Making Technology Work for People

CIVIC TECH

Making Technology Work for People

Andrew R. Schrock

Rogue Academic Press

Printed in the United States of America

First Printing, 2018

ISBN 978-1-7320848-0-3

Rogue Academic Press
3321 Monogram Ave.
Long Beach, CA 90808

CivicTechs.com

CONTENTS

IMAGES

ACKNOWLEDGEMENTS

First and foremost, thank you to my fellow hacker-for-good François Bar; generous mentor Kerk Kee; and Henry Jenkins, a civic Yoda to me and a whole generation of young scholars. You three showed me the core concepts that form the basis of this book, and hopefully many more. I will forever be grateful for your support.

This book interprets a cultural movement through the projects and voices of civic technologists. As such, it and benefitted from conversations with techies too numerous to count. Thank you to everyone in the community

that I worked with and talked to, particularly Ev Boyle, Mark Headd, Steve Spiker, LaurenEllen McCann, Emily Shaw, Wendy Hsu, Vyki Englert, Jazmyn Latimer, Dawn McDougall, Abhi Nemani, Lilian Coral, Sid Burgess, Nigel Jacob, Alma Castro, Catherine Geanuracos, Travis Korte, Molly McLeod, Alan Williams, Fureigh, Nick Kaufmann, Leah Bannon, Andrew Maier, and Candace Faber. I hope the narrative of this book does justice to your ideas.

Every book is an intensely collaborative endeavor. In particular, several fellow researcher-practitioners helped give shape to the ideas that make up this book. It benefited enormously from discussions with Holly Okonkwo and Morgan Currie. Leah Horgan and Burcu Baykurt generously read the final manuscript and offered valuable insights.

Other academic friends were there to give helpful advice as I worked through what a public-facing book on Civic Tech might look like. To Cynthia Wang, Gina Neff, Seyram Avle, Rob Kitchin, Zizi Papacharissi, Seyram Avle, Paul Dourish, Chris Kelty, Jonathan Donner, Robbie Fordyce, Cliff Lampe, Ben Stokes, Jason Farman, Eric Gordon, Joan Donovan, Kevin Driscoll, Lana Swartz, Molly Sauter, Thomas Lodato, Nick Seaver, Roderic Crooks, Andrew Chadwick, Katherine Lo, Samantha Close, Shannon Mattern, Gabriella Coleman, Anna Lauren Hoffman, Miriam Posner, Neta Kligler-Vilenchik,

Nathalie Maréchal, Mihir Pandya, Ritesh Mehta, Lee Vinsel, Andrew Russell, Jeremy Hunsinger, and Laura Forlano—I truly appreciated our conversations and hope they continue.

In a common story to self-publishing, I bit off more than I could chew. Luckily, experts in the technical side of publishing were there to guide me. Rochelle LaPlante assisted with transcribing interviews, Laura Portwood-Stacer and Meghan Guidry were my editors, and Livien Yin's artwork graces the cover and chapters. My good friend Will Fertman generously guided me through the world of publishing. My wife, Rebecca, used her sharp photographer's eye to finalize the images.

Thank you to Rebecca, Nora, and all my family for believing in me. You have been incredibly understanding about giving me time and space to write over the last year. I love you all.

Finally, thank you to the backers of my book project on Kickstarter. Your trust in this crazy idea gave me the confidence to complete this project. A book on Civic Tech written for a general audience now exists thanks to you. I hope you find it worth the wait!

INTRODUCTION

Tiffani Bell was working in Atlanta when a story in the Atlantic Magazine caught her eye: a heartbreaking tale of Detroit residents who had their water service cut off. Like most readers, Tiffani was aghast that a city would neglect their low-income and housing insecure residents. Unlike most readers, however, she had experience working in local government and knew her way around software development. She responded by founding the Detroit Water Project to help pay their water bills. At the start, it was just a simple website to collect donations. Then came

news that lead had leached out of the pipes and poisoned Detroit residents. This deepened the crisis and Tiffani's commitment to help by paying water bills. In response, she worked closely with residents to understand the problems they faced on the ground in Michigan.

The Detroit Water Project was a far stretch from the gleaming, well-funded tech startups of Silicon Valley. It wasn't glamorous work and it didn't involve flashy technology. Instead, it was slow, deliberate community organizing that connected people with means to improve infrastructure. The Detroit Water Project adopted the slogan "water is a human right" to draw attention to the obligation we have to our fellow human beings. The infrastructure was there, but pipes and water meters were defective, so residents were suffering.

On the other side of the country, Jake Solomon, Alan Williams, and Dave Guarino wanted to improve food assistance services in San Francisco. Over 2 million people in California were eligible for the state food assistance called Calfresh, but many never applied. The team called themselves GetCalFresh, and started to investigate what the root cause of this participation gap was. They found that mailings used arcane language, offices for interviews were dehumanizing, and workers at community-based organizations were overloaded. "We took a very civic hacking approach," Alan told me. Techies use the term

"civic hacking" to refer to progressively learning about a problem and improving on a solution. Accordingly, early versions of GetCalFresh were creative work-arounds, like a mobile-friendly form that input data directly into a database. These adjustments bore fruit by cutting reporting requirements in half and eliminating the need for in-office visits for recertification interviews.

After improving participation among low-income residents, the GetCalFresh team started to think about the systematic problems they discovered. Increasing participation was not just an interface problem. It perpetuated because the way government paid companies to administer benefits was flawed. The middle-men were compensated the same amount no matter how effective they were. However, the more people participated, the better their family's health would be. In turn, communities would also benefit if people took advantage of CalFresh. Healthy families lead to healthy communities.

Alan described this next step as, "building connective tissue between community organizations, counties responsible for processing, and state policy." These groups were hamstrung by existing laws and contracts from improving services. By showing an alternative way to deliver services through prototypes and finding new funding sources, GetCalFresh hoped the underlying policies and processes would change. Ultimately, they saw

an opportunity for a more holistic model for modernizing social services.

Tiffani Bell and the GetCalFresh team improved relationships between community and government from different vantage points. Tiffani put pressure on the government by improving residents' access to water one household at a time, while Alan's team took nearly the opposite approach. They worked from inside the government to encourage community members to gain access to legally entitled food benefits. Despite differences, they were united in a belief that services and infrastructure should serve the people. Each understood there was a role for technology, even if technology couldn't alone solve the problem. Creating prototypes and reaching out to the public could persuade more powerful stakeholders to pursue wiser courses of action. Websites and mobile apps played a role in helping people mobilize, guiding them through arcane and outdated government systems.

Most importantly, working with residents paid off because it helped civic technologists ethically design more effective intervention strategies. "Technology isn't so much the solution," concluded an article about Civic Tech on the website TechPresident, "as it is a way to get more people involved in figuring out what the solution should be." The strength of Civic Tech is that it puts process over product. It emphasizes thinking through

problems rather than rushing to apply a solution.

You will not read about radically new technologies in this book. There is little discussion of the latest hype in artificial intelligence or blockchain. Instead, you'll read about how people in a cultural movement think about politics, and design technologies to be radically accessible and participatory. While their ideas about democratizing technology design might sound new, I argue civic technologists draw on ideas from similar movements across history. For example, in the 1970's the Appropriate Technology movement presented an alternative to the Vietnam war's inhumane use of nuclear technology. In the best-seller Small Is Beautiful, E. F. Schumacher described how technology could be ecologically sensitive and locally designed. Jimmy Carter invited Schumacher to the White House, and even famously put a solar panel on its roof.

Later that decade, informatics professor Kenneth Laudon wrote of "Citizen Technology." He was hopeful that personal computers could be used to transform data, strengthen participation, and increase interactivity between government officials and constituents. It was early in the adoption of computers in local government, but he was already promoting ideas later revisited by techies. "How might we organize technology to enhance democracy," he wondered, "without at the same time

destroying its most valued features?" Schumacher and Laudon advocated for aligning technology with existing democratic institutions—an evolutionary perspective rather than a revolutionary one.

While Appropriate Technology and Citizen Technology emerged from quite different historical situations, each sought to humanize technology through improved communication and design. In our current day, these ideas are relevant again for many reasons. Civic engagement has continued the downward slide it has been on since the 1960s. We have realized that social media platforms are not the democratizing force that we once hoped. While often helpful, they are also rife with sexist language and racist hate groups that drown out other voices. The private sector has shown itself to be a poor steward of the public good. Because technologies are designed with corporate goals, our relationships have become increasingly transactional. As cultural scholar Sarah Banet-Weiser put it, "according to today's market logic, consumer citizens can satisfy their individual needs through consumer behavior, thus rendering unnecessary the collective responsibilities that have historically been expected from a citizen." Civic technologists, by contrast, devote themselves to improving democratic institutions—a noble pursuit in an era dominated by crass commercialism.

In this book, I describe the ways civic technologists are

pushing back on this tide of apathy and corporatization. To drive enduring change, public technologies should be ethically designed, part of systematic reforms, and the result of community-government collaborations. By working from data rather than intuition, and by acting as bridges to resident needs, they create better chances to get traction on difficult social problems. This book is filled with stories of techies working on successful projects.

I'm also pressing a loftier philosophical point. If technology should be created to reflect collective needs, it also shapes how we think of ourselves as a people. That is, working for the "public good" creates an aspirational image of who we collectively might become. The hope of techies is that by encouraging people to participate, government can recover from being stereotyped as inefficient and unresponsive. In turn, if government is able to restore equity among underrepresented and marginalized groups, it might encourage society to see itself as more inclusive and tolerant. Combatting structural inequality can help restore trust and help us restore a progressive image of our society.

As with most movements, Civic Tech was sparked by growing inequity. Starting in 2007, the economic crisis led governments to cut funding to vital services like education, health, and disability services. The Bernie Madoff investment scandal became symbolic of uncaring

Wall Street investors. Low-income communities and people of color bore the brunt of the effects. Traditional democratic practices were often ineffective at combating these rising inequities. Voting became a routine exercise dominated by political parties and special interests. Only 20-25% of registered voters voted in any given local election. Such declining engagement still characterizes the "crisis in civics" in America. Fewer people are participating in organizations, and rates of volunteering are on the decline, a theme famously explored in Robert Putnam's book "Bowling Alone." City council meetings get dragged into the same trenchant debates, and federal policy-making has become polarized. Productive routes forward for institutional change have become scarce. Techies were inspired to respond to this dire situation.

"One of the enduring values of the Civic Tech community," wrote Civic Hall co-founder Micah Sifry, "is the belief that technologies help make civic participation easier and more effective." Sifry suggested civic technologists saw technology design as a way to lower the bar for others to participate, whether that meant signing up for government programs or getting new voices heard. Participation is not just a feel-good idea—it can help people have a local impact. Carole Pateman wrote extensively about participation in her 1970 book Participation and Democratic Theory. She

suggested the classic definition of participation was based on improving, "the interrelationships between individuals and the authority structures of institutions." Participation is vital, but improving participation is a long game that takes patience and learning. Just ask Josh Tauberer, an early adopter of open data.

Tauberer created GovTrack, a website that let people track bills as they moved through Congress and the Senate. Like other early enthusiasts, he saw open data as enabling citizens to become more informed about politics. But over time he didn't see GovTrack going far enough to change the larger system. He became leery of the frequent email pitches he received for technologies that would magically fix democracy. In frustration, Tauberer wrote a blog post describing how, "building power is a social, societal, [and] institutional challenge." Putting what he learned to use, he suggested a more long-term strategy: gain expertise in a particular problem area and use it to follow through to execution. After all, government and community issues are complex, requiring years to comprehend.

Civic Tech presents an alternative that builds capacity in the public sector for problem-solving. This is an important shift, since the last few years has seen a slow realization that tech companies can be harmful and even outright undemocratic. Take the example of Facebook's role in politics. A year after the 2016 presidential election we

still aren't sure how Facebook's algorithm assigned news stories to certain users over others, or what role Russia played. Then there are serious questions raised about how much we should trust opaque platforms. Many objected when Cambridge Analytica revealed that Facebook permitted them to harvest data from 50 million users for targeted political campaigning. Big data and predictive algorithms might be fine for suggesting a new toothpaste, but they can clash with democratic ideals. This is just one reason we might not want to adopt Facebook's mantra that we should "move fast and break things." Technology design in the public sector simply requires more cultural nuance and institutional sensitivity.

From its beginning, the Civic Tech movement embraced a diversity of perspectives and approaches. Techies from a range of backgrounds wondered how they could help by blending their politics with technical skills. Software engineers with experience in back-end development thought they might help by upgrading outdated code and databases. Designers wanted to simplify government services and make them more usable by the public. Organizers and activists pressed for more attention to community needs. Civic technologists were not just about technology—they advocated for more comprehensive reforms that involved all the levers of social change. This was a good thing

since, even as technology is part of these efforts, as Ethan Zuckerman noted, "it is rare that technology provides a robust solution to a social problem by itself."

The movement naturally grew faster in urban areas where geeks thirsted for new ways to participate politically. Certain cities developed unique cultures of participation, bringing together groups with different goals. San Francisco, long a tech hotspot, had civic hackathons early on. Philadelphia became known for its collaborations and early adoption of open data. In New York City, BetaNYC was able to get local government to implement policy changes. Washington DC maintained a focus on national politics and law.

Participants in Code for Philly

These techies started to develop a language to talk about how large, unwieldy systems might be made more humane and participatory. One of the more influential early ideas was publisher Tim O'Reilly's notion of "government as a platform." He wrote with disdain about a "vending machine" model of government where citizens put in taxes and receive pre-defined services. In his view, passivity was undemocratic because it did not require participation or collaboration. His alternative was that government should operate as "a vehicle for coordinating the collective action of citizens." Small groups could collaborate on projects that helped alleviate social problems without being politically partisan. While his distinction between "government" and "politics" was debatable, a frame of political neutrality was a smart way to attract collaborators.

The promise of improving government without being partisan was appealing to city leaders. Civic Tech started to fill in where previous waves of tech-friendly reforms were found lacking. "Smart cities" painted a picture of fully automated and wired urban environments. But like the Jetson's flying car, that future never arrived, because government had little time or money to wire up whole cities. Civic tech presented a more realistic alternative that used existing technologies and was responsive to the needs of citizens. Policy-makers in the United States had also

been watching successes unfold overseas. For example, the Behavioral Insights Team (BIT) in the United Kingdom used small "nudges." They found a slightly different interface or a gentle reminder could alter citizen behavior for the better. Yet, this approach tended to be paternalistic.

Organizations and philanthropies started to broker relationships between civic technologists and government partners. At the federal level, the consultancy 18F sprung from the United States Digital Services (USDS) to provide advice to federal agencies. The non-profit organization Code for America (CfA) was founded in 2009 by Jennifer Pahlka to foster collaboration with local government. You've already read about a successful CfA project, GetCalFresh, which put principles of Civic Tech into action. Civic tech will never be "one-size-fits-all" because cities have local identities, cultures, and problems. The most effective and responsive solutions fit a particular place and community.

Different organizations embraced particular styles of collaboration. The CfA brigades program invoked an image of early firefighters, suggesting that small groups of like-minded technologists could band together. Bloomberg Philanthropies started to fund innovation teams (i-teams) to tackle systemic problems such as crime and housing in over twenty-seven cities worldwide. Code for America fostered grassroots participation,

while Bloomberg Philanthropies echoed the data-driven pragmatism of its founder Mayor Michael Bloomberg. Their common goals were leveraging civic engagement and community infrastructure to tackle ambitious local problems. They also both preferred collaborating with government partners, which gave them more buy-in and access. And the fire brigade wasn't just a convenient metaphor—it can be read as a pre-history of Civic Tech.

Brigade Logo

It used to be relatively common for people to perish in fires. Starting in the mid-19th century a string of massive fires struck the United States. Pittsburgh was nearly demolished in 1845 by a fire that started in a backyard. The fire spread quickly because of an old hose and low water levels. The environment also wasn't cooperative: an eastwardly wind fanned the flames into the heart of the city. Volunteers did the best that they could with the tools they had, but the crux of the disaster was poor organization. In Crucible of Fire, Bruce Hensler concluded, "civic leaders recognized the potential for a major fire... [but] they failed

to act at a most basic level." Beyond all else, the Pittsburgh fire was an institutional failure.

Technology was undeniably part of a transition to modern firefighting. Urban planners and architects came to rely on less flammable materials. Building codes were updated and fire doors standardized. Diesel-powered trucks and more durable hoses increased the effectiveness of firefighting efforts. However, technology alone was a piecemeal effort. Government culture needed to shift to embrace new responsibilities. The public, government officials, and community leaders had to act in concert.

Public officials collected data to recognize the severity of the problem, which justified re-thinking arcane regulations. Fire departments slowly emerged through a variety of creative funding strategies. Some received funding from local or state governments, while others were independently operated. Even today many rural fire departments remain driven by volunteers. Everyday citizens had to learn new habits of communicating with the government: ring the fire department through call boxes when you smelled smoke. Fighting fires required new forms of participation connected with growing infrastructures, and coalitions built around a common goal. Improving firefighting took a century and still continues to this day.

The often dry concerns of techies are, similar to

firefighting, often ignored. Despite its importance, we rarely think about firefighting except in moments of crisis. Maybe it passes through your mind when you pull over to let a fire truck pass. When there isn't an emergency, infrastructure sinks into the background. It is as essential as it is easily ignored. Dying in a fire is still a serious problem, but it's one we mostly have under control in urban environments: only 10 people out of one million perish in fires each year. We now take firefighting for granted, even though the system we have counts over 1.1 million employees and volunteers. We would be hard-pressed to recall the political will that was required to change firefighting over a century ago. But creating modern fire departments required convincing those in power to adopt stronger positions on a public problem.

It is still difficult to convince government leaders to take stronger stances on public problems, since it is easier to play it safe. Their reluctance to change is often due to entirely ordinary reasons, like just not having enough time or money. That's why civic technologists often start by demonstrating low-cost ideas that result in tangible benefits. Showing the value of Civic Tech can change institutional culture, guide policy, and free up funding for more ambitious projects. Of course, tackling big social problems like education and homelessness requires political will and diverse coalitions inside and outside

government. Civic tech is about big ideas and small wins. Right now, we need both.

In fact, the very tools that civic technologists now use only exist thanks to big ideas and small wins. The Freedom of Information Act (FOIA) allows for anyone to request information from the government. It helped equalize access to information and improve communication with the public. Civic hackers now sift through data sets to analyze government operations and create mobile apps. But our right to freely obtain and use data was not guaranteed. A small group of journalists and media organizations convinced a reluctant President Johnson to sign it into law in 1966. Historian Michael Schudson argued there were three key components to openness: an institutional framework, everyday politics, and an ethos.

"Debug Politics" Hackathon in Los Angeles

A cultural shift only came about through slow pressure, changing politics, and a big unifying message. Civic Tech is no different.

This book traces ideas espoused by a cultural movement of people who put out new types of fires. I've learned about the Civic Tech movement by being part of it over the last five years. I have run civic hackathons, worked for local government, and volunteered for my city. During this time, my hopes have been buoyed by the excitement of young people tackling social problems by rewiring government programs and amplifying community voices. I found myself hoping they would succeed in combatting government mistrust and citizen apathy. Might civic technologists bring about a more robust understanding of how to shape technology for the public good? Academics, policy-makers, and bureaucrats alike had struggled with this question for decades. Inspired, I began to write down ideas and interview them. These notes eventually grew into chapters that comprise this book.

Out of these stories and experiences came a set of principles that I believe define the Civic Tech movement. Chapters tell stories about how civic technologists have used these principles to tackle social and political problems. In turn, these stories also show how techies have woven the fabric of a political movement that has attracted international interest. Chapter 1 starts with the

importance of local design practices that are culturally sensitive and based in the community. Chapters 2 & 3 discuss the importance of working with infrastructure and open data. Finally, organizing and government collaboration make up the principles explored in chapters 4 & 5.

The complete principles are listed below and illustrated in the artwork on the cover of this book:

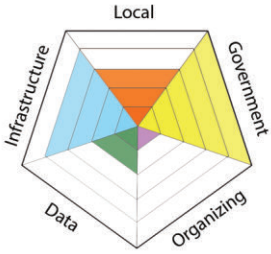
1. Design locally first
2. Hack infrastructure, not technology
3. Open data can improve communication
4. Organize around public problems
5. Change government for the better

Together, I argue these principles explain how civic technologists, or "techies," approach problems. Techies include geeks, government employees, designers, and activists who identify with Civic Tech and work on projects to alleviate public problems. While some techies are software engineers, not all are technological experts. Some have no interest in coding whatsoever. Instead, they are skilled in communication, design, and qualitative research.

Of course, given their diverse backgrounds, not all techies believe strongly in all principles. For example,

those coming from community organizing rally around local design (1) and public problems (4), while others coming from data activism use open data (3) to change government (5). Techies coming from urban planning naturally gravitate towards blending infrastructural improvements (2) with data (3) and local design (1).

Think of these principles not as a rigid formula, but as ingredients that work together in different combinations to improve public problems. Each project that I discuss in this book is illustrated with a design badge that shows the Civic Tech principles in action. For example, see the badge for the GetCalFresh project you read about in the introduction to the right. It illustrates the project's reliance on infrastructure, local design and government collaboration, with less emphasis on data and organizing.



GetCalFresh Badge

I am not suggesting that these principles are a panacea for all political dilemmas. To organize and work with government is to struggle against rigid structures and fickle political winds. Many decent ideas have been abandoned due to uncooperative partners, changing administrations, and lack of resources. Rather than implausibly describe techies as saviors, my goals with

this book are more modest. I believe in what techies call "small wins"—getting traction on a specific social problem and improving people's lives in a tangible way. Maybe a few thousand residents get access to clean drinking water, or get a way to navigate their city. These improvements are worth celebrating because they disrupt structural inequalities embedded in political institutions, cities, and technologies. It is around the hope that these wins might add up to something more that this book proceeds, starting with the importance of local design.

CHAPTER 1:
DESIGN LOCALLY FIRST

Technology seems to invite poor planning. The federal government of the United States spent $75.6 billion on technology in 2014. Contractors who jumped through the hoops of procurement were rewarded with juicy contracts. Many of these projects, like the high-profile failure of HealthCare.gov, were top-down technical solutions that hurt more than they helped. The website cost taxpayers over a billion dollars and had little little oversight, resulting in buggy execution. A whopping six people managed to register on its first day up, and even

Obama had to admit that it was a "well-documented disaster."

It is no exaggeration to say top-down planning has plagued nations throughout history. In his book Seeing Like a State, James C. Scott surveyed a history of large-scale government projects. He found that political regimes worldwide neglected the importance of local knowledge. Technical experts and populist leaders tended to impose a top-down vision that unrealistically simplified complex problems. At the most extreme, people became distant dots on a map, merely target numbers to be achieved. In authoritarian regimes, these techniques denied people their very humanity and, in many cases, their lives.

Nobody was more outspoken about the toxic combination of authoritarianism and top-down planning than the "Frankfurt school" of critical studies, a group of academics who escaped the Nazi regime and subsequently became influential public intellectuals. They included Theodor Adorno, Max Horkheimer, and Hannah Arendt.

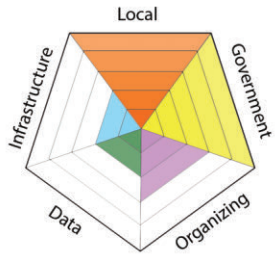
Adoro famously described the Holocaust as the result of authoritarianism. Rather than understand the nature of social problems, Nazis simplified their complexity to make them easily solvable. Hannah Arendt elaborated on this idea, suggesting that this warped mindset was the result of a dehumanizing bureaucracy. In 1963 she coined the term "banality of evil" to describe Adolf Eichmann,

a mastermind of the Holocaust, during his trial. At the time, the public was outraged because they perceived her as a Nazi sympathizer. However, her point was that Nazi officials were just doing their job by pursuing narrow goals, unaware of the bigger picture. Arendt implied that immoral acts were the result of bureaucracies that blinded people to the impact of their actions.

Picking up on insights of the Frankfurt school, Scott argued that when government officials viewed problems at a distance, they reduced their complexity to be conveniently and immediately solvable. As a result, projects that were supposed to improve community life did just the opposite. Scott called his ethical alternative "metis," referring to the process of recognizing local problems and working with residents to translate grassroots knowledge.

Scott argued that if institutions could be more flexible in how they worked with residents to formulate plans, the horrors of the past could be avoided. In this way, complex social problems could be addressed and effectively improved over time. The problem of reductive planning, as Adorno and Arendt suggested, stemmed from impoverished communication that led to groupthink and insularity. While western democracies are certainly not much like Nazi regimes, we might still draw insights from this extreme example to help inoculate us against poor planning.

Jazmyn Latimer is a young woman with a head for law and a passion for social justice. California passed proposition 47 in 2014, which allowed "non-serious and non-violent" crimes to be downgraded from felonies to misdemeanors. As a result, adults who had non-violent convictions as minors were legally entitled to have their youth records expunged. This mattered to them because employers often won't hire someone with a criminal record, even if the offense was a youthful indiscretion from a decade ago. This struck Jazmyn as unfair because it stigmatized valuable members of the community for minor infractions and kept them from finding permanent work. Even though record expungement was legal, most Californians didn't understand the process, which meant the law risked not helping their situation. In response, Jazmyn created the service ClearMyRecord.



ClearMyRecord Badge

"The criminal justice system is big, complicated, and unfair," Jazmyn told me. "Everything I've learned can benefit from design!" She wasn't the kind of designer who made nice-looking buttons for a website. Rather, she was interested in what is being called "design thinking," a mindset promoted by companies like IDEO. Design thinking was most famously promoted by Richard

Buchanan as a way to solve society's "wicked problems." He argued that to understand the impact of technology on the world, we should look to design rather than engineering.

Jazmyn became interested in learning why the legal reforms promised by proposition 47 weren't helping who they were supposed to. She started by following defenders and their clients as they navigated the legal system, a practice ethnographers call "shadowing." "We just started showing up at their clinic," she told me. The more time she spent shadowing public defenders, the better she understood the problem from the perspective of people

Jazmyn Latimer Mapping the Expungement Process With a Participant

who had to navigate it. She started working with clients to map where they would get stuck. Jazmyn uncovered roadblocks that public defenders faced in expunging records: the process was complex and differed by county. This meant there would never be a universal solution that worked everywhere.

ClearMyRecord started small, like many Civic Tech projects, with the hope of scaling up. "What if we just made the process understandable for one county," she wondered, "and see if we could add more?" Jazmyn started by simplifying communication. She ditched legal jargon, and used words that everyone could understand. Applicants could simply go to ClearMyRecord, select their county, and click continue. They were then presented with a single form that collected the information required. Filling out the form would take about ten minutes. That information was then relayed to county employees who guided them through the rest of the process. ClearMyRecord did not try to impose a purely technological solution. Rather, Jazmyn sought to understand the contours of the problem better to make the most of available social knowledge, and clarify lines of communication.

There is another way "local" works into technology design practices that is probably in your pocket: the ability for your cell phone to detect current location. About 95%

of adult Americans own a cell phone, which enables new ways to visualize and interact with cities. Eric Gordon and Adriana de Souza e Silva argued that the intersection of local knowledge and location-aware devices presented a powerful combination that they called "net locality." Rather than dividing us from our communities, they thought mobile media might bring us closer to them. "The fact that the web is marching steadily along the path to localization," they wrote, "is an indication that local communities, cultures, and contexts have always been relevant, and always will be."

Location can connect community members to immediately relevant information. I am overloaded with cherry tomatoes during the early summer, while my neighbor has too many persimmons to deal with in the fall. The mapping website fallingfruit.info has records for over one million fruit frees. I registered my unruly tomato plants, and my neighbor down the block registered her avocado trees, so we can now share our produce. This application found a natural home in a city like Los Angeles. It was built on old fruit orchards, resulting in backyards with overloaded citrus trees. This exemplifies Gordon and de Souza e Silva's argument that mobile media allow the intrinsic value of local knowledge to be shared and organized in new ways.

Technologies that civic technologists are attracted to

are rarely flashy. The mobile phone's relatively humble status is an advantage, since they are cheap. Learning a new technology can be a high barrier to adoption. "Some of the best civic tools are the ones we already have in hand," wrote LaurenEllen McCann, who we'll learn more about shortly. "Their civic utility is unlocked just by wielding them differently." Sid Burgess, a techie and former city councilman from Haskell now living in Seattle, similarly told me Civic Tech should emphasize radically accessibility. "I would not say that our technologies are out of this world amazing," said Sid, "but they don't have to be." He noted the example of txt2stop, a program that helps smokers quit through a simple series of text message reminders. "We need to get away from shiny objects and focus more on what needs to be done."

Anthropologists and sociologists have long understood that problems are situated in specific geographic and cultural contexts. "The shapes of knowledge," wrote anthropologist Clifford Geertz, "are always ineluctably local, indivisible from their instruments and encasements." We would probably agree with Geertz that villages in Bali and Morocco are vastly different. They have different governments, cultures, and norms. Yet, the tech industry seems to believe that a mobile application created in San Francisco will be used in the same way in Trinidad.

A more productive route is to, as Jazmyn did, first work

with people to reveal insights. As James C. Scott suggested, translating these rich local insights is not easy—it takes time and dedication. It takes times to recognize the value of street knowledge and translate these learnings to help government employees better understand the most effective courses of action. In this way, the bureaucratic blindness that Hannah Arendt feared might be prevented.

Few figures embody the process-oriented, locally-sensitive approach of civic technologists like the sociologist and author Jane Jacobs. She witnessed urban planners ignoring the grassroots expertise she saw in abundance among people in neighborhoods like Boston's North End. Rather than stigmatizing low-income neighborhoods for being "slums," she saw them as enduring lessons in neighborhood sustainability. Jacobs reminds us to be attentive to processes, think inductively, and pay attention to clues.

"There is no substitute for knowing the particulars," she wrote, referring to the benefits of observing people rather than making assumptions about how they might act. Cities were organized complexity, a new kind of organism that was perpetually misunderstood because of a missing link. "In creating city success, we human beings have created marvels," she mused in her best-selling book Life and Death of Great American Cities. "But we left out feedback. What can we do with cities to make up for this

omission?" Civic technologists serve as this human link between residents and planners.

It is from a desire to involve community in design that LaurenEllen McCann coined the phrase "build with, not for." McCann's Twitter avatar shows her in a pose from the cover of David Bowie's album Heroes with an undercut and piercings. She believed that Civic Tech's unique contribution was to foster collaboration with community groups and draw on local knowledge. Like many in civic tech, she has held several different occupations, from data journalist to National Policy Manager of the Sunlight Foundation. She described being inspired by a deep undercurrent of local participation worldwide among authors like Paulo Freire's Pedagogy of the Oppressed, and disability activists in the 1970s. Her worry was that Civic Tech would simply bolster business as usual, rather than focus on the capacity for change. She told me that participation should, "structure projects in a way that actually changes how power works." You could call McCann the conscience of the Civic Tech movement. She used language that pushed techies to take a more ardent stance on recognizing and channeling the expertise of local communities and organizations.

The mantra "build with, not for" quickly spread. Soon, Code for America founder Jennifer Pahlka started using it in presentations. The idea spread quickly because

participatory design helped shape technology to be more egalitarian. McCann was interested in changing patterns of inclusion, not validating what techies were already doing. "I wasn't trying to make the next Coca-Cola," she told me with a laugh, "I was trying to challenge the way you do your work." We should all strive to constantly question if we are improving life for our communities, and connecting them in meaningful ways with opportunities for participation.

She also drew an important line on for-profit tech companies. Those in Civic Tech that take a corporate view, she told me, "maintain very client and provider relationships with governments as opposed to partner." Her book Experimental Modes of Civic Engagement elaborated on what alternative partnerships might look like: a vision that brought community organizers, residents, and practitioners into the design process. Civic Tech requires fostering equitable partnerships, as opposed to "gov tech," which simply built technology for government's internal use.

As McCann suggested by invoking Freire, the idea of learning by involving people in co-creating technologies comes from a long lineage. Participatory design started in Scandinavia in the late 1960s in workplaces in Norway, where workers wanted to be included in design decisions. This was an empowering alternative in socialist

Scandinavian countries predicated on equal distribution of resources and opportunities. Judith Gregory described this phase of participatory design as being about, "acting locally to engage the expert knowledge of workers in systems development projects including critiquing the present and envisioning future use."

At a basic level, a participatory design approach meant that workers gained voting rights in companies to make collective decisions in the technologies that defined their workplace environment. In the 1980s, this evolved into techniques that promoted the idea that custom design of technologies was a better designed alternative to off-the-shelf products. Because these technologies were designed by people through cycles of frequent feedback, they better suited their needs. This is why software developers prefer an "agile" approach that improves over multiple iterations to a "waterfall" method that follows a singular path that stifles learning.

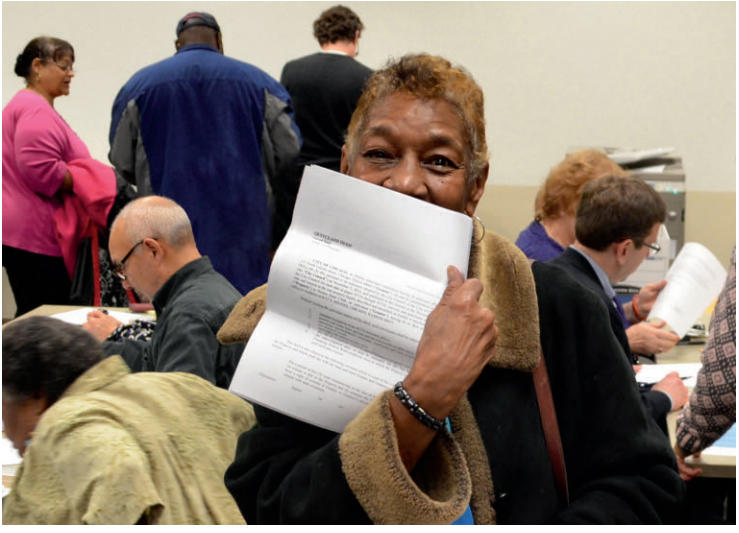
The difference with modern local design techniques is they encompass a wider variety of strategies to understand local issues and involve residents in developing customized solutions. Some carve out learning environments, as when civic hackathons provide a space for geeks to work alongside career politicians. Other techies set up elaborate games with residents as a way to help them plan their city. For example, the Knight Foundation-funded Macon

Money in Georgia was an example of what Benjamin Stokes called a "local community game" that fostered a stronger sense of community by encouraging residents to talk across cultural boundaries. The game involved pieces with two parts distributed across the city's different zip codes. When matched, the two participants would get a gift certificate to spend at local stores. In this way, Macon Money got residents to make friendships and stimulate the local economy. Companies like IDEO use elicitation techniques to generate new ideas that form the basis of improved projects. All of these, from civic hackathons to local games and elicitation techniques, encourage participation. But, they work best when paired with a local opportunity and willing organizational partners.

Ultimately, civic tech projects should start by recognizing residents' knowledge and involving them in improving their community. Nigel Jacob, co-founder of Boston's Office of New Urban Mechanics, agreed that community relationships are important for local problem-solving. "Community people are incredibly useful," he said. "They're the ones that have all the real insight into what's broken and what works well." Invoking the same term as Jane Jacobs, he continued, "we rely heavily on folks to give us in depth feedback." Admittedly, right now, Civic Tech has seen more successful experiments than robust organizations or funding streams. Still, techies have

started to bring together community groups, government partners, and technologically-minded organizations. The Large Lots project came from just such a collaboration.

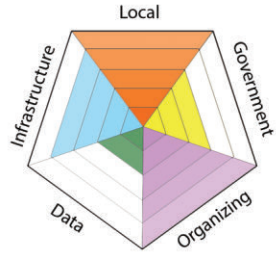
The once-vibrant Englewood neighborhood of Chicago suffered a financial downturn in the 1960s. Vacant lots dotted the area, the result of abandoned properties that were subsequently razed. Teamwork Englewood, a local community group, was trying to draw attention to the ways these spaces could be repurposed by turning the land back to the community. They came up with the idea to let residents purchase vacant lots for $1 if they committed to using the property. The city worked with community groups to craft policy that made the transfer of properties possible. The results of a 2013 pilot were encouraging. In a given year the city averaged transferring 35 lots



Woman Receiving her Deed Through Large Lots

to private hands. That year the city received over 500 applications—and the city still had more lots to turn over. Yet, awareness of the program was still low, and there wasn't an easy way for residents to view which properties were available. Large Lots needed a hyper-local strategy that relied on reaching the right person at the right time. Datamade, a local Civic Tech company, had an idea for improving outreach.

Together, Datamade, the city of Chicago, and community groups combined a sophisticated communication strategy with locative technology. Datamade created a mobile mapping application from open data that showed residents vacant lots around them to reveal local infrastructure. They also used physical assets of cities—like libraries—to spread the word about Large Lots. Finally, they created a website that saved time in the application process. City employees appreciated the streamlining since it meant less paperwork on their end. As a result, the second year of Large Lots went even better—58% of the abandoned lots in the Garfield Park neighborhood were applied for in 2014.



Large Lots Badge

Large Lots showed how partnerships between community groups, Civic Tech organizations, and

government can work. The idea emerged organically from the community. Rather than imposing their own preconceived solutions, Civic Tech organizations recognized the need to "build with, not for." Working alongside community organizations, they created an interface that improved outreach and reduced the workload on government employees. Large Lots was less about technology than an effective, locally-situated collaboration.

Many companies—like IBM, Microsoft, and ESRI—are now receptive to the ideas of Civic Tech. They like the concept of using their platforms for the public good. But where they often come up short is finding a fit between technological possibilities and local needs that are able to garner public support. This returns us to James Scott's assertion that understanding local knowledge requires responsible translation. In the case of Large Lots, amplifying ideas of community organizations took years to show government partners that this approach was bearing fruit. Jazmyn Latimer only understood the constraints of the legal system only by shadowing public defenders as they went through their daily life. As LaurenEllen McCann wrote, solutions should be "built at the speed of inclusion." Improving technology design requires being a patient, sensitive interlocutor more than being the best programmer.

By now, you've probably gotten the idea that Civic Tech is foremost about inclusion and communication. Cloud computing—a more efficient way to store and retrieve data—is not Civic Tech, since it lacks community participation and an explicit application for the public good. Building on these insights, I have argued that the first and most important principle of Civic Tech is local design: addressing problems from the ground up, and improving communication among stakeholders that often have different goals and worldviews. The slogan "build with, not for" resonated with civic technologists because it spoke to a need to work alongside the community that was not fulfilled by similar notions such as "smart cities" or "e-democracy." In this regard, Civic Tech tackles what is sadly missing in political systems today. It helps technology become part of the fabric of urban life, rather than an obstacle to it.

CHAPTER 2:

HACK INFRASTRUCTURE, NOT TECHNOLOGY

When you think of infrastructure, you probably think of vast systems that deliver water, power, and roads across the country. Economists refer to these as public goods—accessible resources with benefits that spill over into society—and they go far beyond wires and asphalt. Think of a neighborhood park, a social infrastructure that serves the community. On weekends, it is a place for parents play with their kids, and students can relax on a blanket and catch up with their reading.

In the 1970s, sociologist William Whyte pushed back on

then rampant assumptions that empty city spaces were a nuisance and invitation for crime. In response, over several decades he filmed people in plazas, streets, and parks as part of his "Street Life Project." His cameras did not capture nefarious activities, only a variety of people coming together in public.

"A good new space builds a new constituency," he concluded. "It stimulates people into new habits." While parks are a social infrastructure, the school system can be thought of as an educational one. Everyone has a right to a decent education, thanks to sound decisions we have collectively made. Because the educational system helps people obtain better jobs and participate politically, it generates yet more positive benefits in the form of improved employment opportunities and a more informed public. Yet for all the civic benefits it gives us, infrastructure doesn't get much love.

"We take infrastructure for granted," wrote economist Brett Frischmann, "and we are paying the price for our lack of vision." He described the value of non-rival public goods such as lakes and roads that can be used by many people at once. Yet, the American Society of Civil Engineers, which has over 150,000 members across the country, gave the country's infrastructure a D+ on their 2017 report card. You only have to look at the news to see how bad our country's infrastructure is. A bridge in

Mississippi that carried traffic for interstate 35 fell in 2007, killing fifteen. Recently, the main and backup spillways failed at the Oroville Dam, threatening hundreds of thousands of Californians. Educational systems, too, regularly fail many in the United States.

Maintaining and improving infrastructure should be a shared responsibility, since it affects us all. "I've never met a republican sewer line or a democratic stop sign," said Sid Burgess. "A person's politics have no bearing on the services they need." He sees himself as a pragmatist without a strong party affiliation. When asked about influences, Burgess gives a nod to Calvin Coolidge, a fiscally conservative republican who worked across the aisle. Burgess serves in a predominantly republican district, but found that residents are fine with spending money as long as they understood that it was spent wisely. While Sid worked from inside the political establishment, activists can take a more crafty approach to infrastructure improvement from outside of it.

Richard Ankrom was driving on the 110 freeway in Los Angeles when he missed the exit for the I-5 freeway heading north. Years later, he was driving the same route and realized why he missed it: the sign was not adequately marked. Because he was an artist and sign-painter, he hatched a plan to create and install the much-needed route marker. He carefully matched the colors on existing signs

inspected and approved by the California Department of Transportation (or Caltrans). Next, he downloaded the MUTCD, the Manual on Uniform Traffic Control Devices, which listed "uniform standards and specifications for all official traffic control devices in California." When his I-5 shield was up to spec, he signed the back just as any other artist would. On a quiet Sunday, he donned a worker disguise and drove up in a truck with "Aesthetic De Construction" on the side to install his sign. He described his actions as "guerrilla public service."

Grassroots groups who think like Richard can help the community benefit from well-maintained and safe infrastructure. They have humorous names that play on actual government "transportation agencies." The San Francisco Transformation Agency and PDX Transformation in Portland have taken to improving bike infrastructure in a DIY fashion. Shocked by injuries and even deaths of cyclists, they installed cones and barriers on dangerous roads. While not all city agencies appreciated these roguish additions, some of them adopted these infrastructural changes. For example, Caltrans determined Ankron's sign was up to spec and helpful to commuters. They left it up for over eight years, although they did politely request he not do it again. Other forms of infrastructure are not just physical, but like public space, improve communication among citizens. These durable

communication infrastructures can, as Tim O'Reilly put it, be built on "as a platform." Take the humble United States mail, perhaps the country's first example of a democratic communication infrastructure.

"For more than two centuries," wrote historian Winifred Gallagher, "the postal commons has endured as one of the few American institutions in which we, the people, are treated as equals." Anyone knows they can buy a $.49 stamp to mail a letter, but most are not aware that the mail preceded our country's existence. Mail may not look like a bridge or dam, but it is no less vital to our well-being. Gallagher argued that mail, as a democratic infrastructure, enabled communication that brought about the United States government. The British Parliament used the post mostly for sending word to the colonies. They imposed the Stamp Act on the fledgling states in 1765.

Members of the not-yet United States needed a way to communicate and create their own government. Ben Franklin, the first postmaster, increased the efficiency of the post, visiting every colony and creating mileposts. He then ordered that all newspapers could travel across the country for the same low rate. Gallagher argued this combination of autonomy and accessibility created a shared national identity through new informational pathways. In other words, the mail fostered a cultural shift where people started to think of themselves as united.

Like LEGOs, communication and educational infrastructure can be built on top of other infrastructure. Take the example of how the nonprofit environmental group Seed Savers took advantage of the United States mail. Starting in the 1970s, they wanted to save and share seeds to preserve our biological heritage for future generations. They began, like so many civically engaged citizens since Benjamin Franklin's day, by writing a newsletter. In the back of each issue you would find lists of who was selling rare seeds, and tips on creating your own worm castings. The "correspondences" section printed letters from readers as far away as Ecuador, Honduras, and the West Indies.

Seed Savers built a social infrastructure for preservation on the backbone of the U.S. Mail. The non-profit organization continues to this day, a testament to how you don't always need digital technologies to create a "social network." Decades before the Internet, the mail sustained this vibrant community of amateur biologists. Seed Savers also generated what economists like Brett Freischmann call "spillover effects." We can all, quite literally, enjoy the fruits of their labor in the form of fruits and vegetables. Each summer my favorite tomato to grow is "Cherokee Purple," an heirloom strain they saved from extinction with a deep bruised color and a delicious, slightly acidic taste.

You're not alone if you sometimes forget about infrastructure. The anthropologist Susan Leigh Star noted that infrastructure sinks into the background and, consequently, becomes invisible. She saw that part of the issue was that things like technical standards and forms were "frequently mundane to the point of boredom." To Star, taking an infrastructural perspective to society revealed the inner workings of larger systems that were essential but often ignored. Thinking infrastructurally was a way to foreground the mundane, everyday objects that connect us in ways that were not immediately obvious. So it is with the mail, a social infrastructure that enables collaboration through postage stamps, scales, rates, and transportation networks. I refer to the mail as a social infrastructure because its important contribution is improving communication between people. There is also community infrastructure, which is designed by and serves particular groups.

Quite contrary to its reputation for being boring, infrastructure can be a site of organizing and political action. African-American organizations in the late 60s and early 70s mobilized communities to create their own community infrastructure. A potent mix of ideas from Pan-Africanism to Black Liberation theology was circulating, and self-governance figured prominently. African-American communities had a lower quality of

healthcare and education, the legacy of racist policies and the "Jim Crow" era. In response, community groups mobilized to foster healthy communities through educational and sustainable food programs.

The East, in the Bedford-Stuyvesant neighborhood of Brooklyn, coordinated to provide a quality education to young black youth. For several years they ran their own independent school system. The Black Panther organization, spearheaded by Huey P. Newton in Oakland, provided a nutritious breakfast to over 20,000 children in 19 cities by the end of 1969. Another of their "survival programs" was public healthcare. The authorities harassed the Black Panthers ruthlessly, defining them as dangerous militants. Yet, free breakfast would become one of the country's most popular programs. In 2012, nearly 13 million children received a free or discounted breakfast before school.

In Community: Structure of Belonging, Peter Block saw how communities were strengthened by groups taking action and engaging with non-profit organizations. In a basic sense, you know a community is working well when you feel that you belong there. People know each other by name and grow to trust each other. Residents, in turn, are more likely to donate their time to local organizations to help their community as part of a virtuous cycle. Examples like the free breakfast program show how

communities have always banded together to build what government is unable or unwilling to provide. However, Block argued that "parallel effort added together does not make a community." In other words, most of the time community groups and government were pursuing separate and even conflicting efforts. One way forward is to see infrastructure as he did: a "product of the conversations and social fabric of any community."

One touchstone for seeing infrastructure as an opportunity for collaboration is Tinke M. Egyedi and Donna C. Mehos' notion of "inverse infrastructures," where communities have a hand in creating interventions that can be sustained by policy-makers and businesses. They called these infrastructures "inverse" because they emerged through residents who self-organized to address complex problems. They found examples of inverse infrastructures worldwide, from Africa and the Netherlands to Australia. The common problem was that it was difficult for community groups to grow organizational capacity and master logistics of allocating resources. They addressed the sustainability problem by suggesting that communities might collaborate with government and industry partners. Egyedi and Mehos, similar to Block and Scott, draw our attention to the need for infrastructure to develop locally before being carefully scaled up.

We can think about the benefits of scale by comparing government-run neighborhood libraries and their grassroots equivalent, the "Little Free Library" movement. Across the country over 50,000 tiny huts have sprung up in small towns and large cities. Residents put them next to sidewalks so their neighbors can borrow books. Some include basic toiletries for the homeless and staples for the food insecure.

A Little Free Library in Capitol Hill, Seattle

Little Free Libraries have the same core values as local libraries. People who create them want to share knowledge and resources with others in the community. However, they lack the space, staff, and budget of city and county libraries. As inspiring as Little Free Libraries are, they will never be a replacement for their government-

run counterparts. City and county libraries also have the capacity to offer a range of other services, from classes to child car. People might go on a hot day for the air conditioning, or fill out a job application—services impossible with a Little Free Library.

It is no coincidence that schools and the mail are run mostly by the government, since it is a tremendous challenge to run a school system or move a package across the country. Running these systems requires coordinating massive numbers of people, storage facilities, and transportation. This is why citizens have difficulty creating infrastructures that endure. It's not that they don't have the right idea, they just have difficulty scaling up without going the corporate route. Public ownership matters because public infrastructure provides benefits that flow to the people, not to investors' bank accounts.

The idea that technologies are best created by and for communities, too, harkens back to an earlier era. As the dust settled from World War II, E. F. Schumacher coined the idea of "appropriate technology" by drawing attention to design. Technology that was appropriate for particular communities was designed locally, cheap, and simple to produce. It was "appropriate" for a particular time and place. His ideas quickly rose through international development and policy circles. Solar-powered ovens and composting toilets were, for a time, cutting edge.

President Carter saw potential in appropriate technology, writing, "the government should be encouraging the development of those approaches that offer real long-term solutions to our environmental, social and energy problems." Eventually the star of appropriate technology faded as the 1980's brought back big business and Reaganism. But appropriate technology's insistence on local design and positive community impact still holds true. Echoing Schumacher, Civic Tech recognizes that a top-down approach often results in unworkable solutions for residents. By contrast, locally-designed infrastructures can be the best fit for community problems.

Civic technologists are politically motivated to create and improve social and communication infrastructure through a bottom-up approach. In doing so, they are improving the very fabric of cities. Dawn McDougall, executive director for Code For Philly, thinks about infrastructure as an ecology. "What Civic Tech is really trying to accomplish is developing urban ecosystems," including government, small businesses, and residents. "They are also part of that infrastructure." The Code for Philly website lists 197 projects in stages of development from idea-generating to prototyping. The best will find a home being supported by community and government partners. "Some projects end up getting adopted by a non-profit, some by the city itself," McDougall told me.

"There's a lot of different ways that you could measure the success of a Code for Philly project." For example, participants learn about community issues, develop technical literacies, and learn how to communicate with public officials—skills that help foster a more vibrant civic ecology.

"Philly," said Mark Headd, "is to Civic Tech as Nashville is to country music." It is no coincidence that Philadelphia, a crucible for democracy and home to the first postmaster Ben Franklin, developed a reputation in Civic Tech for fostering political participation. For example, an anti-gerrymandering project is underway that could eventually give visibility to unjust ways the collective voting power of minority resident are diluted through voting districting. When I spoke with her, McDougall was particularly excited about MyPhilly, a website that mapped local community organizations. "These are centers of incredible power and influence in our communities and our neighborhoods," she said. "The reason that I really like it is that they took a very user-centric approach." There wasn't a way to map the neighborhood organizations sociologists agreed were essential to neighborhood strength. That's because there was rarely a reason for big tech companies to make a bespoke, non-profit product. Civic Tech is best at finding these niche opportunities.

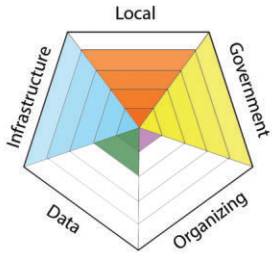
Techies can also get involved in tinkering with

infrastructure solo, but "guerilla public service" can be tough to do on your own. Mats Järlström saw a problem with infrastructure in his city of Beaverton, Oregon. His wife was given a ticket when her Volkswagen ran a red light while taking a left-hand turn. She had enough time to safely make it through, but the light changed too quickly. Mats was an electronics engineer with a knack for thinking through problems, and it kept bugging him. Was the problem just about this light in particular, or a bigger problem? As he dug deeper, he discovered the calculation for the timing of yellow lights in most cities came from an academic paper written by employees of General Motors in 1959. It didn't take into account reduced speed for turning lanes. The system had a critical flaw that was reproduced for decades across the entire country.

Mats did his homework and generated new formulas that improved on the original. He created diagrams to demonstrate the benefit of his solution. Then he emailed his findings to the state's engineering board. Instead of working with him, the state gave him a $500 ticket for "practicing engineering without being registered." Mats was confused, since he thought of himself as a volunteer motivated to improve the safety of his community, saying that, "I'm not practicing engineering, I'm just using basic mathematics and physics to make calculations, and talk about what I found." His frustration speaks to the need

for local government to be more receptive, and Civic Tech organizations to help incubate ideas for projects like Mats'.

This chapter deliberately has not discussed technological infrastructure. That is because I feel technology should be thought of *as* social and community infrastructure. So if you are tempted to "hack technology," think first about how you're changing community infrastructure as a whole. Take the SeeClickFix mobile application. It lets residents snap a picture of an offending pothole or misplaced trash using any cell phone. The picture and location are then delivered to the appropriate department.



SeeClickFix Badge

SeeClickFix enables a basic form of civic engagement—a digital way to help pick up litter. People can keep doing what they do best: noticing issues that arise in a neighborhood. Government can do what it does best: maintain the city. SeeClickFix has spread widely because it is easy to use, low cost, and can be easily repurposed to improve other city infrastructure. The power of SeeClickFix is in simplicity and interoperability. It easily integrates with existing infrastructure and simplifies existing communication patterns with government.

Law professor Lawrence Lessig famously wrote in his

book Code about how digital systems should be tamed to be radically accessible. "It is wrong that the system works well only for the top 1 percent," he wrote. "It could be made radically more efficient, and inexpensive, and hence radically more just." Lessig pushed against utopian notions at the time that suggested the internet would be emancipatory. "There is no special set of dilemmas that cyberspace will present," he claimed, "there are only the familiar dilemmas of modern governance."

Lessig was correct that after multiple supposedly transformative waves of technology, we are left with familiar dilemmas. So civic technologists don't use digital tools because they think they can "solve" problems like poverty or homelessness. It is just far easier to write software than it is to pour concrete or build new roads. You can use programming languages and servers to create programs that can be run, tweaked, and progressively improved. Persuasive prototypes can be quickly created that show an alternate way to accomplish a menial task. In these ways, techies are attracted to technology as an inroad to change, even as they acknowledge it will ultimately involve more fully formed policy changes and adoption by organizational partners.

Social and communication infrastructure are essential for community ecosystems. Because infrastructure serves as a bridge between community and government,

improvements can come from either side. Even though infrastructure doesn't get much love, it has historically been a valuable site of political organizing, as Black Panthers and DIY transportation enthusiasts have demonstrated. Yet, we largely forget about our shared infrastructure since it slips into the background and becomes invisible. An infrastructural principle helps us recognize that techies often serve as a missing link, helping government understand how technologies can be contextually appropriate, while community residents see how infrastructure can help them. Far from being dry or boring, the rise of Civic Tech signals the potential of infrastructure to again be a site of political action that delivers long-term public benefits.

CHAPTER 3:

OPEN DATA CAN IMPROVE COMMUNICATION

Mark Headd, Philadelphia's first Chief Data Officer, wrote, "the common ingredient in every successful engagement effort with local technology communities is open data." His statement implies that data can improve communication between government and communities. Thanks to smartphones and an ever-increasing number of "Internet of Things" enabled devices, we have a wealth of data at our disposal. Where we travel, how many calls we make, and who we communicate with online are all tracked and recorded. The challenge now is how all of

this data can be used for civic collaborations, rather than simply an excuse for making a quick buck or bringing about a surveillance state. The first way this happens is to give residents control over data collection.

Civic Hall's Heat Seek project used data to improve communication and make government accountable. In 2016, the City of New York received over 200,000 complaints about landlords turning off heat in a brutal winter. Yet, only 4% of complaints resulted in a violation because low-income tenants had little way to prove how harsh their living conditions were. In response, Civic Hall created a small wireless sensor that collected hourly temperature data. Renters simply placed the sensor in their apartment. The sensor integrated seamlessly with rather outdated systems for reporting landlords. Families could simply print out a PDF complaint form populated with the data from the sensors. This prototype demonstrated a way for local residents to bootstrap existing infrastructure through grassroots data collection.

In this way, citizens used data they collected to help the public recognize the scope of a serious problem and put pressure on officials. Heat Seek's technology wasn't particularly expensive, and the resulting data was used to

HeatSeek Badge

reinforce existing laws. Heat Seek was also notable because it collected data that was valuable to organizations and other potential partners like attorneys. It was an example of urban planner Anthony Townsend's notion of "slow data" that was consciously collected by residents, rather than skimmed off unwitting consumers. Limiting the data collected was also a way to get around privacy concerns. Because no sensitive personal information was captured and it immediately benefitted residents, they were more interested in participating.

The second way data can improve communication is through residents who interpret data that the government has in abundance. Showing new ways to use data can benefit all involved. A recent article in The Atlantic Magazine concluded that governments collect terabytes of data, "but actually making sense of it all is one challenge [the government] might not be up for." Government employees might not be "up for it" because they simply don't have the time or technical skills to analyze data. Accordingly, policy scholars like GovLab's Beth Noveck have argued that community and organizational partners are essential to help analyze the data governments have in abundance. Ben Wellington, a financial analyst on Wall Street who teaches a night class at Pratt on statistics, is one such bridge.

Ben shows his students how to use simple programs

like Microsoft Excel and free programming languages to analyze data on public problems. Including open data sets in his classes adds realism and a feeling of civic involvement. Ben also blogs about open data to demonstrate the utility of open data. For example, when the city released data on parking tickets on their platform, he downloaded it and found an important story buried in the data: people across the city parked in front of old curb cuts no longer connected to a crosswalk, which was legal. However, the police put tickets on these cars, believing they were illegally parked. As a result, New Yorkers got millions of dollars of unnecessary tickets. He posted his findings on his blog IQuantNY, not sure of the response he would get. It turned out that lots of people were interested in what he found, particularly residents who were miffed the city wasn't following its own laws. In response, New York changed the way it gave tickets by repainting cubs and training police officers to recognize legally parked vehicles.

"The democratization of data means people can have a role in government," Ben told me, summarizing an idea I had heard before in Civic Tech groups. He saw education as empowering, a way to open up government to participation and bridge the digital divide. Of course, some people are sharp enough to learn on their own. Take the example of high school students in Jamaica Plain, a

neighborhood in Boston, who were trying to raise money for an ice rink. Lorrie Pearson, Mabel Gondres, and Jonah Muñiz uncovered a 1993 agreement between the city and the Boston Garden Stadium that stipulated three non-profit fundraisers a year be held there. Yet, yearly financial data showed this promise was never fulfilled. In response, these teens took on a new task: figuring out if this oversight could help fund non-profit projects like theirs. Similar to other civic issues like environmental pollution, working with data was a way to open communication channels and spark further organizing.

The data that students in New York and Boston used to improve their cities didn't appear overnight. Rather, open data is the result of a century-long history of progressive leaders pushing for access to information. Judge Louis Brandeis famously made the case for disclosing information in the 1914 book Other People's Money. He believed that big banks had created a closed monopoly that was detrimental to an informed public. Brandeis reasoned that if people had access to information about rates, monopolization would be less rampant. From this idea came the well-worn aphorism, "sunlight is said to be the best of disinfectants; electric light the most efficient policeman."

In the 1960s, interest grew among journalists and legal reformers who believed that information was a way to hold

those in power accountable. A small group of journalists commissioned Harold L. Cross to write The People's Right to Know. His book made the case that the public had a legal right to the documents government created. What went on inside government was the people's business. As a result, the group lobbied for legislation to compel the government to produce information on request. Their extended campaign resulted in the Freedom of Information Act (FOIA), which gave anyone the right to request information from the government.

In response to the Watergate scandal in 1974, FOIA laws were further strengthened. Eventually, Obama reinforced the need for open data—not just information—through executive orders. By 2016, the Open Knowledge Foundation's yearly data census found that 94 countries and 125 cities in the United States have placed some amount of open data online. Community-oriented data projects fill other data needs. For example, 33 cities collaborate on the National Neighborhood Indicators Project (NNIP), which consolidates data on community health and makes it available to the public. Many democracies now recognize that citizens have a right to data and regard it being associated with a range of positive benefits.

You can still see a reflection of journalistic ideals embedded in open data, because some techies are journalists. Dana Chinn is a lecturer at the Annenberg

School for Communication and Journalism at the University of Southern California. She teaches students how to find new stories in data. Her data journalism courses start with the issues. Students research crime, gun violence, and water use. She takes an issues-first approach because, as she put it to me, "the subject matter context is important to learn before you even look at the data." They download datasets from public websites and use basic statistics to give visibility to the issue.

Data journalism can be less flashy than students expect, because it can take time to start to see trends in the data. "Collecting data should be part of your 'beat'," she says, referring to particular topics that journalists specialize in. Chinn prefers Microsoft Excel to more complex data analysis packages. She describes data literacies as one tool in a "critical thinking toolbox," and challenges students to describe how they came to their conclusions, so anyone doing follow-up research can understand their analysis. Another tool is realism; for each story she asks students, "why is this important to the public?"

She asks this question because changing the public's mind has always required spreading a persuasive message backed by evidence. In 1965 Ralph Nader published the bestseller Unsafe at Any Speed. He described design flaws of automobiles that could be corrected by reluctant car manufacturers. By using data to demonstrate that cars

without seat-belts were more likely to injure or kill their passengers, the book prompted passage of the National Traffic and Motor Vehicle Safety Act in 1966 and seat-belt laws in nearly all states. Civic technologists often think like Ralph Nader—they wonder how to use data to help the public be well-informed, and in turn, put creative pressure on stubborn systems. Perhaps the difference since the 1960s is that governments are starting to value the participation of citizens as potential collaborators.

Obama did much to publicize ideas about openness. Once elected in 2008, he helped open government advance through executive orders advocating for digital, machine-readable formats to be the default within government. He also helped civic technologists gain a foothold at the federal level by bringing in techies like Aneesh Chopra, the first federal Chief Technology Officer. Steven Levy characterized the US Digital Service (USDS) as part of Obama's "tech surge" to grow federal capacity for technological projects. But as the long history of the right to information movement shows, openness is not just technological. It is a set of practices built on a long history of progressive ideals, such as openness and the public's right to know.

Data analysts like Ben Wellington would rather not have to publish data exposés on his blog to get government to change its ways. When I talked with him, he was

hopeful that the city might start thinking of him more like a volunteer advisor than an adversary. It's not an outlandish idea—cities involve citizens all the time in commissions and city council meetings. But most of these formats rely on deliberation. People discuss options for policies, eventually coming to a decision based on voting. Despite the benefits, volunteer techies struggle to find opportunities to work inside city hall. That is why government officials have been experimenting with making space for people like Ben and his students, and line up projects they can work on.

Lilian Coral fostered just such a place for collaboration during her time as Los Angeles' Chief Data Officer. Her team of students and fellows used data to write stories, create mobile apps, and build lines of communication with community partners. Ease of use was always important to Lilian's team. Under her guidance the city launched a "Geohub"—a maps-based portal maintained by the geographic mapping company ESRI. Residents could create data visualizations and maps with just a few clicks. The hope was these collaborations might be a bridge to the public, and even improve people's negative opinions about government. After all, if cities foster more collaboration with the public, maybe people feel heard and start to have greater confidence in public officials.

I was surprised to find that not all techies who work

with data fit a geek stereotype. For years I volunteered on a Technology and Innovation Commission for my city of Long Beach. We helped advise our city on ideas about how technology can improve life for residents. In 2015, we ran a series of public forums to learn about how residents were using data. Not content with the usual stale meetings, we wanted to forge new pathways for collaboration with residents. Our mayor, Robert Garcia, was keen to encourage civic engagement, and together we wanted to write the policy for the city's new open data portal. During our forums and outreach efforts, we spoke with hundreds of residents as diverse as Long Beach itself. They worked as programmers, students, cashiers, and cable installers. Only a small number (20%) were software developers. What they had in common was a curiosity about technology and concern about local issues. Data caught their imagination and interest, particularly the notion that open data could help communities. Gerard, a 40-something with salt-and-pepper hair and an easy smile, was just one of those interested residents who stopped by.

Gerard sat patiently in the audience and listened to what others had to say before chiming in to talk about the issue that concerned him most: speeding around school zones. He had witnessed a near fatal accident near his daughter's school, which inspired him to track where the problem areas were in Long Beach. He gave each commissioner

a flyer of recommendations about the data he needed. One data set had more information, but was staggered 6 months behind another. He could also use more granular information on speeding tickets. Gerard wasn't a software engineer from Silicon Valley, just a father trying to keep his fellow residents informed and organized to respond to a deadly problem.

Data standards help scale up ways to alleviate problems that cities commonly face, such as transportation. Local governments want to help people ride busses, subways, and bicycles. Going carless is great for cities because it reduces smog and traffic. Reducing the number of cars has been shown to improve health, since people walk more and breath less pollution. Less affluent residents particularly benefit from public transportation. Bus riders in Los Angeles are mostly people of color and have a median household income of only about $16,000 per year. Public transportation is a lifeline to family and jobs for countless people worldwide, and transportation systems across the world produce similar types of data. So it makes sense that transportation data was an appealing candidate for data standards—a consistent way data is delivered.

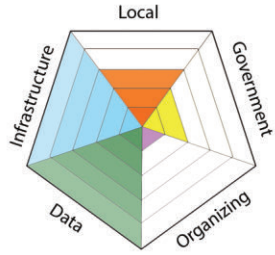
Think of data standards like a cake mix. Programmers need to know what format to expect data in. Imagine a spreadsheet where data in one column is for money, while another is a person's name. By knowing what type of

data goes where, programmers can quickly and cheaply build new applications. It's easier for developers to use a cake mix rather than make a recipe from scratch. You've probably used data standards without knowing it. The General Transit Feed Specification (GTFS) format is used by hundreds of transportation agencies worldwide. GTFS was developed in 2005 by Chris Harrelson, a Google engineer. Bibiana McHugh saw what he was doing and wanted to test it in Portland, Oregon. Together they developed an application over a few months and launched it to a receptive public.

Developing a common format for transportation is a particularly challenging problem. You need to capture locations, times, and station names. Once that work is done comes the payoff. "The counts were reaching staggering numbers, even by Google standards," wrote Bibiana. Showing value was important to helping GTFS spread to other communities. Promising prototypes can get government officials excited about new projects. They always are trying to do more for residents, but rarely are interested in trying unproven ideas, even if they sound good on paper. Their decisions are often based on public response and institutional rewards.

"Agencies saw they could benefit from being involved," wrote Bibiana, "by offering a service that was clearly in demand by the public." City officials were excited by

improving ridership on public transportation and making cities more walkable. Residents who couldn't afford a car or preferred the ease of public transportation got an easy way to plan their commute. A slew of new applications sprung up like OneBusAway, all built on the GTFS data standard.



OneBusAway Badge

OneBusAway, an application built on GTFS, was developed by two graduate students at the University of Washington. They collected data to support the benefit of their simple mobile application. They found that if riders knew when the bus would arrive the wait felt less arduous, and they were more satisfied with public transportation. They felt like they were in control of their commute. Statistics on ridership showed a significant increase in ridership when the application was introduced to the public. Eventually, the popularity of the app led to real-time information on transportation being made publicly available. As a result of all these positive benefits, OneBusAway has been deployed across the world. Its New York City app receives over 30,000 requests for information per minute. It is even used as far away as Lappeenranta, Finland.

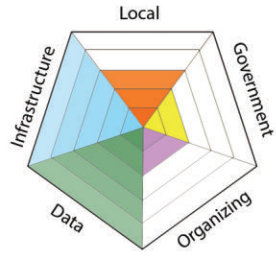
In these ways, a data standard can mutually benefit private companies, government, and non-profit

organizations. And transportation is just one example; the BLDS Data Specification is for sharing zoning information on building and construction permits. Blue Button helps people download their medical information, while Popolo makes government activities like votes and motions visible by citizens.

When crowdsourced data collection, data interpretation, and data standards come together, it can be an opportunity for a very specific community. Access Map emerged from the 2015 "Hack the Commute" civic hackathon. Anat Caspi, Director of the The Taskar Center for Accessible Technology at University of Washington, believed commercially-available digital maps didn't work well enough for the less physically mobile. Residents who are

Hack the Commute Civic Hackathon

blind or in wheelchairs found navigating a city challenging. Mobile apps are often "ableist"—built by people unencumbered by a disability. They lack features that the mobility-impaired need, and important details tend to be left off of maps. When developers create applications, they can imagine the "user" as a generic other, rather than a person with unique needs.



Access Map Badge

Anat was a mentor for transportation accessibility at the civic hackathon. She worked with students from University of Washington to create a transportation app made with the less mobile in mind. "All of us have been poorly trained by Google maps," Anat told me. "These routing services leave a lot of informational gaps for pedestrians." The shortest route in many mobile mapping systems is impassible to someone with mobility impairments. Barriers like construction zones, curbs, and gradients are not included. Despite enforcement, cities still have areas that are not up to code of the Americans with Disabilities (ADA) act. Even a small elevation change or unexpected construction zone can be the end of a trip for someone in a wheelchair.

Data from the city and OpenStreetMap community enabled Anat to prototype Access Map. OpenStreetMap

is a community that crowdsources and hosts open geographic data. It started in the UK in 2004 and grew through members' contributions of map data. In aggregate, they've managed to map much of the world, and their data sets are available to anyone interested in using them. This open data, when combined with data sets on construction zones and sidewalks provided by the city, were the ingredients Anat and her students needed. Access Map is currently being beta tested by residents with support of the city of Seattle.

Open data was founded on progressive beliefs that open communication between an engaged citizenry and government was healthy for society. Since the early 20th century, the ways people use data have evolved, and now go beyond just transparency. Grassroots activists like Gerard use data analysis as an inroad to civic issues, organizing their fellow residents and serving as advisors to local government. Dana Chinn, a journalism professor, unearths stories of public interest from government data. Transportation projects built on open data and standard formats have made it easier for all people to travel, enriching the way we benefit from social infrastructure. Thanks to educators like Ben Wellington and open data portals worldwide, it is relatively easy to get involved in using data for civic purposes.

Another reason to pay attention to open data is we

lack an understanding of how data can lead to collective benefits, rather than individual harms. The public hears quite a bit about how data is dangerous. The news is full of stories of identity theft and businesses unscrupulously violating privacy laws. The PEW Center for Internet and American Life concluded that, "people now are more anxious about the security of their personal data and are more aware that greater and greater volumes of data are being collected about them." When people collect data to get traction on an issue that matters to their community, or interpret data for their city, they are trying to find how data can be responsibly used.

Open data might be the most "common ingredient" in Civic Technology projects, as Mark Headd put it, because it is a common building block that can be used in mobile apps, visuals, and stories. However, the lesson of the last few years of enthusiasm for open data has shown that it is most effective only when integrated with ongoing collaborations and reform efforts. If open data cracks the door to social change, only collaborations with academic institutions, non-profit organizations, and governments can help throw it wide.

CHAPTER 4:
ORGANIZE AROUND PUBLIC PROBLEMS

Nobody likes bureaucracies. In the 1930s, the sociologist Max Weber famously described government as hierarchies fraught with rules and specializations. They prioritized efficiency and hierarchical structures, making them resistant to change. Nearly a century later, government still enjoys a reputation for being impersonal and unwelcoming. Organizing can create space to collaborate, sustain participation, and guide people into occupations where they can help change government. Because government can foster an insular

culture, ethically changing the way it delivers services and communicates with the public requires sustained collective action. Changing government is a long game that can't be accomplished by any one person.

"Voters don't want more government, they want better government," wrote John Osborne and Ted Gaebler in 1992's "Reinventing Government." The book was well-received among administrators because it took a pragmatic approach to improvement, drawing inspiration from both the political "left" and "right." From the left they drew on ideas that suggested community members should guide the direction of change; from the right they promoted collaboration with businesses and accountability.

Osborne and Gaebler believed in some similar principles as civic technologists: openness, collaboration, and new types of partnerships. But Reinventing Government didn't result in the kind of change they hoped. A 2016 retrospective article in Governing Magazine suggested that Reinventing Government failed because it lacked sustainability and ways to persuade reluctant bureaucrats. Improving government was a tough problem of organization and persuasion, not just a question of having better ideas.

Organizations have long enabled people to work together on public problems with a technical dimension. For example, starting in the 1990s, the little-known "Circuit

Rider" movement helped advise non-profit organizations on how to go online during the early days of the internet. As Paul-Brian McInerney wrote, the movement grew to involve some 10,000 people interested in improving public sector technology design through collaborations. Eventually, this "entrepreneurial" approach became corporatized, turning the movement into a familiar situation of companies scrambling for a paycheck.

You can even organize within government. From 1972 to 1995, the federal-level Office of Technology Assessment (OTA) reported on topics ranging from computer security to transportation. The expertise in these reports, and innumerable conversations over the decades, helped Congress adopt and implement wiser policies and laws. Eventually, the office with nearly 200 employees was phased out, the target of shortsighted cost-cutting measures.

It is against tough odds that techies organize. The next two chapters explore the different forms organizing takes in the Civic Tech movement. Large events like civic hackathons draw attention to social problems through ethical spectacles that invite public participation. They can capture enthusiasm, channeling it into more long-term participation. Code for America brigades are a network of autonomous, non-profit organizations that engage more than 40,000 techies across 133 cities. Then,

the most dedicated civic technologists work inside of government, giving their time and labor to change the system from the inside. The final chapter is dedicated to these "innovation teams" inside government that operate semi-autonomously to alleviate public problems. Together, these different organizational forms capture, channel, and connect participation with opportunities to change government.

Civic technologists are hardly the first to scaffold civic participation. In the mid-1960s, Sherry Arnstein was Chief Advisor on Citizen Participation in the Department of Housing and Urban Development (HUD) Model Cities program. The Model Cities program was an experiment in "maximal participation," where everyone could have their say on all the issues that affected their community. This sounded great, but in practice Model Cities was a tough lesson that everyone didn't have the time or interest to participate in every civic issue.

Anthropologist and scholar of participation Chris Kelty concluded that Arnstein was critiquing the "maximum feasible participation" model of Model Cities. The alternative she proposed was to think about participation as a spectrum from non-participation to full involvement, rather than an all-or-nothing proposition. On the lower end of the spectrum was merely informing the public. Midway was consultation. On the higher end were the

organizational partnerships that characterized Civic Tech projects like Large Lots. Rather than everyone participating in everything, the question turns to how to locate and make the best use of people's expertise.

The ladder of participation starts with civic hackathons, vibrant public events where issues are discussed and ideas developed. You might think of them as a communication channel where policy-makers and citizens can both become better informed and have some fun at the same time. The term "hackathon" originally came out of technical cultures in high-tech industries. Corporations like Sun Microsystems, Facebook, and Google needed a way to encourage shared work in a low-stakes environment. Engineers were invited to, as an early advertisement put it, "transform the spark of an idea into a working prototype and get other people excited about its potential." Yet, at the time, hackathons were still engineering exercises rather than focused on public problems.

Random Hacks of Kindness (RHoK) was the first group to widely publicize the term "civic hackathon" on a national stage. Like other techies we've read about, they were interested in using direct participation to connect geeks with social causes. RHoK started in 2009 with a single event, and grew to 30 by 2011. Civic hackathons gave techies a way to leverage technical skills to create prototypes that broadly addressed societal problems.

Members of RHoK helped run the first National Day of Civic Hacking (NDoCH) in 2013, which promoted a message of collaboration for the public good. Over 11,000 people participated by interpreting data and writing software applications to "hack for change." Government, industry, and non-profit partners started to run civic hackathons.

Civic hackathons demonstrated how big spectacles can drive participation towards progressive goals—which is sorely missing in leftist politics. In response to his perception that the political right had mastered the art of spectacle, Stephen Duncombe called for competing "ethical spectacles" that were directly democratic, broke down hierarchies, and embraced diversity. An ethical spectacle was not sheer fantasy. Rather, he suggested that it "engages with reality while asking what new realities might be possible."

Civic hackathons similarly create an ethical spectacle to call for solving massive problems like homelessness or police violence. Duncombe reminds us that people are not duped into participating, but rather, these events engage a sense of fantasy. Participants need to imagine a new reality is possible to motivate them to work together and co-construct the spectacle. If anything needs a dose of fantasy to drive collaboration, it is the kind of dour administrative work that typically repels participation.

In April 2017, the LA County Arts Commission and the City of LA's Department of cultural affairs put on a "Datathon" to increase access to the arts. By making an ethical spectacle of data interpretation, they encouraged techies and non-techies to believe they could made a difference. The Datathon was held at The Reef, a 12-story concrete building south of downtown LA that rents out space to artists and manufacturers. That day, attendees trickled into an expansive room with frosted glass and minimal white furniture. They included urban planners, artists, students, and community organizers.

The team effectively organized the space and time through respectful communication that was equally inviting to newcomers and seasoned experts. A "guide for engagement" on the wall listed skills of self moderation, active listening, and respecting the voices of others. Bronwyn Mauldin, an author and one of the organizers, began the morning with an inviting message of, "you're supposed to be here." Copies of her photocopied "Guide to Spreadsheets for the Spreadsheet-Phobic" on every table gave novices a way to get started. Danielle Brazell, general manager of the Department of Cultural Affairs, echoed Bronwyn's message of inclusivity to get the crowd excited. "Change doesn't happen in the center," she said, "it happens in the margins." Here was the embrace of participation and diversity that Duncombe advocated for.

Data sets on grants, neighborhood health, and social media were introduced by subject matter experts. This information was mirrored on a website, which acted as publicity and a reference tool. Data enabled a new way to view and shift the arts landscape of the city. Susannah Kidd, an anthropologist turned research art data analyst, walked the group through how to use the advanced features of Microsoft Excel for data analytics. Teams then transitioned into brainstorming their projects.

My team pulled out laptops and mulled over how to increase access to the arts. We settled on the question of looking at arts funding and revenue generation in Los Angeles' diverse neighborhoods. We wanted to find evidence of fluctuating arts funding in neighborhoods with changing demographics. Was funding going to historically Black and Latinx neighborhoods at the same rates as changing ones? To us, this was a vital question of enabling long-term residents to retain cultural capital.

Each team member brought different skills and perspectives. Brittany was a college student who was just learning to work with data. She stood out with her enthusiasm and a shock of curly blonde hair. She wanted to ensure that locals retained a stake in their neighborhood's art. To her, data drove our argument. To construct it, we had to comb through, clean, and aggregate data. That is where Ben came in. Ben Watters, Grants and Research

Datathon Team Members

Director for the Arizona Commission on the Arts, was a slim fellow with an auburn beard and an easy smile. He was able to show us how to use simple tools to gain insights from data sets. Regina, an expert in public engagement, looked over his shoulder as he explained how to use the index function in Excel. Ben was used to data analysis, but he needed information from locals about Los Angeles.

The project took all the expertise the event helped bring together: Regina's community knowledge, Brittany's emphasis on equity, and Ben's skills with data interpretation. The resulting analysis showed a persistent correlation over time between affluent neighborhoods and arts support. It used data to make the case that the city should pay closer attention to the cultural assets of less affluent areas. Gentrification was a hot-button topic that can pit art galleries against community organizations.

I was worried about the ways the analysis might be misconstrued, but Regina understood how to tactfully tell this story about how to improve communities. The civic hackathon was a success because it fostered a message of inclusivity and brought diverse teams together with the tools they needed.

As exciting as they are, expecting civic hackathons to immediately change government is not realistic. The next step up the ladder of Civic Tech participation are non-profit organizations like brigades that help participants improve their ideas and build a supportive team. Participants in brigades are more like volunteer consultants. "We don't ask administrators for solutions," said Code For Philly brigade director Dawn McDougall, "we just ask them, what are the problems that you are facing?"

Code for America, which runs the brigade network, was started in 2009 by Jennifer Pahlka. She saw that public sector technology design was impoverished partly because tech companies offered high salaries and perks. Working in government, by comparison, involved long hours spent on unglamorous tasks for a paltry paycheck. As a result, the most talented young adults were being siphoned off for careers making technological widgets for the privileged. Code for America built bridges for outsiders to participate in governance, and even become professional public servants. "Politics isn't government,

and governing isn't someone else's problem," wrote Jennifer Pahlka. "It's ours." She was trying to persuade people to join government with a message of unitary democracy.

Jane Mansbridge, responding to the turbulent politics of the 1960s, divided politics into two categories: adversarial and unitary. Adversarial politics, such as voting and protest, were characterized by competition. Unitary politics was the model of Tocqueville's small-town America. "Unitary democracies are like friendships," Mansbridge wrote, "distinguished by consensus, face-to-face assembly, and an emphasis on a rough equality of respect among the members." A town's 24-hour crisis helpline was one of her examples of a unitary project that helped people come together around community infrastructure. The people who ran the helpline also provided shelter and transportation for those in need. Like techies, they worked together to use everyday technology to alleviate a problem that affected their whole community.

Pahlka started connecting ethical technologists with sympathetic local governments through a fellowship program. The fellows she brought in reflected the true diversity of America. Fellows were paid a fair monthly wage and placed with a government that supported their efforts. Many of the projects you've read about—like Clear My Record and GetCalFresh—started with Code

for America. The CfA network now includes some 40,000 civic hackers, and their yearly summit tells important stoies of their successes.

Brigades invite people to come work at their own pace on projects that have an positive impact in the community. Vyki Englert is captain for the Code for America brigade Hack for LA. She grew up in a progressive Florida town that embraced gay rights and volunteering. Over time Vyki gained a reputation for being savvy with databases. "We could bridge the gap between community and technology," said Vyki, "because we could speak both languages." For her, working with data was an important part of representing the community. "For me, open data about is empathy and accountability," she said. "You need to better understand what kinds of things to do and how they are going to impact residents." Brigades help data specialists like Vyki translate issues between government and the surrounding community. In turn, she helps sustain the brigade.

Participants benefit differently from brigade work. For example, Kyle, Alan, and Chandler started Work for LA after they met at the Hack for LA Brigade. They wanted to increase the number of people applying for government positions. "It's a very complicated process. That's why our group has arisen," said Chandler. "When the city loses out on potential talent, everyone in the city suffers." While

they were united around this idea, each had different individual motivations for participating. Alan, who came to LA from San Francisco, saw civic hack nights as part of a trend where technogical methods and politics were free to mingle. Kyle got a taste for working with code when he lived in Mexico. To him, seeing an impact was its own reward. "There's this feeling when the code goes live and you see people using it," he says with a laugh. "It gives you the warm fuzzies!" Loose-knit organizational forms like brigades are useful for geeks who are interested in getting involved in addressing social problems on a regular basis.

Working as a government employee is the highest rung on the ladder of Civic Tech participation. The most dedicated civic technologists can become Chief Data Officers (CDOs), Chief Technology Officers (CTOs), and other city officials. Just to name a few, Mark Headd served as Chief Data Officer for the city of Philadelphia, Abhi Nemani had a stint as CDO of Los Angeles, and Todd Park was CTO of the United States from 2012-2014. Having Civic Tech as your "day job" can be stressful, but it opens up new opportunities for changing government.

"Civic tech wants to solve real problems," said Candace Faber. "It's not just about apps." She first got interested in technology through blogging. Politics came later, when she became involved in Howard Dean's presidential campaign and served as a diplomat in the U.S. Foreign

Service. For years she worked to foster a healthy ecosystem for technology design as the Civic Technology Advocate for the city of Seattle. Civic technologists working on the inside still retain a pragmatic spirit and build bridges to the community.

In the 1960s economist and sociologist Guy Benveniste believed that experts could potentially reform political systems. His question was "not whether technocrats might animate a world of robots," but rather "whether experts and planners accept the responsibility of their potential political role in society." Sid Burgess, like Candace Faber, saw working on the inside as offering new possibilities to connect with community needs.

"I was a researcher in a way, trying to understand how government worked so I could solve problems in it," Sid told me. "The most useful I could be was to pull back and really think about the problem... talk to the people that were suffering." Civically engaged geeks like Sid spend a lot of time doing unglamorous work that is mostly about understanding how complex systems work. "I've spent countless hours in a police car riding around... digging trenches with public works, trying to figure out their problems."

It should be apparent by now that civic technologists are not all software engineers. Sure, people like Dave Guarino, a senior engineer at Code for America, know

more than a few programming languages and can find their way around GitHub. But it pays to get down in the weeds, like Sid Burgess and Jazmyn Latimer did, to map the real problems people encounter. Civic technologists are aware that the message that technology will solve all community and government problems has been oversold lately. One revelation that I hope this book imparts is that civic technologists have a range of communication and design skills. Diverse expertise, not just technology, is what distinguishes them as valuable bridges between community and government.

The last few years have seen a rise in organizing around technology design. And I haven't even touched on growing, exciting organizations like Civic Hall, or companies like DataMade. Organizing around technological issues, as they do, fills a gap in our democracy. "The trouble is not that we lack good arguments and theories," wrote technological philosopher Langdon Winner, "but rather that modern politics does not provide appropriate roles and institutions in which the activity of defining the common good in technology policy is a legitimate project." By comparison, consider established democratic formats like voting and town halls.

For centuries we have elected representatives to represent us. If you want to make your voice heard in local politics, you know you can go to a city council meeting. Voting

and meetings are vital to healthy communication between residents and city officials. However, neither voting nor meetings work well at improving technology design, or integrating technological reforms with associated policy and process improvements. This is why we need border-dwellers like techies that move across organizational boundaries.

Admittedly, we are still in the early days of Civic Tech organizing. Still, civic technologists have started to think through how organizing can democratize the way we generate and implement ideas. Notably, theirs is an additive formula, designed to improve government rather than replace it. If we want technology to reflect the diversity of residents, one way forward is to organize to structure participation and bring new expertise into the mix. City employees should rub shoulders with artists and data nerds, as happened at the Los Angeles Datathon. The Work for LA team came up with an idea for breaking down barriers to public service. Civic hackers working in government who are interested in improving public safety might benefit from riding alongside police, like Sid Burgess. These are the kinds of problems that are of vital public interest, but often do not fall on one person to fix. The next chapter explores another type of organization, innovation teams, that try to reform government from the inside.

CHAPTER 5:

CHANGE GOVERNMENT FOR THE BETTER

Technology can be simply another distraction. A few years ago I met with my councilwoman. We had planned to talk about how technological efforts could benefit our city. Ironically, technology got in the way. While we were talking, her government-issued iPad would buzz and beep. She would flip it over occasionally, tap at the screen, then turn it over, only to have it beep again. It was hard to have a discussion, so eventually I asked her about what was going on. There was a discussion on animals rights in the upcoming council session, so every time she received

an email or message online her iPad responded with an alert. It was similar to the notifications you get from text messages and social media on your mobile phone.

We are taught that contacting public officials is a way to have your voice heard. Public officials get floods of tweets, emails, and Facebook posts on specific issues. But because social media is so easy to post and ignore, tweets and posts rarely sway their opinion. The problem with reforming institutions is not that we don't have enough technologies that help us communicate with public officials. It is that we often have too many, to the point communication becomes a distraction. While the last chapter discussed ways to organize outside of government on issues the public cares about, this chapter explores a way to use communication to strategically change government.

Innovation teams are small groups that use communication to improve the way organizations operate. They persuade stakeholders inside government to adopt new courses of action on persistent social problems. Innovation teams in government use multiple strategies to accomplish this. The federal agency 18F, which employs over 200 techies, encourages the adoption of better technology design practices such as agile development, while Bloomberg "I-teams" follow a particular path from problem investigation to suggesting potential solutions.

Despite their differences, innovation teams share a

set of core characteristics. They are small teams, often of institutional outsiders. They rely on creative funding sources, which is appealing to governments that have seen budgets slashed. Innovation teams also seek to cyclically improve the way government functions while taking a progressive approach to urban change. They also apply the very principles you've read about so far in this book—local design, open data, and organizing around public problems.

The roots of innovation teams, similar to open data, can be traced back to progressive ideas that emerged in the late 1960s through a pair of educational researchers working in inner city Washington, D.C. high schools. Vytautas Cernius was a Lithuanian intellectual who fled Nazi Germany. He graduated from the University of Chicago, which was famous for its "laboratory school" that took an experimental approach to education. Cernius and his colleague Mary Lela Sherburne acted on a hypothesis to change schooling. They were inspired by psychology professor Kurt Lewin, who found that groupthink could be disrupted if you communicated tangible results in a familiar language. By showing the need for change, administrators would change their assumptions, eventually settling in new patterns of behavior. Most importantly, Lewin showed that institutions had a tipping point. Change was not impossible—it required trusted

advisors diplomatically communicating benefits to reluctant stakeholders.

Cernius and Sherburne brought together educational and organizational change by putting together a group of fifteen teachers and organizational partners to work inside of troubled schools. They called this group an "innovation team." The problem they encountered was that principals were confronted by rapid teacher turnover and over-crowded classrooms. Through observation, the innovation team started to see that the problem lay not in teachers or classrooms, but in a curriculum dominated by passive observation and rote learning. The team suggested an alternative of active learning and self-discovery. They started working with teachers to shift the curriculum to empower students. By 1966, over 50 classrooms showed improved student outcomes. Then, a tragedy struck that would put the innovation team to the test: on April 4th, 1968, Martin Luther King Jr. was assassinated in Memphis.

The predominantly African-American schools had a sudden need to respond in a culturally sensitive way. This wasn't the kind of problem that big institutions were typically able to quickly respond to. How should teachers involve students in the learning process, while showing empathy? In response, "the team became a genuine participatory decision making group," wrote Cernius. The innovation team consulted with teachers, who felt

that it was best to let students talk about what they were going through and create artwork to reflect what the were feeling. The resulting booklet was published and distributed widely to 20,000 more students. "Critics had been demanding results for years," Cernius wrote. "When it arrived the community was astonished." This little-known story showed how building trusting relationships within institutions can enable them to respond quickly and appropriately in moments of crisis.

The idea of innovation teams caught on with businesses, who used them to improve the ways companies functioned. Innovation teams were appealing to businesses for very much the same reasons as public sector institutions. Change could be achieved through a small nimble team working internally instead of a large set of reforms or an expensive outsourced solution. Innovation teams could view problems from the ground up and be ready to adapt to unexpected events. These are still the ideas that drive modern-day innovation teams, which have started to return to the public sector.

Much of renewed interest in innovation teams can be traced back to Michael Bloomberg, who rose to political prominence as Mayor of New York City. He got his break in business when he was given a $10 million buyout from his position at Salomon Brothers. With this money, he famously created the company Innovative

Market Systems. He made a fortune renting "Bloomberg Terminals"—computers running specialized software that tracked financial markets. Eventually he moved into news, while promoting a simple formula. A 1995 article in Journal of Business Strategy quoted Bloomberg as stating, "I identified my client base, figured out its needs, and then filled those needs."

Pragmatism always figured more prominently in his worldview than issues or party affiliation. At times, this caused political backlash among voters. Defending the police's "stop-and-frisk" policies and clearing Zuccotti Square of Occupy protesters did not endear him to the left. Supporting a tax on sodas angered the conservative right. His brand of politics relied on data-driven pragmatism—the "Bloomberg Method." With his billions of assets, he wanted to bring his brand of nonpartisan problem-solving to other local governments.

Bloomberg Philanthropies collaborated with Nesta, a foundation in the United Kingdom, to bring innovation teams into local government. For this reason, these "I-teams" took on a certain flavor from both Bloomberg and developments in the UK. Michael Barber, another educational reformer, was instrumental in Tony Blair's second administration. He saw a problem with public officials who created initiatives merely based on instinct and political will. Barber believed that iteratively refining

service design would lead to more successful outcomes. Similar to Cernius and Sherburne, he believed small teams could shift the way large, unwieldy organizations worked. A team researched problems, proposed plans, and gathered support. Once the idea was supported by stakeholders, the team could turn their attention to new problems. This let teams continue to be nimble and generate new ideas. Innovation teams got traction in the United States through Bloomberg Philanthropies awarding over $85 million in three rounds of grants (2011, 2014, and 2017). They remain a powerful example of what professional public service for techies looks like.

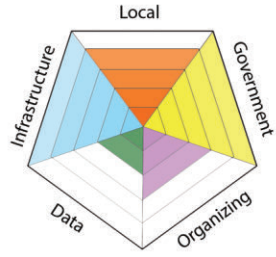
Two years ago I was coming out of a graduate program in communication and was itching for a way to put my skills to use. I had heard about a new team in Los Angeles called an "innovation team," and soon found myself working in one. Mayor Eric Garcetti was interested in getting a handle on Los Angeles' changing neighborhoods. Rents were rising in neighborhoods like Silver Lake, unfortunately pushing out long-term residents and people of color. It was a complex problem that didn't reside cleanly in any one department, with cultural, economic, and urban planning dimensions. Keen to show progress, Garcetti and his Deputy Mayor Rick Cole wanted to show the city that they could balance economic prosperity and cultural sensitivity. The Bloomberg-funded innovation

team would try to bridge government and the local community to encourage stakeholders to adopt improved technologies, processes, and policies. It was the kind of real-world challenge that I was excited to tackle after years of academia.

The team went through several phases of problem-solving, developing plans to make neighborhood change more culturally sensitive and sustainable. Jason Neville, our urban planner, found that researchers had reached a consensus that housing scarcity was a powerful contributing factor. If a neighborhood can't grow its housing stock, rent will be driven up. But making houses appear was difficult, to say the least. How could we increase the supply of housing? The team developed a multi-pronged approach.

The team saw potential in increasing the supply of accessory-dwelling units (ADUs)—apartments converted from buildings, such as garages, or added on to existing properties. More ADUs would mean residents could comfortably house their family or rent them, gaining a new source of income. But first we needed to understand what might keep people from building ADUs. We extracted addresses and phone numbers from PDFs of building permits for these types of units. Then we simply called them to invite them to a bilingual focus group. I remember how surprised residents were that their city

was calling them to see what they could do better. By contacting residents directly, we were able to get a cross-section of Angelenos who had built ADUs together at a local library to figure out what the roadblocks were.



ADU Initiative Badge

We eased into the focus group with a set of introductory questions, which led into a process mapping exercise. Using sticky notes we walked through the steps residents went through to complete their project. The team started to see the problem through their eyes and identify points where they got stuck, similar to how Jazmyn Latimer uncovered legal roadblocks. It turned out that plan inspectors didn't give consistent feedback. We found ADUs were also classified in a number of different ways by the city, leading to an inconsistent way the permits were recorded. The focus group demonstrated how innovation teams used a variety of tools to investigate social problems. The team's hyperlocal approach also relied on members' creativity and instincts in finding new sources of data and ways to reach out to the public. We came out of the focus group understanding the need to clarify feedback and make inspections more consistent.

The city started to integrate the team's insights. The team collaborated with architects on building two

prototype ADU units and improving the plan inspection process. They also created an outreach campaign so residents understood how they could access resources to help them stay in their homes. These reforms came alongside strengthening renters' rights; Mayor Garcetti proposed new legislation that would strengthen rent stabilization, and committed to building 100,000 new housing units by 2021.

The innovation team's plans for improving access to affordable housing led to a comprehensive set of reforms. The team simultaneously increased participation, changed government processes, and helped set goals for government officials. Other team initiatives included creating a small business portal and increasing youth participation in neighborhood council. And Bloomberg I-teams are just one type of innovation team.

Other innovation teams are more experimental, like the Mayor's Office of New Urban Mechanics (MONUM), co-founded by Nigel Jacob. The name came from Boston Mayor Thomas Menino, who was nicknamed the "urban mechanic" because of his passion for improving urban life. He was known to obsess over mundane topics like streetlights and graffiti, and asked the public what mattered to them. "Throughout my whole career I have tried to be an open door to people left out of the mainstream," he said in a 1994 interview. Inspired by Menino, Jacob's

team took an experimental approach to improving the user experience of citizens. "First and foremost, our job should be making city living better," said Jacob. "For us it's really about taking a people-oriented way of thinking."

Departments in Boston city hall had narrow priorities, which meant thinking about shared civic problems across departments was uncommon. Everyone pretty much stayed in their lane. As a result, employees were reluctant to try new ideas that weren't their direct responsibility. To Jacob, innovation teams have an important role when it comes to trying out novel ideas. "We potentially shield you from the negative aspects," said Jacob. "If you do something that doesn't work you don't get that negative phone call, we do."

Since they were able to take risks, MONUM cheaply prototyped a range of different projects that might improve public engagement. They created "City Hall to Go," a truck that brought city services directly to the people. Some applications were targeted at youth, like a bus-tracking app that helped students get to school, and an experiment in participatory budgeting that let teenagers decide how to distribute $1 million in project funds. They gave it to the Franklin Park playground, as well as public art and sidewalk renovation. As to his inspiration, Jacob cites the work of Laboratory Para La Ciudad (Laboratory for the City) run by the Mexican government, that runs

public experiments they call "provocations." After all, innovation teams, like Civic Tech as a whole, have gone worldwide.

New Urban Mechanics' experiments showed that local government could be exciting and intersect with city imperatives of civic engagement and policy-making. Though Jacob has a degree in computer science, he does not believe "big data" analysis is the solution to social problems. "I think that we don't simply want to take a predictive analytics view of the world," he said, "because that means that we will never have an actual theory of the city." Although college professors don't get into city hall very much, Jacob sees similarities between the way they want to understand social urban systems.

"We're like peas in a pod," Jacob said with a laugh, "academics and bureaucrats." Accordingly, MONUM has collaborated with the Engagement Lab at Emerson College, a lab started by Eric Gordon to connect civics, play, and mobile media. To Jacob, trying out these types of collaborations helps build our collective knowledge about cities. This helps public officials to create not just more efficient government, but a more open and supportive one that responds to the contours of local life.

When I was working for the city of Los Angeles, the incoming deputy mayor rallied enthusiasm in the mayor's office by telling us, "we must rebuild." He then paused

before adding, "but we must rebuild smarter," meaning that we should use this opportunity to improve our functioning as we add capacity. Accordingly, techies working inside government, like Nigel Jacob and Bloomberg I-team members, are re-thinking how behavior in large bureaucratic systems can be built better. Although scholars of civics such as Robert Putnam and Theda Skocpol focus on volunteer engagement, it's difficult to argue that government employees don't have a role to play in the Civic Tech ecosystem. In fact, they might be the most participatory of all, laboring full-time to keep government running.

Cities want to dedicate staff to work with data and improve social infrastructure—the skills civic technologists have in abundance. Yet, working on an innovation team is among the most difficult work in Civic Tech. Public officials also have to meet the needs of constituents amidst challenging circumstances. Budgets are tight, and public officials can be leery of changing their routines and taking on new priorities. On top of that, existing government technology can be complex and outdated. Snarls of code written in arcane languages litter websites, and mobile apps were created by contractors long gone. As the example of my councilwoman being distracted by her iPad showed, technology and communication are not always complementary. And unfortunately, government

can still live up to its reputation of being unnecessarily complex and insular. Recently I ran into a techie who was working inside the DMV, who simply told me, "it sucks just as much as you'd think." The tech was outdated, and employees were reluctant to try anything new.

Innovation teams bring different stakeholders together around new ideas, and push the envelope of what cities can do for their residents. Nigel Jacob suggested that innovation starts with a human-centered approach and securing space for experimentation. The Los Angeles I-team showed how creatively reaching out to the public and generating new data can give clarity to public problems. In cities like Chicago and Boston, innovation teams have even become permanent fixtures, because they model principles we can trace back to Vytautas Cernius and Lela Sherburne. They showed how large organizations can be changed by slowly developing trust and providing advice at the right time. All these examples show the power of principles of Civic Tech.

CONCLUSION

In Alphaville, a science fiction film noir directed by Jean-Luc Godard, the bluntly-named detective Lemmy Caution is on a mission in a dystopian alternate reality. Alpha 60, an omniscient, ultra-rational computer, runs the city. The cities are visually represented by brutalist concrete structures that are uncomfortable to view and probably to live in. Residents never participate. They never ask why, only state "because." If they ask questions or express emotion they are executed—most memorably, by a team of synchronized swimmers.

The film's narrative centers on a debate between the technocratic Alpha 60 and the hot-blooded detective. "My judgement is fair and I operate for the universal good," Alpha 60 stated. Lemmy saw this thinking as authoritarian, eventually dismantling the machine. Godard's point was a sole functional reliance on technology can come at the expense of progressive ideals. What we think of as the "universal good" is always changing, and what "works" for one person does not for another. Alphaville outsourced decision-making to a computer that cared only for efficiency and internal logic.

Alpha 60 Defends Itself

This old science fiction film seems less like fantasy now. In the process of seeking a solution, algorithms produced

by outsourced contractors and the tech industry blithely transgress societal norms in the name of efficiency. For example, professor Safiya Noble wrote about biases of search engines in her book Algorithms of Oppression. When women of color used Google, they were confronted with sexist and racist results. She argued that technology perpetuated harmful stereotypes to the very people who needed more positive role models. Similar stories of technological bias arrive in the news daily. The COMPAS algorithm helped courts make sentencing decisions. Yet, it gave people of color lengthier sentences than white offenders, even as the logic behind the algorithm was opaque to the accused. It lacked the transparency and empathy civic technologists believe characterizes democracies. Such automation simply does not have the moral innovation to improve society.

Although I feel Civic Tech is a productive middle ground for social change, critics like Evgeny Morozov assert it reflects an Alphaville-like technocracy. He views the movement as a corporate bid for civic institutions and an elitist way to circumvent participation. We should take these assertions seriously. But I do not think techies are technocrats or elitist, as their approach involves the public and eschews easy solutions. In fact, a close consideration of history reveals that techies hold quite different political beliefs grounded in progressive democracy.

Technocracy emerged in the early 20th century from the great depression and a surplus of freshly-trained engineers. Historian William Atkin concluded that the 1930s financial bust led technocrats to become frustrated with government corruption. He claimed that they, "demanded new ways of viewing and organizing society, a new set of values." Civic technologists, too, have their values. They also grapple with unresponsive politicians and programs that don't serve constituents. However, techies should not be confused for a technocracy.

Technocrats wanted to tear government down and rebuild it around the efficient functioning of technology. They calculated that productive machinery would bring about incredible abundance, an implausible utopian goal. From their very beginnings, technocrats were an odd bunch of anti-institutional cranks without organizational savvy or interest in thinking through the root causes of human problems. A more explicitly reformist movement came shortly in the form of Roosevelt's New Deal. It put money toward infrastructural reform and pushed technocracy to the fringes, where it remains today.

Civic technologists are far more sensitive to systemic problems than technocrats, and better attuned than Roosevelt to questions of diversity. They shape technology to improve social life, not bend people to its whim. Part of the confusion about Civic Tech might stem from

the way techies draw from multiple political techniques that are rarely combined. That is, even though techies' tools include technology, their goals align more with the New Deal's investment in communities and social infrastructure.

Candace Faber, then Civic Technology Advocate for Seattle, similarly argued that the reason Civic Tech is needed is because the promises of technology have been over-sold. "I think the reason Civic Tech exists is because, so far, technology has not fulfilled its promise to make society more equitable," she said. "In a lot of ways, technology has made it harder for people to access information and services." Often technology can hurt more than help.

We have seen ill-functioning technology in Facebook's omnivorous data collection, the unusable Healthcare.gov website, and mapping services that were not designed for residents in wheelchairs. By Candace's judgement, Civic Tech arose not because techies thought technology will solve all our woes. Rather, they saw that simply throwing technology at a problem has rarely improved people's lives in a universal or straightforward way. The principles described in this book provide comprehensive ways to make technology work for people. Its default settings should never be trusted.

A more productive way to think about the Civic Tech

movement is as a form of technical populism that seeks equality in an increasingly diverse society by making socio-technical systems more just and equitable. Returning to Kenneth Laudon, he presciently wrote that democratic reforms through technology can take the form of "pluralism of the old sort." Techies like Jazmyn Latimer, Mark Headd, and LaurenEllen McCann have articulated fruitful ways technology design can work alongside old-fashioned policy work and organizational collaboration.

I feel that techies reflect what economist Robert Reich referred to as "progressive populism, based on democratic renewal and widening inclusion," rather than "authoritarian populism, based on strongmen who... scapegoat minorities." This is why the politics of techies echo the leftist, progressive populism of Obama. They are oriented by the same moral compass of our country that finds routes for supporting our communities in moments of crisis. It is this same progressive spirit that drove the precedents of Civic Tech discussed in this book, such as informational transparency and democratic participation.

Thinking about equality returns us to this foundational democratic concept. Law professor Danielle Allen ran a continuing education class at night in Chicago. Her adult students were from all walks of life. Many worked two jobs and had to take multiple busses just to get to class. "The single most transformative experience I had

came from teaching the Declaration of Independence," she wrote, "to my life-tested night students." Nothing grabbed their attention quite like this old parchment. What captured her students attention and transformed Allen's life? "All men," (or people) the Declaration of Independence famously stated, "are created equal."

Equality was the same promise that captured Alexis de Tocqueville as he traversed a fledgling America in the early 19th century. He encountered vibrant scenes of deliberation and direct participation. In Democracy in America, he wrote of his amazement at the resilience of small communities. He was particularly impressed by what he called the country's "equality of conditions." Danielle Allen similarly argued that equality undergirds freedom. "From a commitment to equality," she wrote, comes the "power to create a world in which all can flourish."

We are only all free when we are all equal, never vice-versa. Civic Tech exists not because it imposes technocratic solutions. Rather, it presents a more balanced route to social change. We can simply no longer ignore technology in our democracy. To reflect our values, technology needs to be collaboratively designed, carefully scaled up, and integrated with policy reforms. Only then might it lead to improvements in people's lives. Society needs this slower, more culturally nuanced path to increasing

access to and participation in unresponsive systems. By this measure, techies embody the familiar leftist goal of improving social services like health, education, and economic mobility.

To act as an agent of change means we need to be aware of persistent threats of paternalism and neoliberalism that typically accompanies state planning and technological initiatives. Promises to democratize technology tend to be a way for those already in power to claim they are being "participatory" when in reality, they do what they already planned. Some innovation teams have simply become another layer of middle management, and government CTOs can prefer top-down solutions. Techies should remain wary of this slippery slope as financial and organizational support for Civic Tech arrives.

Philanthropies and Universities have started to rally behind the principles of the Civic Tech movement. The Knight Foundation, New America Foundation, and Omidyar Network continue to fund efforts in this space. Civic tech also offers universities a way to achieve complementary goals of imparting technical skills, political knowledge, and habits of civic engagement. The Engagement Lab at Emerson University, the Center for Civic Media at MIT, and the Interactive Telecommunications Program (ITP) at NYU are bringing

these ideas together through practice. Similarly, professor Cliff Lampe at the University of Michigan has brought his students to work with the nearby small city of Jackson. Over the last few years they have gained technical literacies and experience working with local government. Lampe's teaching demonstrates that the principles of Civic Tech—which some assert has a bias towards large cities and short-term stints—can also work over the long-term in rural areas.

Another measure of Civic Tech's success is the spread of these principles into government. Mayors like Eric Garcetti and Rahm Emanuel see principles of Civic Tech as key to balancing accountability, service design, and economic growth. While not all techies agree with their politically moderate stances, their responsiveness signals an opening. And it is happening at all levels of government. The federal agency 18F alone has hired over 200 employees to promote agile development and service design. Open data portals are now a fixture in local governments nationwide. The Open Knowledge Foundation (OKF) counted 38 cities with open data in their 2016 census. In turn, cities have embraced direct participation with techies as a way the community can advise city policy-makers.

There has also been a flowering of new Civic Tech efforts and non-profit organizations. LA Counts, an open data portal funded by the California Community Foundation,

is based in the community, rather than in government. It serves the needs of students, non-profit organizations, and journalists in Los Angeles County. Catherine Bracy, an important figure in Code for America's early days, recently founded TechEquity. Her non-profit helps the tech community in San Francisco grapple with how to improve its relationship with local neighborhoods.

The civic technologists I interviewed were finding themselves closer to centers of political power, and leading coalitions of their own. They gained the trust of community partners, were working inside government, and some had even won public office. Yet, in general, they work behind the scenes on tough problems that most people aren't aware of. So Civic Tech's model of reforming governance has been challenging to package into a message that will resonate with the public. Compared with social justice movements like Black Lives Matter, it has been difficult for techies to garner public support, even as they tackle many of the same problems. Moving forward, Civic Tech need symbols that catalyze and organize techies while communicating their values. This was a problem that Jake Brewer thought quite a bit about.

Brewer, an early supporter of Civic Tech, quickly rose through the ranks of the Sunlight Foundation and change.org before joining the Obama White House as a Senior

Technology Advisor. His colleagues respected him for finding willing collaborators of all political stripes inside government on issues like immigrant rights. Bipartisanship wasn't just a way he thought about politics. Although he came from the political left, he fell in love with Fox journalist Mary Katharine Ham. One of their most shared images was of their family dressed as Marvel characters for Halloween, with Brewer dressed in a homemade costume as Captain America. Always working to help others, he went on a cancer charity bike ride on September 19, 2015. He lost control of his bike, throwing him into oncoming traffic. He died instantly. Obama released a statement describing Jake Brewer as a brilliant man with a big heart. "He engaged our striving immigrants. He pushed for more transparency in our democracy," Obama wrote. "He sought to expand opportunity for all."

The less told part of this tragic story is that Jake Brewer helped connect techies by remixing symbols from popular culture—a smart move to motivate young adults to take on tough tasks. He frequently referred to Civic Tech as the "Rebel Alliance," a nod to the revolutionary organization of the Jedi in Star Wars. To Brewer, the Empire symbolized everything that government should not become: an authoritarian state that ignored the will of the people. After his death, pins were made that showed Brewer in the cockpit of an X-Wing fighter. "He

saw the American revolution as unfinished," read a tribute written by Micah Sifry, "and believed that techies and open democracy activists were indeed part of the continuing #RebelAlliance fighting the Empire."

Jake Brewer Imagined as a Rebel Pilot

After his death, Jake's mother found a sticky note on his computer monitor that said, "cultivate the Karass." The phrase was drawn from Kurt Vonnegut's 1963 novel Cat's Cradle. It referred to a spiritual group united by invisible bonds. Civic Tech resembles the Rebel Alliance or a Karass—a network united in shared purpose to push back the darkness. When the specter of technocracy looms and government becomes increasingly closed-off, it does little good to pine for more receptive administrations. I believe

comprehensive plans that combine design with old-fashioned political goals of policy reform and coalition-building hold promise.

This book has told promising stories of techies, and situated their ideas in a lineage of progressive democracy crucially concerned with equality. They have improved participation in services, created transportation systems for the less physically mobile, and made access to housing easier. These successes should be celebrated. After all, one reason our civic life has become impoverished is we fail to recognize unfamiliar forms of civic behavior. We need more people fired up about building bridges between community and government.

To channel this energy, we don't just need more technology—we need better organizing, inside and outside of government. After all, one way to combat meritocracy and authoritarianism is to model more open, empathetic alternatives. This is the next evolution of Civic Tech, and the formidable challenge that awaits all of us who see ourselves as part of the #RebelAlliance.

EPILOGUE

This book discusses Civic Tech up until 2016. Since then, there have been numerous political shifts. What came after Trump's election is a story suited for an entirely different type of book. However, since final drafts took longer than I anticipated, I wanted to include a few words on the frustration and hope that I saw emerging in the aftermath of the presidential election.

Hillary Clinton's technology plan was robust. Her campaign promised to push for initiatives on broadband,

privacy, and open data. She promoted unity through diversity. Her supporters were a vibrant cross-section of America: women, people of color, gay, transgender, and queer. The mood at the yearly Code for America summit that November was upbeat. A Clinton win would have meant that Obama's "tech surge" would continue. That optimism came crashing down when Donald J. Trump was elected president. His populist vision represented everything that civic technologists were not: isolationist, bigoted, and uninformed.

Shockwaves reverberated through the Civic Tech community as leaders responded. Jennifer Pahlka tried to ease fears by repeating that the country still needed skilled public servants. Mark Headd tweeted, "the next 4 years are going to drive home the importance of having competent, experienced managers running the bureaucracy." Tough to argue with that. But for techies on the ground, the tension between their beliefs and the incoming administration's goals was difficult to reconcile.

Techies responded in ways that showed their political convictions. Recalling the response of librarians to the Patriot Act, data scientist Emily Gorcenski tweeted, "should we burn our algorithms?" Over 2800 tech employees signed the pledge neveragain.tech, refusing to work on unethical projects such as tracking databases for Muslim residents. Project #datarefuge brought scientists

and students together with the Internet Archive to make copies of public environmental data before they could be deleted. The critical technology 'zine Logic published a special issue on "Tech Against Trump." The model of problem-solving that civic technologists espoused suddenly seemed quaint in light of a palpable threat to the country's existence.

"Still here," tweeted the official account of the US Digital Service (USDS) on January 23, 2017. "Still coding, designing, and fighting for all Americans." But there is no telling how long this would continue to be true. Even organizations that supported Civic Tech in its early years were having trouble maintaining momentum. With little funding in sight, Alex Howard manned the Sunlight Foundation with a skeleton crew. Code for America's brigades were having difficulty keeping momentum.

Then there were controversial organizational collaborations. The American Civil Liberties Union (ACLU) used a windfall of donations, mostly from people objecting to Trump's immigration ban, to partner with the controversial tech accelerator Y-Combinator. Mark Zuckerberg strangely denied running for president, even as he traveled across the country paying visits to unsuspecting families for photo ops. Some of those on the inside doubled down. "The current squad skews much more grittier," Rebecca Williams tweeted, "and is growing

grittier still." It was a time of uncertainty, resistance, and organizing—the stuff of politics.

Ethically designed technology, whatever form it takes, will always take a diverse range of practices, expertise, and partnerships. Equity will always matter. Accessing legally entitled programs will be more important than ever in coming years for our most vulnerable communities. We still need to push for bridging to community partners and channeling participation. It is not all bad news. Organizations only now springing up could bridge to government and provide stability to public sector technology design. Every week new groups of savvy young people discover Civic Tech and build on its ideas. But Civic Tech has definitely passed through its idealistic halcyon days.

The new normal might be a more precarious existence: tougher work, unfavorable political winds, and less money to go around. Regardless, we will still be here: coding, designing, and fighting.

Andrew Schrock
December 2017

Code for Maine Poster

The term "Civic Tech" has gained international recognition as a way to unite communities and government through technology design. But what does it mean for our shared future? In this book, Andrew Schrock cuts through the hype by telling stories of the people and ideas driving the movement. He argues that Civic Tech emerged in response to inequality and persistent social problems. The collaborative approaches and early successes of "techies" may not be easy solutions, but they exemplify a powerful political alternative. Civic Tech draws our attention to the challenges of public ownership and democratizing technology design—vital goals for the years ahead.

Andrew Schrock has the head of a hacker and the heart of an activist—a pretty powerful combination if what you want to do is use new media platforms and practices to change the world. I can't think of anyone who would be a better guide to the bold new world of Civic Tech, a topic which should be close to the heart for educators and community organizers alike.

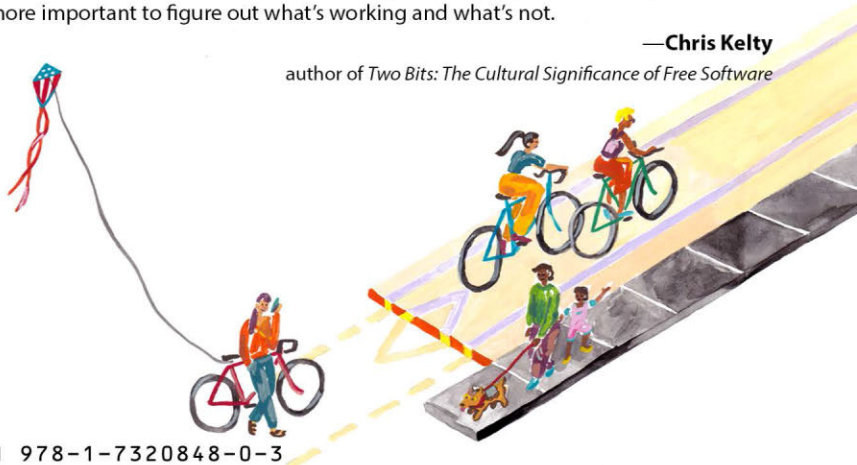
—Henry Jenkins
co-author of *By Any Media Necessary: The New Youth Activism*

While some hoard their good ideas for personal gain, Andrew openly shares them—especially ones with the power to make the world great through collective action. **His authorial style is open, accessible, and welcoming to a wide audience.**

—Meryl Alper
author of *Giving Voice: Mobile Communication, Disability, and Inequality*

This book guides us and exemplifies the spirit of participation animating Civic Tech. It's exciting to watch a new mode of political engagement emerge—but even more important to figure out what's working and what's not.

—Chris Kelty
author of *Two Bits: The Cultural Significance of Free Software*



ISBN 978-1-7320848-0-3
51995>
9 781732 084803