack,” I conducted participant-observation and interviews between 2013 and 2017 in Mexico and in the San Francisco Bay Area. I attended over 20 hackathons and spent extended time in co-working spaces and at tech industry events. I was able to participate actively as a “technology mentor” at the co-working spaces and hackathons, thinking alongside hacker-entrepreneurs as they brainstorm and develop their tech startup ideas. In addition to my undergraduate training in computer science, my previous professional work as a business technology consultant in both the U.S. and Mexico, consulting with diverse organizations to design and implement custom software solutions, provided me the technical ability to take on this mentor role.

I also conducted open-ended, formal and informal interviews with research participants mainly in two cities in Mexico: Mexico City (one of the center of tech startup activity) and Xalapa (a small city where the startup community is unexpectedly vibrant). These two cities provided geographic and demographic points of comparison. Mexico City is a mega-city where individuals more freely perform bi-cultural identities and interact with foreigners; Xalapa is a smaller university city of about 500,000 people surrounded by small municipalities where people work the land to earn a living. Although the sites I investigate in this paper are situated in Mexico, my ethnography is transnational in that I traveled frequently between Mexico and the San Francisco Bay Area, sometimes accompanied by my research participants, and sometimes running into them at various tech related events and spaces.<sup>63</sup> Thus, I continued to conduct participant-observation and interviews across these sites.

Prior to official fieldwork, I conducted two periods of preliminary fieldwork, during the summers of 2013 and 2014, in Mexico City and in Xalapa, respectively. I served as a technical instructor in a 6-week incubator program meant to train recent university graduates with the technical and entrepreneurial skills to launch viable tech startup companies. The participants had backgrounds in software development, business/marketing, or graphic user-interface design. I also made contacts with more “radical” collectives of hackers that keeps in touch mostly virtually but also had physical meetings in Mexico City. These research experiences allowed me to begin to

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<sup>63</sup> In order to highlight “transnational” phenomena, scholars have proposed traveling back and forth between their research sites (e.g. Joo 2012) or trying to produce “ethnographic simultaneity” (Zilberg 2011) between their research sites located in spaces contained by national borders. My “transnational” approach treats national borders as important but focuses on the coding logics underlying my research participant’s movements (physical, ideological, strategic) to focus on dynamics not necessarily contained by national borders.

understand how hacker-entrepreneurs maneuver their way through apparently contradictory hacking and entrepreneurship domains.<sup>64</sup>

## [7] PLAN OF DISSERTATION

First an explanation on the naming convention used to reference different sections of this dissertation, for example *Hacking\_Imaginaries*[0][1]. The first bracketed number references the chapter and the second bracketed number references the section within that chapter (see Table of Contents). In the example above, the call references chapter 0 (*Introduction*), section 1 (*Hackers and Hackathons*).

This naming convention is meant to mimic computer language syntax and computing data structures. The dissertation can be thought of as a simple data structure, such as a list or array. A simple list containing fruits, for example, might be constructed as follows: *my\_fruits* = ["kiwi", "lychee", ["blood orange", "valencia orange", "navel orange"]]. To access the first element of the list, we would call *my\_fruits*[0], which would return "kiwi." To access the second element of the list, we could call *my\_fruits*[1], which would return "lychee." We can also have nested lists; in this example, the third element of *my\_fruits* is a list of different oranges. To access "valencia orange," we would call *my\_fruits*[2][1].

This dissertation thus contains elements (chapters) which themselves contain other lists (chapter sections). The idea is that the reader "thinks like a programmer/hacker" with these simple lookups. In addition, referencing different sections of the dissertation works against linearity and instead invites the reader to think about how the dissertation is "assembled" across the different chapters.

*Hacking\_Imaginaries*[1], "Hacking Imaginaries in Mexico," ethnographically investigates emerging forms of hacking and entrepreneurial development in Mexico. I show how hackathon attendees build solidarity and find "coding bliss" when they create beautiful code. As research participants tease out the tensions between self-making and being-made, they fill an overarching neoliberal agenda with substance, meaning, and materiality. For young people in Mexico, "hacking" emerges as a way to make sense of their future livelihoods in a precarious state and economy, as a way to exist in a system where things just don't seem to work, and as a way to let the "code work" intervene in narratives that have only delivered false hopes. As hackathons continue to proliferate across the globe, I examine how the underlying logics of software design, such as "loose coupling," become fundamental for the re-organizing of social relations in Mexico.

*Hacking\_Imaginaries*[2], "Hacking Difference," traces the genealogy of the concept of hacking by analyzing studies of "hacker culture" (mostly by journalists) and depictions of the hacker in popular media (key films and magazine images). I explore how the figure of the hacker went from technology tinkerer in the 80s/90s to outlaw and then terrorist in the 2000s to the everyday hacker in the 10s. Today, everybody can be a hacker, and according to experts, everyone *should* be a "life hacker." How has this transformed our understandings of the relationship between "man" (I pay attention to

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<sup>64</sup> For more on conducting ethnography in Silicon Valley and in the hackerworlds, see Beltrán (2017b).

constructions of gender) and machine? How are race and gender incorporated (or not) into this trajectory toward the mainstreaming of the hacker? In other words, what counts as a hack and who gets to hack? How do “differences” become important as hackers differentially position themselves, but also align themselves, with the contradictions of treating code work as gendered and racialized labor?

In *Hacking\_Imaginaris* [3], “Prototyping Latinidad,” I focus specifically on constructions of global Latinidad within the “Migrachack” events (held on both sides of the U.S. Mexico border) by bringing together scholarship on “prototypes” and participatory models with conceptual work on constructions and mobilizations of Latinidad. That is, while collectives from both sides of the U.S./Mexico border put in the “code work” to resolve issues that they have deemed important to their livelihoods, they also put in the cultural work necessary to construct their *Latina/o* maker and *Latina/o* maker subject positions. The Mexico makers of the Mexico City hackathon in *Hacking\_Imaginaris*[1] were not necessarily concerned with what was really being made, because most of the time the projects were never really made at all. Similarly, at Migrachack it was clear that what was being made overstepped the boundaries of the projects at hand; what was being made were mindsets, hopes, futures, and participation models and subject positions to occupy these futures.

Popular discourse thinks about racial diversity in maker/hacker communities by proposing ways to get different or “diverse” participants to join events aimed at empowering these communities; here I explore how members of racialized groups are called upon to construct and manage these differences themselves within hacker spaces and maker collectives.

*Hacking\_Imaginaris*[4], “Pivoting Across the Borderlands,” I examine how research participants think with “the pivot,” a tech startup term that calls for changes to a product that might better align it with the market. A main argument of this dissertation is that (1) hackers use underlying coding logics as tools to “think with” about the social, technological, and government infrastructures they navigate, and that (2) hackers also work as “hacker-entrepreneurs” who freely navigate seemingly contradictory domains. In the hacker domain their practices are aimed against capitalism; in the entrepreneurial domain they advance capitalist practices.

In this chapter, I demonstrate how these crossings become even more complex when we add nationalized and classed borders that call for creative traversals (to use a computing term). Along this line of inquiry, then, I’m interested in how research participants reconfigure the market logics of agility, competitiveness, and risk to creatively combine them with logics of hacking characterized by reinvention, playfulness, and “resistance.” Thus, at this layer of the ethnographic stack, I show how research participants move and think with “the pivot” to manage and perform their Latinidad and labor potential across nationalized and racialized lines.

In the conclusions, *Hacking\_Imaginaris*[5], I outline how the ethnographic stack can become a tool for epistemic reflexivity; it might be used as an analytic and form of inquiry that serves as an invitation for coders and non-coders alike to use “ethnography” as the effective trade language required to do the crucial border-work required of complex problem-solving.

## [1] HACKING IMAGINARIES IN MÉXICO

### [0] THE FIRST HACK OF THE DAY

In the Colonia Anahuác neighborhood of Mexico City, dozens of young tech enthusiasts wait in line to be allowed admission to the 2015 “Hack CDMX” event. Like other hackathons, this event proposes that participants show up, network, build a multi-disciplinary team, and create a technological solution to a pressing societal problem. This year, the challenges fall under four broad categories: civic apps, solutions for the city, urban hardware and infrastructure, and data visualization. The winners in each category receive cash prizes and a promise from *El Gobierno de la Ciudad de México* [city government] to provide institutional support for the project to be successfully implemented. The event is sponsored by over thirty government entities; the long list of names takes up a substantial portion of the event’s webpage. If the heavy government involvement is somehow lost on any of the participants, they are promptly reminded when a caravan of black Chevy Suburbans pulls up to the building. Several square-shaped men wearing suits, dark sunglasses, and earpieces jump out of one of the vehicles and form a pocket around a slimmer man with a nicer suit as they approach the entrance. “Con esos lentes no pueden ver que hay una cola,” [with those glasses they can’t see there’s a line,] one young man exclaims.<sup>1</sup> “Quién es?” [Who is he?] I ask. “No sé y no me importa,” [I don’t know and I don’t care,] he responds.

Waiting in line, a couple of young men spot an obscure door with a sign that reads, “Tocar en la siguiente puerta -> o la cortina de la vuelta.” One of them quickly gets out a marker and makes two small modifications to change “cortina” [curtain] to “cantina” [bar]. “Ahí está, el primer hack del día,” [There it is, the first hack of the day,] he announces to an approving crowd (see Photo 1).

The attitudes and positions expressed in these brief interactions define much of the spirit and tone that will make up the weekend event. That is, these young people exhibit a sensibility for modifying, tweaking, and finding ways to exploit vulnerabilities in systems and structures, from the text on the sign to the practices of corrupt police officers. They embody and perform an ethos of “hacking” everything. In 48 hours—the time displayed as a countdown on a giant screen overlooking the space—enthusiastic programmers, entrepreneurs, designers, and community members will have to pitch their idea to over 1,000 participants in attendance. Among the projects that will be developed at HackCDMX are: In/fracción, an app that allows users to quickly verify if a traffic agent is officially registered to give you a citation; EseTaxi, an app that helps users feel safe when using public taxis by sharing routes with close acquaintances; and ¡Agües Güey!, a platform that allows you to check potable water conditions in your area.

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<sup>1</sup> All translations by author



[Photo 1] The first “hack” of the day



[Photo 2] Line around the corner to enter HackCDMX.

The event has undoubtedly garnered much attention from the tech community. At 9am, one full hour before the doors open to the limited capacity event, the line has already coiled around the corner (See Photo 2). What drives these young men (and a few women) to show up in the hundreds to this event in particular, and to hackathons in general? <sup>2</sup> Some, especially the “newbs/noobs/n00bs,” or first-timers, are here for the free “swag” (t-shirts, stickers, and other hacker paraphernalia) that will be handed out. Others are professional hackathon participants, known in the hackathon community to show up to these events with previously developed projects and try to nab the winning prizes, which range from cash awards and tech gifts (laptops, smartphones, tablets) to trips to other parts of the world to present projects. Others are here to try to recruit top

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<sup>2</sup> I further explore the gender dynamics at hackathons in *Hacking Imaginaries*[2] as part of a discussion on difference and “diversity” within these events. For a discussion on the parallels between “hacker culture” and “boy culture” see Douglas Thomas *Hacker Culture* and Sherry Turkle *The Second Self: Computers and the Human Spirit*.



software developers to work on their “secret” projects. Such is the case of Diego, an Argentine architect who works in Mexico City, who, after observing me interacting with several of the hackathon veterans, asks me if I know who the top “talent” is.<sup>3</sup>

Diego is familiar with tech buzzwords, and he’s currently on the search for a “10x developer,” a term that circulates widely in Silicon Valley and is built on the premise that not all programmers are created equal. A “10x developer” is a (some say mythical) rockstar programmer who is at least ten times more productive than your average, run of the mill programmer. I ask Diego what his startup idea is. “No te la puedo contar – la verdad es que es así de buena.” [I can’t tell you – the truth is that it’s that good.] Diego is also familiar with the popular narrative that an original, creative idea can lead to a lucrative business venture, or “the next Facebook.” As Diego scurries along the line in secrecy searching for his mythical programmer, “Chavita” (a common nickname for men named “Salvador” in Mexico), who is waiting in line next to me, observes him and smirks.

The irony is that Chavita is perhaps the best candidate to fill the shoes of the “10x developer” Diego is looking for. Chavita was the top scorer in a software programming placement exam we administered as part of a summer-long tech startup bootcamp at the Universidad Nacional Autónoma de México (UNAM) in 2013, where I served as technical instructor. In addition to hacking away on his computer engineering coursework at the university, he heads the university mobile development team, and during his free time Chavita performs the duties of “sensei” at Dev.f., a hackerspace where young people gather to improve their programming skills, work collaboratively on projects, and promote the “hacker” ethos. At Hack CDMX, Chavita will continue to work in this spirit as he teams up with other members of Dev.f. to work on *Bikingos*, an augmented reality game that allows users to gamify their experiences using *Ecobicis* (Mexico City’s urban public bicycle transport program).

Last year, Chavita’s app, *Audiovio*, won second prize in this competition. It used a crowdsourcing platform to help find missing persons in the city. Despite the city’s promise to help fund and support the project, nothing materialized from *Audiovio* other than a congratulatory letter signed by a city official and some winning pictures and press. The hackers know that *In/fracción*, *EseTaxi*, and *¡Agua Güey!* (other projects that will be developed at HackCDMX) are likely doomed to the same fate. This “app futility” isn’t particular to this hackathon or even to Mexico.

Lilly Irani (2015) chronicles a similar experience at a Delhi hackathon: years go by without her demo spawning any projects, grants, or working software systems, despite the fact that a team of talented professionals spent a grueling week putting in the “code work” to create a sophisticated working demo. As Irani mentions, many hackathons have similar endings where participants “just shake hands and say goodbye” and where much of what gets built “never gets built at all” (2015:804). Thus, while anthropologists who conduct fieldwork with young “trendsetters” or “prosumers” (those who blur the boundaries between production and consumption) find themselves infected and inspired by a spirit of making (García Canclini and Cruces 2012), my extended fieldwork hones in on the social worlds constructed during but also beyond this making, where much of what is made is never really made at all.

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<sup>3</sup> All names are pseudonyms.

Chavita, as well as other hackathon participants, are well aware of these dynamics of making and not-making. I asked Chavita why he showed up again this year to the hackathon, in the face of the same empty promises, but he responded with a reserved shrug. The underlying reasons why Chavita and other self-identified hackers continue to show up and help stage and perform the hackathon, in a setting where the promises of rewards and opportunities are largely spectacle, is one of the primary probes that guides this chapter.

This chapter has three main sections. First I provide the political context in which hackathons and co-working spaces are being promoted by the Mexican government. To further explore the ways in which the figure of hacker is constructed, I examine how research participants fill the hackathon space and their hacking experience with meaning by focusing on the social dynamics and software development practices at a popular hackathon in Mexico City. Next, I follow my research participants outside of the hackathon and back into everyday “hacker life” as they socialize and work together at a co-working space. To tie these three sections together, I conclude by discussing how the underlying logics of the “hacking” that takes place across these sites become fundamental for the re-organizing of social relations in Mexico.

As described in my introduction, I build on work by scholars who have analyzed the hackathon as a microcosm of Silicon Valley dynamics, where participants perform mercurial allegiances and work in focused, high-innovation cycles meant to mimic free-market business processes (Jones, Semel and Le 2015).<sup>4</sup> At these hackathon events, young hackers and entrepreneurs (usually between the ages of 20-35) learn startup methodologies, brainstorm and prototype their products, and develop “pitches” that they use to present their startup ideas.<sup>5</sup>

By putting in the code work alongside a heterogenous and shifting group of hackers within and outside of the hackathon, across different hackerspaces, and by spending time with them in their daily lives, this chapter highlights the ways young people position themselves in relation to narratives that promote the “promise of technology” (Shankar 2008). How do their practices index the ways in which they learn to function inside of a neoliberalizing economy by using different resources and by appropriating the discourses of flexibility and self-management while they remain outside of formal routine employment? By exploring my research participants’ multiple, overlapping, and contradictory relationships to the hackerworlds, I aim to highlight critiques that emerge

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<sup>4</sup> A hackathon usually lasts 48-72 hours. During this time, participants are expected to meet partners, develop a mobile application related to an organizing theme (e.g. healthcare, transportation) into a viable tech startup company, and pitch their startup to investor-judges. The pitch must convey why the startup is an innovative project, what problem it is resolving, and most importantly, that it is scalable and economically viable in the current market.

<sup>5</sup> I use the term “hacker” to refer to someone who loves to program computers in the spirit of playfulness and exploration and who disassociates from capitalistic or technocratic motives. Kelty (2008) uses the term “geek” to avoid subversive or criminal connotations and to be more inclusive of the lawyers and activists sympathetic toward free and open-source software (F/OSS) endeavors. I prefer the term “hacker” for those who have the technical proficiency to do the computer coding; moreover, I found this is how hackers identify in Mexico. Thus, my focus is on hackers who have the skills to put in the “code work;” my aim is to add texture to the contours of everyday hacker life, inside and outside of the hackathons and hackerspaces, without reifying the “hacker.” Chavita, for example, carried himself with a reticent demeanor, unlike the majority of the hackers I interacted with, or the vocal, loud, persistent and loquacious “geeks” other anthropologists encounter—the “superalterns” who can speak for themselves.

about neoliberal work life from these “other” hackers or code-workers (Amrute 2016).<sup>6</sup> Hackers in Mexico immerse themselves in the “coding sublime,” navigating the politics of making and not making at the same time that they re-interpret coding logics such as “loose coupling” to re-organize their relationships with entities who produce value from their hacking. As they negotiate their new subject positions and conditions, Mexican hackers create a collectivist response of alternative meaning-making (and code-making) to fill an overarching neoliberal program with substance, meaning, and materiality.

## [1] MEXICAN HACKERS AS MODEL ENTREPRENEURIAL SUBJECTS?

In Mexico, the tech startup scene has surfaced in parallel to hype from economic analysts who project that Mexico is set to emerge as the “Aztec Tiger” economy. President Peña Nieto’s administration has quickly orchestrated an ambitious reform agenda, addressing labor laws, tax reform, the public education system, and the telecommunications industry. Peña Nieto’s reforms follow developmentalist logic aimed to move Mexico beyond low-wage factory jobs and toward an entrepreneurial economy.

Following capitalistic and developmentalist narratives, Hack CDMX and other hackathons and co-working spaces fit into the larger Mexican political-economic landscape as spaces to keep recent graduates busy, as potential generators of companies that will create jobs for them and their colleagues, and as the type of infrastructure that will help Mexico emerge on the global innovation stage. Indeed, government funding and interests have been a main catalyst of the “tech entrepreneurship movement” in Mexico. Not surprisingly, state government offices can be found on the first floor of iLab, one of the co-working spaces where I conducted research in Xalapa, as politicians frequently drop by to hear the latest startup pitches and take pictures with the teams.

The young entrepreneurs by no means ignore the political backing and presence. Alberto “Chung,” a self-identified hacker from Xalapa, comments on the upcoming hackathon being sponsored by the city government:

No pregunten como pero conseguí un borrador de la convocatoria para el “Hackathon Xalapa,” por si quieren participar se pueden ir preparando. Hay que desarrollar soluciones tecnológicas que resuelvan problemas de movilidad y servicios municipales...según esto ganas o no tienes que entregar tu proyecto, códigos y documentación, y pues el premio es salir en el diario de Xalapa, una beca al iLab y una palmada del presidente municipal...muy tentador no? [Don’t ask how I got a draft of the call for the “Xalapa Hackathon,” but if you want to participate you can start getting ready. We have to develop technological solutions to resolve mobility problems and municipal services... according to this [announcement] whether you win or not you have to submit your project, code and

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<sup>6</sup> Recent scholarship has looked away from the Euro-American hacker lifeworlds and focused on hacker communities in the Global South (Chan 2013; Takhteyev 2012). My goal is to add nuance to an undifferentiated “global” hacker community at the same time that I add complexity to the “*Mexican* hacker,” and more importantly, to investigate how the shifting meanings of hacking are a sign of significant technical and political change (Coleman and Kelty 2017).

documentation, and well the prize is that you will appear in Xalapa's newspaper, you get a scholarship to iLab, and you will get a pat on the back from the municipal president... very tempting, right?]

Especially in regard to hackathons, hackers across my research sites were in agreement that government entities were using them as a way to further their own political agendas and as photoshoot opportunities for their poster politicians.

The use of technology by state entities to advance underlying political agendas is not new and has been theorized in other contexts. Social "reformers" partner with technological "experts" to imagine and conceptualize worlds with which they plan to intervene, often with the technical systems they are designing. Through the tunnel vision of technology, which often excludes underlying political-economic relations (Ferguson 1994), they specify problems that need to be fixed and improved, or the "problematization" phase (Li 2007), then plan to resolve them with the technical instruments at hand, or the "rendering technical" phase (Rose 1999; Mitchell 2002). When these projects are promoted by the state, they become part of a pageantry in films and across different media that is meant to produce, address, and train a modern subject how to react to these awe-inspiring technological projects (Larkin 2008).

The celebration of "modern" engineers, scientists, and entrepreneurs thus becomes part of Mexico's nation-making project to stage the potential of technology to fulfill the promise of progress. More importantly, the promise of *entrepreneurial* engineers and scientists helps to promote a political agenda where young people are asked to appropriate neoliberal discourses about taking initiative, being self-satisfied, not waiting for government, and being "socially conscious" (Urteaga 2012).

The model entrepreneurial hacker thus emerges as a valuable subject in the Mexican political-economic landscape, where the majority of young people exist disconnected from institutional support and need to provide for their health, work, education, and security (Reguillo 2010; Valdez 2009).<sup>7</sup> About seven million young people ages 14-29 in Mexico are either looking for employment, not enrolled in school, or fall under the broad category of "not economically active" (Instituto Mexicano de la Juventud 2010). Only a minority is connected to institutional circuits that allow them to make decisions about their livelihoods; nevertheless some opt for working "by the project," in the "here and now" and "in their own terms" (Urteaga 2011). Some claim to belong to a generalized "generation of disenchantment," stating, "They fooled us, we did what they told us and in the end things aren't the way they told us they would be" (García Canclini and Cruces 2012:xviii).

In many ways, Chung's cynicism about the government backing for the hackathon mirrors the comments from other "disenchanted" youth in Mexico which other scholars have pointed to, and more generally, the expressions of loss of hope for the future and loss of faith in the neoliberal project that other anthropologists have found in contemporary contexts (Riles 2013). Reviewing recent anthropological theory, Lucia Cantero (2017) finds that ethnographic explorations have consistently unpacked a

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<sup>7</sup> The connection between entrepreneurial subject-making and neoliberal nation-making is not specific to Mexico. Describing projects across Asia and Africa that present entrepreneurs as drivers of forward-thinking, large-scale social change, Irani states, "These projects cast entrepreneurs as collaborative rather than agnostic, technical rather political, and constructive rather than complaining" (2015:803).

persistent disenchantment with the fruits of contemporary political economy. Nevertheless, Chung and others proudly displayed their HackCDMX sticker along with dozens of others on their laptops as they enthusiastically hacked away during the hackathon weekend. While other scholarly research finds that hackathon participants are primarily driven by an interest in exhibiting the entrepreneurial spirit in order to perform middle-classness, to confirm their trust in their ability to “change the world,” I found a much more heterogeneous cast of characters, motivations, and experiences at hackathons in Mexico. To explore further why Chung and Chavita, like many of the other hackers at the Mexico City event, continued to hack away amidst the unreliable government sponsorships, shameless politicians, and empty promises, I participated as a team member and floating mentor at the event in order to stay close to their practices, effectively attempting to hack while I hovered above their hacking, within and beyond the hackathon.

## [2] STAGING THE HACKATHON

If the Mexican state is invested materially and imaginatively in the hackathon, so are the participants who come to put in the “code work” to attempt to make their solutions and dreams come alive. The technical solutions proposed at this hackathon are not of the generic (and often naïve) “change the world” genre, however, but closely guided by intimate understandings of the kind of apps that will win, that the “winning” might not lead to tangible solutions, and that there is real meaning in the process of “making” regardless of the outcome. That is, the hackathon becomes a negotiation between government and corporate actors and the hackers who come to find meaning and a collective sense of efficacy within the bounded space of the hackathon. Among the cast of characters at HackCDMX we will find Leo, a veteran hacker and recent UNAM computer science graduate who travels over two hours on public transportation in and out of Mexico City from a peripheral *municipio* [municipality] to participate in these events and to freelance with small businesses who need apps built. Most of his earnings he contributes to help pay for family expenses, and he saves up just enough to purchase airplane tickets to attend annual expo training events in the San Francisco Bay Area hosted by major tech companies. Wearing t-shirts given away by these companies is a badge of honor for the hacker, and they complement his wardrobe of more colorful t-shirts with even more colorful slogans, “Talk is Cheap,” “Show me the Code,” and Leo’s favorite, “Programming is the closest thing we have to superpowers.”

Few women show up to these events. One of them is Ana, a visual artist by training who was recruited to join the first cohort at iLab, a co-working space in Xalapa. After graduating college, she helped out with her family’s business renting rooms for university students, and secured a small income making picture frames for her artist friends. “In the art world the ones that make money are the ones that make the frames,” she says, “I didn’t know anything about technology. The first months it was very difficult to understand all of this. Artists are somewhat proud/arrogant. We do our work, and we don’t care if people understand us. Before I saw art everywhere, and now I see apps and technological projects everywhere that can improve anything,” she says, somewhat sarcastically, about joining iLab.

Ana was recruited by iLab's director, whom students have nicknamed "*El Pato*" [The Duck], in response to his characteristic phrase, "Yo escopeta, tu pato." [I'm the shotgun, you're the duck.]<sup>8</sup> His phrase is meant to index an overall disciplining of the rising hacker-entrepreneurs who join iLab. *El Pato's* bible is *The Lean Startup*, a popular book that circulates widely in the startup world and proposes a decentralized protocol for efficiently developing tech products that meet the needs of early customers, thereby reducing market risks and sidestepping large amounts of initial project funding. In an interview, *El Pato* tells me:

Lean significa esbelto, pero también significa que siempre estamos en beta. Nada es seguro. Todo el tiempo estamos re-plateando todo. Si vemos que algo no está aplicándose correctamente lo podemos calibrar. Si vemos que hay algún proceso que deberíamos de estar adoptando porque está teniendo éxito en otra parte, en ese momento lo conectamos con nosotros. No queremos hacer algo estático. Queremos que siga siendo muy dinámico.

[Lean means slim, but it also means we are always in beta. Nothing is certain. All the time we are re-formulating everything. If we see something is not being applied correctly we calibrate it. If we see there is a process being applied successfully in another location, in that moment we adopt it and connect it to ours. We don't want to do something static, we want to continue being very dynamic.]

When he makes appearances at events like the hackathon, he supervises iLabbers to make sure they are adhering to the disciplined entrepreneurship the model proposes.

At HackCDMX, Ana, Leo, *El Pato*, Chavita, and his "sensei" friends from Dev.f. spend the weekend together thinking about Mexico City's and Mexico's problems at the same time that they meet and work with other hackers, designers, entrepreneurs, and curious onlookers from across the country and from across the world—participants that have shown up to take part in the spectacle of the hackathon. Hackers have gathered not only to create something new but to share, in person, their latest creations; they show off their code to others who can appreciate it. "Mira todos estos imports," [look at all these import files,] Chavita tells Leo, as he points to the dozens of "import" statements in his Python file. An import statement tells the current file to look at other files that contain previously written code that you can reuse for the task at hand. "No tengo más de cuarenta líneas en cada *class*," [I don't have more than forty lines in each class,] Chavita proudly explains. Leo, who hasn't slept in the last 30 hours, manages to follow Chavita's demonstration with his bloodshot eyes, and confirms Chavita's accomplishments with an enthusiastic "Eres un chingón." [You're a badass.]<sup>9</sup>

Indeed, the principles of reuse, simplicity, consistency, efficiency, and the ability to shuttle between different levels of abstraction are core tenets of computer science

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<sup>8</sup> As Rihan Yeh notes, these linguistic nuggets that can be categorized under the broad category of "jokes" can be read as either pro-neoliberalizing slogans (especially as this example shows) or "popular resistance," as many of the examples (especially from the side of the hackers) show. This parallels theoretical literature on jokes: half frames them as social critique and half claims they support the status quo. As Yeh (2017) argues, jokes can be understood as doing both at once.

<sup>9</sup> For further analysis of the use of the word "chingón" in this context, in connection to performances of technical masculinity, see *Hacking\_Imagaries*[2][4].

and metrics used to identify a talented computer programmer. Hackers at Hack CDMX use the time and space to share code from other projects they have been working on, sometimes from their professional jobs where there are few programmers and where results-oriented managers fail to recognize the complexity and beauty of their creations. In her ethnographic research with hackers, Biella Coleman (2013:118) finds their value of cleverness, ingenuity, and wit transfers to the process of making technology and writing smart pieces of code. That is, hackers “revel in directing their faculty for critical thought toward creating better technology or more sublime, beautiful code.” If one can dissect, manipulate, reassemble, and solve the problem within the given constraints and tools at hand, one can create beautiful, “original” code. Within the space of the hackathon, Chavita, Leo, and other hackers come together for a weekend to look for this “coding sublime.”

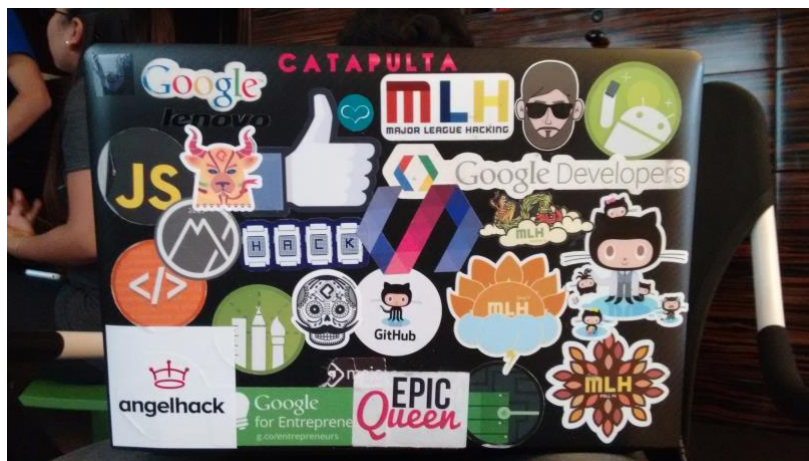
Anthropologists such as Biella Coleman (2013) and Chris Kelty (2008) have found that hackers (mostly in the U.S.) build techno-social movements narrowly configured around a technical craft to ensure “software freedom” and their corresponding individual “productive freedom.” But by highlighting the sociality and relational construction of hackers in Mexico, I show that their technical craft and love for coding is cultivated within a context of precarious political allegiances and arrangements.

### **[3] LOOSE COUPLING**

With one hour left in the hackathon, the *Bikingos* team takes a needed break for some non-coding *cotorreo* [fooling around, just hanging]. I take advantage of the opportunity to conduct informal interviews with the team. Leo tells me more about why he is so tired. Leo works for a tech consulting firm in Mexico City and usually spends ten to twelve hours a day programming and many times has to work weekends with no extra pay since he gets paid by the project. He is aware of the exploitation but instead of framing it as a situation where he has no other choice, he refers to his arrangements as “loose coupling.” “It’s a systems design term,” Esteban, who is also present, explains, in case I’m not familiar with the coding terminology.

“Loose coupling” is a computing term that refers to a robust way to write code where data structures (or other components) can use other components in an interconnected system without needing to know the full details of their implementation. In this way, each component becomes more autonomous and can be used for different purposes by different components; elements become “coupled” and depend on each other with very little (or no) direct knowledge of each other. Leo and Esteban recommend manuals and tutorials that further explain this software design so that I can appreciate its value. The term “loose coupling” Leo uses to refer to his flexible work arrangement references his autonomy at the same time that it references his replaceability. Like many of the young people in attendance, Leo contracts out his programming skills to diverse companies or startups. In the case of startups, they are usually U.S. based companies which find programmers who work for a lot less than software programmers in the U.S.

Leo further elaborates on the hackathon dynamics: “Antes, los políticos llegaban a repartir licuadoras y a tomarse la foto cuando se terminaba una cancha de basquet, si es que se terminaba. Ahora llegan a repartir stickers del hackathon y a tomarse la foto con los equipos ganadores.” [In the past, the politicians would arrive to distribute blenders and take pictures when the basket[ball] court was completed, if it was ever completed. Now, they arrive to distribute hackathon stickers and take pictures with the winning teams.] Leo is referring to the “swag” that is handed out at events such as the hackathon. The stickers are primarily used as marketing material; they show the logos of tech companies, operating systems, development tools, and hackathon events, and participants like to decorate their laptops creating colorful, creative displays (see Photo 3). Even though Leo criticized the practice of sticker distribution, associating it with the “old” method of gifting household electronic appliances such as blenders in the name of voter recruitment by politicians, he still proudly displays his stickers on his laptop. Moreover, the varied events, companies, and technological platforms show the contradictory and fleeting allegiances that currently make up his hackerworld. Like the “loose coupling” approach he takes to code, his sticker arrangement points to his flexible (and legible) networking capabilities.



[Photo 3] Hackathon “swag” displayed on laptop

García Canclini, working in Mexico, has found that the relationship between government and people is continuously staged in rituals where politicians function as vicarious actors in the national drama, and the construction between “old” and “new,” “traditional” and “modern” is predominantly visual (1990). If the stickers function as a new way to remake “the state” by politicians, the hackers use them as a way to visualize their contradictory relations to the state. Mexican citizens have found themselves preoccupied with managing their national culture vis-à-vis “modernity” since independence (Lomnitz 2001), and the arrangement of their hackathon “swag” becomes one way to understand the institutional and relational makeup of their “citizenship” within the ritualized spectacle of the hackathon. Indeed, in a loosely coupled system, interfaces between system components are important communication points, where the



rules of the interaction are made explicit. Here, the sticker arrangements take the role of the interface, where (fleeting) relationships are made explicit and negotiated.

These shifting relationships also point to the neoliberal knowledge economy and underlying processes of transnational capitalism that ask young people to work by the project, and on their own time. Rising hacker-entrepreneurs must learn to respond quickly and with agility to volatile market trajectories and frequently cross career, role, and political boundaries to perform their flexible or “latitudinal citizenship” (Ong 1999). Market volatility becomes a way of life, where flexibility, instability, liquidity, and risk-taking are interpreted as desirable and challenges that the modern subject can manage by employing calculative decision-making (Ho 2009; Miyazaki 2003; Zaloom 2003). If politicians have upgraded from *licuadoras* [blenders] to hackathon stickers to construct loyal citizens, these hackers are model citizens using the stickers to visualize, make legible, and manage their own *liquidity*.

More specifically, the version of “modernity” that the state attempts to construct is gendered and virtual.<sup>10</sup> That is, state practices follow the ephemerality and contingency of the hackathon dynamics as they move from a stable, territorialized domestic space where the blenders they distribute will purportedly be used by women, to the de-territorialized, unstable and male-dominated space of the hackathon where the stickers will be distributed. If Mexico was meant to be “modern” when it could fashion itself as capable of producing a nation of stable, middle-class heterosexual nuclear families using their “modern” technologies inside of their own homes, here it needs to upgrade to a nation of male (not necessarily heterosexual), flexible workers who themselves are responsible for producing future possibilities and spaces. This new “virtual” space of modernity contrasts with the actual domestic space in order for subjects to perform their liquidity, as described above, and aligns nicely (for the state) with the work the hackers are already doing.

For 48 hours, then, *Bikingos* team members put in the code work in search of “software freedom” while they design a beautiful graphical interface and user experience for their application and test their app while riding bikes around the city. After several iterations of prototypes, testing, and debugging, they commit their final code snippets to the team’s repository, click “deploy,” and celebrate the successful launch of their working application. They deliver a phenomenal pitch to the hundreds who show up for the final demo session and celebration. *Bikingos* wins first prize in the “solutions for the city” category. The team poses proudly for their group photograph. Chavita gets the same certificate he did last year. In the individual photo sessions, a different politician than last year takes a picture with him.

This public performance of the rewards and the potential of the hackathon contrasts with the private discussion the team had as they talked about the actual utility of the app. That is, they were aware that the rating system and route sharing infrastructure that was part of their app was not very likely to be used in daily Mexico City life; because of privacy issues, users would be reluctant to share any personal information despite the promise of secure connections and encrypted data. Similarly, the team members of *In/fracción* and *¡Agua Güey!* recognize the challenges of their apps being implemented at institutional levels outside of the hackathon. Team members of *GuarurApp*, an app meant to let users know which parts of the city are “safe” to walk

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<sup>10</sup> I use the term virtual not as opposed to the “real” but to the “actual.” See Boellstorf (2008:21).

at different times during the day, acknowledge that the app might be used by the very people it is intended to protect citizens from—they might be giving crooks and thieves insight into “new” zones to conduct their business where people might have their guard down. Thus, hackers know that their code might work, but perhaps not in their particular context. Regardless, they demonstrate their intimate knowledge of skills and mindsets of groups who fall on different sides of political and institutional boundaries. Their loose coupling is performed together with this “app futility” within the space of the hackathon as they discuss and negotiate these contradictions, a practice they seek to replicate outside the bounds of the hackathon.

#### **[4] “PROGRAMMING IS THE CLOSEST THING WE HAVE TO SUPERPOWERS”**

After the Hack CDMX hackathon, Leo, Chavita, and other winners reintegrate into everyday life. This means going to the university, helping out at home with brothers and sisters, and the most fun aspect of their everyday lives, going to Dev.f. to hack. Dev.f. is the first “hacker school” in Latin America, created in 2014. It is “nomadic,” in that each batch of students takes part in the 12-week program in a different part of Mexico City, many times within co-working spaces and sometimes within large tech companies. When they work in a tech company’s facilities, they are not involved in the operations of the company, but they do promote hacker students for advertised jobs within the company. The idea is that a few participants might transition into professional roles within the company that do not ask them to sacrifice the “hacker ethic” carefully cultivated within the Dev.f. program. Thus, their interactions with the different companies effectively resemble loose coupling.

Like many of the young men (and few women) that come to the hacker school, Dev.f.’s founders, Kike and Eme, felt their university material was outdated and their teachers lacked passion. “We loved to go to hackathons so we made one that would extend more in time. We wanted to live the hackathon every day,” Eme tells me in non-accented English. He is a graduate of the prestigious Monterrey Institute of Technology (sometimes referred to as “Mexico’s MIT”) and sells his story to Dev.f. students as someone who was destined to follow a “traditional” middle-class life (get a well-paying job using his university pedigree, get married, settle down) but instead decided to follow the “hacker” life. Eme and Kike consistently assert themselves as individuals who know all about the Silicon Valley culture, from the books and blogs they read, to the lean startup methodologies, to the current tech company mergers and acquisitions. They see Dev.f. itself as a tech startup, and recently landed an office hours session with Sam Altman from Y Combinator, a prestigious and competitive startup accelerator with its headquarters in San Francisco. This was an accomplishment they were both quite proud of, but the environment they have built for students, the “everyday hackathon,” is their prime accomplishment.

As students at the hacker school progress from white belt (most basic) to black belt (most advanced) classes, their “senseis” (Eme, Kike, and other advanced mentors) provide feedback and mentorship into the hacker ways. You don’t have to be part of the program to hang out and hack, and entry into the official “hacker school,” which grants you an official certificate for completing each phase of the program, is priced on a

sliding scale. Thus, Eme and Kike see themselves as both entrepreneurs and evangelists.

The current batch of Dev.F. takes place within a co-working space, “The Pool,” in the upscale Polanco neighborhood of Mexico City. Students like Leo travel over two hours on public transport to arrive. Their laid back “hacker attire,” jeans and t-shirt complemented by a scruffy appearance, sometimes contrasts drastically against the luxurious shops and perfumed upper-middle class shoppers they pass on their way to The Pool. Inside the co-working space, they rub shoulders with other entrepreneurs whose startups are headquartered in rented office space at The Pool. Hackers-in-training meet their friends and set up their laptops to hack in the perfectly kept space, which adds touches of inspiration with quotes written on the wall, “The only way to win is to learn faster than everyone else. – Eric Ries,” it says in English over the main workspace where black belts work, and a longer quote in Spanish appears over the workspace for white belts:

Tu trabajo te llavará una gran parte de tu vida y la única forma de estar totalmente satisfecho es hacer lo que tú creas que es un gran trabajo y la única forma de tener un gran trabajo es amar lo que haces. –Steve Jobs  
[Your job will take away a great part of your life and the only way to be completely satisfied is to do what you think is a great job and the only way to have a great job is to love what you do. –Steve Jobs]

Eric Ries is the author of *The Lean Startup*, and Steve Jobs is the even more popular co-founder and CEO of Apple, Inc. In addition to idolizing and quoting these famous U.S.-based tech entrepreneurs, who have created high-revenue-generating tech companies, one of Eme’s first entries on his popular and widely read blog lays out the 10 principles of the “hacker ethic” one must follow to become a Dev.f. hacker:

- |     |                                       |                                   |
|-----|---------------------------------------|-----------------------------------|
| 1.  | <i>Give before you get</i>            |                                   |
| 2.  | No pedir permiso                      | [Don’t ask for permission]        |
| 3.  | Hacer > Hablar                        | [Doing > Speaking]                |
| 4.  | No existen excusas                    | [Excuses don’t exist]             |
| 5.  | Resolver problemas                    | [Resolve problems]                |
| 6.  | Sigue tu curiosidad                   | [Follow your curiosity]           |
| 6.2 | Fracasar == Crecer                    | [Failing == Growing]              |
| 7   | Conoce tus herramientas y comunidades | [Know your tools and communities] |
| 8   | Siempre aprender                      | [Always learn]                    |
| 9   | Involucrarse                          | [Get involved]                    |
| 10. | Divertirse en el proceso              | [Have fun in the process]         |

If the students are too busy hacking to look up at the walls or even to read Eme’s blog, phrases of wisdom are worn proudly on t-shirts by their colleagues. On the back of one young man’s t-shirt (a freebie that was handed out at a hackathon), the words, “Start Local. Think Global.” Eme wears one of Dev.f.’s favorites, the aforementioned “Programming is the closest thing we have to superpowers.” The t-shirts have proven to

be particularly useful because of their mobility; hackers can display elements of the hacker ethic as they move through the world, thus establishing a boundary between themselves and those who are not hackers.

Dev.f is itinerant and, as mentioned above, sometimes holds sessions within tech companies. Kike is particularly proud of this practice. He tells me that for the company that allows them to use the space, they get to feel like they are part of this new “hacking” thing and also hire some of the best “talent” in Mexico while saving on recruitment costs. For Dev.f., they get to use the space to continue their operation. More importantly, as the nomadic Dev.f batches iterate and occupy the space of different companies, they get to observe the inner workings of different institutions and the kind of performance and negotiation that take place within them.

The “hacker culture” thus becomes a product to be sold to hackers-in-the-making by expert “senseis” and also to tech companies who want to integrate talented software developers and also feel they are part of something young and new. The commodification of “hacking” might be seen as positive, in the sense that young people, many from underprivileged backgrounds, build solidarity with other young people, learn new skills that might enable them to gain employment, and at the very least, hacking keeps them away from urban crime. The language used in the hacker ethic, however, aligns with the discourse García Canclini (2012) and Urteaga (2012) have pinpointed as neoliberal language used by the Mexican government to “blame the victim,” for example, “no existen excusas” [excuses don’t exist], rule number four in the hacker ethic. That is, this emerging “hacker ethic” must be understood in the current Mexican political and economic climate.

According to Marcus, the co-founder and CEO of one of the first tech startup incubators in Mexico City, the self-motivated and self-governing hackers that keep Dev.f. iterating are part of a new generation of young people who have undergone a complete cultural overhaul. “Five years ago, they would graduate and think about getting a job. Today, more than half of graduates in Mexico want to start their own business,” he says. He mentions that venture capital investments in México surged to \$978 million in the first half of 2015, more than double the \$403 million reported in the first half of 2014. He uses numbers to back up his claim that the startup boom is not only working in Mexico but goes on to credit Mexicans’ “creativity” for being able to stay ahead of the “exploding startup culture” reported globally. Marcus uses dollar amounts to give substance to rising economic trends and backup figures for the number of hackathons and corresponding prototypes created at these events -- a 2016 report shows 3,450 hackathons counted worldwide with over 200,00 participants and 13,000 prototypes created across more than 100 countries (Laudet 2017).

Thus, the hackathon and the hacker are at the center of not only the imaginary of the nation but the coding and operation of the “new economies” that compete to be the “next Silicon Valley,” or other offshoot terms that index rapid economic development defined by technical expertise and information technologies (e.g. “Silicon Alley,” “Silicon Valle,” or “Silicon Savannah”).<sup>11</sup> In Mexico, major cities (Mexico City, Monterrey, Guadalajara) have taken turns claiming to be the city that gets it, the city where the future is being built, the city where the top “talent” can be found and where more emphasis is placed on STEM education and infrastructure. Guadalajara’s mayor

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<sup>11</sup> See Poggiali 2016.

Enrique Alfaro, for example, claims that the tech sector makes up 30 percent of the city's economy, a figure he adds to reports that show around \$120 million has been invested in over 300 Guadalajara start-ups between 2014 and 2016 (Popescu 2016). The fact that half of Mexicans are under 30 and the median age is 27 might have something to do with the startup boom in Guadalajara.

No such investment figures have been reported in Xalapa, Veracruz, the home of iLab, and yet the spirit of hacking continues to flourish and connect with circulating narratives of entrepreneurship. This small but vibrant startup and hacking community receives praise from media reports and from the politicians who frequently stop by to take pictures with those who spend their time at iLab. Perhaps the activity is not surprising if we look at demographic data, however. A 2010 survey reveals that the state of Veracruz is home to close to half a million young people (between age 14-29) who do not study or have a formal job, and that 53% of those in this same age range fall under the category of "not economically active." This represents 7.7% of the national total and the second largest percentage after the state of México (Instituto Mexicano de la Juventud 2012). This same survey reveals that young people in Veracruz place less confidence in "well qualified" institutions (medical, education, public university) than their peers in other Mexican states, and that 35% (also higher than the national average) believe they are worse off than their parent's generation in regard to finding work or having adequate economic resources.

Thus, just like it is common to hear iLabbers reproducing the popular discourse about Mexico joining the new knowledge economy or the rise of a Mexican creative or middle class, it is also common for young people to critique the iLab project for its state sponsorship and express feelings of disenchantment in regard to prospects of future livelihood. Omar, for example, tells me, "Todo está muy padre, las instalaciones y el apoyo, hasta que te das cuenta que solo quieren que registres tu compañía para que pagues impuestos." [Everything is real cool, the facilities and the support, until you realize that they only want you to register your company so you can pay taxes.] Omar reminds us that more than half of Mexico's economy reportedly functions in the informal sector, where people do not pay taxes (but also receive no benefits), and he further evokes the sentiment of mistrust confirmed by the national youth survey. The founders of iLab, along with other economic "experts," are quick to counter that the main technology systems in the world (referencing Silicon Valley, Boston, and Israel for example) were fueled by government money. The fact that Omar continues to work on his startup and hack away within iLab, with government offices located on the first floor, while he voices his skepticism and disapproval, further highlights the complicated maneuvers young people execute as cycles of expert promises, government projects, and economic models iterate in booms and busts that parallel those of Silicon Valley.

In contemporary Mexico, multitudes of citizens collectively protest the impunity, corruption, and violence that have come to characterize state practices, where *narcotas* [drug-trade graves] with hundreds of unclaimed bodies frequently appear in clandestine locations, where dozens of protesting students go "missing" in the hands of state officials, where nothing seems to work – something in the here and now at Hack CDMX, at Dev.F., at iLab, "works." More importantly, there is something to show for it: the constructed apps, however uncertain their futures might be, and the stickers on their laptops, however volatile those allegiances might be. Thus, their "making" (of apps, of

spaces, of connections) succeeds precisely insofar as it allows for a making and remaking of worlds, a necessary practice for Mexican citizens who “have been tormented with recurring modernizing fantasies and aspirations ever since independence” (Lomnitz 2001:110). Hacking becomes a vehicle for sustaining a set of relations – relations that are crucial in the construction of the “hacker.”

## **[5] STILL WAITING (IN LINE FOR THE HACKATHON)**

When I initially asked Chavita why he continued to attend hackathons in the face of empty promises and uncertain outcomes he responded with a reserved shrug. By following his and other hackers moves within and outside of the hackathon, in other hackerspaces, it becomes clear that young people learn to function inside of a challenged neoliberal economy by using different resources, appropriating the discourses of flexibility and self-management while they remain outside of formal routine employment. At the same time, they maintain their bliss for hacking not only to “rate themselves” and form a community where others can *truly* value their code work, but also to fill this overarching neoliberal program with substance, materiality, and meaning. For young people who attend hackathons, “hacking” emerges as a way to make sense of their futures in a precarious state and economy, as a way to exist in a system where things just don’t seem to work, and as a way to let the “code work” intervene in narratives that have only delivered false hopes.

I’ve brought you into the world of hackathons and co-working spaces (and what the participants call a hacker school) to show you how Chavita, Leo, and the hackers and senseis at Dev.f. actively participate and thoroughly enjoy themselves as they appropriate and embody the hacker spirit and ethic. That is, in some ways they belong to the undifferentiated “global” hacker community other scholars have conducted research with. They value cleverness and creativity and place a high premium on knowledge, self-cultivation, and self-expression as core tenets to achieving “productive freedom” and corresponding “software freedom.” They improve their technical craft by following principles of reuse, simplicity, consistency, efficiency, manipulation, and agility. Hackers attend hackathons and hone their skills as they work in solidarity to find the “coding bliss,” the affective dimension one encounters when creating beautiful code.

The emergence of the hacker subject position in Mexico also satisfies other interested entities. For government, hackathons provide the opportunity to showcase the promise of technology to its citizens and the “talent” that awaits potential international investors. Co-working spaces, hackathons, entrepreneurial initiatives, and neoliberal “reforms” are seldom differentiated by politicians. Hacker-entrepreneurs become part of the reimagining of Mexico as an orchestrated national project. For Silicon Valley, California, and the U.S., the exportation of the hacker results in economic and cultural capital. Hackers in Mexico not only translate and modify hacker ethics and guidelines across national borders, they also use products from U.S. companies that help them become hackers.

Among Mexican hackers, I found a heterogeneous cast of characters, motivations, and experiences, not just driven by an interest in exhibiting the entrepreneurial spirit in order to perform middle-classness. When research participants

search for coding bliss, they carve out ephemeral, unstable, and shifting spaces within the hackathons and co-working spaces, momentary oases where something “works” in a vast desert where, at the moment, nothing else seems to work. Hacking becomes one way to confront the state, or take advantage of state resources without feeling like you are necessarily dependent on it. Blissfully immersed in the coding logics that underlie programming approaches such as “loose coupling,” they learn to design systems that promote separation of concerns and self-determination by actors. That is, the components in a loosely coupled system are less constrained by their platform, whether it’s an element in a coding environment or an actor in a political environment.

Even as goals of hacking, such as personal liberation and removing the shackles of institutional constraint, get taken up by public and private projects that might not necessarily align with the common good or with the political goals of the hacker, the hackathon continues to be staged because hacking is not only a way of being in the world, it is also a way of intervening in the world. Or at least a way to feel like one is intervening in the world. The hacker is autonomous. The hacker is mobile. The hacker is smart. The hacker is (finally) valued – by his/her peers, and by the state.

Throughout this chapter I’ve attempted to tease out the ways in which the figure of the hacker is constructed. In one the state constructs the hacker; in the other the hacker constructs his/her intervention. Ultimately these two become entangled. I’ve also taken seriously other anthropologists’ calls to examine on the ground the possibility of hacking constructing new subjectivities. Mexican hackers demonstrate agility at performing their “global” hacker status at the same time that they perform their “Mexican” hacker roles. That is, they demonstrate intimate knowledge of Mexican institutions and hone their ability to manage themselves and their “loose coupling” as they make the “app futility” serve a productive purpose—one in which they highlight and renegotiate their relationships with the state, private companies, and their valued hacker communities.

If engineers and scientists are constructed as apolitical (by the state or by popular discourse), navigating the ethnographic stack might paint a different picture of the coder. If the opening up of technical black boxes is meant to uncover the alliances and controversies that went into “black boxing” internal implementations, here they relationships between the “black boxes,” and the design logics used to think about their relationship tell us about the way the code is made at the same time that it tells us about how Mexican citizens learn to understand political-economic systems and their underlying rituals/patterns (see *Hacking Imaginaries*[0][4]). If the “way in” to the study of science and technology “crucially depends on good timing,” (Latour 1987:2), this study of hacking practices comes at the brink of political change for Mexico, a time when citizens are not only ready for change but looking for tools to “fight corruption” and dismantle inequality.<sup>12</sup> Their code work is aimed at understanding not only technical structures but multi-layered and complex state structures. If the alliances and resources that go into “technics” becomes manifest in the “unbreakable whole – and this is more often visible in engines, machines, and pieces of hardware,” (Latour 1987:132) here the

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<sup>12</sup> I write this days after Andrés Manuel López Obrador wins the 2018 presidential election in México. He is part of *Morena* (Movimiento Regeneración Nacional [National Regeneration Movement]), a “new” social democratic political party in Mexico whose historic victory marks the first time one of the ruling parties PRI or PAN fail to win the presidency since the 1930s.

coder must understand not only the wholes but the code work necessary to move between different “wholes” – coding systems, political systems, difference systems.

As young people turn the spotlight less on what they say and more on what they code and the context in which they do so, they hack away, and in the background we purportedly have business as usual, politics as usual, reforms as usual. Politicians create and re-create “the state” in response to narratives that paint Mexico as “hyperconscious of its backward condition for at least 150 years” (Lomnitz 2001:xvii) or as a place where “traditions have not yet disappeared and modernity had not completely arrived” (García Canclini 1990:13). The hackathon becomes a site where new versions of modernity are staged, where the state and hackers find complex ways to co-produce themselves, and where coding logics becomes foundational for the re-organizing of these relationships. Here, the self-identified hackers find meaning in a community of action and performance that supports them as they negotiate their new subject positions and conditions (and that of their fellow Mexican citizens) within these overarching processes that construct them as always “in-the-making,” as always “becoming,” as always waiting. If they’re going to be waiting, they might as well be waiting in line at the hackathon.



## [2] HACKING DIFFERENCE

### [0] SEDUCTION OF HACKING

While the previous chapter took a deep dive into the hackathon in Mexico City to show how young people practiced and positioned themselves in relation to “hacking,” here I explore the circulations of the hacker and hacking that make up the imaginaries of hacking I pointed to in *Hacking Imaginaries*[0]. Specifically, I explore how these imaginaries of hacking help construct markers of difference along dimensions of class, race, and gender. Within the hackerworlds, subjects themselves produce these differences, at the same time that they create spaces to hack these differences.

To understand how subjects become enmeshed in these ideologies of difference, I first explore how the figure of the hacker evolved into the “everyday hacker” of contemporary society. In 2018, everybody can be a hacker, and according to experts, everyone *should* be a “life hacker.” How are race and gender incorporated (or not) into this trajectory toward the mainstreaming of the hacker? What counts as a hack and who gets to hack? How do “differences” become important as hackers differentially position themselves, but also align themselves, with the contradictions of treating code work as gendered and racialized labor?

If the image of the hacker is one of a middle-class, disheveled young man working from his parent’s basement, it is because it is an image we ourselves have created. That is, we can think of the hacker imaginary as one that is constructed by popular media representations, but also one that hacker subjects, and even academics, have helped to reify. Early academic studies of “the hacker” focused on the social construction of engineering-types that wound up studying computer science at places like MIT. Sherry Turkle, for example, interviews young men who trace their beginnings as hackers, and all seem to align themselves with the common archetype of the “nerd,” “loser,” or “loner,” the “ostracized of the ostracized” (1984:199). According to these stereotypes, they attend “all-American” schools but don’t care about sports or being popular. They create clubs where they work on computers or play esoteric card games during lunch breaks. One young man that Turkle interviewed proudly circulates the nerd/geek/loner origin story that emerge in many of her interviews:

I’ve always thought of myself as ugly, inept. All of the boys who had friends and were popular were into sports and didn’t care about school. Or if they cared about school they were sort of good more or less at everything. But there I was. All alone, fixing used ham-radio equipment. And all the of the other kids I knew who were into ham-radio stuff felt as ugly as I did...So don’t expect to be surprised to come to MIT and find all the other loners, doing their math and science and thinking of themselves as losers, make themselves an ugly-man contest. [Turkle 1984:197]

This ostracized young man thus begins the journey to becoming a “computer person,” a “computer wizard,” “computer hacker,” or “computer addict.” He finds in the computer something that gives him power, a tool that he can be used to manipulate and

master his chosen object, and prove himself within it. This control brings a sort of pleasure and obsession that only the machine can provide, as Weizenbaum describes in another early work on computer hackers:

Bright young men of disheveled appearance, often with sunken glowing eyes, can be seen sitting at computer consoles, their arms tensed, and waiting to fire, their fingers, already poised to strike at the buttons and keys on which their attention seems to be as riveted as a gambler's on the rolling dice. When not so transfixed, they often sit at tables strewn with computer printouts over which they pore like possessed students of a cabalistic text. They work until they nearly drop, twenty, thirty hours at a time.... Their rumpled clothes, their unwashed and unshaven faces, and their uncombed hair all testify that they are oblivious to their bodies and to the world in which they move. They exist, at least when so engaged only through and for the computers. These are computer bums, compulsive programmers. [1976:116]

Of course, this kind of mastery and dedication is part of a technical masculinity that precedes computing, and signals a "boy culture" that is cultivated along with the nerd/geek/hacker, or ostracized young men. Other scholars have linked the emergence of "hacker culture" to grow alongside "boy culture." Thomas (2002) points out that "boy culture" and "hacker culture" are both cultures of competition, where affection is expressed through "playful spontaneity," "friendly play," and "rough hostility" where boys learn to express "affection through mayhem." Hacker phrases such as "r00t owns you" and "I'll own your ass" express not only mastery and subordination, but are "a fantasy of complete technological domination and control over others, the idea that the vanquished hacker (or system) is at the mercy of the more powerful and skilled hacker" (xvi). Likewise, in her genealogy of "geek" cultures, Dunbar-Hester (2016) shows that "wizardry" is gendered and that the "tinkering" ascribed to the geek (and hacker) communities continues to be a predominantly male pursuit.<sup>1</sup> Thus, geek identity continues to be a strong factor in the exclusivity of technical cultures found in engineering and computer science departments, and correspondingly, Silicon Valley.

Thus, if constructions of gender enter into "hacking" and computing practices in different ways, this chapter explores how subjects who are gendered and othered along other markers of difference attempt to "hack" this difference. I explore how the difference produced within the hackerworlds is inextricable from ideologies of productivity, work, and race.

## [1] A BRIEF GENEALOGY OF THE HACK

If the descriptions from geeks of the 70s and 80s seem outdated,<sup>2</sup> they are still relevant in that they mimic society's fascination with describing a particular "hacker

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<sup>1</sup> For additional discussion on gender and the rise of the computer, see Abbate (2012) and Light (1999).

<sup>2</sup> The description of the transfixed programmer might describe many of my computer science colleagues at MIT during the early 2000s, and many of the hackers I conducted research with during the 2010s. Moreover, the positioning of the body for hours on end in front of the computer is the type of disciplining

culture.” The most famous journalistic (and romantic) account of this hacker culture is Steven Levy’s (2010[1984]) account of the “authentic” or “original” hackers. These were the “brilliant, eccentric geeks” who founded the Tech Model Railroad Club in the basement of forgotten buildings at MIT, who took their tinkering and technical curiosity to all domains of life, and who most clearly saw why the computer was a revolutionary tool. Levy suggested that this small group who hacked away on the TX-0 (Transistorized Experimental computer Zero), a platform for pioneering computer research, developed an underlying set of morals, beliefs, and worldviews. He outlined these as the foundation of their “culture,” their guiding “hacker ethic” defined by six key tenets:

1. Access to computers—and anything which might teach you something about the way the world works—should be unlimited and total. Always yield to the Hands-On Imperative!
2. All information should be free
3. Mistrust authority—promote decentralization
4. Hackers should be judged by their hacking, not criteria such as degrees, age, race, sex, or position
5. You can create art and beauty on a computer
6. Computers can change your life for the better

The defining factors of the hacker ethic that Levy finds can be said to mirror the liberal tradition that more contemporary hackers ultimately promote when they commit themselves and their craft to “productive freedom” (Coleman 2013). That is, they align themselves with key liberal ideals of access, free speech, transparency, and colorblind meritocracy. One key tension does arise from Levy’s tenets, number 5, “You can create art and beauty on a computer.” One faction of hackers might agree with this, especially those who are adamant about comparing their codes and programs to artistic works, and their work to those of artists.<sup>3</sup>

My research participants took a similar stance: If one can dissect, manipulate, reassemble, and solve the problem within the given constraints and tools at hand, one can create beautiful, “original” code. Their value of cleverness, ingenuity, and wit transfers to the process of making technology and writing smart pieces of code.<sup>4</sup> Biella Coleman finds that hackers “revel in directing their faculty for critical thought toward creating better technology or more sublime, beautiful code” (2013:118). Moreover, the joys of hacking transfer into a state of bliss, the “Deep Hack Mode,” where, “The self can at once express its most inner being and collapse within the objects of its creation. In the aftermath of a particular pleasurable moment of hacking, there is no autonomous liberal self to be found” (13). This particular view of hacking falls in line with those

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many knowledge workers receive in today’s information technology economy (Anke 2006), and the type of body work required by *all* “cognitarians,” the new cognitive laborers/proletariat (Berardi 2006).

<sup>3</sup> A popular book many of my research participants recommended, for example, is Paul Graham’s *Hackers and Painters: Big Ideas from the Computer Age*. Paul Graham is a popular “hacker-entrepreneur” in the hackerworlds, having founded *Hacker News* and Y Combinator, a prestigious San Francisco startup accelerator.

<sup>4</sup> I explored these dynamics further in *Hacking\_Imagaries*[1].

“transfixed” and “brilliant” original hackers, who, not caring for banal things like friends and popularity, devote their time (and themselves) to creating pieces of code that perhaps only they and their hacker peers can appreciate as works of art.

On the other hand, another faction of hackers treats “the hack” as the practice of an amateur tinkerer. In this version, the hacker is an autodidact who tries many solutions to a problem before arriving at a “good enough” resolution.<sup>5</sup> To confirm this genealogy of the hack, self-identified hacker and cybersecurity blogger, Robert Graham, traces “hacking” to the 15<sup>th</sup> century: “The word hacker started out in the 14<sup>th</sup> century to mean somebody who was inexperienced or unskilled in a particular activity (such as golf hackers). In the 1970s, the word hacker was used by computer enthusiasts to refer to themselves. This reflected the way enthusiasts approach computers: they shun formal education and play around with the computer until they can get it to work. (In much the same way, a golf hacker keeps hacking at the golf ball until they get it in the hole.)” Along these same lines, the following “Hacker’s Song” appears in a 1980s “Hacker’s Handbook”:

Put another password in,  
Bomb it out and try again  
Try to get past logging in,  
We’re hacking, hacking, hacking,

Try his first wife’s maiden name,  
This is more than just a game,  
It’s real fun, but just the same,  
It’s hacking, hacking, hacking.  
[Cornwall 1985:5]<sup>6</sup>

Others claim that this tension -- is a hack the work of a talented craftsman or a persistent amateur – arises from confusing the distinct communities that have compromised the hacker movement. Gisle Hannemyr (1999) identifies three main shifts by decade: (1) The “original” hackers of the mid-sixties were computer professionals who adopted the term “hack” as a synonym for computer work and applied the noun “hacker” to skilled code workers who took pride in their work. (2) The second wave of hackers, the techno-hippies of the seventies, were grassroots activists who believed computers meant equality and social power. They desperately wanted computer systems designed to be useful and accessible to citizens; in the process they pioneered public access terminals, computer conferencing, and personal computers. (3) Then in the second half of the eighties, the “computer underground” emerged, and “to hack” meant to break into or sabotage a computer system -- a “hacker” was now the perpetrator of such “illegal” activities.

This shift in the identity of the hacker, from respectable, computer professional and DIY hobbyist to digital outlaw/terrorist, went hand in hand with the rise of computer

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<sup>5</sup> See also Galloway (2015, 2004) who traces a genealogy of “hacking,” also quoting Robert Graham on the golf hacker.

<sup>6</sup> The guidebook has a “hackers for beginners” feel to it.

viruses in the late 1980s and the Computer Fraud and Abuse Act of 1986.<sup>7</sup> No surprise then, that popular movies, media, and corresponding imaginaries corroborated that the hacker was someone to be feared, either because he could break into your computer or because he was society's outcast.<sup>8</sup> I'm more interested in a less explored shift: the transition toward the *everyday* hacker. In the late 2000s and 2010s, the hacker has come back as a "disruptive" (in the Silicon Valley professional sense), respectable computing member of society. Underlying this transition, we still have shifting and complementary (or contradictory) definitions of hacking, each with origin stories and genealogies to back up their claim, but each "manifestation of hacking" lies along some dimension of:

- Repurposing technology for means other than for what it was intended
- Playful tinkering (technological or not)
- Technical competency that allows you to build a technological system
- Knowing the system or the code that constructs the technical system so well that you know the exceptions, where it will fail, the backdoors, etc.

In this chapter, I explore further what it means for these "manifestations of hacking" to travel, and how they are taken up across various markers of difference. The mobile hackathon events and co-working spaces where I conduct the majority of my ethnographic labor throughout this dissertation work as critical sites to explore how these subjectivities are born and how they circulate (or refuse to circulate) to other sites across overlapping borders. Within these research sites, we find the hackers, hacker-entrepreneurs, and normal, everyday citizens (who shuttle between and blur these positionalities) who plug into and disconnect from the joys of hacking for myriad reasons.

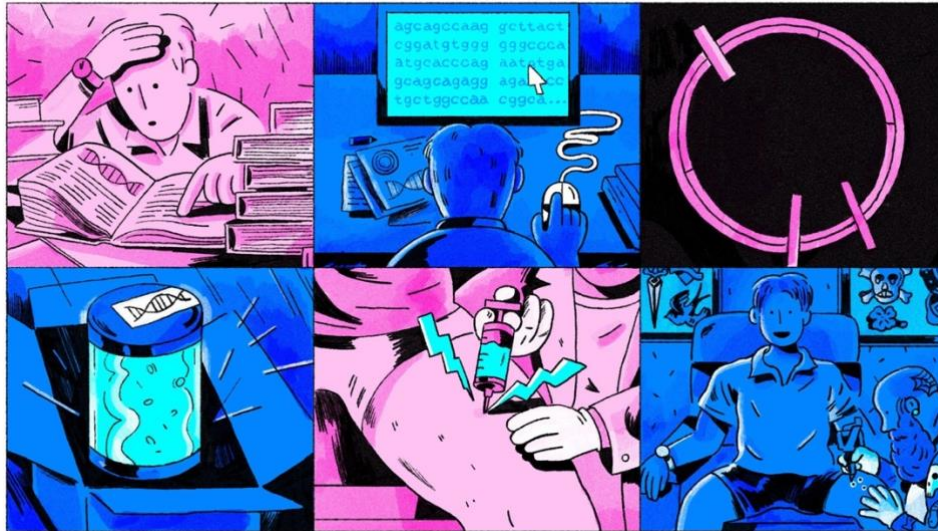
## **[2] HACKING *IMAGINARIES***

The following images illustrate how popular hacking imaginaries fit along these different dimensions that I have identified.

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<sup>7</sup> The legislation made it a felony to break into federal computers. For more historical analysis on the shifts of hacking see Ross (1991) and Sterling (1992).

<sup>8</sup> Two popular movies that reflect these imaginaries are *WarGames* (1983) and *Hackers* (1995). For further analysis on how these particular movies framed different generations of "hacker culture" see Thomas (2002).



[Photo 1] Illustration from article titled, "One Man's Quest to Hack his own Genes." *MIT Technology Review* January 2017.

# FEELING IT



Friends since freshman year, Chandani Doshi, Julian Shi, Chen (Bonnie) Wang, Charlene Xia, Tania Yu, and Grace Li make up Team Tactile.

After building a rough prototype in a day of hacking, a team of undergrads is developing a low-cost handheld device that translates printed text to Braille.

By Raleigh McElvery, SM '17

[Photo 2] Photograph of undergraduates who developed a low-cost handheld device to translate printed text to Braille at the annual MakeMIT hackathon. *MIT Technology Review* May/June 2017.



[Photo 3] Illustration from article titled, “Here’s how hackers could cause chaos in this year’s US midterm elections.” *MIT Technology Review* April 2018.

In the first illustration, we find the archetype of the hyper-technical and model neoliberal subject, who took it into his own hands to learn how gene therapy works, bypassed the millions of dollars’ worth of scientific experimenting that would have involved doctors, companies, and complicated regulations, and proceeded to “hack his own genes” using cheaper alternatives (See Photo 1).<sup>9</sup> In the second image, we find a photograph of a group of undergraduates who spent a weekend at a hackathon event and proceeded to produce a low-cost handheld device that translated printed text into Braille (See Photo 2).<sup>10</sup> Their synchronized crossed arms show pride and resolve, but these hackers are far from the image of the underground (or parent’s basement) hackers and even farther from the “terrorist” hackers I introduced in the previous sections. Moreover, this particular group of young women break the mold of the stereotypical hacker along dimensions of gender.

Between these first two images, we get a sense that these individuals plug into the joys of hacking for the good of society, whether they are immersed in their technological explorations as individuals (trying to prolong their life, in this case) or as a collective interested in helping those less fortunate than themselves (those with visual impairments, in this case). These manifestations of hacking show individuals who are technically proficient, who take matters into their own hands, and who embody the persona of what I call the “everyday hacker.”

In the third illustration, however, we find the return of the malicious hacker; or at least, the shift to the everyday hacker gets a bit more muddled (See Photo 3).<sup>11</sup> The illustration is from an article that warns the public of how hackers might “cause havoc” in the 2018 U.S. midterms elections. Pointing out that the current voting infrastructures contain outdated machines and operating systems, and that local networks have been

<sup>9</sup> Online version of article available here: <https://www.technologyreview.com/s/603217/one-mans-quest-to-hack-his-own-genes/>

<sup>10</sup> Online version of article available here: <https://www.technologyreview.com/s/604050/mit-students-invent-simple-device-that-makes-printed-text-accessible-to-the-blind/>

<sup>11</sup> Online version of article available here: <https://www.technologyreview.com/s/610774/heres-how-hackers-could-cause-chaos-in-this-years-us-midterm-election/>

set up by technological amateurs, the article convinces the reader that these “malicious coders” are in a position to exploit these technical vulnerabilities. The “worrying precedent” here is that the U.S. Department of Homeland Security reported that Russian “hackers” has meddled in the 2016 U.S. presidential elections, scanning computers and networks for security codes.

Analyzed in conjunction with the other images, we get a “hacker” who benefits from the increasing cultural authority they have been granted because of her/his technical proficiency, but whether they are malicious, benevolent, or a “terrorist,” depends on the project at hand and what side of the political, national, or ideological border you are positioned. That these images appeared within the same year is indicative of the imaginaries of the hacker and the shifting/conflicting definitions of what it means to hack. That these images all came from the same magazine, MIT’s *Technology Review*, is representative in that MIT is deemed a cultural and technical authority in all “hacking” matters by many and especially by my research participants. The magazine has a Spanish online version and has a presence on social media. I chose these three images to show the form that these images and definitions take, and highlighting their contrasts. These were the popular imaginaries that circulated (and were circulated by) my research participants as they plugged into and out of the codeworlds.<sup>12</sup> I mean this quite literally, as these were the type of articles many of my research participants shared on social media.

Thus, considering the origin stories, the emergence of these “everyday hackers,” and how these hacker images and definitions might be interpreted in different ways depending on one’s positionality and familiarity with the hackerworlds, my dissertation is less concerned with who the hacker is, or even with what hacking really means—my research is aimed at highlighting and understanding how my research participants align themselves with these “manifestations of hacking,” and how and why they find meaning in them. Of course, not everybody aligns with the “hacker” category so neatly – and my inquiry takes these overlaps and crossings as particularly meaningful as well.<sup>13</sup> There are multiple genealogies of the hacker which overlap with those of the “geek,” and in my specific inquiry, with the “entrepreneur.” I introduced the term “hacker-entrepreneur” in *Hacking\_Imaginaries*[0], for example, to show how many research participants navigate domains that seem contradictory: a hacker-world aimed against capitalism, and an entrepreneur-world that advances capitalist practices. My research is thus aimed at how these hacker ethics, definitions, and imaginaries circulate, and how young people across the U.S./Mexico borderlands practice what they understand as “hacking.”

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<sup>12</sup> Conducting a sustained analysis of circulating images about hacking (whether in magazines or across media platforms) is beyond the scope of the dissertation. For an anthropological analysis of how media images (especially magazines) shape popular perceptions and national discourse, see Chavez (2001). Literature on the elementary relations between symbols and meaning needed to “read” images is vast, see for example Hall (1980).

<sup>13</sup> As I lay out in the introduction, I use the term “hacker” to refer to someone who loves to program computers in the spirit of playfulness and exploration and who disassociates from capitalistic or technocratic motives. My focus is on the hackers who have the technical skills to put in the “code work” and my aim is to add texture to the contours of everyday hacker practices, inside and outside of the hackathons and hackerspaces, without reifying the “hacker.” Kelty (2008), for example, uses the term “geek” to avoid subversive or criminal connotations and to be more inclusive of the lawyers and activists sympathetic toward free and open-source software (F/OSS) endeavors.



Moreover, instead of thinking of distinct communities and categories I think about how and why people move across them.

Hackathon events thus worked as ideal research sites to examine these differences and crossings. Highly ephemeral but also highly visible, the hackathons allowed me privileged access to understand how these “communities” crystallized and evaporated.<sup>14</sup> At this layer of the ethnographic stack, where my research participants were concerned with their code work but also with self-identifying as hackers, I was able to highlight how participants at these events aligned their hacker identities and practices with a particular group or cause. These events and spaces were many times organized “in the name of” empowering particular communities, which allowed me to visualize how elements of gender and race were manifested in communities who differentially align themselves with the hacker image, “ethic,” or persona.

### [3] OTHER(ED) HACKERS

My fieldwork thus focuses on the hackathon as a space where many of these imaginaries are enacted but also challenged, reconfigured, and (arguably) ignored. The hackathons I attended were mostly in Mexico, but I also attended hackathons in the U.S., in particular those aimed at empowering Latinx communities and communities of color. Sometimes my research participants attended these events with me; sometimes they did not. Although the public hackathon events provided the opportunity to notice *differences*, my approach is not necessarily one of comparison, i.e. what is different in Mexico or how do people of color do the hackathon differently. Much of my dissertation is focused instead on how my research participants use the underlying logic of software design across or against the multiple borders, regardless of location. In this section, however, I focus on some of the “differences” that became apparent across my research sites, to examine how they are meaningful, beyond “cultural comparisons,” to my overarching argument on difference.

During the many years I have been involved with the hacker collectives there have been many “firsts.” An example of such a first was a hackathon organized specifically for women at the UNAM in Mexico City. The event was advertised as the first “for women by women” hackathon in Latin America. Because the event was partly sponsored by U.S. universities (and later companies), and it would include presentations by female and Latina-identified professors from the U.S., the event quickly became the first hackathon for Latina women, not just for Mexican women. As one of the jaunty organizers, Abigail, explained the event, “A female hackathon. A Latina hackathon. We would be fighting to incorporate two minorities at once!” Abigail enjoyed the privilege of being a Mexican computer science student at the University of California. Like many of the organizers, she traveled freely between the U.S. and Mexico and had experience with the hackathon circuit on both sides of the border.

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<sup>14</sup> To get a sense of how popular these hackathon events were in the years I conducted research, an organization dedicated to enumerating the hackathon fruits reported that in 2016 there were at least 3450 hackathons organized, 200,000 participants participating in them, and 13,000 prototypes built in over 100 countries. Source: “Infographic: Worldwide Hackathon Figures in 2016.” <http://agency.bemyapp.com/insights/infographics-hackathon-figures-in-2016.html> (Davy 2017)

One thing the organizing team agreed on was that they needed the hackathon “swag” in order for the event to be successful. Designers created logos that could be shared on social media and placed these on t-shirts and other products – all meant to “create a collective identity for the event and build community,” as Abigail explained. Moreover, the goal of the hackathon was to get as many women as possible interested in technology, regardless of their background or level of expertise.<sup>15</sup> Thus, participants would be offered Arduino kits that included components that could be used to design different devices for “intelligent homes” with minimal coding experience required.<sup>16</sup>

The publicity for the event was a success, if measured by the hundreds of women participants who registered. The atmosphere had a congenial air to it, and the message of increasing representation in tech (and the codeworlds specifically) was never far from participants. The first day of the event opened with female role models who described software as “algo que te extiende, que te libera,” [something that extends you, that liberates you,] and attempted to convince young women that coding was far more social than popular imaginaries made it out to be. The message was that technology could be used to create a more elusive and empowering figure, never stable, never fixed by original differences (Haraway 1991), and at the same time, that software development as a profession was not at odds with normative ideas of femininity (standard roles of wife and mother), if this was how young women wanted to assume their professional and social roles (Mukherjee 2008). “La calidad de nuestras vidas depende de la calidad del software que construimos,” [The quality of our lives depends on the quality of the software we build,] another presenter said, as she prepared the hackers for the intelligent homes they were about to design.

Whether these presentations and the “all women” dimension of the event were effective or not depended on who you asked. As teams formed and organized into teams that were composed of diverse disciplinary backgrounds – among undergraduate students there were computer engineering, mechatronics, industrial design, political science, and philosophy majors – I served as floating mentor/ethnographer, circulating between the scattered university spaces and helping with ideas, implementations, and pitches while I asked about the explicitly gendered dimensions of the event.

Mariana, a skilled and amiable computer science student whom I knew from the coding bootcamp I had administered several summers before, confirmed her excitement for the all-women structure, “En otros espacios, los hombres nos reclutan solo para que hagamos sus apps lucir bonitas.” [In other spaces, the men recruit us just to make their apps look pretty.] I had spent several months working with Mariana in a coding bootcamp, which was a male-dominated space, so at the very least the hackathon had provided a space for her to feel comfortable revealing the gendered power dynamics she had experienced within the unmarked (or by its un-marking actually marked as “inclusive”) coding spaces.

When I asked another young woman what could have attracted more participants to the event (about half of the 300 women who registered actually showed up), she responded bluntly, “más hombres” [more men], confirming that not all participants felt the all-women camaraderie the event attempted to create. Pilar, a mechatronics major on the same team disagreed with her colleague, telling me, “Las mujeres tenemos en el

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<sup>15</sup> I explore these modes of participation and inclusion in *Hacking\_Imaginaries*[3].

<sup>16</sup> Arduino is an open-source electronic prototyping platforms used to interactive electronic objects.

chip ser competitivas contra una y otra. Si fuera con hombres, decimos, ‘no podemos,’ y no nos activamos.” [We women have in our chip to be competitive against other women. If [the hackathon] was with men, we’d say, ‘we can’t,’ and we don’t activate.] If representatives from Mexico’s national “todos con el mismo chip” initiative (See *Hacking\_Imaginaries*[0][0]) would have been at the event, they could have taken notes from Pilar on the differences between male and female “chips.”

Other young women were onboard with the “empowering women through code work” message of the event and of the role-model/presenters, but felt that the presentations themselves were effectively “wasting their time.”<sup>17</sup> Those who had been to other hackathons felt that since these other events did not have any additional presentations, that the additional time slots they had to participate in cut into their hacking time. The time constraints created anxiety amongst the groups. One team told me to go away when I started asking questions, since I was taking up their time. (No offense taken.) From a room in an engineering building designated the final phases of the hacking, I helped other teams put together their final pitches for their designs. We perfected speeches and added the final bells and whistles to the presentations with one of the commonplace “Silicon Valley maps” prominently overlooking us. The dated poster showed an illustrated map of the San Jose, California region with dozens of company names superimposed on the map, representing the company’s location on the map. The poster was a sobering reminder that this hackathon was meant to mimic the high-paced, competitive cycles of technology-driven capitalism that characterized Silicon Valley.<sup>18</sup> Whether the presentations “wasted their time” or whether the all-woman design of the hackathon were positive or negative aspects of the event was one up for debate as the quotes above demonstrate. But one thing that all participants agreed on (and made evident) was that they were nervous for their final presentations – the spotlight was now on them to show how much they had learned and what they had spent the weekend *making*.

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<sup>17</sup> On the politics of “non-productive” time in relation to gender within IT work, see Fleming (2018).

<sup>18</sup> See Jones et al. (2015).



[Photo 4] The team that tells me to go away because I was wasting their time allows me to snap a picture while they are hacking and receiving guidance from a mentor more interested in hacking and less interested in asking.



[Photo 5] The first team is ready for their pitch as the male mentors stand on the sidelines.

The nervousness that the young women demonstrated during their final pitches was warranted, for different reasons. For one, the event was not entirely all women. As

different teams took the stage to present their home improvements, the young men who had participated as mentors during the weekend stood alongside the walls of the auditorium, arms crossed, with black Google shirts to distinguish themselves and claim authority to the probing gazes they directed toward the stage (See Photo 5). In one particularly condescending comment, one of the mentors voiced a demeaning, “Awwwwwww,” as the group presented a prototype of a robot meant to crawl alongside babies to keep them company. The first-place team used its Arduino kit to present prototypes for intelligent sensors meant to detect when food supplies are running out; another team presented a key holding device that would alert users when all members have safely arrived home; another winning team created a system that would track their pets around a set perimeter, alerting the user when the pet had left the specified boundaries. As the teams progressively gained confidence, their nervousness eased, in no small part by the presence of other members of the audience that distinguished themselves from other participants – mothers and grandmothers who had come to witness the presentations and cheer on their daughters and granddaughters.

The *mamás* and *abuelitas* certainly added a “different” element to the hackathon. I had never seen family members come to cheer on their burgeoning hacker-entrepreneurs at hackathons in the U.S., for example. Neither had I seen them at the male-dominated hackathons in Mexico. The family ambiance quickly turned the hackathon into an (even more) hospitable event, with lively cheering for family members and extra commentary from the sidelines. As I circled around the room to speak with the family members, I asked one grandmother what she thought about her granddaughter’s smart home prototype. “Lo que no hizo en todo el semestre lo hizo en dos días.” [What she didn’t do all semester she did in two days.] Clearly, this abuelita also had her take on what type of making should be accomplished at the university, especially from an engineering major, and identified this as a valuable space to *make* and to perform this making. If the “tiger mom” has become a neologism for the disciplinary, authoritarian mother who is overly concerned with her children’s academic achievement, then this grandmother was rightfully assuming her rising “Aztec tiger abuelita” position.<sup>19</sup>

After the winners were announced and prizes were distributed, celebrations ensued as the hackathon participants joined their families, some who had brought flowers and home-made food to reward their weekend efforts at the hackathon. I approached Mariana as she celebrated with her team, which won second place for “Easy PetCare,” to congratulate her and to continue my full-stack ethnography. “¿Qué te parecerion las presentaciones finales?” [How did you feel about the final presentations?] I asked her. “Pues, están más bonitas, ¿no?” [Well, they’re prettier aren’t they?] Her response functioned as irony, in relation to the earlier remark she had made about men recruiting her to make their apps “look pretty.”

Mariana’s response also functioned as a way to remind me that perhaps my “end results” type question was in line with a masculine, results-oriented technical outlook of the world that was missing the importance of what was going on at the event: solidarity and empowerment along gender lines, as peers, mentors, and family celebrated their weekend efforts. I was part of this group, no doubt, but also an outsider in more ways than one. Here, at the peripheries of the event, in my attempted ethnographic

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<sup>19</sup> See *Hacking\_Imaginaries*[0] and *Hacking\_Imaginaries*[1] for discussion of the way economists and journalists have described Mexico as the rising “Aztec tiger.”

encounters/interventions, I myself was an “exception” (to evoke a coding concept) to what was going on and what was important within the confines of this ritual, a hackathon that had been appropriated for means and negotiations much different than perhaps its original Silicon Valley, U.S. based variants had been created for.<sup>20</sup>

A straight-forward read of the “smart home” design competition at his women’s hackathon might appear contradictory. How can any of these technologies be “liberating,” as some of the speakers preached, if they assume and presuppose that women must maintain their empowerment inside of the domestic space? This interpretation presumes that it isn’t something the women (organizers and participants) had already discussed, and that it isn’t something that was discussed (and possibly critiqued) within the space of the hackathon itself. It would also be homogenizing, as the varied responses by my respondents on the “all women” component of the event demonstrate, they all have different takes on the matter. Finally, as Mariana’s ironic comment and posturing shows, there might be spaces of debate and critique within the hackathon that this male-identified ethnographer does not have access to – rightly so.

Thus, we can say it’s easy to point out the differences within spaces that so explicitly frame themselves as different and voice and perform their differences. But if we want to explore differences along dimensions of gender, we have to remember that these differences are created in relation to other elements that come together with “gender,” that an ethnographic perspective to researching these constructions might reveal more nuanced arguments about the construction (and interventions) along these gendered lines at tech-oriented spaces, and that even in spaces that aren’t explicitly marked as gendered spaces (such as this “for women by women” hackathon), constructions of gender are actively negotiated and constructed. I address this latter point in the next section, where I explore how constructions of gender come together with more complex elements and processes at Hack CDMX.

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<sup>20</sup> In the codeworlds, an “exception” is anomalous or exceptional condition that requires special processing, often during the normal flow of executing a computer program. A good programmer predicts and plans for exceptions to prevent a computer program from crashing.

#### [4] FROM CARNEWORLDS TO CODEWORLDS



[Photo 6] The *Bikingo* team presents their app to a mentor at the Hack

At an underlying organizational level, the women’s hackathon at UNAM attempts to mimic the structure of the Hack CDMX event, the hackathon from *Hacking Imaginaries*[1], but with a gendered intervention. That is, we have teams of hackers who come together to put in the code work to resolve societal issues. Back at the Hack CDMX, the *Bikingo* team members spend the weekend putting in the code work to design their bike-riding app, an app that is part of larger government efforts to revitalize the historic city center with “green” and “smart” technologies (Leal Martínez 2016; Crossa 2009). After several iterations of prototypes, testing, and debugging, they are almost ready to commit their final code snippets to the team’s repository, click “deploy,” and hope that their code work will result in a working (and better yet, winning) application. As Leo and other team members follow Chavita’s demonstration with their bloodshot eyes – many have barely slept over the course of the weekend hackathon – they confirm Chavita’s accomplishments with an enthusiastic “Eres un chingón” (You’re a badass). “Cofi” – a team member that earned this name because of the amount of coffee he consumes – interrupts their coding session with some *cotorreo*, “Se parece a la Gaviota, ¿no?” [She looks like La Gaviota, no?] he asks as he glances at the magazine cutout of a topless model they have posted over their workspace. (“La Gaviota” [The Seagull] refers to the nickname of President Peña Nieto’s wife, who was a telenevola superstar before she became Mexico’s first lady.) The team erupts in laughter, and they take the cue to break out into some non-coding *cotorreo*, a chance for a brief break as the clock winds down.

I take advantage to conduct informal interviews with the team. Attempting to get additional information about the motivations behind attendance at this hackathon, I ask

Leo, whom I know is behind on his contracting job with a tech company, “Tú, ¿por qué decidiste venir al hackathon cuando tienes tanto trabajo?” [Why did you decide to come to the hackathon when you have so much work?] “Yo solo vengo por las chavas,” [I only come for the girls,] he announces to the rest of the team. We look around the area and the group erupts in laughter. Aside from the magazine cutout of the topless, there are no “chavas” (See Photo 6). Indeed, the only *chavas* some of the hackers have come to see is *Chavita*, an expert programmer who can help them develop a sophisticated program in addition to providing them feedback on their independent creations. (To learn more about Leo and Chavita, and the results of the *Bikingo* app see *Hacking\_Imaginaires*[1].)

Analyzed from an outsider’s perspective, the expressive forms and cultural performances that make up the hacking space might be recognized as sexualized jokes that make up a masculine space and combine with the technical masculinity being performed as Leo, Chavita, and “the boys” hang out and “hack.” They might even resemble the *carnales* José Limón (1994) conducted research with in southern Texas, who were just *llevandosela* and *echando relajo* at a *carne asada*. Limón’s *carnales* exchanged aggressive idioms of sexual violation amongst themselves, especially using the word *chingar*. “Me chingaron en el jale” [I got screwed at work]; “Pos gano Reagan, y ahora si nos van a chingar” [Well, Reagan won, now we’re all really going to get screwed]; “La vida es una chinga.” [Life is being constantly screwed.]<sup>21</sup>

Instead of thinking of these individuals as classic machos or homophobes, Limón argues, let’s consider the socio-political context in which they’re entangled. “This homosexuality-in-play may also be reversing the sociosexual idiom of *chingar* as practiced by *los chingones* that continually violates the well-being and dignity of these working-class men” (Limón:132). That is, these specially marked space creates moments in which the social world is reversed, in which these working-class *batos* become the *chingones*.<sup>22</sup>

Likewise, the male hackers at Hack CDMX use the time and space to share code from other projects they have been working on, sometimes from their professional jobs where there are few programmers and where results-oriented managers fail to recognize the complexity and beauty of their creations. Leo tells me, for example, that when he was hired to work for a tech consulting firm in Mexico City, the company gave him a clear message: “Aquí puedes venir en shorts y chanclas, pero vas a trabajar.” [You can come here wearing shorts and sandals, but you’re going to work.] Or in another occasion, when Memo (one of Leo’s best friends) showed up to the first day of a coding bootcamp in a suit, the rest of the group ostracized him for his *faux pas*, associating him with one of the “men in suits” they were trying to distinguish themselves from. Indeed, there are many parallels between Limón’s *batos* and these hackers. Instead of flipping *carne* amongst their *carnales*, here they flip some *código* with their fellow coders. But what makes the *codeworlds* different from the *carneworlds*?

For one, it would be difficult to mark this group of coders as solely “working class.” As I’ve mentioned before, the teams were made up of heterogeneous young men from different class and social backgrounds, attracted to the space of the

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<sup>21</sup> Translations by José Limón.

<sup>22</sup> Limón further builds on Bakhtin’s carnivalesque to show that these working-class Mexicanos are inverting the frame not only on Anglos but also on upper middle-class Mexicans.



hackathon by the joys (and promises) of hacking. For some that do come from lower socio-economic backgrounds, the allure of “hacking” promises to transport them to a respectable, middle-class status, like the hackers we find in some of our images – the everyday hackers who break rules, within the limits, in the popular imaginary, but also within sanitized co-working spaces designed specifically for them to become respectable, middle-class-leaning “hacker-entrepreneurs.”

But as Sareeta Amrute (2016) shows in the research she conducts with Indian software developers in Berlin, encodings of class sometimes clash with encodings of race. That is, for her research-participants, the “software developer” marker grants workers an entry to the type of cultural capital where one can identify as a middle-class, but the “Indian” marker prevents workers from becoming anything more than racialized software developers. Race and class intersect across a terrain of transnational labor that values technical expertise yet differentially recognizes and rewards this expertise. Indeed, these racialized and ethnicized workers plug into highly coded and particularized lateral spaces, that defy national borders, yet rely on infrastructures that mobilize networks and workers to respond efficiently to market conditions, and shift among different systems of codes that enforce ethnic discipline and social cohesion in segregated labor sites (Ong 2006). The hackathon can thus be examined as a space where hackers come to perform their willingness to become the coding (and coded) workers of the future.

In the case of the hackers at the women’s hackathon and at Hack CDMX, despite their (presumably) ascending authority as “coders” or “hackers” in Mexico, they are still Mexican coders (regardless of what gender they identify with) once they transport across nationalized borders, whether physically or “virtually” (see Aneesh 2006). Most notably, they become “cheaper” code laborers. The hackers find ways of navigating these contradictions, which I explore further in *Hacking Imaginaries*[4]. But they need not travel anywhere to face these very tensions and contradictions, as one defining interaction at the hackathon shows.

## [5] ESTEBAN’S CROSSINGS AND ORIGINS

“Tiene cara de llamarse Esteban.” [He has an “Esteban” face.] This is how Cofí welcomed the potential *Bikingo* team member when the hackathon started. Some of them knew his actual name, as he had been a bootcamp instructor at UNAM the previous summer. But after this moment, they just called him Esteban.

After Leo explained how his managers were ok with him wearing *chanclas* and shorts as long as he worked a lot, Esteban chimed in, “Parece que se trajeron la cultura sin travesar el respeto a los *coders*.” [They brought the culture without bringing the respect for the coders.] He went on to explain that he had worked at a company in San Francisco where they made it a policy to pay the software developers more than the managers and sales people; this was meant to demonstrate that they valued the work of the coders above all else. Esteban clarified that this was an anomaly and that indeed, the common case was not too far from what Leo was describing, even in the U.S. More interested in the practicalities of his employment, another *Bikingo* asked, “¿Cómo conseguiste permiso para trabajar en San Francisco?” [How did you get a work permit

to work in the San Francisco?] “Es Chicano y fue a MIT,” [He’s Chicano and went to MIT,] Leo responded for Esteban. (Leo took almost any chance he could to bring attention to the fact that his friend went to MIT, as it was a place many of the hackers admired and aspired to at least visit one day.) “¿Cómo hablas español entonces?” [How do you speak Spanish then?] another *Bikingo* member asked. With a growing audience, Esteban proceeded to unpack “Chicano” and his trajectory to MIT.

Esteban grew up in the Los Angeles area, in a Spanish-speaking home, and was the first person in his family to attend college. He chose to attend MIT, where he studied computer science and engineering. Unlike the archetypal “geeks” that fundamental studies on hacker culture (Turkle 1984) introduced us to, Esteban didn’t learn to hack (on his own or with a “beginner’s guide) in his parent’s basement. This isn’t because he wasn’t interested in computers per se but more because his family didn’t own a computer until he was close to graduating high school. He excelled in courses in his high school, and was offered admission to several colleges, but decided to attend MIT because of its “culture,” he claims. “I liked that you could call professors by their first name and everyone just felt down to earth there,” he tells me, in English, about his first impressions when he visited campus. When I ask him why he chose to study computer science specifically, he tells me, “I thought if I majored in computer science at MIT I would have a guaranteed well-paying job for the rest of my life.”

For Esteban, the draw of a college education in general, and learning to code at MIT specifically, was directly connected to the appeal of secure employment and social mobility. His high school was predominantly Latinx and less than 10% of students attended college. MIT and coding were an invitation to the middle class. In an updated *version* of his life, he took a summer job in Mexico where he showed students at UNAM coding skills, and “entrepreneurial” sensibilities; since the six-week boot camp was sponsored by MIT, the organizers trained instructors to instill an MIT “culture,” an entrepreneurial ethos connected to technical competency. As Esteban tells his story, Cofi interrupts, “Yo pensé que eras un hijo de papí.” [I thought you were a ‘daddy’s boy.]

Esteban’s story and Cofi’s comment raise the contradictions of coding, labor, and class. That Cofi thought you had to be an “hijo de papí,” or an upper-middle class young person who relied on his family’s status and financial well-being to be successful, reflects the overall disillusionment young Mexicans experience with the promise of meritocracy (Canclini and Cruces 2012, Urteaga 2012). They struggle to find their place between the “duped neoliberal subject” and the “empowered coding hero.” Esteban, Leo, and the rest of the coders serve as mentors at hackathons that promote gender inclusivity, but then they create male-dominated space, complete with topless female models, at another space. The space might even be said to resemble the garage spaces of mechanic shops, or other male-dominated spaces, where some of their father and uncles work.

As infrastructures of technology and the knowledge economy intersect with structures of value and gender, their coding is valued in some spaces and emasculated in others. As Esteban further elaborated, “I can never work from home. My dad always interrupts me and when I tell him I’m working, he just laughs, and says, ‘Uy que trabajo tan duro’ [Yeah that’s real hard work].” Esteban’s father had effectively plugged himself in to the migrant “hard work” ethic that gave him self-esteem and helped carve out a

niche for himself and other laborers in the low-wage job market.<sup>23</sup> As Esteban pointed out, his coding, sitting in front of the computer for hours on end, had not yet made it into a system that might value his labor amongst his family.

As Amrute (2018) lays out, the first step toward arriving at a “techno-ethics” is to recognize coding as labor, the kind of work that uses all of a person’s mental and physical faculties. “Coding includes hunching over a laptop for hours on end, and can often involve solving problems that coders themselves find uninteresting. Though it can be fun, and coders get into a flow, it can also be a grind, repetitive and unfulfilling” (Amrute 2018). Within the space of the hackathon, the hackers find a place where their coding is valued, where they can get into the flow and have some fun, even amidst the various contradictions their labor embodies, and even if they haven’t laid out an official hacker or techno ethic.

## **[6] HACKING IMAGINARIES**

In this chapter I focused on hacking “imaginaries” and perspectives of difference. The first important move was to intervene in popular imaginaries the reader might have of the hacker; I traced the genealogy of the hacker to show how definitions have changed and how even the current definitions give rise to the tensions. Instead of focusing on these definitions, throughout this dissertation I focus on how research participants engage with “hacking,” how they embody their positionalities, and how these position-taking and resulting subjectivities transfer onto their “code work.”

On the “imaginaries” side, I’m aware of recent critiques of the over-use of this concept, “imaginary.” The term has purportedly become a catch-all phrase for asserting social collectivity and claiming broader relevance (often with limited ethnographic data) and has become a substitute for the term anthropologists always try to circumvent, “culture” (Stankiewicz 2016). But my take on imaginaries is not necessarily about a static “belonging,” or collectivity; indeed, the nature of my research sites is ephemeral, quite explicitly. Neither do I claim that my research participants create an imagined community, or that they constitute a particular “culture,” one that attempts to “speak for more” than what they are and do. The goal of my dissertation is in fact to look specifically at their code work, as it manifests itself across layers of the ethnographic stack, as something that is very real and not “out there” somewhere. How do these coding practices interface with circulating images, stories, and “imaginaries”?

I ended with Esteban’s origin story and his entry into the hackerworlds to demonstrate how these position-takings counter popular (and academic) accounts of what it means to be a hacker. Esteban does not fit popular media stereotypes of the white middle-class hacker in his mother’s basement; his reasons and condition for becoming a coding expert are embedded in liberal notion of “diversity” and corresponding ideologies of “difference.” The production (and construction) of these differences became important as Esteban interacted with hackers who differentially positioned themselves, but also aligned themselves, with the contradictions that treating

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<sup>23</sup> For politics of “hard work” among migrants in the U.S., and how they enter into hierarchies of racialization and deservingness amongst other migrants, see De Genova and Zayas (2003), Gomberg-Muñoz (2010), Wortham et al (2009).

coding as gendered and racialized labor bring about. How do hackers distinguish themselves from the “men in suits” (or those in power) but also from the women they try to empower using the same technique they must themselves have undervalued (and emasculated) by their own families?

My exploration of the construction of gender at the “women’s hackathon” showed that the construction of difference is intimately connected with contradictory ideologies of productivity and work. In *Hacking\_Imagaries*[1] I showed how hackathons function as re-stagings of “modernity” in Mexico, where citizens and “the state” co-produce each other and their gendered worker selves, from the domestic home to the virtual space of future possibilities. The women’s hackathon shows how these negotiations of gender and domesticity are actively negotiated. Some women hackers praised the liberatory potential of “new” technologies; other women enjoyed the “competitiveness” and productive time the hackathon fostered; other women resisted the explicit othering and called for more male hackers; other women (the *abuelitas*) performed their solidarity with the burgeoning makers, arguably regardless of what was being *made* at the hackathon. The way the organizers shifted the name of the event from the first women’s hackathon in Mexico to the first *Latina* hackathon shows how the participants, whether they liked it or not, would become enmeshed in the multiple ways that work and coding get co-produced with race and gender. I explore the construction (and contradictions) of this transnational “Latinidad” in the next chapters.

Thus, instead of presenting simplified versions of coders/hackers as either duped neoliberal subjects or empowered coding heroes, I explore ethnographically how young people in Mexico (and those who navigate the U.S./Mexico borderlands) make sense of these processes of self-making and being-made. How do they fill coding spaces and hackathons with meaning, hope, and critique? I explored the answer to this question in *Hacking\_Imagaries*[1] without losing sight of the overarching political economic processes at play. In the next chapter, I focus on a series of hackathon events that took place in both the U.S. and Mexico and which was organized by hacker-entrepreneurs who moved between the national borders. The goals of the events were explicitly political, aimed at resolving issues that dealt with U.S./Mexico border politics. How does code work continue to play a role in the kind of subjects, subjectivities, and participation models that emerge from these transnational collaborations?

### [3] PROTOTYPING LATINIDAD

#### [0] LIFE AS SOFTWARE

Ten years from now, who knows maybe management is completely overhauled and it's a different group of people and they want to sell all of our data to data brokers – nothing is stopping that. This is why policies are important and I've been working hard to protect ourselves from future versions of ourselves.

-Jessee, lawyer at an open-source software company

Jessee works for a startup (now a very profitable company) that created a popular open-source coding platform. The company and its technical infrastructure is highly respected by self-identified hackers everywhere since it provides the social platform where coders can collaborate on software projects and gain recognition for their personal contributions to new and existing programs. The charismatic, 30-year old CEO sells the company as the “Facebook for developers.” He frames his company's pitch in the following way: “Instead of giving a ‘like’ to someone's baby picture, why not give a ‘like’ to someone's code?” The pitch worked. As of 2016, the company is known as a “unicorn” in Silicon Valley (a startup valued at over \$1 billion), and is also known as a “shovel” company, in reference to the San Francisco gold rush of the 1840s, where merchants who sold auxiliary tools, such as shovels, became consistently more wealthy than those who took to the gold fields.<sup>24</sup> Most importantly, Leo, Esteban, Jessee (of course, he works for the startup), and many of the hackers who navigate the hackathon circuit are big fans of this platform. They admire the company because of the Silicon Valley imaginaries it satisfies (two young guys in their garage created a billion-dollar company using nothing but their coding skills) and for the Silicon Valley categories it neatly fits under (“open source,” “unicorn,” “shovel”). Moreover, they feel that this is what a successful (i.e. revenue-generating) company run by hackers should look like; the company's “success” has purportedly not compromised the hacker ethos of the founders or employees.

In an interview with the company's CEO, I asked him what his daily life looked like. He gave a pretty standard response for an active leader of a company: start with exercise, cut out a segment of the day for “proactive” time (advance new projects you're working on), cut out a shorter segment for reactive time (respond to important emails), spend some time in a Slack channel with your lieutenants, and end the day by reflecting and making a list of things you plan to accomplish the next day.<sup>25</sup> A lot of these activities were carried out in solitude. “It's lonely at the top,” he confirmed. But his weekends were a lot more interesting. This was when he connected with a productivity advisor/guru, to

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<sup>24</sup> In 2016, amidst industry and economic anxieties about a “tech bubble,” this company is considered one of the most stable tech startups. A majority of tech companies, no matter how big or small and no matter what their product or service is, use this platform to run their company. It has successfully merged the “open-source” and “closed-source” worlds, in that even giant companies like Facebook and Google protecting proprietary code pay them to use their “open-source” tools in house; “free software” has finally infiltrated the world of big money software.

<sup>25</sup> Slack is a popular messaging app created to help distributed teams communicate efficiently.

reflect on his week and think creatively about how his next week might be more productive, more efficient – a better version of the previous week. Like Jessee, who’s been “working hard to protect ourselves from future versions of ourselves,” the CEO’s orientation toward life is one of perpetual iteration and renewal. With an institution that proudly announces it is “for the coder by the coder,” his practices mimic the sprints, iterations, and openness of software methodologies. Each iteration is meant to be better than the previous; each new version is open to contributions and suggestions from other members. Better software. Better prototypes. Better people. Better futures.

Within the space of the hackathon, the prototype becomes a representation of this iterative way of being in the world. The prototype functions as a preview of things to come, a demonstration of what has been worked on but is always a work-in-progress, always open to suggestions and ready for renewals. Since my research witnessed many “firsts” in the world of hackathons, in this chapter I explore how *making* prototypes becomes entangled with the *making* of particular groups. I focus specifically on constructions of global Latinidad through a series of hackathon events named “Migrahack” that took place in both the U.S. and Mexico.<sup>26</sup> These Migrahack events were aimed at bringing together hackers from both the U.S. and Mexico to think about issues related to U.S./Mexico relations, border “security,” and (im)migration.

Jesse’s words along with the CEO’s iterations are important because they have an attentive audience. They’re followed closely by coders and entrepreneurs as role models, in the tech world, but even more so by my research participants, who latch on to the message of renewal and change. On the Mexico side, hackers put in code work as they’re constructed as always “in-the-making” and always in the process of “becoming,” as I explored in *Hacking\_Imagaries*[1][5]. They are purportedly stuck between the “specter of the Indian” (Leal Martínez 2016), the primitive and the uncivilized that forever deters them from becoming full-fledged “modern,” respectable “mestizo” citizens (Lomnitz 2001; Yeh 2015). On the U.S. side, the hackathon becomes another space where they are supposed to resolve their positions between assimilation and multiculturalism while navigating the shifting politics of racialization. As anthropologists and sociologists who take Latinidad as an object of study have shown, Latinxs are encouraged by institutions to promote their racial identity and “be themselves,” but within the confines of respectable U.S. citizenship, which many times equate to white middle-class values (Perez 2015; Rios 2011; Rosa 2018).<sup>27</sup> Latinxs must negotiate which type of citizens they want to become as popular discourses frame them as either a “threat” to the nation, deploying metaphors of contagion, invasion, and disease (Chavez 2001, 2008; Santa Anna 2002), or as properly ordered Latinx subjects grounded in distinctive American values of hard work and family (Dávila 2008).

Thus, in this chapter I focus on how “Latinxs,” or Mexicans and people who identify as Latinx (sometimes Mexicans themselves) on both sides of the border, are summoned to learn to code and use their burgeoning technical skills in the name of

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<sup>26</sup> As of 2017, the Migrahack hackathons have taken place in Los Angeles, Chicago, Mexico City, Tucson, and most recently, Toronto. While they’re focused on U.S./Mexico border issues, the events take place anywhere where people want to attempt to resolve the issues. Not surprisingly, the events drew large numbers of Latinx-identified participants.

<sup>27</sup> More broadly, these studies are part of scholarship that had looked at what it means for Latinx youth to become “respectable citizens” in relation to neoliberal subject formation and the politics of race (Cacho 2012, García 2012, Ramos-Zayas 2012).

empowering their “community.” Thus, the deployment of “community” warrants analytical consideration. On the one hand, hackathon participants frequently mention the creation of a “global community” of hackers. If you participate in a hackathon, you’re automatically admitted into the family of hackers across the globe – you are now part of the family; I heard several hackathon organizers begin their introductions to the events in this way. This call parallels the mission of popular social networking sites such as Facebook, whose proponents use “community” to mean collective identity, and who promise us that this community will lead us back to the original “community,” one based on physical proximity and shared institutions (Boellstorf 2017). Attempts to define or describe any “community” from a research perspective resemble classic ethnographies by anthropologists’ who bounded particular communities in order to present them as their “field” or ethnographic unit of analysis (e.g. Redfield 1955). These approaches have since been critiqued (Gupta and Ferguson 1997), and defining a “community” of hackers is not part of my scope or methodology, as I have shown in the previous chapters. Here, however, the creation of the “community” becomes important precisely because of the shifting politics of race in which my research participants find themselves enmeshed. The term “community” and the term “Latinx” are strategically deployed, by hackers and by other entities in the hackerworlds. Sometimes they are not used at all, but in this chapter, I argue that they are exactly what is at play in events like the Migrahack.

Hackathons looking to “empower Latinxs” call on participants to construct new iterations of Latinidad by learning to code and by using their “code work” to resolve political problems. In this chapter, I highlight how “communities” from both sides of the U.S./Mexico border put in the “code work” to resolve issues that they deemed important to their livelihoods and the same time that they put in the cultural work necessary to perform and construct their Latinidad. Throughout the chapter, sometimes I place “community” in quotes and sometimes I substitute it with the term “formation” to call attention to the process of creating these groupings. As described in *Hacking\_Imagaries*[0], my proposal for navigating the ethnographic stack build on work that treats these formations and constructions of “the social” as dynamic movements of re-assembling and re-associating (Latour 2005). If *Hacking\_Imagaries*[1] explored the tensions that hackers experience in the process of self-making and being-made, here I connect with the politics of Latinidad to highlight how “community”-making also intersects with processes of being-made.

To explore these transnational dynamics I bring together scholarship on prototypes and participatory models with conceptual work on constructions and mobilizations of Latinidad. Popular discourse thinks about racial diversity within maker/hacker groups by proposing ways to get different or “diverse” participants to join events aimed at empowering their “communities”; here I explore how members of racialized groups are called upon to construct and manage these differences themselves within hacker spaces and “maker” formations.

## [1] PROTOTYPES

The prototype is an essential component for creating futures by using software at the hackathon. The expectation is not that one will complete a polished, working product, but that teams will present to a panel of judges their works-in-progress, a preview of things to come. This methodology stems directly from software development processes, where developers release “beta” versions of their programs, receive feedback from users and other developers, and use this information to iterate on their designs and implementations, in order to get closer to a final design, to approach a product/project that might overstep its “prototype” stage and be ready for a public. The stage at which the prototype is released can range from very early (e.g. asking for input from users when user-interface designs are drawn up on cardboard mock-ups) to very close to “completion” (e.g. adding or deleting bells and whistles that are almost ready to be launched). Indeed, a hallmark of open-source code is that it is technically always in beta – releasing any version of your code is an invitation for others to contribute code that might add their own features to your program or even to contribute code that might re-implement a feature of your program with more robust or more elegant code. As described in *Hacking\_Imaginaris*[1][2], the principles of simplicity, consistency, efficiency, and reuse are core tenets of computer science and metrics used to identify a talented computer programmer, or hacker.

Fred Turner traces the emergence of the prototype in professional software development to a 1990s manual, *Prototyping*, that re-defined the initial “requirements” phase of system development. “The prototype could become an object, like an architect’s model, around which engineers and clients could gather and through which they could articulate their needs to one another. It would speed development, improve communication, and help all parties arrive at a better definition of requirements for the system” (2016:258). Alberto Corsín Jiménez analyzes the rise of “prototyping” as cultural discourse in design and engineering circles but also among analogous experimental moments in social studies of science and critical theory. He conceptualizes the prototype as both material culture and sociological theory:

Prototyping as something that happens to social relationships when one approaches the craft and agency of objects in particular ways. A cultural moment, then, when the prototype stands for the mutual prefiguration of objects and sociality; when objects and social relationships are recursively paranthesised, now as protos, now as types, with respect to each other. [2014:383]

In this way, proto-types are situated within the larger field of prefiguration as “things-that-are-not-quite-objects-yet.” If information technologies are the “socio-material apparatuses that align themselves into more or less coherent and durable forms” (Suchman et al. 2002:163), then the prototype is the manifestation of these apparatuses, or configurations.

Viewed this way, the study of new technologies shifts from thinking of “inventions,” understood as singular events, and instead shifts interest toward ongoing practices of assembly, demonstration, and performance. We know that each completed



(or not completed) prototype is *assembled* with an aim to resolve pressing societal issues and injustices, in this case those that crystallize around issues of immigration. And we know that as the prototype comes into being, it is *demonstrated* to a group of experts that will subsequently determine which social-technical manifestation is more effective at delivering a message that might prompt others to act, to spring into collective action for a just cause. But what else is being *performed* at the Migrahack?

## [2] CODE WORK == MIGRA WORK

Similar to the spirit and ethos that filled the HackCDMX event discussed in *Hacking\_Imaginations*[1], participants at the Migrahack fill the space with contagious excitement. They are here to discover the potential of new technologies, foster burgeoning collaborations, and resolve pressing societal problems. Like other hackathons, the event's aim is to get diverse folks with different abilities together for a weekend and have them use technological tools—in this case, preferably of the open-source variety—to create projects, or prototypes for projects, that visualize data, tell stories, and propel citizens into action. For many in attendance at the Migrahack, it is their first time attending a hackathon. As publicity for the event succinctly states, “Most journalists and community members have never been involved in a hackathon. Most programmers have never been involved in immigration issues. Migrahack brings them together.” Monica Lozano, an executive professional of a media company that publishes newspapers and websites in cities with a large Latino population, encapsulates much of the vision and enthusiasm for the hackathon with her comments:

Hackathons are remarkable in that they bring the power of technology, programming, engineers, to think about ways to solve social problems, and combines it with journalism, and journalism that focuses on the immigrant community, and if we can pull that data and not just tell stories from it but then provide people solutions and to force accountability — I think that's what so powerful that comes out of this.

This smaller scale, more intimate hackathon experience distinguishes itself quite explicitly from other hackathon events in that the participants are there not only in the name of creating innovative solutions to abstract societal problems; participants are there to address very specific problems and politics they are familiar with and that affect them personally. The hackathon purports to not of the standard “make the world a better place” variety that are easy to criticize and categorize as idealistic and/or naive. Participants at the Migrahack have arrived with a mission to empower communities they feel a close connection to, and in the process empower themselves. Both the Migrahack publicity and Monica's use the term “community”: Migrahack to call attention to the “community” members who can become part of the problem-solvers using code, and Monica to reify the “community” they will be helping. Presumably, with the help of this hackathon, these communities will overlap.

Cindy, who works for an immigrant and refugee rights organization, is eager to respond to the call. “A lot of the work I've done has focused on advocacy around

immigrant rights issues, so I was hoping that coming here I would meet other people who are interested in similar issues as I am but also in creating a solution to the problems that I've seen," she says. Just as folks who have been working on immigrants' rights issues feel naturally drawn to the space, so do the software developers who have always felt close to technology, such as Antonio, who says, "I've always been interested in immigration issues and it's always been something that's very close to me, and naturally I've always been into technology. To a certain extent I'm doing what I feel I'm supposed to do. It's something that just — I feel I'm driven to do it."

From the outset, this hackathon seems to have a more *participatory* feel to it than other events at which I've conducted research. One might say that there is an unspoken commitment to make sure that everyone who wants to participate is actually able to do so. This is evident in the structure of the event: a full day is devoted to workshops where participants learn new technical skills and vocabulary in order to be able to scrape the web, access relevant immigration data, manipulate datasets, and visualize newly acquired and cleansed data. After participants meet, greet, and indulge in the excitement in the air—and the bottomless coffee provided by sponsors—they get down to *making*.<sup>28</sup> They have to: like at other hackathons, the clock ticks away until the time comes to present a working demo to a panel of judges. In approximately 48 hours, they will have to use newly acquired data sets and tools to develop a technological prototype (of an app, platform, video, visualization, or other creative media genre) aimed toward raising awareness or helping solve an issue related to the immigrant population – issues many of the participants at the event are closely familiar with. Of course, among the participants we'll find veteran like Leo and Esteban, who will join the newly initiated hackers to create projects that use open data to tell stories about border militarization; immigrant detentions and deportations; migrant access to healthcare (on both sides of the border); and retained belongings at the border.

For this latter project, the team is composed of members of a nonprofit which documents human rights violations within U.S. immigration centers. Their aim is to bring attention to a violation that occurs frequently at these detention centers but is rarely discussed: the retention of whatever meager belongings have survived migrant journeys. Migrants are frequently unaware that they can ask for the return of their belongings, so they often get deported without them. "They cannot get jobs, they risk being arrested for not carrying official identification. If their relatives send them money, they cannot make the withdrawal in the bank, and if you ask the favor to someone else, they run the risk of the money being stolen," team member Blanca says. This project, which used an animated video to convey this data to the public, received honorable mention at the Mexico Migrahack event.

On the other side of the border, in place far removed from the "border" but where people are fully aware of "border issues," the winning "Finding Care" project at the Chicago Migrahack used data from the Affordable Care Act to visualize unequal access

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<sup>28</sup> At some hackathons, willing participants do quick pitches (e.g. 1 min) of proposed projects to speed up recruitment process; at other hackathons, other "icebreaker" tactics are used to get participants networking, after which they are left on their own to create teams and prototypes; and others, friends show up to the event with pre-fabricated teams (and even projects!). For a study of commitment and team-formation at one hackathon, see Jones Semel and Le (2015).

to healthcare.<sup>29</sup> To make their pitch even more compelling they combined this data with the story of a 24-year old undocumented Chicago migrant who needed a kidney transplant (see Photo 1). This project, along with many of the videos, animation, and data visualizations that were produced at the events, corresponds to an emerging form of participatory advocacy media that is not just about an “issue” but also about a particular campaign aimed at resolving the issue. In this sense, the construction of the “issue” mimics the way experts and “reformers” specify problems that need to be fixed or improved. These social justice interventions are first conceived through the process of problematization, where the issue is first outlined as specified as something that needs fixing (Li 2007), and then “rendered technical” (Mitchell 2002; Rose 1999), the process by which experts conceptualize the worlds as ripe for “intervention” with the technological instruments they have at hand or are in the process of designing (Sims 2017).

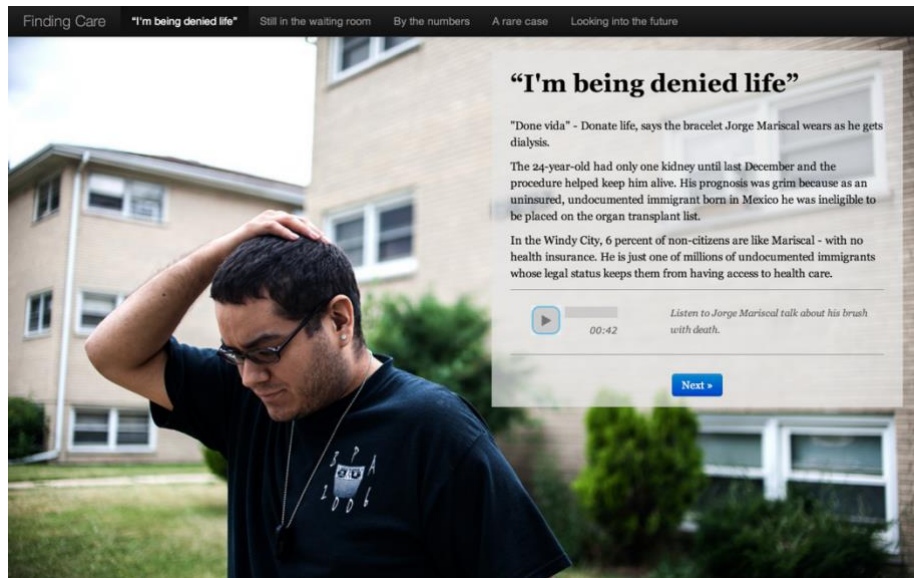
With the “issue” to be resolved carefully articulated, many of the apps and projects at the Migrahack resemble the genre of advocacy media that is explicitly non-neutral, and refuses to provide a closed narrative or structure, with the intention to invite audience members to “meet the victims,” to become aware of the (many times) gruesome facts, and most importantly, to *act* (Gregory 2012:526). This media uses techniques of “audience engagement” to tell concerned citizens how to get involved, who to connect with, and where to sign up (McLagan 2012). The panel of judges at this Migrahack event clearly had an eye for this form of media advocacy, as they commended the Finding Care project with the following text:

Coherent, elegant narrative with lots of points of departure. Triggers questions for further research. Polished production in short time frame with simple, effective data visualization. Would love to see calls to action— links to advocacy groups, reporting on pending legislation, and so on.

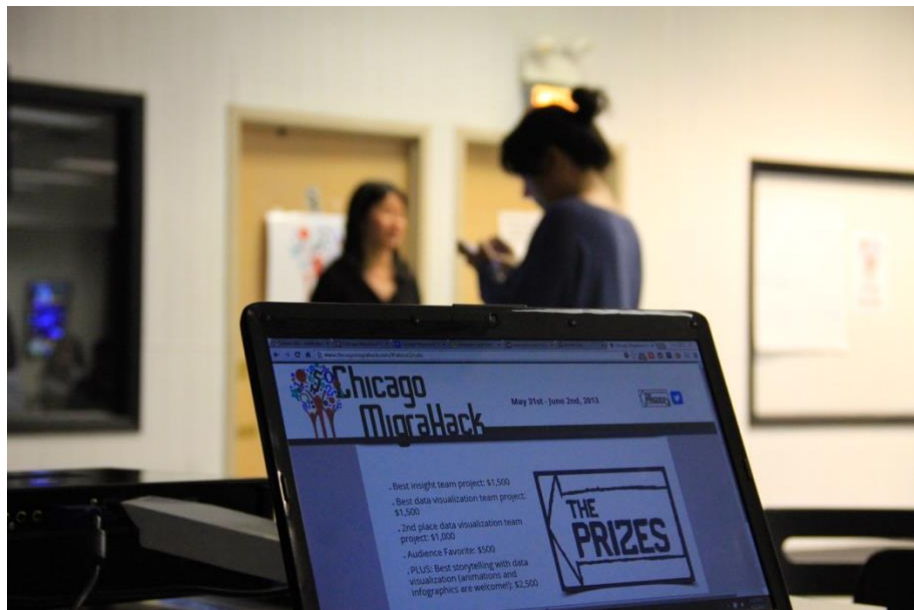
Despite the call for more audience engagement, more explicit “calls to action,” the judges commented nevertheless on the effectiveness and elegance of the visualization, and more importantly, on the ability of the team to develop the project in a “short time frame.” In the hackathon world, it’s not unheard of for hackathon participants show up with ready-made prototypes, often in pre-organized teams, ready to win prizes (see Photo 2).

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<sup>29</sup> For discussion of “Mexican Chicago” see De Genova (2005).



[Photo 1] The Finding Care project at the Chicago MigraHack mobilizes the story of a young undocumented migrant's struggle to obtain an organ transplant.  
Photo by Daniel X. O'Neil licensed under [CC BY 2.0](https://creativecommons.org/licenses/by/2.0/)



[Photo 2] The competitive nature of the hackathon is always present: prizes listed on the event's webpage are displayed on a participant's laptop screen.  
Photo by Daniel X. O'Neil licensed under [CC BY 2.0](https://creativecommons.org/licenses/by/2.0/)

But the real idea behind any hackathon, including the MigraHack, is to produce a

working prototype, or an MVP (minimal viable product),<sup>30</sup> in a limited time, under constraints that mimic Silicon Valley style free-market cycles (see Jones, Semel and Le 2015). The time pressure is not lost on the hackathon participants, and it is reflected in their overarching feeling: in their desires to stay ahead of the game, to catch up, and to not be left behind. An example is Cesar, a journalist in attendance at the Los Angeles hackathon, who comments: “Como periodista *no puedes dejar de avanzar*. Este hackathon nos permite explorar técnicas utilizando las últimas tecnologías y modelos que antes quizá no habíamos considerado.” [As a journalist *you cannot stop advancing*. This hackathon allows us to explore techniques using the latest technologies and models that we hadn’t considered.] Fernando, another hackathon participant, tells us:

We have to provide more opportunities like the Migrahack because they provide access to people and expertise. They create an environment, a very welcoming environment in which to explore, what for many people can be, intimidating. You know the world is moving at a very fast pace, *and if we don’t catch up...* In fact it’s not about catching up, we need to start leading.

These themes/fears of staying ahead of the game, of staying current, of not being left behind by technology, were frequent across interviews and in media portrayals of the events. Popular media reports in particular picked up on the diversity aspect of this hackathon, praising the organizers for putting together a structure that allowed those who would not normally show up to a hackathon to attend and become immersed in the codeworlds; the reports praised the participants for taking it upon themselves to learn new skills and participate.

Thus, just like the Mexico City *makers* of the Mexico City hackathon (*Hacking\_Imaginaires*[1]) were not necessarily concerned with what was really being *made* (because most of the time the projects were never really made at all), at Migrahack it was clear what was being *made* overstepped the boundaries of the projects at hand; what was being made were mindsets, hopes, futures, and participation models and subject positions to occupy these futures.

### [3] PARTICIPANTS-WHO-CAN-PARTICIPATE

Each instance (to use a software design term) of the prototype, of the sociotechnical configuration manifested as an object to come, becomes a potential vision of a way of organizing society as a whole and the place of the “community” and individual within that society. Prototypes are, by definition, incomplete – they invite makers to work on completing the object. It’s an invite to complete the object at the same time that it’s an invite to complete themselves. Analogous with “design thinking” and “thinking with your hands,” hackathon rules encourage participants to have fun, “break rules,” and to create new objects and selves.

The prototypes that emerge at Migrahack are not only aimed at improving society — in this instance by approaching issues related to immigration and inequality — but

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<sup>30</sup> The minimal viable product requirement is more common in hackathons with a business orientation, where participants are asked to present a prototype that will satisfy “early adopters.”

are also aimed at constructing “a way of looking at the world in which individuals constantly remake themselves, in which they test themselves against the world, and, if they find themselves wanting, improve themselves” (Turner 2016:262). From interviews and participant-observation, it is easy to see that event participants come with genuine desires to improve themselves and society; it is also clear that they are interpellated as subjects who *want* to participate, who *want* to improve themselves.<sup>31</sup> They are not only performing their burgeoning *Latino maker* status but also their ability to exercise their neoliberal subjectivities, to construct, mobilize, and manage their own Latinidad.<sup>32</sup>

“Fail fast, fail often” is a common phrase that circulates in hackathons. The phrase indexes the fast-paced, disciplined risk-taking that is carefully honed at these events, and which (quite explicitly) mirrors Silicon Valley or “California” ideologies.<sup>33</sup> As I’ve shown in *Hacking Imaginaries*[1], the “failure” of the prototypes (i.e. nothing becomes of the startups or projects beyond the hackathon) and the “failure” of the teams (i.e. they might just “shake hands and say goodbye” after the event) is expected not only by the organizers but also by the participants (see also Irani 2015). Likewise, participants in the Migrahack formation do show up with visions for advocacy and future calls to action – an ethos that mirrors the discourse of the event organizers, “The results: Apps, stories, graphics, maps – and friendships. It’s powerful. It works. With training and mentoring, open data is an opportunity for all,” states a promotional video for the event. But the hackathon participants don’t necessarily expect that their apps will be completed or that their budding friendships will last too long.<sup>34</sup> Indeed, the only feasible way they could “fail” is by not being at the event, by not becoming participants and by not taking advantage of the possibilities that this opportunity to *participate* presents.

Scholars of the “participatory turn” argue that participation has evolved into a leading mode of subjective interpellation in our contemporary period. Participation is construed as not only a concept and a set of practices, but as “the promise and expectation that one can be actively involved with others in decision-making processes that affect the evolution of social bonds, communities, systems of knowledge, and organizations, as well as politics and culture” (Barney et al 2016:x). Especially with new media technologies that purport to create egalitarian technical infrastructures and modes of engagement where everyone can participate, participation becomes desired, expected, and ultimately, normal.<sup>35</sup> Not to participate is seen as strange and disappointing; the non-participant becomes suspect.

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<sup>31</sup> Louis Althusser (1971) describes interpellation as the process whereby we become the subjects we are by responding to the hail of ideological formations that structure our social environment.

<sup>32</sup> I use “neoliberal” as a logic of governing for optimal outcomes (Ong 2006). As scholars have shown, elements usually associated with “neoliberalism” (e.g. efficiency, transparency, forms of enterprising subjectivity) can take unexpected forms on the ground (DeHart 2010; Hoffman 2010).

<sup>33</sup> While other technological global “nodes” (e.g. “Silicon Alley,” “Silicon Valle,” “Silicon Savannah” (see Poggiali 2016), or techno-capital hubs in Israel or India) are sometimes indexed to compare infrastructures, the model point of comparison is undoubtedly California’s Silicon Valley.

<sup>34</sup> The hackathon itself can function as a space where participants might be able to network to find work. For a full discussion of the different strategies of networking to find employment, and the relationship of these strategies to the global (neoliberal) economy, see Gershon (2017).

<sup>35</sup> Fish et al (2011) provide a “birder’s handbook” to the forms of participation and the range of theories used to understand participation, from “peer production” to “presumption” to “networked publics” to “user-led innovation.” (Cheney-Lippold 2011, 2017) shows how algorithms accomplish a sort of “soft biopolitics”

As Migrahack attendees build their prototypes over the weekend, they fulfill the promise and the expectation of participation: that one can be actively involved with others in decision-making processes that influence the construction of social bonds, “communities,” systems of knowledge, organizations, politics and culture. If the construction of a class of active citizens is constructed in relation to a class of excluded citizens, *participants-who-cannot-participate*, Migrahack attendees avoid their structural exclusion by materializing their subject positions as *participants-who-wish-to-participate* and *participants-who-can-participate*.<sup>36</sup>

In order to claim a place in this latter category of active technical citizens, of *participants-who-can-participate*, hackathon attendees must not only be able to replicate the discourse of the event—and clearly many were able to do this as can be seen by examining the quotes in this chapter’s introduction—but also perform their technical understanding and capability, their *hacker* ethos and *hacking* abilities. Unlike many other hackathons, this event provides a day of workshops where “newbies” learn new skills and vocabulary (data mining, mapping, Fusion Tables) in order to be able to scrape the web and access relevant immigration data, and where more experienced users update their technical repertoire with workshops on new (open-source) software to cleanse datasets and visualize data.

After these boot camp-style trainings, attendees quickly network to organize teams that are committed to the same project and that are composed of team members with varying skill levels. As the workshop-day comes to a close, Rafa, a journalist by training, enthusiastically tells me, “Coding is actually not that hard. It’s all about reusing stuff and someone has already done the hard part for you. You don’t have to understand everything to add a new layer to the program.” Rafa and other participants at the event have picked up on what it means to navigate the stack. In order for them to put in the code work, they must know how to not only infiltrate the “black boxes” of code but move efficiently and elegantly between them as they organize them using specific design principles, such as “loose coupling” describes in *Hacking\_Imaginaries*[1][3].

#### [4] STACKING IMAGINARIES

As discussed in *Hacking\_Imaginaries*[2], many of the hackathon events are aimed at empowering particular groups, especially groups which are marginalized and underrepresented in the tech industry. During my fieldwork I encountered many claims to have created “firsts” in the hackathon worlds: the first hackathon for Latinxs, the first hackathon in <insert your favorite Mexican city or favorite U.S. metropolitan city with a high Latina/o population>, the first hackathon by and for women in Mexico, etc. The hype around the events is framed around particular groups of people becoming

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to sort, rank, categorize, and display content meant to invite participation from users. Kelkar (2017) explores the relationship between “governance” and “participation” in technological platforms to show the socio-technical-discursive work of engineering organizational roles and the division of labor within institutions.

<sup>36</sup> Barney et al (2016) use the term *participants-who-cannot-participate* to reference the material reality of a class of citizens present in Aristotle’s classic formulation of citizenship, whereby slaves and women “belonged” to the household and were excluded from “the administration of justice and the holding of office” as a *condition of the possibility of participation* by Greek male citizens (italics theirs, x)

empowered by not only using technology but also by actively participating in building the technology that they use.

Jason Edward Lewis proposes a similar vision, specifically for Indigenous people, in which active technology users can take control of their future by "populating the present social imaginary with fully empowered subjects of a future imaginary" (2016:234). In this way, he says, users can appropriate technology to create Indigenous stories, characters, and epistemologies through which people can articulate dreams and aspirations, in order to help Indigenous people create a future imaginary at the same time that they become present in that future. In this view of community empowerment, marginalized populations appropriate new technologies for their own ends to resolve problems that are pressing for their own communities.<sup>37</sup> Thus, the Migrahack formation might be said to be fulfilling this vision, of a (Latinx) "community" coming together, appropriating new technologies, and using them to resolve issues they have decided are important to their collective well-being and future livelihoods – in this case, matters that revolve around the border and (im)migration.

But Edward Lewis provides a more critical perspective by reminding us that any technology has underlying configurations that are hidden from the average (or even not so average) user. He proposes that to fully make technology "speak for us" we need to be proficient in navigating the different layers of "the stack" (2016:239). The stack, as I outlined in *Hacking\_Imagaries* [0][2], refers to the interrelated and interdependent layers of hardware components and software protocols that make the high-level computations and programs possible. To move from the bottom of the stack (machine code) to the top of the stack (programming languages and systems) means to traverse the corresponding circuits, microchips, and computer code that can be part of each "layer of abstraction" that makes up the system.<sup>38</sup> Thus, Edward Lewis proposes that in order for indigenous people to completely infuse their worldviews and future aspirations into the system, they must become involved and be adept at navigating all layers of the stack.<sup>39</sup> Only by fully and comprehensively participating in this way, can we increase our ability to "make the technology speak in the way that we desire" (2016:242).

While I share Edward Lewis' vision, it is an ambitious one that necessarily calls for education and training (whether formal or informal) and that involves focused attention and practice that can take months, years, or generations – certainly more time than is provided in the space of the hackathon, or even several hackathons. Indeed, a common scene at most hackathons is the unfortunate situation where the burden of actually implementing a working prototype falls on the expert who has claimed his authority.<sup>40</sup> As I've mentioned before, many times pre-configured teams of experts arrive at the events in order to maximize their possibility of "winning" the event;

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<sup>37</sup> Early anthropologies of media focused on the ways Indigenous populations used new technologies for their own means, but were also fetishized as "natives using modern technology." (See Ginsburg 1991; Turner 1992)

<sup>38</sup> In the professional software world, a "full stack developer" is a (highly sought after) software programmer who possesses the technical proficiency to work at any level of the stack.

<sup>39</sup> Coincidentally, C. Wright Mills in *The Sociological Imagination* says that "The capacity to shuttle between levels of abstraction, with ease and clarity, is a signal mark of the imaginative and systematic thinker."

<sup>40</sup> I use "his" deliberately because in the majority of cases, the emergent expert identifies as man. As Dunbar-Hester (2014) shows, the greatest concentration of expertise at DIY and makerspaces resides with a few expert men.



sometimes groups of diverse “experts” – the hacker (a person with programming skills), the hustler (a person with business skills), the hipster (a person with marketing/design skills) – would effectively find each other. When this wasn’t the case, the small teams would, for the most part, effectively divide themselves up into the experts and the novices, at least along dimensions of technical proficiency. That is, regardless of the particular skills they had to contribute to the project, an expert programmer would be the one responsible for implementing the working project.

In my role as participant-observer—and hopeful, boundary-occupying ethnographer—I was able to fill a mediator role between experts and novices, demystifying some of the underlying layers of abstraction for novices while helping to set up technical configurations alongside the experts. My expert status was frequently tested, many times in the exchanges of masculine technical performances.<sup>41</sup> While my MIT affiliation gave me “street cred,” I frequently had difficulty demonstrating familiarity with latest libraries (collections of functions) of a programming language, for example. Programming itself is a craft; one must display “diligent craftsmanship” (Coleman and Golub 2008) to be considered a worthy hacker, and craftiness itself can be described as the aesthetic disposition of the hacker (Coleman 2016).

At Migrahack, as participants appropriated and attempted to shuttle between “novice” and “expert,” there were several people occupying “mediator” roles, attempting to help this apprenticeship model for empowerment move along to its full potential.<sup>42</sup> In fact, it was more common than not to encounter these mediators and an overarching aura of congeniality at events aimed at empowering a particular group or determined to resolve a relevant social problem, perhaps not surprisingly. The vision to develop proficient technology users, those who might be able to traverse distinct layers of the stack, proved to be more idealized fantasy than implementable vision.

Christina Dunbar-Hester (2016) finds a similarly unviable apprenticeship model in her work with radio activists across DIY (do-it-yourself) and maker spaces. Within these spaces, activists promoted their vision for a self-sustaining participatory structure, one in which self-guided discovery and learning could provide a heightened sense of agency to participants, where the demystification of technology would lead to a leveling of expertise through pedagogical activities. In this vision, as time progressed, novices would become experts and the field of experts within the group would increase, broadening the capability to recruit more novices, in a self-sustaining novice-expert model. Instead, Dunbar-Hester highlights the moments of frustration and alienation that novice participants experience when they attempt to learn from experts responsible for building radio consoles in a compressed amount of time (2016:81). She notes that although activists self-consciously tried to distance themselves from competitive and exclusionary aspects of some electronics and engineering cultures (see Abbate 2012; Chun 2013; Turkle 1984), the technical pursuits were overwhelmingly fun for a few (especially men), and intimidating and unappealing for others. Thus, a consistent situation across Dunbar-Hester’s spaces was that “the *burden* of participation fell disproportionately on women and technical novices” (2016:92, emphasis hers).

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<sup>41</sup> For a discussion of how these performances of masculinity play out in similar ways in a different context, see Jones 2011

<sup>42</sup> As Andrew Shryock notes, the ethnographic experience isn’t complete until one meets his/her doppelganger.

While the participatory promise and its on-the-ground structures of participation were less bleak at some of the hackathons than others, I encountered a similar dynamic across my research sites, in which the burden of *participation* fell on the novices, while the burden of *implementation* fell on the technical experts.<sup>43</sup> As Leo once told me, after I commented that I was impressed at the turnout at a popular hackathon in Mexico City, “Once the free pizza is gone there will be about half [of the participants] left, and once we start programming there will be about a fourth of us.” He was right. I couldn’t confirm whether participation decreased because of a lack of pizza or because of technical intimidation, but I hypothesize it was a combination of both.

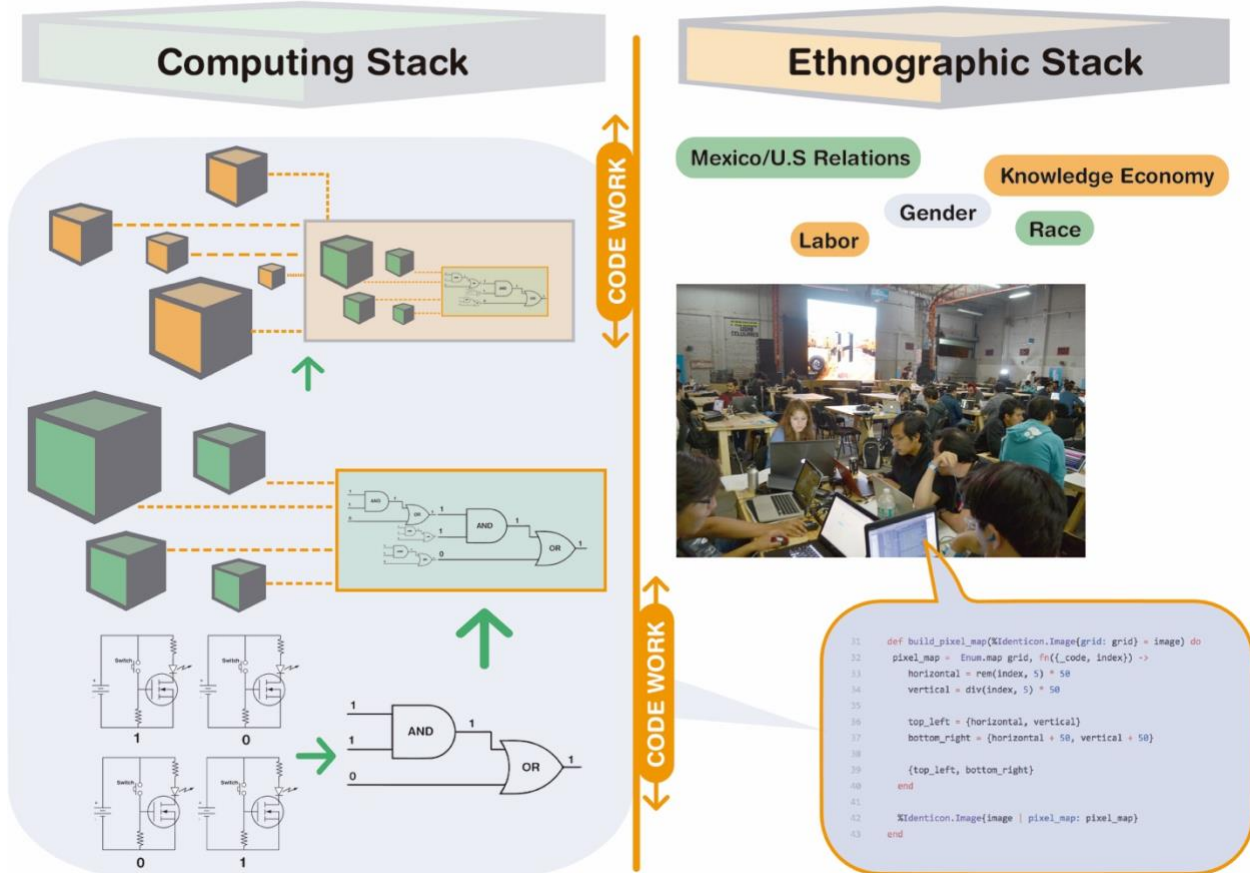
Whether novice or expert, however, participants at the Migrahack seemed to escape the burden that fell on either, more so than at other hackathon events. Perhaps this has to do with their realistic participation at the appropriate level of the computing stack (or layer of expertise). By avoiding the pitfalls of trying to gain *too much* expertise, or technical knowledge, and focusing instead on the top layer of the stack which allowed them to use coder tools (programs and apps) to manipulate data, they were able to effectively become participants-who-can-participate; they were able to perform their burgeoning Latina/o maker subject positions.

Thus, if it appears as if research participants at the Migrahack have failed to escape “the stack,” it is because in this section we have been referring strictly to the computing stack. That is, the presumed traversal of the stack to get to the lowest layers, and the participation models that are supposed to get hackathon attendees there, focus on the stack as a configuration of technical layers of abstraction. Recall my proposal for navigating the ethnographic stack below (see Figure 1):

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<sup>43</sup> Not surprisingly, the hackathons with more substantial prizes for the winning teams bred a more competitive spirit among participants.

# Full-stack Ethnography



[Figure 1] Navigating the ethnographic stack.

If we've been focusing on the codeworlds to highlight the *making* that takes place at the Migrahack, and the possibility of infiltrating this stack at its various layers, the right side of the diagram, the ethnographic stack, guides us toward connecting these codeworlds toward overarching processes of racialization and the knowledge economy. How is it that the *code work* taking place, to construct prototypes and to construct "communities," relates to the coding of particular people?

## [5] MAKING LATINX MAKERS

Regardless of what level of the computing stack Migrahack participants found themselves in, or the expert or novice designation they aligned themselves with, one thing was certain, they were not only becoming makers but *Latina/o* makers. The construction of the "Latino" racial/ethnic/identity category has been studied by various Latina/o Studies scholars. Mora(2014) examines this construction by examining what she calls the "politics of categorization." By conducting archival work on American history between 1960 and 1990, she traces the rise of the "Hispanic" category.<sup>44</sup> Mora

<sup>44</sup> For the nuances (and arbitrariness) of the Latino vs. Hispanic category, see Dávila 2001.

begins her archival work by closely reading the minute meetings of organizations like the National Council of La Raza (NCLR). How was it, she asks, that by 1990 the NCLR had transitioned its agenda from one focused on protest activities (protesting local instances of discrimination against Chicanos and Chicanas) and regional programs (funding and implementation of job training programs and day-care centers) to a national agenda focused on policy analysis and research, legislative advocacy, and lobbying focused on a national Hispanic constituency? (2014:51) A lot of this transition was based on the financial pressure placed on the NCLR to become the nation's foremost Hispanic civil rights advocacy organization – in order to gain power, the organization needed to secure resources from federal agencies, philanthropic foundations, and corporate foundations. The best way to do this was to frame its constituency as a national organization that was unified by *something*—in this case a hazily defined set of cultural values and experiences; these fuzzy values and experiences would come to shape a “Hispanic” community/group/category.

Mora thus points to the state-activist-media networks where diverse subjects could work together because, while they framed Hispanic pan ethnicity differently, they also referred to this common, albeit ambiguous narrative about Hispanic cultural values (2014:6). In the process, they became reliant on one another for expertise, data, and resources. Hispanic activists became Hispanic political analysts; Hispanic census officials became Hispanic data analysts; Hispanic media executives became Hispanic marketers. There were ongoing negotiations between several sets of actors each of whom had distinct interests and abided by distinct organizational logics. What kept the network together was the ambiguity used in defining the new Hispanic field. They never necessarily defined who Hispanics were, nor did they argue definitively that characteristics such as language, place of birth, or surname made Hispanics *Hispanic*. Instead, participants in these networks used descriptors like “hardworking,” “religious,” and “family-oriented” (adjectives that could be used to describe any group) to give Hispanics a common set of values and a common “culture” (156). While Mora’s work shows how the categories that Latinos/Hispanics come to occupy (or identify with) are constructed at an institutional level, anthropologists have shown how subjects who identify with the Latino category – whether they are embedded in these decision-making spaces/institutions or not – differentially perform and contest these descriptors, many times creating intra-Latina/o tensions (Dávila 2001; De Genova and Ramos-Zayas 2003).

The tensions at the Migrahack seem to be minimal. Indeed, the space has been carved out from the “real world” as an experimental laboratory where hopes, futures, and identities are carefully proposed and inspected beyond the reach of those usually in power. Likewise, Ines Casillas (2014) explores how (mostly working-class) Latina/os find spaces where they not only get to “be themselves” but also where they are able to engage with each other in order to deliberate their position within a broader national body. Specifically, she shows how radio has become the medium of choice for these negotiations.<sup>45</sup> That is, as an aural stage, Spanish-language radio provides Latinos the

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<sup>45</sup> The Federal Communications Commission (FCC), which functions as official watchdog for radio broadcasting, is unable to keep up with monitoring Spanish-language radio. This is for simple reason: they lack bilingual investigators. In 2004, they only had two Spanish-speaking investigators on staff. Thus,

opportunity to retreat and deliberate outside the surveillance of dominant society, and engage emotionally and economically with more than one national body by also affirming their distinct class and ethnic identities. At a time when visuality overwhelms most media formats (film, movies, television), sound offers a unique platform for a listenership that is characterized by language, class, mobility, and, for many, legal status.<sup>46</sup> Casillas makes the point that these question-answer sessions on the radio are often aired live, and that these dialogues carry elements of an oral tradition long familiar to Mexican and Chicano communities. Most importantly, as audiences deliberate and organize around critical transnational issues for U.S. Latinos—listening offers not only an opportunity to retreat but also a sense of anonymity for groups dependent on inconspicuous livelihoods.

Like this radio “community,” Migrahack participants are able to think through issues relevant to their communities without worrying about “outside” monitoring or judgement. Unlike this radio community, Migrahack participants are called upon to “think with their hands.” They are not only listening and deliberating but fully immersed in *making*. The Latina/o makers are responsible for making their own Latinidad; as they prototype their projects, they prototype a new way of embodying these newly forming hopes, stances, and futures. Moreover, the very “openness” of their maker interventions is embedded into the structure of their tools and making. Indeed, if there are any new descriptors that the attendees at Migrahack are constructing, they are “participatory,” “collaborative,” “engaged,” “concerned,” and of course –“hackers” and “makers.” Being by definition incomplete and open, the prototype encourages participants to work on completing the object. Their *Latina/o* maker status, as well as their *Latina/o maker* status, is up for grabs.

## [6] CHANGING GEARS

By immersing myself in the codeworlds (and the code itself) alongside research participants, my goal in this dissertation is to examine how the logics underlying software coding practices are used to rethink other domains of life. In this chapter, by focusing on the experts who form U.S./Mexico transnational alliances to focus on issues relevant to “Latinx,” I’ve focused on what else is being made while they’re making, what else is being coded while they’re coding. Instead of focusing on abstract prototypes and unmarked, generalizable “better selves,” I consider what the implications of this *making* are for groups who identify with particular ethnic or racial groups, who are called upon to become *hacker* or *makers*, and how it is that they manage and construct new (and old) markers associated with their “community.”

The fact that my research participants work in cycles, adopting iterative software methodologies into their professional and personal lives, is perhaps a benefit to an anthropology that wants to “change gears” (Farías 2017), that wants to inhabit different temporal configurations in order to carefully time our collaborative interventions. The

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institutional racism in this case trumps capitalism and plays in Latina/os’ favor, as a lack of monitoring makes transgressive sound practices possible.

<sup>46</sup> For an exploration of how radio and other media technologies constitute “voice” as a site of reflexive consideration and manipulation in relation to community empowerment, see Fisher 2016.

prototype effectively functions as what Corsín Jiménez calls a “trap,” a contemporary figure of possibility and expectation whose work is to keep sociality in suspension (2014:385). “The trap is capable of eliciting abduction because it is deliberately fabricated to ‘hang’ in a regime of uncertainty: it is a temporal construction that tolerates uncertainty as a reasonable and feasible outcome” (391). That is, in an expert culture obsessed with efficiency and renewal, every iteration of the prototype becomes an opportunity for introspection, a moment for the possible surfacing of desires to better understand, to learn by listening and practicing.

Migrahack’s mission to bring the power of technology together with programmers, journalists, and concerned “community” members in order to resolve complex immigration issues is quite powerful. Participants are invited to learn to open up the black boxes of technology and in the process learn about the code work it takes to move between them. It gives them different tools to think about how the politics of migration “work.” Although the events are not marked specifically as “for Latinxs,” many of the participants indeed identify as Latinx and many of them (as the advertising for the event states) have not interacted before. If scholars have identified advertising, radio, and language as domains where Latinidad is constructed (and contested) when Latinxs are asked to become *Latinx* cultural producers, here I argue that “hacking” and corresponding making are domains that are just as important in the negotiation of Latinidad. I don’t just mean that the hackathon should be *another* domain where we think about Latinx identities and difference. More generally, my exploration is an invitation to think about Latinidad in spaces where difference is more subtly marked. Unlike the all-women’s hackathon in *Hacking Imaginaries*[2][3], the Migrahack events were framed around “issues” and “community.” The subjectivities that address difference are carefully cultivated within these spaces and bleed out into domains beyond the codeworlds and hackerworlds.

By focusing on the “newbies” who attempt to join these codeworlds, who are themselves inspired by calls announcing that “anybody” can participate, I’ve also explored the role that hierarchies of expertise, participatory models, and layers of “the stack” play in the renewal and completion of a people. If prototypes are by definition incomplete, how do prototypes contribute to Latinxs’ perceptions about their own incompleteness? How do hackathon and maker spaces make a group of people take responsibility for their own becomings and give them a way to manage their own racial/ethnic markers?

As particular versions of Latinidad come to be objectified, in the next chapter I continue this line of inquiry by focusing specifically on how research participants think with “the pivot” (a tech startup term that calls for changes to a product that might better align it with the market) to manage and perform their Latinidad across national, racial, and ideological lines.

## [4] PIVOTING ACROSS THE BORDERLANDS

### [0] FROM POLITICS TO PIZZAS

“These entrepreneurs are bright, well educated, hard-working, and excited—you can see the sparkle in their eyes.” Saeed Amidi introduced the entrepreneurs that would pitch their startup ideas to the investors gathered at Plug and Play Tech Center in Sunnyvale, better known as “Silicon Valley in a Box” to various tech startup collectives. The event was publicized as “Mexico Day”; 10 startup teams that had already gone through accelerator programs in Mexico would try to convince San Francisco based investors to invest anywhere from \$30,000 to \$250,000 to move their operations to the Bay Area. “Why Mexico?” Saeed asked. “Why not—it’s right around the corner, and it’s easier to fly to than Russia,” he laughed.

Saeed’s joke was meant to foment the convivial ambiance; we were all encouraged to “connect” and make new friends and potential collaborators at the event. In case we needed reminders of the transnational collaborations being materialized, we were presented with U.S. and Mexican flags waving side by side as the centerpieces of every table, and the same giant flags were prominently displayed on the center stage. Saeed went on to give some background on Plug and Play. This was *the* place where Silicon Valley connections were made. From bottled water to the latest online workspace platform, this is where venture capitalists, investors, university professor-advisors, and the “sparkly eyed” entrepreneurs had come to connect and make million-dollar deals. This is where the hackers met the entrepreneurs to “let products grow naturally” and where everyone was able to become part of the journey. “Almost like a movie,” Saeed cheerfully exclaimed.

He might have been referring to *The Social Network*, the movie that tells the story about the founding of Facebook. Walking into the room where the event was being held, you might have felt as if you were in fact a part of this movie, if only by the appearance of the people in attendance. Of the approximately eighty people at the event, there were about thirty “hungry entrepreneurs” (the ones presenting their startups) who could pass for the Mark Zuckerbergs of the Silicon Valley. They resembled the popular tech mogul not only because of their light skin color but also because of their “hacker” attire—jeans, tennis shoes, “scruffy” overall appearance. If it wasn’t for the flags and the event being called “Mexico Day,” I could have certainly been fooled.

Anne Saxenian (1996) argues that this “laid back” California attitude, complete with corresponding wardrobe, in direct contract to the “buttoned up” style of the East coast, was an important determinant of Silicon Valley economic success. This “culture” led to more openness and cooperation across companies. Similarly, Aihwa Ong finds these circulations of the U.S. entrepreneurial figure across national borders where U.S. best practices in business and government projects and policies also translate to “a cultural translation: floppy hair, jeans, rolled up sleeves the can-do, technologically savvy, entrepreneurial figure celebrated in American neoliberalism” (2006:186). The figure of the college computer genius or “outcast” (see *Hacking\_Imagaries*[2][0]) no

longer had to compromise his identifying markers when crossing over to the world of high-revenue generating tech entrepreneurship.

Many of the entrepreneurs, ranging from early twenties to mid-thirties, only one of them a woman, came from prestigious private universities in Mexico, most from the Instituto Tecnológico de Monterrey. Some had degrees from Brown University and Harvard University. Karen Ho (2009) finds in her ethnography of investment backing corporate culture that employee fungibility is built on the commitment (on the part of the banks) to the employee's university affiliations, not to the employees themselves. The banks look to hire "3 Harvards and 2 Browns," for example. The members of PingStamp, a startup that looks to bring loyalty programs to Mexico (e.g. get a free coffee after your 10<sup>th</sup> purchase), already had substantial investment from "friends and family," and had previous experience holding leadership positions for large corporations in Mexico.

Perhaps these burgeoning entrepreneurs were seduced by the "leave your secure, boring day job to start from scratch" narrative that appeals to so many startup founders. Especially in the U.S., a successful tech startup starts with the seemingly mandatory 3-minute origin story video; the story convinces the audience that the team "started from nothing" and invites the audience (especially investors) to become involved in the project.<sup>1</sup> But leaving your day job to start from nothing, a voluntary "pick yourself up by your bootstraps" venture, we might call it, is different in Mexico, where the population far outnumbers the number of jobs available.<sup>2</sup>

Not all of these young entrepreneurs were elite, privileged Mexicans looking to increase their wealth, however. Take the story of Eric and Federico, two amiable young men in their mid-twenties. They told me about their original idea, which was to use Twitter to report corruption in Mexico, namely, voting poll fraud during presidential elections. In contrast to the image from the article in *Hacking Imaginaries*[2][2], which warned readers that "malicious coders" promised to cause havoc in U.S. elections by exploiting vulnerabilities in technical infrastructures, Eric and Federico aimed to flip this narrative, and use "hacking" to *prevent* fraud. The infrastructure they had designed was aimed at interfering with common tactics that political parties used to skew voters and voting counts. Politicians were known to not only "buy" votes from citizens by offering them money, debit cards, or even household items (recall the *licuadoras* [blenders] comment from Leo in *Hacking Imaginaries*[1][3]), but also organize these voters (usually from marginalized populations) and bus them to strategic locations to cast their vote. Eric and Federico's app would use Twitter to help a crowd-sourced team quickly and efficiently arrive at locations when suspicious buses and crowds arrived at these locations. They could possibly interfere or at least document the occurrences in order to build cases against the culprits.

But after meeting with more seasoned startup advisors, Eric and Federico "pivoted" their project to Twitt2Go. "Pivoting" is a buzzword in the tech startup

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<sup>1</sup> As I discuss in *Hacking Imaginaries*[3][2], these pitches commonly take the form of participatory advocacy media that is not just about an issue but also about a particular campaign. This genre of advocacy media uses techniques of "audience engagement" to tell concerned citizens how to get involved, who to connect with, where to sign up, etc. (McLagan 2012).

<sup>2</sup> *Hacking Imaginaries*[1] further explores the relationship between employment opportunities, education, and informal/formal work in Mexico.



community. It refers to being flexible with your idea and changing it quickly to something that sticks with users, and in this case, investors. This new mobile application, Twitt2Go, would allow users to use Twitter to easily order food, in particular pizzas, from their favorite restaurants; this idea fit the needs of the market more closely and would probably catch the attention of some of the investors at Plug and Play in Sunnyvale at “Mexico Day.” The technical infrastructure would work in a similar way to their voting poll fraud system, but would simply organize delivery persons and pizza consumers instead of voters and politicians. The pivot from politics to pizzas was a viable move in the current market.

Eric and Federico were very happy to be in the Bay Area, and even more excited at the possibility of securing investment money they could use to move to San Francisco and to get their startup into the next phases of development. They asked me a lot of questions about the area and what it was like to live there. Their original idea might have been *pivoted*, or better yet, distorted beyond recognition, from politics to pizzas, but it would have certainly been an adventure to move to the U.S. and the Bay Area specifically— at least for a bit, that is.

Curiously, and against the stereotypes of Mexican migrants, their ultimate goal was not to stay in the U.S. but to return to Mexico; they fell neatly into the category of highly-qualified migrant workers looking to contribute to “brain circulation” instead of “brain drain” (Saxenian 2006; Tigau 2013).<sup>3</sup> Moreover, they told me that if they made enough money they might be able to move back to Mexico and continue working on the social issues they were interested in in the first place, before the pivot. “Para tener impacto, necesitas feria,” [To make an impact, you need money/bling.] Eric tells me, confirming his long-term vision.

The investors, older men mostly wearing suits to distinguish themselves from the young entrepreneurs, listened attentively and whispered remarks to each other as Twitt2Go, PingStamp, EasyParking, and other hopeful startup companies pitched their ideas on the stage. After the presentations they had the chance to ask questions and give advice. A common question emerged, “What is a similar application that has been successful in the U.S. and how can you do the same thing faster and more effectively in Mexico?” “Find something that worked in the U.S., and execute the hell out of it in Mexico,” another investor says. Saeed chimes in, “We need at least two Googles and Dropbox’s in Mexico.” After PaydayLoans pitches their idea for a mobile app that would allow users to receive a personal loan within 15 minutes, one investor offered advice about their presentation, “Move your advisors to the very front. I was nervous and skeptical about your startup until you showed me who was behind it.” If any of the young Mexican entrepreneurs didn’t know it already, at “Mexico Day” they learned that “pivoting” your idea in the tech startup world was inextricable from the circulation of economic capital, as well as cultural capital.

A main argument of this dissertation is that (1) hackers use underlying coding logics as tools to “think with” about the social, technological, and government infrastructures they navigate and that (2) hackers also work as “hacker-entrepreneurs” who freely navigate seemingly contradictory domains. In the hacker domain their

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<sup>3</sup> For a sociological perspective on the recruitment and incorporation of “high tech braceros” from Mexico see Alarcón (1999); for theoretical frameworks that explain “qualified migration” from Mexico more broadly, see Hernandez Suárez (2012).

practices are aimed against capitalism; in the entrepreneurial domain they advance capitalist practices. As the opening of this chapter demonstrates, these crossings become even more complex when we add nationalized and classed borders that call for creative traversals (to use a computing term). Along this line of inquiry, then, I'm interested in how research participants reconfigure the market logics of agility, competitiveness, and risk to creatively combine them with logics of hacking characterized by reinvention, playfulness, and "resistance." Thus, at this layer of the ethnographic stack, I show how research participants move and think with "the pivot" to manage and perform their Latinidad and labor potential across nationalized and racialized lines.

## [1] CODERS AND CODED SOMBREROS

This wasn't the first time Eric had paraded with Mexican flags in front of an audience. The previous incident occurred as part of an annual "developer festival" in 2015 sponsored by a large, popular tech company. These events were becoming more and more popular and an obligatory event for tech companies to be considered among the top tier of tech giants. The festivals featured talks, demonstrations, releases of new products and product features, and, in the latest iterations I attended during fieldwork, guest celebrity speakers. As I described in *Hacking\_Imagaries*[1][2], some of my research participants would use their savings to make the annual pilgrimage to the headquarters of their favorite tech company in the Silicon Valley or in San Francisco. Luckily for Leo and others who attended the 2015 event, this tech company sponsored "extended" versions of the main event; these additional physical locations across the world were featured contextually and geographically relevant presentations and events.

In Mexico, for example, several speakers came to talk about the apps they were developing (using the tech company's underlying framework for mobile apps) to accept payments in Mexico. Since people in Mexico did not trust banks and credit cards, they claimed, these apps proposed alternative ways for merchants to accept payments and receive funds. One speaker, for example, proposed that the funds from a transaction would be deposited to a debit card that the user could cash out at any ATM machine, thereby bypassing any need to deal directly with bank accounts or processes or institutions that would make their operations "official." (The boundaries between the "informal" and "formal" economy, the "legal" and the "illegal," are always negotiable with small businesses in Mexico.)<sup>4</sup>

As the live feed from the annual festival in Silicon Valley was streamed to the "extended" node locations, so to were video streams of these locations broadcast back to the headquarters in the Bay Area. As the keynote speaker began his address, he wanted to show images of these locations to all viewers. This practice should sound familiar from events such as globally televised sporting events, the World Cup for example, where distributed collectives view the event at the same time to feel the solidarity and collective effervescence of rooting for their team (see Joo 2012). In this case, the team to root for was definitely the tech company, as was made clear when the

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<sup>4</sup> See Bakić-Hayden (2018).

keynote speaker started with the live feed from Mexico, much to the delight of the crowd in attendance in Mexico: Eric and hacker-entrepreneur friends packed into the auditorium in performed their overwhelming excitement on screen.

They all stood to their feet, waved their arms in the air, and screamed at the top of their lungs, first with random shouting and hollering and then, as if previously planned, into a coordinated, “Mexico, Mexico, Mexico!” chant. If an outsider were to see the crowd without knowing that they were watching a tech company’s live transmission, they would likely conclude that this crowd of mostly young men was watching the Mexican national team score a goal in the world cup. If not for the excitement and chanting in the name of their country, then the giveaways would be the sombreros, the waving Mexican flags, and the clothing that coordinated with colors of the Mexican flag. The one young man who showed up in a mariachi suit would have been the dead giveaway.

Eric was not the young man in the mariachi suit, but it was still surprising to see him participating in these performances that worked to essentialize “Mexicanness.” That is, in previous interviews with Eric, he had told me about the resistance his startup team had encountered when trying to raise capital for their projects, in their various iterations: the voting fraud infrastructure, its “pivoted” pizza delivery system, and a third project, an app that used mesh networking to help mobile phones connect with each other without wireless internet or telephone signal. U.S.-based investors met his team’s proposals with questions about his team members’ origins, “Are all the founders Mexican?” for example, and doubts about the way they would run their operations, “You’re all Mexican so you will be running things in the ‘Mexican way.’” Eric showed resistance to these generalizations and felt that they were detrimental to all the code work and dedication he and his team had already put into their projects. He felt that potential investors would first consider who they were and essentialize them and their projects without carefully considering the content and value (both economic and social) of their ideas.

Thus, after getting to know Eric and his experiences and reflections in both the U.S. and Mexico, it surprised me that he was self-essentializing his self in front of a live feed, performing the stereotypical “Mexicanness” that had so explicitly prevented him from accessing the necessary capital to carry out projects he so deeply cared about. The answer to my doubts about his participation in this performance of coded sombreros were answered by returning to the ethnographic stack: in this case, it was key to understand how Eric’s code work aligned with concepts such as “the pivot” to make moves that countered the flexibility and the “pivots” performed by the companies and the investors themselves.

## [2] PIVOTING PRESENCE

Eric and hacker-entrepreneur friends at the annual tech company festival effectively performed their Mexican *hackerness* by participating in the event; they also strategically performed their *Mexican* hackerness by making visible the stereotypical sombreros and other “Mexican” material artifacts. William Mazzarella (2005) finds similar underlying dynamics when a large multi-national corporation deploys its strategies to expand to “global consumers,” in his case the “Indian consumer.”

Mazzarella states that the Indian consumer shares the structural doubleness that is characteristic of the commodity form in general. For the advertising and marketing professionals he conducts research with, the “Indian consumer” should have (1) a general level of equivalence, the Indian *consumer*, the commodity that can be sold to multinational clients, and (2) an irreducible particularity, the *Indian* consumer, its corollary form that these advertising and marketing professionals can claim exclusive rights to, in terms of production and distribution (2005:233). These Indian “versions” meant that there needed to be mediating professionals who doubled as cultural guides in order to give the corporations access to consumers who were “hungry to consume.”

Curiously, Eric uses similar language to describe his participation in events such as the Plug and Play demo from the introduction. “You have to know when to leverage the fact that you’re a hungry Mexican who knows the market but you have to know who to tell and who not to tell that to. You can’t tell a top investor in Silicon Valley, ‘hey we’re based in Mexico and we’re all Mexican,’” Eric tells me. He has to learn when to deploy his Mexicanness and when to deploy his hacker-entrepreneurness. In the U.S., he tried to perform the latter, despite attempts by investors to pin him as the former; at the event in Mexico City, he resorts to displaying the former, since he was already being interpellated as the latter with the inclusion in the presentation. Eric learns to “pivot” between the two roles, attempting to perform the Mexican *hacker-entrepreneur* and the *Mexican* hacker-entrepreneur, to be effectively grounded as the “Mexican hacker-entrepreneur” who can navigate the flexible dynamics of the market but also provide access to the “talent” and “opportunity” his flexibility gives him access to. But to whose benefit?

From the perspective of the tech company that hosted the annual festival, their live video feed that flashed various geographical locations is a way to make visible their own “flexible global presence” in a system that asks employees (actual and potential) to perform the same. Just like Saeed from Plug and Play in the opening of this chapter compares Mexico and Russia, as places where he and his team of investors can easily tap into for “talent” and “sparkly-eyed” entrepreneurs, the tech company demonstrate across its feed where it has its eye and its reach. It’s common to hear how large of an “untapped market” Mexico possesses, but the feed images also function to demonstrate the willing and able coder and prepared cultural guides in each country; these subjects represent the tech company’s overarching *presence* in these locations.

In her ethnographic work with Wall Street investment employees, Karen Ho (2009) finds the surprising side of corporate “presence.” Her respondents confirm that they are sometimes part of a “team” of 1-2 employees in an international office where banks have an international location; moreover, an empty office also qualifies as a location and more importantly, another notch en route to the company’s globalness. The banks develop a “global strategy” under which they decide which location justifies an important and strategic market, but at the same time project the sense that they can be present in many (and any) markets with flexibility. One of the executives at the banks demonstrates his flexibility and presence when he says, “We do China; I like India,” (2009:325), in the same way that Saeed at Plug and Play makes on-the-fly decisions about his group’s decision to look for “talent” in Mexico over Russia. The comparisons of geographic markets, the live feed at the tech company’s annual coder festival, and the empty offices that are intended to perform the “global presence” of Wall Street

companies all point to “specific ways of constructing and imagining scale and movement in order to achieve particular goals and positions in a world of demanding financial flexibility” (Ho 2009:314).

Taking into account these complex dynamics, we can better understand Eric’s own performances in sites across the U.S./Mexico border. Eric plays with his own “visibility” across these borderlands. Among the reasons that investors gave him for not investing in his projects had been (1) that he wasn’t raised in the U.S. so he doesn’t understand how the business world really works, (2) that his team was not based in the Bay Area so it would be hard for investors to keep an eye on his operations, and (3) that since he was Mexican he would proceed to do things the “Mexican way.” In attempt to chip away at the refusals and become more legible to the investors, thereby making his companies potentially more desirable investments, his startups are all based in San Francisco. That is, they have an address in San Francisco, all of their documentation is in English, and from an outsider’s perspective it is a U.S. startup.

Indeed, across the hackathon and co-working spaces I participated in, teams would consistently give their startup projects an English name and go out of their way to perform their companies U.S. “presence.” Many confirmed that unless they did this, users would simply not download their apps. More importantly, if they wanted to launch their apps or other startup projects, investors were unlikely to provide them with any attention (much less capital). In the same way that the companies learned to perform their globalness by setting up shop in places they could quickly pull out of, so too had Eric learned to perform his globalness by establishing his operations in San Francisco. “It’s not a lie because technically our headquarters are in San Francisco even though we physically aren’t,” Eric assured me.

At this level of the ethnographic stack, then, Eric was learning to navigate the stack as it related to overarching processes of capitalism and the knowledge economy. The tech companies saw him as an untapped tech consumer and producer in Mexico, but also an untapped “talent” that can code and provide access to other consumers/producers. He takes up the discourse to make himself visible as a Mexican hacker-entrepreneur, and he wears and removes the sombrero as he makes the necessary “pivots” of his company (and his self) between the U.S. and Mexico. The sombrero works here as a material artifact to demonstrate his moves but also as a metaphor to the types of negotiations and alignments he makes to make these transitions. In the next section, I show how markers of race further complicate the pivots that need to be made across the U.S./Mexico techno-borderlands.

### **[3] PERFECT ENGLISH AND LATINX FRICTIONS**

Eric was one of the young men I followed closely as I navigated the ethnographic stack. His moves between Mexico and the U.S. and his positioning as a “hacker-entrepreneur” reflected the flexibility, contradictions, and mobility that made research with “Mexican hackers” more revealing and complicated. Near the end of my fieldwork, Eric and other hacker-entrepreneurs I had developed close relationships with participated in an event that surely would have interested many of the audience members present in spaces where I have presented my research. That is, audience

members who consistently and inevitably asked the following question, “So what is different about hacking in Mexico?”

At another coder festival held at the *Instituto Tecnológico de Monterrey*, [Monterrey Institute of Technology,] Eric and fellow hacker-entrepreneurs and travelers of the codeworlds across the U.S. and Mexico held a panel titled, “Diferencias entre EEUU y México.” [Differences between the U.S. and Mexico.] The small university room was packed to capacity, with young people and a few journalists in attendance. The young men took turns telling the experiences they had trying to launch startup companies in the U.S. and Mexico, and effectively took the role of “experts” who understood the cultural differences between the U.S. and Mexico.

The comparisons took familiar routes, unfortunately. The panelists circulated stereotypes about each of the collectives up for comparison, those that represented the “Americans” and those that represented the “Mexicans.” Americans in Silicon Valley, they claimed, were prone to sharing; Mexicans were not. Americans worked efficiently to avoid *trabajo doble* [double work]; Mexicans were perpetually stuck *trabajando doble*. Americans were more direct and said “no” when they needed to; Mexicans were forever stuck saying “yes” to work they knew they could not accomplish. Ultimately, the panelists circulated common narratives about the competitive cultural advantage of Silicon Valley (Saxenian 1996) and spread developmentalist narratives that urged their fellow Mexicans to “change their culture,” not dissimilar from the governments *todos con el mismo chip* initiative described in *Hacking\_Imagaries*[0][0].<sup>5</sup> In addition, their comments fell in line with neoliberalizing discourse about taking matters into one’s own hands, not taking no for an answer, and thinking “global.”

Esteban, the ever-present Chicano at these annual coder festivals, asked Eric a question that for a moment seemed to challenge their “anything is possible” recommendations. “Do you think you’ve had success in San Francisco because you speak English so well?” he asked Eric directly. He asked his question in English; he knew Eric spoke English and since the panelists had been code-switching (between English and Spanish) during the presentation, changing the conversation to English seemed “acceptable.” In fact, this code-switching was particularly common throughout the event. More so than in the southern part of Mexico and even Mexico City, people in the north were more accustomed to code-switching, perhaps because of their proximity to the United States. Eric, sticking to Spanish, responded, “El inglés ayuda pero solo hablar Español no es un impedimento.” [English helps but only speaking Spanish is not an impediment.] Eric not only stuck to Spanish but also to his “anything is possible” rhetoric, claiming that it was not necessary to speak English to (presumably) travel to the U.S. and secure investments. This was indeed the “success” Esteban was referring to since Eric, at this point, had secured “angel” investment for his latest startup company, the platform that used mesh networking to “connect the unconnected.” Esteban, keen on pushing Eric further on the matter, and perhaps putting him on the spot in front of the audience, asked, “So how do you speak English so well?”

Eric hesitated for a moment, but then proceeded to provide full-disclosure about his ability to speak what most would call “unaccented” English. He told the audience that his mom taught him English since he was born, and that her English came from her grandmother, who was born on the other side of the border, in El Paso, Texas. “Mi

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<sup>5</sup> See also Barbrook and Cameron (2009) and Turner (2006) on the “California ideology.”

abuela tenía ‘perfect English,’ mi mamá tiene ‘perfect English.’ Mi inglés suena mejor después de unos días en Estados Unidos. Antes sueno como George Lopez.” [My grandmother had ‘perfect English,’ my mom has ‘perfect English.’ My English sounds better after a few days in the United States. Before that I sound like George Lopez.] Esteban chuckled.

Esteban’s chuckle showed some warranted hesitancy to Eric’s “perfect English” as contrasted with George Lopez. First, Eric’s “perfect English” was fraught with language ideologies about how people should speak. These ideologies intersect with racializing processes, specifically about the way Spanish-speaking Latinxs should speak. As Arlene Dávila (2001) shows, Latinxs themselves often argue over what is the “correct” way to speak Spanish. When they see others speaking “accented” Spanish, they feel embarrassed; the proper Latinx should be able to speak either English or Spanish in its “pure form.”

Speaking “correctly” in this context means not only *not* code-switching between the two “correct” forms, but not speaking with an accent in either. Latinxs who grow up bilingual are often placed between these two, and bilingualism becomes equated with programs for “Limited English Proficiency” or “English Language Learners” in educational contexts (Mendoza-Denton 2008; Zentella 2002). Positioned alongside special education students as second-class educational figures, students are framed as lacking proficiency in neither English nor Spanish. They become “linguistically subhuman” (Rosa 2018). Jonathan Rosa calls this the ideology of “languagelessness”: expected to speak two languages but understood to speak neither correctly, U.S. Latinxs linguistic practices are framed as “non-languages.” Mandatory language policies thus create stratified, class-based distinction between elite and remedial forms of bilingualism. That is, where bilingualism is understood as a valuable asset or goal for middle-class and upper-class students, for working-class and poor students it is framed as a disability that must be overcome.

Thus, Eric’s “perfect” English is entangled with these ideologies, but the most revealing part of his comment was that he opposed his purported perfect English in relation to “sounding like George Lopez.” George Lopez is a Chicano comedian from southern California who rose to fame with standup comedy geared toward a working-class Mexican-American audience. One of his recurring jokes is when he switches into a “white voice” by modulating the pitch of his voice: raising his pitch to index an “unhip” whiteness or lowering it to index a professional “voice of authority” (Fought 2006). His stereotypical characterizations of whiteness, especially when indexed as voices of authority, work to create a space where relations of power are reversed, held up for inspection, and (most of the time) reified (Bakhtin 1984[1965]; Limón 1994). His live performances function as a space where working-class Latinxs can “be themselves,” complete with “accents” and all.<sup>6</sup>

Coincidentally, George Lopez is from San Fernando, the same neighborhood in Los Angeles where Esteban was born and grew up. Perhaps there was some

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<sup>6</sup> Similarly, Casillas (2014) explores how Spanish-language radio functions as an aural stage, allowing Latinxs to retreat and deliberate outside the surveillance of dominant society, and engage emotionally and economically with more than one national body by also affirming their distinct class and ethnic identities. Miranda (2012) explores how this same space reinstates sexist, machista participation structures.

misrecognition on Eric's part, and he didn't realize that Esteban in fact "sounded like George Lopez." Or perhaps his comment was geared directly toward Esteban, or more precisely, toward distancing himself from Esteban. That is, Esteban represents not only a version of English that isn't "perfect," remaining part of the "backward culture" that still hasn't fully assimilated to the U.S. ideals of efficiency, openness, and innovation, those represented full by the Silicon Valley "culture" that Eric and his friends came to promote in Mexico in order to change the "Mexican chip."

Curious about these dynamics, I asked Eric in an interview how he felt about Latinx politics, framing my question around issues of diversity and access in Silicon Valley. Eric himself had participated in events aimed at increasing diversity and "empowering" the Latinx "community" on his trips to San Francisco. The event in the opening of this chapter is one example; he had also participated in summer-long "bootcamp" designed specifically for Latinx tech startups (qualified as both U.S. Latinx startups and Latin American startups). Eric hesitated when I asked the question. "How do I say this... I'm trying to be politically correct, I need to avoid hurting people's feelings," he tells me in his "perfect" English. "I total disagree with the premise that you should have extra benefits because you're Latina or you're Black or you're a woman or you're gay or whatever. I totally disagree with that because I think it should be based on talent." Eric confirms his position in relation to "minorities" in the U.S., which he lumps into "Latinas, blacks, gays, women, and 'whatever'." Here, very explicitly, Eric adopts the Silicon Valley concept of "finding talent," of colorblind meritocracy that finds those who are able to acquire the necessary skills and cultural capital to "succeed" and to blame people from underrepresented backgrounds for "failing" to do so.

Sound familiar? The logic that Eric uses parallels the same position he has toward all Mexicans. His comments are in line with the government's proposal to remodel Mexicans' chips and with the colleagues on his panel's wishes to build a "new" Mexico with new attitudes, new outlooks, and a new "culture." Later he confirms his vision for this "new" generation in Mexico:

Our parents' generation feels defeated, *son la generación de 'no se puede.'* We are the generation of *'si se puede.'* That generation was brought up around a sense of failure. Like, you're Mexican you're not worth anything. We need to weed out that generation as soon as possible. We need to work on the small victories. We can actually achieve change if we change the way we think, if we stick together, we can see results and achieve what we want. This younger generation needs to forget about what we've always been told about Mexico and we just need to create a new Mexico.

Eric's comments resonate with the "disenchanted generation" in Mexico I pointed to in *Hacking Imaginaries*[1][1]. He has appropriated neoliberal discourses about taking initiative, being self-satisfied, not waiting for government, and being "socially conscious" (García Canclini and Cruces 2012; Urteaga 2012). But when paired with his comments about underrepresented communities in the U.S., in particular the Latinx "community" he selectively connects and disconnects himself from, he also aligns himself with hierarchies of global capitalism that encourage him to perform his country's modernization. This corresponding "coming of age" is always assumed in relation to



other Latin American countries (Dávila 2016), and in this case, in relation to other members of the “Latinx community” that might be holding him back. If Eric escapes the “specter of the Indian,” the idea that the Indio part of the mestizo is the uncivilized, primitive, and incommensurable “Other” that permeates the “future-thinking” mestizo and prevents the “cosmopolitan” mestizo and the nation from becoming fully “modern,” (Leal Martinez 2016), then here he employs the same logic to distance himself from the “Chicano,” or the “Mexican-American” as the forward-thinking cosmopolitan Mexican.

Judith Irvine and Susan Gal call this “fractal recursivity,” when binary oppositions are projected across scale onto another level of group structure or subcategory of said group (Irvine and Gal 2001). Using this framework of fractal recursivity, Norma Mendoza-Denton (2008) finds that young Latinas in California construct markers and corresponding ideas about “*norteñas*” [northerners] vs. “*sureñas*” [sureñas], where the latter are seen as poor, unsophisticated newcomers. The overarching processes of race, language, and capitalist structures that frame the “Global North” vs. the “Global South” get projected onto these “hemispheric localisms” (Mendoza-Denton 2008:130). Thus, the moves across the borders and the positions that Eric takes are in tune with the shifts in his mestizo status, always in relation to an “Other” that also shifts, especially with crossing nationalized borders (Yeh 2015).

I am focusing on Eric’s statements and moves but they parallel instances that I found across my field sites as I navigated the ethnographic stack. In a “Latina entrepreneurs” panel held in the Bay Area, for example, one young Latina-identified woman reprimanded the U.S. Latinx “community” for not taking advantage of the entrepreneurial opportunities available to them. She herself was the founder of a startup consulting firm in the Bay Area. She highlighted her proven trajectory of “taking matters into her own hands” and not waiting for permission from anyone as crucial to her success. “We held an ‘open office hours’ for Latinx startups and guess who showed up?” she asked the audience? “Only people from Mexico, again,” she responded to herself. She gave numerous example of how the Latinx community was not taking advantage of the “opportunities” available to them and then *we* needed to step it up. Except for the Latinx *makers* from *Hacking\_Imaginaries*[3], perhaps, the rest of us were failing to “catch up.” We were refusing to become the modernizing tech entrepreneurs of the knowledge economy.

Thus, the dynamics that characterized working-class Latinx “frictions” come to re-construct themselves in the high-tech knowledge economy. As Nicholas De Genova and Ana Ramos-Zayas (2003) find, Latinxs enter into hierarchies of “deservingness.” These hierarchies are informed by politics of labor vis-à-vis the nation-state, that result in unfortunate stereotypes of one another (e.g. Mexicans viewed Puerto Ricans as lazy and Puerto Ricans viewed Mexicans as submissive, “third world” people). These intra-Latinx distinctions perhaps become hyper-visible when it is time to organize around a “movement” and make public demands, but they are “created in the everyday, in terms of ideologies of deservingness based on dignity, civility or modernity, gender and sexuality, or language, these disparate themes tended to be orchestrated through intersecting rubrics of racialization and inequalities of citizenship” (2003:16). Within the tech spaces, citizenship also plays a factor, where those “Latinxs” who enjoy the privilege of citizenship fail to capitalize on opportunities and therefore don’t quite measure up in terms of “talent” to those who don’t reside within the U.S. nation-state. As

a transnational Latinidad is constructed (or prototyped, as I argue in *Hacking Imaginaries*[3]) around tech spaces, who *belongs* is up for grabs, as are the positions of the gatekeepers of this new privileged space.

I also don't mean to condemn Eric, or others with his views and positions, for adopting these "neoliberalizing" discourses; my goal is to understand the politics and infrastructures in which they are entangled. In the case of Eric, we learn that his family was adamant about teaching him "perfect" English, and that his great-grandmother was in fact from El Paso, Texas. As scholars of the Chicano Movement have shown us, social movements are made up of different (and competing) ideologies and practices across regions. In Texas, for example, Arturo Rosales (1997) shows how activists took a more pragmatic approach, less ideological than California, because they were hungrier for material rather than cultural rights. Rosales paints a Texas where Chicanxs were more willing to be part of a middle class where they could work "within the system" to promote social mobility amongst Chicanos, particularly because the line between Anglos and Mexicans was more visibly drawn. California activists, on the other hand, were confronted with more of an "identity crisis" where they quick to reject middle class lifestyles and experiment with alternative identities that pulled from African American activist influences, a pre-Columbian past, and street youth culture more than folk *mexicanismo* (224). While there might be some homogenizing of "California" and "Texas" communities on the part of Rosales and erasure of women within these spaces (Blackwell 2011; Ramírez 2009), my point is to highlight how the shifting politics of race, class, and nation are responsible for Eric's moves more than his personal statements or subjectivities.

In other words, my aim is to show how racialization inflects theories of flexibility and the "neoliberal" knowledge economy, less than finding distinctions between Latinx collectives (or self-identified Latinx subjects). Here I share De Genova and Ramos-Zayas' more optimistic view for solidarity:

Thus, if we have taken such great pains and gone to such extraordinary lengths to analyze the bases for Latino division, it has been motivated by a more fundamental desire to explore the possibilities for effectively sustaining various ideas of Latino community and coalition that could viably serve to promote counterhegemonic sociopolitical projects formulated in terms of *Latinismo*. [2003:215]

In the final section, then, I retake the concept of "the pivot" I started this chapter with in order to discuss how the neoliberal logics underlying Eric (and others') moves across the borderland have the potential to be used in their favor.

#### **[4] FLEXIBLE NEOLIBERALISMS**

"Mexico Day" is just one instantiation of what the "tech startup boom" looks like in different parts of the world. A challenge of this dissertation, then, is to highlight the heterogeneity evident within Mexico, and across the U.S./Mexico border, paying particular attention to matters of class, social, and racial inequality, but also of the larger

political economic processes that are not bounded by location or a particular nation-state or national border.<sup>7</sup> In other words, the challenge is to highlight what exactly is different about Mexican hacker-entrepreneurs at the same time that we pay attention to how they perform their belonging to a “global” hacker community. How do hacker-entrepreneurs navigate national, racial, and ideological lines, as well as other dimensions of difference, as they attempt to construct and manage pockets of autonomy within and across the spaces and institutions in which they participate?<sup>8</sup>

Eric and his hacker-entrepreneurs could be framed as answering the call to develop a “culture of risk” that modernizing, nation-building narratives so desperately call for. Their “moves” across the borderlands – cultural, national, and technological – might be precisely what is expected of subjects who works with the “new spirit of capitalism.” As Luc Boltanski and Eve Chiapello (2007) outline in their book of the same title, this new spirit of capitalism fosters commitment and enthusiasm through management techniques that stress versatility, job flexibility, and the ability to learn and adapt to new duties. In this sense, they not only work within the capitalism system but also help to construct it.

That is, hacker-entrepreneurs effectively contribute to capitalism-in-the-making; “capitalism” in this sense grows out of a particular set of institutional worldviews, subjectivities, and practices, and spreads under certain conditions at specific moments. The wall street investment bankers Karen Ho (2009) works with not only create markets, but immerse themselves in the market—their skills and social lives take on the anxiety, reinvention, and risk that characterizes it. Similarly, Caitlin Zaloom’s ethnography with commodity traders proposes that disciplined traders feel they can “experience the market and become part of this living thing, intimately connected to it” (2004:379). There are productive dimensions to risk. Risk-taking becomes established and sustained by routinization and bureaucracy; it can become “objectified” (LiPuma and Lee 2004). Risk also becomes a celebrated skill of the “strong individual” who knows how to manage risk and calculate his current market value (Miyazaki 2006). The “code-switching” entrepreneur who embodies risk performs flexible knowledge to gain “global technology expert” citizenship (Ong 2006).

When I’ve presented parts of my research and argued that my research participants use the underlying logics of software design to help them re-think social and political relations, audience members have been skeptical. A common response is that these subjects are moving and acting exactly the way capitalism and neoliberalism expects them to move and act. The first part of my response is to unpack “Neoliberalism” as I did in *Hacking\_Imagaries*[0][5]. Developing the ethnographic stack functions as a methodology to understand the global processes that constitute “Capitalism” or “Neoliberalism.” This approach moves away from all-encompassing Neoliberalism “package” (Collier 2009) and instead things about the neoliberal as a logic of governing for optimal outcomes, an array of techniques is mobile, abstractable,

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<sup>7</sup> I hope Anthropology has moved away from producing studies that frame groups as bounded by “culture.” For a discussion on classic studies in this direction see Gupta and Ferguson (1992).

<sup>8</sup> Coleman (2017) proposes the rubric “weapons of the geek” (playing off of Scott’s (1985) weapons of the weak) to point to a shared set of cultural practices, sensibilities, and political tactics that connect diverse “hacker” communities.

and flexible as it migrates from site to site, interacting with various assemblages that cannot be analytically reduced to “Neoliberalism” (Ong 2006).

Moreover, whether hacker-entrepreneurs can be categorized as “neoliberal subjects” is largely irrelevant. Anthropologists have shown how neoliberal logics can be used in ways that contradict the negative connotations usually associated with neoliberalism. Lisa Hoffman (2010), for example, shows how young professionals in China replaced bureaucratic job assignments with labor markets to produce a self-enterprising ethos, even as they acted in the name of a patriotism reminiscent of the Maoist era. In Guatemala, Monica DeHart (2010) finds that indigenous activists invoked norms of efficiency, transparency and accountability—all associated with neoliberalism—precisely to criticize state policies frequently characterized as “neoliberal.” Likewise, Eric and Federico first proposed infrastructure for combating voting poll fraud by organizing an efficient, transparent, accountable group of activists to intervene in state practices they deemed corrupt.

A more productive approach than detecting what is “neoliberal” or not, then, is to understand how these logics can sometimes provide subjects the tools to think about their particular situations. In her research with job-seekers in the tech industry in the Bay Area, Ilana Gershon (2018) explores the moments when U.S. Americans face contractions when implementing these neoliberal logics; she focuses on the moments when workers must be open to finding different ways of being social beings. As my description of the “full-stack developer” in *Hacking\_Imagaries*[2][2] shows, finding a job as a software developer in the tech world is not easy. A worker must be flexible, but not too flexible; they must take risks, but not too many.

“Flexibility” is an ideal within limits, as workers manage commitment and networking with renewal of “skills” they must bundle into legible packages which help to define their worker and coder selves. As workers manage this complicated game, “Moment after moment, people will continue to wrestle with these dilemmas anew, choosing to go in one direction in one instance and in another, perhaps contradictory direction, in the next instance” (Gershon 2018:175). The lived dilemmas of being a “neoliberal self” become the reasons why people begin to reject neoliberal logics or transform them into something else entirely, Gershon argues. Of course, as is the case with most of these research studies, scholars tend to focus on abstract, generalized workers who lack any markers of difference. As I’ve teased out throughout this chapter, theories of the neoliberal and corresponding flexibility become more complicated when we take into account nationalized and racialized borders.

## [5] THE LATINX PIVOT

As I’ve shown throughout this chapter, Eric becomes a “Latinx” here but not there; he accepts the title of a hungry Latinx “talent” but disassociated from the marginalized Latinx when this association works against him. As Arlene Dávila (2008) shows, the very fluidity of a constructed Latinx identity (Dávila 2001; Mora 2014) becomes a commodity. Dávila’s analysis is grounded on a simple observation: how could it be that Latinxs are celebrated in contemporary media and public representations for their “culture,” for their “coming of age” in America, while at the

same time they are represented as an economic liability who take jobs, resources, and benefits from “regular” Americans?

Less interested in whether these representations are accurate or not, Dávila examines this Latinx “spin,” the selective publication, circulation, and deployment of “Latinidad,” how and why some representations come to dominate over others, especially more marketable ones. Dávila reveals the nuances of this “latinx spin”: Latinxs are sometimes represented as “giving America back to America,” as orderly, sanitized, respectable middle-class, employed, family-loving citizens, when in fact many Latinxs find themselves forming part of working-class enclaves, lagging in education, wealth, and access to services and infrastructure (2008:8).

If these selective representations and circulations of Latinidad index the Latinx “spin,” then Eric’s moves across the borderlands index the Latinx “pivot.” That is, the pivot, a term used to guide entrepreneurs to move with “the market,” to follow the trends and construct a product with an audience and corresponding consumer-base, is now a tool to think with (and move with) as the investors who participate in the labor and knowledge economy spin their own versions of “talent” and race. As the examples I have presented in this chapter show, Eric plays with the visibility/invisibility of his startup, wears the sombrero here but not there, and avoids talking with a particular accent in an attempt to dodge the racialized politics that prevent him from advancing his projects, whether these projects revolve around politics or around pizzas. As he traverses these structures, and as I continue to navigate the ethnographic stack, we learn that the pivot becomes another tool to think with, about the way the knowledge economy is structured, about the way “communities” fit into them, and about how one might be able to, at least for the moment, construct (or “hack”) a pocket of autonomy within these processes and infrastructures.

Navigating the ethnographic stack means diving into the hacking but also shuttling out to other layers of the stack in which that hacking takes place (See *Hacking\_Imagaries*[0][2]). Eric and Federico identify as hackers and are active participants in hackathons; they’re also mobile entrepreneurs who transport their code work across nationalized borders as they meet investors and other tech world representatives beyond the codeworlds. As they learn to navigate shifting relations of power they become enmeshed in multiple and contradictory language ideologies and racializing processes. They also learn how to project these same ideologies onto others as they attempt to use concepts such as “the pivot” to make moves that presumably counter the flexibility and the “pivots” performed by the companies and the investors themselves. While they form part of the collectives that aim to hack difference (*Hacking\_Imagaries*[2]), they’re also caught in practices that work to erase *other* differences. The geographic naturalization of “perfect English,” for example, leaves no room for multilingualism, Spanish-dominant bilingualism – ultimately, no room for “unmotivated” or “non-entrepreneurial” Chicaxs. They’re caught replicating the same discourses and structures that frame subjects who are always trying to catch up, to stay ahead of the game, such as the Latinx *makers* from *Hacking\_Imagaries*[2]. Whether their code work is rooted in social justice or revenue generation – that is, whether they’re hacking difference, hacking corruption, or hacking pizza deliveries – the racialized, classed, and gendered borders are always present.

One final example demonstrates why this is important. After much effort to attempt to get their “connecting the unconnected” app funded, Eric and his team realized that perhaps they had something more powerful in their hands. Instead of selling their app as whole unit (a “black box”), they could sell the underlying protocols of the mesh networking that made the wireless communication between mobile phones work. After months of trying to get it to work, and even reaching out to developers of major U.S. tech companies (and receiving no responses), they had hacked the networking protocols to get the wireless messaging system to a functional state. This design could be packaged into an SDK (software developer kit) and sold to other app developers who wanted to add this particular functionality. They advertised it as a novel way to “gain independence from third-party service providers.” The independence they had gained by learning to navigate the stack, could now be packaged and offered to others.

If a major part of my dissertation work has been spent showing how hackers use the underlying logics of software design to understand how different elements of political systems function and how protocols of difference and inequality work, this last example shows how some of the code work across the stack goes back *into* the system. The maneuverings, the showing up here and not there, the associating here and disassociating there, make one adept at navigating the system of systems. So much so that one might gain “independence” from it – an independence that can be repackaged and shared (or sold) to others. How far into the stack they allow you to see is up to Eric and his fellow hacker-entrepreneurs. Perhaps it depends on who is buying.

Thus, the last section of this last chapter brings us back full circle. If this dissertation has been navigating the ethnographic stack by demystifying code work across multiple scales of technological infrastructures and beyond, here we wind up back *into* the technology itself. Perhaps this is what STS scholars meant when they were “looking for a way in” to technology (Latour 1987:2). But we had to conduct a full-stack ethnography first, across multiple scales of difference, to get here. This full-circle ride can be read as a warning: the inequality many hackers purport to be “hacking” can very well wind up back in the system. In the concluding chapter, I propose that epistemic reflexivity and transnational collaborations are two keys to preventing the code work from driving the infinite loop of inequality.

## [5] CONCLUSIONS

### [0] FUTURE VERSIONS (OF ESTEBAN)

If Esteban's "origin story" from Chapter [2] sounded familiar, you most likely know me, Héctor. In this case, I might have told you about my journey to MIT and my work in Mexico as a coding boot camp instructor, which doubled as a phase of research anthropologist's call "preliminary fieldwork." Esteban is a previous *version* of Héctor. If the way Cofi first greeted him, "Tiene cara de llamarse Esteban," sounded familiar, you are perhaps a fan of Gabriel García Márquez' short stories. In this case, you might remember the line from a short story, "*El Ahogado Más Hermoso del Mundo*." [The Handsomest Drowned Man in the World.]<sup>1</sup>

I've always associated parts of Marquez' short story with elements that resemble ethnographic fieldwork. In the story, a drowned corpse washes onto the shore of a small town. Nobody in the town recognizes him; his identity is never confirmed. This doesn't stop the townspeople from constructing stories about who he was in real life and how he lived. "Pensaban que si aquel hombre magnífico hubiera vivido en el pueblo, su casa habría tenido las puertas más anchas, el techo más alto y el piso más firme, y el bastidor de su cama habría sido de cuadernas maestras con pernos de hierro, y su mujer habría sido la más feliz." [They thought that if that magnificent man had lived in the village, his house would have had the widest doors, the highest ceiling, and the strongest floor, his bedstead would have been made from a midship frame held together by iron bolts, and his wife would have been the happiest woman.]<sup>2</sup> I imagine this is what some ethnographic experiences are like, where research participants not only are left to make up who this "ethnographer" actually is and what his/her pre-field life was like, but sometimes attributing some "magical" powers to the individual once she/he explains the ethnographic endeavor. Of course, the relationship is embedded in power relations that frame these encounters, and sometimes the delusion of magical powers comes more from the ethnographers, who believe they can help the "community" in some special way or see something others (most notably, the research participants themselves) cannot decipher on their own.

From my experiences, in this research project and others, the ethnographic magic has emerged when I've taken a role similar to Esteban's – a dead man that lets himself be dragged from place to place. That is, by waiting a bit to tell my story and what I hope to accomplish with the fieldwork, research participants create their own stories about my positionality, why I am there, etc. While listening and observing, moments crystallize when things come together and allow all members of the research relationship to understand how dynamic and contingent processes come together. Such was the case when (this) Esteban told his origin story at the hackathon and Cofi responded, "Yo pensé que eras un hijo de papí." [I thought you were a 'daddy's boy.'] This allowed me to analyze how Esteban was being interpolated into the situation, and what that revealed about hacking infrastructures in relation to the promises, imaginaries, and challenges of meritocracy.

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<sup>1</sup> Full text can be found online here: <http://www.literatura.us/garciamarquez/ahogado.html>

<sup>2</sup> Translations of *El Ahogado Más Hermoso del Mundo* by Gregory Rabassa.

Some other elements of Marquez' story might resonate with fellow ethnographers. There's the parallel to the ethnographic trope where the ethnographer is invited by the community to become "one of us": after the townspeople investigate and confirm that Esteban was not a resident of surrounding towns, they proudly announce, "¡Bendito sea Dios —suspiraron—: es nuestro!" [Praise the Lord – they sighed – he's ours!"] Before they release him into back into the water – perhaps the promised "field exit" that never comes for an ethnographer – they assign Esteban familial relationships with the townspeople: "A última hora les dolió devolverlo huérfano a las aguas, y le eligieron un padre y una madre entre los mejores, y otros se le hicieron hermanos, tíos y primos, así que a través de él todos los habitantes del pueblo terminaron por ser parientes entre sí." [At the final moment it pained them to return him to the waters as an orphan and they chose a father and mother from among the best people, and aunts and uncles and cousins, so that through him all the inhabitants of the village became kinsmen.] These moments of community/family/solidarity come sooner or later, or at least we hope they come, in the sense that the well-intentioned ethnographer hopes to gain some closeness (and at the same critical distance) to their research communities in order to respect the ethnographic labor at hand and feel like they are working together toward some goal.

The introduction of "Esteban" in my ethnography also serves to achieve a critical distancing, not necessarily between "researcher" and "research-participants," but between myself and a different version of myself. Esteban is the idealistic, but not completely uncritical bootcamp instructor who easily ventures into the codeworlds with the hackers; Héctor hovers above the codeworlds with an anthropological toolkit. Esteban understands the coding logics and design principles, along with the corresponding hacker jargon he speaks with his friends, in order to fully understand the code work as a type of labor; Héctor traces how this "code work" is projected onto other domains in the hackerworlds, in the social and professional lives of his research participants. Esteban and Héctor thus partner to understand how these "hacker-entrepreneurs" navigate contradictory domains and use these logics to think about their positions and relations to institutions, to "the state," and to the technical infrastructures they participate in across multi-faceted borders. Together they conduct a full-stack ethnography.

Thus, this strategic distancing works as a type of reflexivity, but not necessarily the one we think of with ethnographic writing. This distancing does not just refer to making the ethnographer's position visible in terms of class, gender, or race as they construct and analyze your anthropological object. Instead, I'm after what Bourdieu (1992) calls "epistemic reflexivity," the kind of reflexivity that promotes a social science that is always "meta" but in relation to itself, always using its own instruments to interrogate itself, continually turning back onto itself the scientific "weapons" it produces.<sup>3</sup> In trying to understand human *practices*, then, Bourdieu brings to the

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<sup>3</sup> On the "meta" question, Bourdieu makes an interesting comparison between academic researchers and monkeys. He cites an experiment on monkeys by ethologist W.N. Kellogg. In the experiment, a banana is placed beyond the reach of monkeys in a room. One of the smart monkeys in the pack pushes one of his monkey friends under the banana and jumps on top of her to grab and eat the fruit. Soon after this demonstration, all of the monkeys in the room are standing under the banana with one foot in the air, waiting for the opportunity to climb on each other's back. Bourdieu claims that if we think for a moment



forefront as an object of study the practices of the researcher. Thus, if a social science discipline “records itself without recognizing itself,” (236) it isn’t enough for the researcher to merely call out her/his position while conducting research. Indeed, Bourdieu is against this type of “reflexivity,” which he claims is presented by self-fascinated fieldworkers who prefer to talk about themselves instead of their research object; he considers this a “veiled nihilistic relativism” that stands as the polar opposite to a truly reflexive social science (72).<sup>4</sup>

This brand of reflexivity differs from others in three important ways: (1) its primary target is not the individual but the social and intellectual unconscious embedded in analytic tools and operations, (2) it is a collective enterprise and not the burden of the lone academic, and (3) its purpose not to assault but to buttress the epistemological security of social science as a scientific discipline. Epistemic reflexivity is a requirement and a form of social science work. (1992: 36)

My proposal for “navigating the ethnographic stack” calls attention to this type of epistemic reflexivity, this distancing from different versions of ourselves that can be used to infiltrate the research problem-space as we hone in on our anthropological object. As Esteban and I shuttled between the different layers of the stack, we started in the middle and plunged into the codeworlds and used the code work to hone in on what our object was and where our ethnographic “instruments” should ultimately be aimed. To effectively navigate the stack, Esteban and Héctor had to sometimes use their respective positions, their classed, nationalized, and gendered privileges, some of which afforded the technical abilities and some which afforded the anthropological frameworks.

Borderlands interventions have proposed ethnographic frameworks where both ethnographer and research participant shuttle between differing, incomplete, and multifaceted viewpoints that offer more complex understandings of ever-changing social realities by navigating spaces characterized by tension, struggle, conflict, and ambiguity (Rosaldo 1989). Pushed even further, women of color immersed in both cyborg politics (Haraway 1991) and intersectional perspectives (Anzaldúa 1987) have proposed weaving “between and among” oppositional ideologies to propose a way of moving they refer to as “oppositional consciousness,” a “differential mode of consciousness functions like the clutch of an automobile, the mechanism that permits the driver to select, engage, and disengage gears in a system for the transmission of power” (Sandoval 2000: 58). Indeed, this technical language resembles the worlds of technical masculinity these movements aim to circumvent, or perhaps engage but then disengage. The tension in developing these practical modes of “resistance,” or oppositional movements, is that, as the authors notes, “these fighting capabilities are not codified anywhere for them to learn.” (59) In order to learn these practices that might intervene in the long-standing structures of inequality, theorists of social movements suggest we start with grassroot efforts, *on-the-ground*.

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about this paradigm, it fits many scientific discussions in which scientists do not seek to understand but simply get on top of each other; this is the way they advance scientific struggles, by being “meta” in the sense that they are always trying to be above others. (1992: 191)

<sup>4</sup> Although Bourdieu makes many of these claims in reference to sociology specifically, many times he makes references to anthropology. In either case, my point is to call attention to how his conception of “epistemic reflexivity” can be applied to anthropological fieldwork.

Throughout this dissertation I've suggested that perhaps we look *in-the-code*. I extended the full-stack ethnography framework by using encounters, in-built reflexivity, and looping findings from the "code work" back into the ethnographic stack in order to develop analytics that privilege the construction of difference and politics alongside the making and use of technology. Fortun (2012) proposes "the loop" (which is of coincidentally a fundamental concept in computing) as a way to turn ethnographic findings back into the experimental ethnographic system. The loop allowed us to trace the code work at different layers of the ethnographic stack using terms and perspectives of research participants themselves to expand anthropological analytics across space, but also across time.

Thus, following the "code work" involved shuttling between the different layers of the ethnographic stack, which also double as "returns" of different sorts, between places and times, between different versions of selves, between past and future. Proposing the ethnographic stack as an analytic and form of inquiry is also intended as an invitation for coders and non-coders alike to use "ethnography" as the effective trade language required to do the crucial border-work required of complex problem-solving. As Jessee from Chapter [3] continues to work hard "to protect ourselves from future versions of ourselves," I hope future versions and implementations of Esteban will find it fruitful to think with (and against) the ethnographic stack.

My proposal for full-stack ethnography suggests we might look *in-the-code* without losing sight of the political-economic; instead of cutting across difference, an exploration of "hacking" across the borderlands enables us to think about how difference is structured and re-structured across space and time. Moreover, this ethnographic proposal suggests that immersion in the codeworlds structures (and is structured) what happens *outside* of the codeworlds and the hackerworlds, especially as computing becomes more pervasive in contemporary life, beyond the contours of the specific borders this dissertation traced.

## **[1] HACKEAR PARA PRINCIPIANTES**

My dissertation work is also intended to reach across disciplinary borders. In an effort to connect my research findings and methodological proposals to an audience who might approach migration, labor, and Latinidad from different perspectives, I end with film that has captured the imagination of scholars across academic disciplines.

In the 2008 Mexican science fiction film *Sleep Dealer*, we meet Mexican migrant workers who work in the U.S. Their labor is recognizable as "unskilled" migrant work; they perform manual, arduous jobs. One man works for hours nonstop in the fields while another looks down for a moment from a high-rise building as he helps place the steel beams necessary to finish the construction project. What separates them from contemporary (and past) migrant workers is that these workers of the future have not left Mexico – they are the "node workers" who use implants, or "nodes," to control robots and these robots perform the manual tasks for them. The film's concept was first introduced by the director, Alex Rivera, in a short satirical piece *Why Cybraceros?* The video circulated on the Internet in the 1990s and used actual footage from a propagandist 1959 video *Why Braceros?* which promoted the mid-century Bracero

Program. The program can be described as a series of laws and diplomatic agreements which allowed temporary workers from Mexico to provide manual labor in the U.S.

In the video we hear the official pitch for the program, “As agriculture has become a larger and larger industry in America, it has become harder and harder to find American workers willing to do the most basic farm tasks. Picking, pruning, cutting, and handling farm produce are all simple but delicate tasks.” Rivera’s short video plays off of this pitch and connects it with 1990s Internet utopianism to propose a new version of the *bracero*, the *cybracero*:

In Spanish, *cybracero* means a worker who operates a computer with his arms and hands. But in American lingo, *cybracero* means a worker who poses no threat of becoming a citizen, and that means quality products at low financial and social costs to you, the American consumer.

The *cybracero* thus resolves the “problem” for both Mexico and the United States. For Mexican migrants who aren’t granted citizenship, they no longer have to suffer from the forced covertness they are subjected to, or from deportability, the sociopolitical condition in which physical removal from the United States. nation-state is a constant worry.<sup>5</sup> From the U.S. perspective, the scenario is captured succinctly by one of the *infomaquila* workers in *Sleep Dealer*, “Le damos a Estados Unidos lo que siempre han querido: todo el trabajo, sin los trabajadores.” [We give the United States what they’ve always wanted: all the work, without the workers.]

Academics across disciplines have honed in on the themes of migration and technology that the film raises. Curtis Marez (2016) places the film in a category of speculative practices and “farm worker futurism” that grows out of California agricultural regions, especially when agribusiness corporations and farm workers (and their unions) debate the transformations that new technologies bring to labor and production. B.V. Olgún takes issue with the film’s individualist takes on true systemic, revolutionary change, “it leaves no room for harnessing technology as part of a coordinated revolutionary struggle” (2017:136). This individualist positioning in relation to the liberatory potential of technology is best represented by Memo’s (the main character) final quote, where he has accepted his “becoming one” with technology, “Un futuro con un pasado, si me conecto y lucho.” [A future with a past, if I connect and struggle.] For the promised (better) future, he must connect himself using the nodes and struggle *with/using* the new technology.

The film has recently gained prominence in academic studies because it provides much material for analyses of the politics of labor between the U.S. and Mexico, as well as the relation between humans and technology more broadly. As one node worker connects within the *infomaquila* in Tijuana, “city of the future,” he states, “A veces tú controlas a la máquina, y a veces la máquina te controla a tí.” [Sometimes you control

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<sup>5</sup> Leo Chavez (1992) focuses on the condition of covertness in undocumented migrant communities as a response to the risk of being deported. Nicholas De Genova (2005) show how migrant “illegality” signals a specifically spatialized sociopolitical condition. He proposes that “illegality” is lived through a palpable sense of deportability, the possibility of being removed the space of the US nation-state. Victor Talavera et al. (2010) expand on this notion of deportability to show how it is omnipresent in migrant’s everyday lives, discursively, materially, and experientially.

the machine, and sometimes the machine controls you.] Raising themes of technological obsession fascination and human alienation, Luz tells Memo of her ex-boyfriend, “La tecnología resultó más interesante que él.” [Technology turned out to be more interesting than him.]

While the movie contains endless one-liners and emergent themes that can be picked up for academic discussion, one very brief image – most likely ignored by most viewers – immediately jumped out for this anthropologist focused on “hacking” as a critical site from which to launch related inquiries. During the opening of the film, we find Memo in a small shack tinkering with circuits, speakers, and unspecified electronic gadgets. For a brief moment the camera focuses on a voltage measuring device which is placed on top of a book titled, “*Hackear para principiantes*” [Hacking for beginners].<sup>6</sup> We learn that Memo has been “hacking” into drone communications transmitted by a multinational corporation that has effectively eliminated water from the area where Memo lives in Santa Ana del Río, a small town in Oaxaca. Memo describes Santa Ana as “una trampa: seca, sola, desconectada.” [a trap: dry, alone, disconnected.] He’s interrupted by his father, who takes him out to work the *milpa* [maize field], and who seems to be annoyed that Memo spends too much time with his tinkering and not enough time outdoors. “At least I know that the world is bigger than this *milpa*,” Memo tells his father.<sup>7</sup>

This brief “hacking” scene is important because it confirms many of the imaginaries (See *Hacking\_Imaginaries*[2]) the general public has about hacking. There’s a man in front of a computer (or objects that resemble technological gadgets) infiltrating some system, either to extract secret information or to carry out some sort of malicious deed. The infiltrator is usually some highly talented (or highly awkward) young man who can do magic with his technical abilities; usually, he accomplishes this from his parent’s basement. If the image doesn’t fit the stereotype of this (usually) white and (usually) middle-class (almost always) male, then it’s usually an Othered hacker from an exotic location whose ability is threatening to the integrity of some system.<sup>8</sup> Anthropologists who have taken “hacking” as their anthropological object, after following the object across multiple borders, and consolidating other studies on hacking, announce:

Hacking exists: whether it is referred to as leaking or breaching; whether it involves state actors, criminals or anarchist activists; whether it seems to disrupt an election, protest a corporation or government, or steal funds; whether it is about making software in a different way, or breaking it in a new way, hacking is a here to stay, whether we want it or not, and we learn more about it, the more carefully we look at and study it. [Coleman and Kelty 2017]

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<sup>6</sup> Perhaps the brief image wasn’t given enough attention by the production crew either, as there is a spelling mistake on the book’s cover: “Pricipiantes” should be “principiantes.”

<sup>7</sup> Original Spanish: “Por lo menos sé que el mundo es más grande que esta milpa.”

<sup>8</sup> Especially with the events following the U.S. 2016 Presidential Election, when the U.S. Department of Homeland Security reported that Russian “hackers” has meddled in process, the “Russian hacker” is particularly legible.

Scholars across disciplines have followed state actors, hacktivists, F/OSS (Free and Open-Source) software developers, hack-driven leakers and journalists, criminal extorters of bitcoins, information security researchers in search of a safer internet, and in my case, what I call “hacker-entrepreneurs,” in search of who the hacker is, what the hack is, and what exactly it means “to hack.” In this sense, my ethnographic labor in this dissertation is less along the lines of the “following” type, and more of a sustained ethnography to determine what “hacking” means to people, how they practice it, and why it’s important for the global information technology economy.<sup>9</sup> I have also suggested how ethnographic study of hacking can use the very terms and perspectives of hacker-entrepreneurs to expand anthropological analytics and to open up broader perspectives on contemporary life in Mexico, the United States, and elsewhere.

Thus, throughout this dissertation I’ve explore how people position themselves in relation to projects *in the name* of hacking, and especially projects that frame hacking in terms of community empowerment, whether this “community” is a particular racialized or gendered group, or a nation.<sup>10</sup> Like Memo from *Sleep Dealer*, learning from his beginner’s hackers manual from his small town in Oaxaca, my highly mobile research participants participate in highly visible hackathons events in both the U.S. and Mexico. My research this shows how subjects differentially positioned and connected to the joys (and possibilities) of hacking align themselves with the meaning of hacking and interact with the underlying technological infrastructures at play.

While the researchers who have been fascinated with *Sleep Dealer* focus on the techno-dystopian aspects of the film, especially the way that technology transforms labor and migration, another under-examined aspect of Rivera’s work is the transnational component of the film’s plot. That is, the two main characters, Memo and Rudy, are two very differentially positioned subjects who end up coming together, “collaborating,” to combine their ability (and possibility) to counter a large, multinational, militarized corporation who does not necessarily have the livelihoods of farmers like Memo and his family in mind. Rudy is Chicano and a newly minted drone pilot for this monster corporation;<sup>11</sup> Memo is a small town “hacker” whose father was killed by the monster corporation.<sup>12</sup> The twist is that Rudy is actually the person responsible for killing Memo’s father in the drone strike, and he commissions Luz, the third main character of the film, to find out more about the man he killed. Rudy ultimately finds Memo and after some intense moments and confrontations they slowly develop solidarity. Rudy then uses and gets rid of his cyborg extensions to destroy the dam he once protected in Rudy’s hometown. Water returns to Santa Ana and the multinational corporation receives a devastating blow.

It is clear that Memo decides he needs to struggle *with* the machine in order to fight the system, and Rudy develops this consciousness about his wrong doings

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<sup>9</sup> For classic frameworks on how to follow objects and subjects in multi-sited ethnographic fieldwork, see Marcus (1995).

<sup>10</sup> Eden Medina (2011) shows how cybernetics vision was used to develop a utopic vision for a “new” nation (Chile).

<sup>11</sup> While Rudy might not necessarily identify as Chicano during the film, but he’s positioned (by the director and most likely by audiences) as a Chicano in that he is born and raised in the U.S. and speaks a form of Spanglish when he meets Memo.

<sup>12</sup> I use the term “monster” purposefully. For an analysis of how Chicano speculative producers have appropriated and positioned themselves in relation to “the monstrous,” see Calvo-Quirós (2017).

through technology also: Luz uses nodes to upload her memories to the True Node website, which Rudy uses to learn about Memo and the innocent people he is killing. Thus, there's a degree of political consciousness that arises in both of these "hackers" in order for them to accomplish their goals, and this consciousness is born out of a transnational collaboration.<sup>13</sup>

I end with *Sleep Dealer* and these scenes and corresponding commentary because their useful to analyze why I've decided to unpack "hacking" in this dissertation and why it's important in contemporary life. Hacking has come become a widespread cultural phenomenon because it provides humans with the practices, narratives, and imaginaries to think about their relationship with technology, and how this relationship might be leveraged to work "against the system." Within the hackathons and the co-working space, we find the hackers, hacker-entrepreneurs, and normal, everyday citizens (who shuttle between and blur these positionalities) who plug into and disconnect from the joys of hacking for myriad reasons. Popular discourse tells us that "anybody" can hack, from their garage in their mother's basement, in order to start a company and become a tech multi-billionaire. Popular discourse also tells us that "anybody" (Memo, for example) can hack from their small shack in their village in order to "fight the system." As I've shown in this dissertation, the "promise of technology" embedded in hacking is one my research participants readily circulated: from *El Chico Partículas*'s comment that perhaps someone from *la sierra* [the mountains of Mexico] could be the next computer genius to the organizer of the all-women's hackathon who proposed that hacking could empower even those who were embedded in intersectional vectors of difference – not only women but *Latina* women could and should become familiar with hacking.

Thus, as anthropologists study the dynamics of hacker collectives that claim to speak to existing forms of power by creating de-territorialized movements in the name of social commonwealth and undifferentiated productive freedom (Kelty 2008, Coleman 2013), it is crucial to investigate the work being done by "other" hackers to re-territorialize these movements. In the anthropological tradition, I've remained attentive to the specific and the particular, and taken seriously claims of difference. I've shown how politics, positions, and position-taking emerge from within spaces that claim to be de-politicized (become a *hacker* or *maker*) but also from spaces which are explicitly political (become a MigraHacker). Across the borderlands, hackers and entrepreneurs develop new forms that incorporate the market/neoliberal logics of competitiveness, agility, and risk with the logics they use in the code itself. By focusing on Mexico and the corresponding crossings (and "pivots") that hacker-entrepreneurs make between the U.S. and Mexico, I've investigated how Mexican hackers work to re-territorialize hacker practices that look different when they intersect with the aspirations to pursue livelihood within a precarious state characterized by incessant violence, corruption, and impunity, and with the shifting politics of race, class, and gender.

Finally, I've approached my research with the understanding that technological "innovations" are always rapidly-changing phenomena. I've look at this problem-space that might ordinarily be broken up into different anthropological domains (technology, development, social movements, difference) and considered how they all come together

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<sup>13</sup> Indeed, Rudy is also positioned as the stereotypical hacker, if only by the scenes where he appears as a hooded, mysterious figure ready to use technology to accomplish covert operations.

by focusing on hacking/entrepreneurship as a critical site. As techno-social movements claim to be rooted in promoting economic, racial, and gender justice, I've maintained a critical eye to investigate their potential to amplify these social injustices.

The cultural practices of the tech companies and collectives that make up the “Silicon Valley” are inextricable from the technical infrastructures my research participants navigate. Many of the hacker-entrepreneurs I worked with aspired to gain employment with the companies, and even if they didn't, they might end up doing work for them even if on a contractual basis. The Silicon Valley is frequently championed as a model for technological innovation, where high revenue generation and disruptive technologies are attributed to a culture of competitive collaboration, lean methodologies, and colorblind meritocracy; these cultural practices are said to “level the playing field.” At the same time—and especially after major tech companies released demographic data of their workforce—it is critiqued for its underlying structures that promote patriarchy, racialization, and exploitation (see Beltrán 2017c). These “critiques” sometimes fade or disappear – or get “pivoted” – when the practices and narratives that construct “opportunities” travel across borders, as my last chapter showed. Full-stack ethnography is an attempt to “level the playing field” for critique.

Thus, my methodological proposal maintains an optimistic outlook. How might *the stack* guide us toward understanding how structures of innovation always seem to re-assemble themselves into structures of inequality? And how might the *ethnographic stack* guide us toward the necessary boundary-work for participating in, observing, and dismantling these re-assemblies, within the hackerworlds and beyond them.

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## Appendix A: Glossary

### **Code Work**

*Code work* refers to both the ways in which (1) research participants use the logics underlying software systems to navigate the *codeworlds* and its corresponding *stack*, and (2) the parallel technique with which an ethnographer might make sense of social and political systems underlying hackathon dynamics.

### **Codeworlds**

The code itself (also *the stack*). Used to reference the time/space research participants inhabit when they become immersed in coding.

### **Ethnographic Stack**

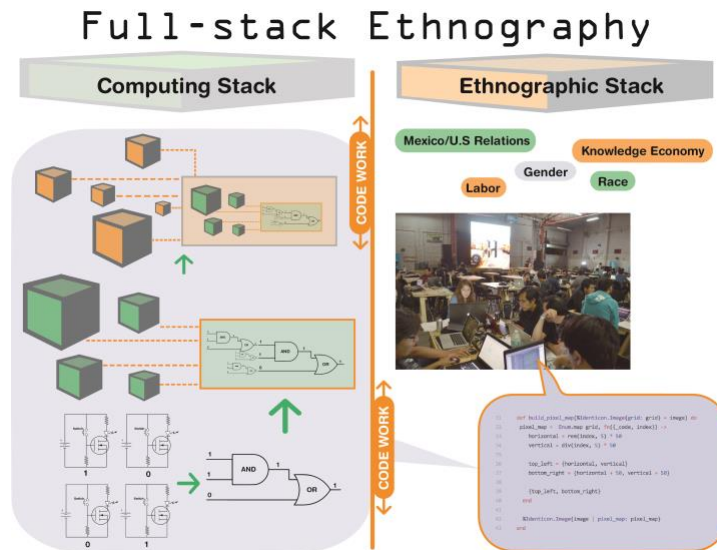
Part of the model for *full-stack* ethnography. The *ethnographic stack* represents a similar layering up of abstractions to *the stack*. From an ethnographer's perspective, looking to conduct "participant-observation," the *code work* that takes place along *the stack* parallels the *code work* that takes place along the *ethnographic stack*. But this same kind of *code work* is used to shuttle to the next layers of the ethnographic stack: the hackathons and then the higher-level systems/processes in which these take place (e.g. knowledge economy, capitalism, U.S./Mexico relations).

### **Full-stack Developer**

A software developer who shows interest and mastery in navigating all layers of *the stack*. A common way to describe a full-stack developer, for example, is as someone who can write code for both the back-end of a project (e.g. databases, architecture, hardware) and the front-end of a project (e.g. graphical user interfaces, web applications). See Figure 1 in Chapter [0].

## Full-stack Ethnography

A model for “navigating the ethnographic stack,” or adopting *full-stack ethnography* as a methodology and analytical toolkit by treating the ethnographic world as a site that can be explored by shuttling between different layers of abstraction.



## Geek

Overlaps with the *hacker*. Kelty (2008) uses the term *geek* to avoid subversive or criminal connotations and to be more inclusive of the lawyers and activists sympathetic toward free and open-source software (F/OSS) endeavors. I prefer the term *hacker* for those who have the technical proficiency to do the computer coding; moreover, I found this is how hackers identify in Mexico.

## Hackathon

The hackathon is a ritual event for the hacker-entrepreneurs. In a span of 48-72 hours, participants are expected to meet partners, develop a mobile application related to an organizing theme (e.g. healthcare, transportation) into a viable tech startup company, and pitch their startup to investor-judges. The pitch must convey why the startup is an innovative project, what problem it is resolving, and most importantly, that it is scalable and economically viable in the current market.

## Hacker

I use the term “hacker” to refer to someone who loves to program computers in the spirit of playfulness and exploration and who disassociates from capitalistic or technocratic motives. My focus is on the hackers who have the technical skills to put in the “code work.”

## **Hackerworlds**

The hackathon level of the *ethnographic stack*. The space research participants inhabit when they interact physically with other hackers at hackathons.

## **Hacker-Entrepreneur**

I use the term *hacker-entrepreneur* to show how many research participants navigate domains that seem contradictory: a hacker-world aimed against capitalism and an entrepreneur-world that advances capitalist practices.

## ***Hacking\_Imagaries* [0][1]**

Naming convention to reference different sections of the dissertation, *Hacking\_Imagaries*. The first bracketed number references the chapter and the second bracketed number references the section within that chapter (see Table of Contents). In the example above, the call references chapter 0 (*Introduction*), section 1 (*Hackers and Hackathons*).

This naming convention is meant to mimic computer language syntax and computing data structures. The dissertation can be thought of as a simple data structure, such as a list or array. A simple list containing fruits, for example, might be constructed as follows: *my\_fruits* = ["kiwi", "lychee", ["blood orange", "valencia orange", "navel orange"]]. To access the first element of the list, we would call *my\_fruits*[0], which would return "kiwi." To access the second element of the list, we could call *my\_fruits*[1], which would return "lychee." We can also have nested lists; in this example, the third element of *my\_fruits* is a list of different oranges. To access "valencia orange," we would call *my\_fruits*[2][1].

The dissertation thus contains elements (chapters) which themselves contain other lists (chapter sections). The idea is that the reader "thinks like a programmer/hacker" with these simple lookups. In addition, referencing different sections of the dissertation works against linearity and instead invites the reader to think about how the dissertation is "assembled" across the different chapters.

## **Loose Coupling**

*Loose coupling* is a computing term that refers to a robust way to write code where data structures (or other components) can use other components in an interconnected system without needing to know the full details of their implementation. In this way, each component becomes more autonomous and can be used for different purposes by different components; elements become "coupled" and depend on each other with very little (or no) direct knowledge of each other.

## **Manifestations of hacking**

While there are shifting and complementary (or contradictory) definitions of hacking, each with origin stories and genealogies to back up their claim, I use "manifestations of hacking" to explore what hacking means to people and how they practice it. Usually, "hacking" lies along some dimension of:

- Repurposing technology for means other than for what it was intended

- Playful tinkering (technological or not)
- Technical competency that allows you to build a technological system
- Knowing the system or the code that constructs the technical system so well that you know the exceptions, where it will fail, the backdoors, etc.

### **Pivot**

*Pivoting* is a buzzword in the tech startup world. It refers to being flexible with your idea and changing it quickly to something that sticks with users, and in most cases, with investors. In other words, a “pivot” more closely aligns your product with market dynamics. See Chapter [4] for exploration of how hacker-entrepreneurs “think with the pivot.”

### **The Stack**

*The stack* refers to the interrelated and interdependent layers of hardware components and software protocols that make the high-level computations and programs possible. More abstractly, to move from the bottom of the stack (e.g. machine code) to the top of the stack (e.g. programming languages and systems) means to traverse the corresponding circuits, microchips, and computer code that can be part of each “layer of abstraction” that makes up the system.