

Democratic Societal Collaboration in a Whitewater World

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We are in a world of continuous change, requiring flexibility in learning and updating of skills. It is a whitewater world that tests our capacity to read the currents and react quickly.¹ Advances in automation and the sharing economy have contributed to a rapidly shifting job market. Natural disasters such as pandemics, earthquakes, hurricanes, and fires are affecting communities at increasing rates. Political polarization, instability, and terrorism are constant sources of fear. These technological, natural, and political rapids generate radical contingencies, accompanied by sudden and regular shocks to society, making it difficult for individuals and communities to know how to adapt and protect themselves from the downstream consequences of change. We argue that a necessary step in preparing for the world we live in are societal collaborations in the service of democracy, collaborations using digital and other technologies not previously available.

In a whitewater world, the constant acquisition of new skills and dispositions is essential for survival at work, in society, and in politics. It is no longer just an issue of reskilling but an issue of constantly reskilling—such that reskilling becomes a state of being. In building societal collaborations, perhaps the most important reskilling lies in repurposing tools and organizational arrangements that worked in an earlier era—and inventing, as necessary, new tools and arrangements.

Our definition of democratic practice in digitally based societal collaborations has two major aspects. The first involves facilitating participation while ensuring relative equality of voice and decision power among the participants. The second is that the organizations are inclusive. Here is where we deviate from much earlier thinking. This is not simply (or only) a question of ensuring diversity, or of defining the common interest in terms of

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the actual members. Elinor Ostrom's *Governing the Commons*, for example, focuses only on how those who share a common-pool resource overcome the narrow forms of self-interest (which would imply free riding) to act on their longer-term interest (protecting the commons).² Our view is that it is equally important to define the community as those to whom there are obligations, even if they are not part of the specific membership group, be it a local community or a nation. We are committed to creating an "expanded community of fate," enabling individuals to perceive their interests as bound with strangers on behalf of whom they are willing to act in solidarity.³ To provide mechanisms for deepening our sense of obligations is part of what we expect of democratic societal collaborations.

Digital connections and platforms create both challenges and opportunities for democratic practice. Smartphones and the internet of things are conduits and facilitators of information and social interaction across the globe, with significant implications for agency and action. The initial effect seems to have been the construction of echo chambers and the manipulation of votes and preferences, but the technology, if properly used, also offers means for communicating and learning across traditional divides and for supporting new organizational forms for problem solving.

But to provide a digital infrastructure for a democracy that encompasses an inclusive community of fate, we must take seriously the concerns raised about doing the hard work of building organizations beyond the mobilization of protest.⁴ Although there is, as this literature suggests, a tendency for digital democratic practices to downskill, this need not be the case. In fact, as we hope to show, we can develop digital platforms that continually upskill.

In what follows, we build on thinking in three domains: pragmatism, arguments about building and sustaining the commons, and research on organizational cultures and institutional design that facilitate collective action that goes beyond the narrow self-interest of those engaged in the action. After elaborating the analytic tools we use, we consider a series of efforts to establish societal collaborations meant to enhance the public good. We then consider what we have learned and the next steps to take.

We primarily focus on technologies for facilitating cooperation and upskilling in societal collaborations, emphasizing the institutions, practices, and tools that make those collaborations internally democratic and that strengthen democracy generally. Some of those institutions, practices, and tools are borrowed from the past, but some emerge from the dynamics of collaboration in the networked age. It is the latter that are of particular interest. We are concerned with how organizations use technology to exercise democratic power and what obstructions they face but, equally, with the

kinds of leadership, hierarchy, power, and obligations developed within the organizations themselves.

Democratic Theory and Societal Collaborations Using Digital Technologies

Societal collaborations for the whitewater world solve problems while inventing and reinventing the appropriate tool set for skilling and reskilling of participants in democratic civic practice; skilling and reskilling participants in multipurpose, transferable tools that prepare them for flexible work; and creating a public that has an expanded community of fate. Such skills are important not only in their own right but also for supplying societal collaborations with what is essential for generative deliberation and problem solving.

Our model derives from the findings of Ahlquist and Levi in their study of the longshore workers (dockworkers) unions on the West Coast of the United States and in Australia.⁵ These unions are mini–democratic governments and reveal processes and rules that might be generalizable and scalable.

The leadership of most American and Australian unions are economic rent seekers who expect considerable personal advancement in return for improving the pay, hours, and benefits of their members. The unions they manage are hierarchical with few expectations of members except paying dues and striking on command. Even voting on contracts and leadership is restricted, generally done by a representative rather than directly.

The two unions Ahlquist and Levi describe are the exceptions to these rules as well as proof of concept of an alternative organizational design. Their leaders are political, not economic, rent seekers. While committed to—and required to—advance the material well-being of their members, they also wish to advance class and other forms of solidarity that extend beyond the boundaries of a particular union’s membership. They want to expand the community of fate, those with whom the members’ interests are bound and on whose behalf they are willing to take costly actions, even if there is little likelihood of direct reciprocity. The only way the leadership cohort can hope to change the beliefs of members about the nature of the world in which they live and change their willingness to engage in costly actions is through democratic institutions that, one, provide equal opportunity for political influence through votes and persuasive argument, and, two, ensure leadership transparency and accountability. Moreover, the organizational design must include education about the political, social, and economic context in which choices are made.

This particular democratic experiment flourished and survived multiple technological and legal transformations because it had two consequences.

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First, it proved effective in improving the living standards and well-being of members; leadership understood that this was their primary responsibility. Second, the engagements in costly action—both strikes on behalf of their interests as longshore workers and port closures on behalf of far distant others—led to reinforcing beliefs in democratic practice and an extended sense of obligations. The members went from being “wharf rats to lords of the docks” while also experiencing the pleasure of agency.⁶ They developed a sense of efficacy and power.

But what these two unions accomplished was in a predigital era and in a period when labor unions were relatively strong. Moreover, the expanded community of fate emerged from a group of people who were already tightly interconnected through their work and their unions. Achieving similar outcomes from a democratic structure that links people who have yet to—and may never—interact personally raises a series of new dilemmas for a pragmatic democracy.

Our model builds on the success of this small set of unions, organizations whose main mission was to serve the economic interests of members but that were able both to achieve that goal and to evoke from their members costly actions in the interest of others. With a combination of internal democratic institutions and learning opportunities, they were able to transform the narrow self-interest that unions generally encourage and create a broader sense of obligation. They enabled the workers to perceive their interests as bound with strangers on behalf of whom they were willing to act in solidarity, thus building an expanded community of fate.

How do we transform this model, forged in a different era and without the digital tools of today, into societal collaborations that work for our time? Listening that is both generous and generative is necessary to forge common understanding of the problems to be addressed.⁷ One means to ensure this quality of listening is a deliberative process, one in which individuals not only give reasons for their preferences and actions but also use the process to revise beliefs, practices, and solutions and to develop emotional interdependence. We also see deliberation as critical in enlarging the sense of obligation to those outside the group and thus expand the community of fate.

To facilitate and support this kind of deliberation also requires new organizational tools and institutions that enable individuals to recognize they are in that community and have solidarity even though their connections are digitally mediated and not personal. In contrast, the digital world may facilitate personal efficacy. In the longshore example, the workers were relatively unique in their capacity to engage in efficacious actions; they could close the ports. The physical world enables few such leverage points. The digital world

offers far more. As experiments with new societal collaboration proceed, the criteria for their success will not only be their effectiveness in solving the identified problem. Equally important will be the extent to which they build new civic skills and devise appropriate institutional arrangements for facilitating a sense of community and efficacy.

To a large degree, societal collaboration is about realizing pragmatist John Dewey's vision for democratic experimentalism.⁸ Dewey believed that actions build productive knowledge. When applied to education, this implies learning by doing and pedagogical methods such as experiential, problem-based, and situated learning that emphasize direct experience in learning. When applied to democratic theory, this implies civil society as a collective problem-solving endeavor and democracy as the form of self-governance that "affords the greatest possible scope to the social intelligence of problem solving and the flourishing of individual character as its condition and product." That is exactly how we envision societal collaboration.

Dewey chose not to offer concrete proposals. As Charles Sabel notes,⁹ Dewey felt it was pointless to "set forth counsels as to advisable improvements in the political forms of democracy" until the problem of communication and improved collective self-understanding had been solved: "The prime difficulty . . . is that of discovering the means by which a scattered, mobile and manifold public may so recognize itself as to define and express its interests. This discovery is necessarily precedent to any fundamental change in the [political] machinery."¹⁰ But the problem Sabel puts forth is solvable, and he, with Joshua Cohen, has offered one promising approach.¹¹ Another is that of Elinor Ostrom, who offers a schema of institutional arrangements that both reveal and facilitate common interests over a range of problems. Ostrom won the Nobel Prize in Economics for demonstrating that one could mitigate the tragedy of the commons without the state or the market, through community self-governance.¹² Left to their own devices, individuals tend to overuse common-pool resources, such as pastures, timber, or fish, in ways that deplete the shared resource forever. Economics has traditionally stated that there are only two solutions to this: either have the state control and enforce regulations on resource use or have the resource sold (privatized) and allow the market to regulate it. Both solutions lack sensitivity to context, the unique local conditions of a community. Ostrom showed that communities often do better than states and markets in monitoring and regulating resource use. Her extensive field studies led to generalized design principles for successful community management.

Ostrom's model of managing the commons not only depends on a relatively homogeneous population but also emphasizes monitoring exploita-

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tion of existing resources. It is not well suited to the instabilities and radical contingencies of a whitewater world. Nor does it apply where populations are heterogeneous and the resources are neither material nor geographically bounded. She and collaborators recognized this to some extent and have enlarged the framework to include other kinds of problems and institutional solutions, most notably in addressing knowledge commons.¹³

Yochai Benkler's commons-based peer production builds on Ostrom to advocate a model of socioeconomic production in which large numbers of people work cooperatively through nonmarket mechanisms facilitated by the internet.¹⁴ For Benkler, the rise of the internet-based networks enables people to easily share and remix information resources, what he calls the networked information economy. In some sense, the internet meets the need Dewey identified: the problem of communication and improved collective self-understanding that he felt was a prerequisite to fundamental change in the political machinery. The internet facilitates political innovation in open licensing that enables people to designate digital resources or knowledge as nonproprietary. By doing so, these resources can in essence be added to a global digital commons that the community at large could mix and match and evolve. Benkler emphasizes that this evolution of the digital commons could happen in a radically decentralized and nonhierarchical way as a natural outcome of the open licensing that put digital resources into the hands of anyone who wants to use them.

Like Benkler, we see digital technologies and the networked information economy as a critical part of our vision of societal collaboration. However, we believe that large-scale deliberation, collaboration, and upskilling happen best when we mix more traditional, but perhaps computationally mediated, organizational forms with innovative forms of peer production. Some of the most exciting emphasize radical decentralization and flattened hierarchy.

Our approach to societal collaborations requires recognizing heterogeneity as a challenge but also a resource for democracy. We build on the Jack Knight and James Johnson version of pragmatist democracy, in which they emphasize institutional means to bring together the diverse voices, values, and commitments of the populace. They argue that "pragmatists see the social and natural world as fraught with contingency. As a result, even our most fundamental beliefs inevitably will be called into question and potentially proven false. What is important is how individuals and communities respond to the resulting tensions and strains, to the real doubt that unforeseen consequences generate."¹⁵ For them the key features of a pragmatist philosophical position are fallibilism, antiscepticism, and consequentialism. Fallibilism implies a willingness to revise beliefs in the light of evidence and experience.

Antiskepticism limits the range of doubts and reduces relativism; doubts, as well as beliefs, require justification. Consequentialism involves a commitment to experimentation and assessment of the effects of a set of actions, including on our beliefs. The priority of democracy, for them, means creating a community of interest and then putting the right decisions with the right people and organizations and using the vote to determine outcomes.

Knight and Johnson argue that democracy is the best available means for facilitating collective choices at least as long as it affords equal opportunity in political influence, that is, votes and voice not distorted by money or status. We agree but go further. The condition of equal opportunity is a key feature of both the unions that produce expanded communities of fate and of the societal collaborations we advocate. Of equal import are the tools and institutions that permit the continual exploration and revision of beliefs, practices, and goals. Digitally grounded societal collaborations that incorporate generative deliberative processes at scale and continual upskilling create the possibility of new forms of democratic problem solving, participation, and obligations.

From Mobilization to Problem Solving

Numerous contemporary initiatives draw on digital technology to organize large-scale collaborative actions in support of democratic problem solving. These initiatives are of at least two kinds: those that mobilize people to engage in political action, and those that coordinate people to solve community problems or improve government responsiveness and efficacy. Both can potentially contribute to democracy by building civic skills, creating new channels for popular engagement in agenda setting, and generating expanded communities of fate that create shared responsibility and accountability among diverse populations. However, each initiative faces challenges that must be overcome to achieve these goals.

Certain features of digital technologies make them especially appealing for mobilization and advocacy. Most important is the capacity to scale action and power through large-scale distribution and personalized targeting of information and communication. However, when scalability is the sole focus, digitally based collaborations may reinforce echo chambers by micro-targeting information. They may also contribute very little to skill building. When deliberation exists at all, it rarely involves generous and generative listening. The point is to get lots of people mobilized to achieve the goals of the organization, not to create a learning environment. The original variant of MoveOn, discussed below, succumbed to these limitations.

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For initiatives centered on community problem-solving, such as Safecast and Code for America, their use of digital technologies goes beyond scalability and targeting of information to effective coordination of collaboration. We see such initiatives as particularly promising sites for using digital technologies to scale democratic participation in ways that embrace learning and deliberation. When digital technologies are applied to mobilization and advocacy for a predefined cause, they can short-circuit the richer engagement and deliberation that happens on the ground. But when digital technologies are applied to problem solving around a need and the stakeholders relevant for that need, then participation can support civic learning. Of course, such initiatives have their own challenges. The reliance on algorithms and complex software can empower certain people at the expense of others. Technologies for collaboration are also still in their infancy and still undeveloped or unproven, especially when it comes to mediating large-scale contestation and the productive friction crucial for democratic agenda setting, deliberation, and decision making.

This section describes three large-scale collaborative initiatives and the digital and other technologies that they use, and it interrogates the extent to which each successfully coordinates heterogeneous actors (who may also be strangers), upskills participants, and advances democratic practices. We first consider MoveOn and GetUp! as illustrating the benefits and limitations of digital technologies used only for mobilization. This is contrasted with Safecast, in which digital technologies are used to support collaborative problem solving. We see in this case a powerful illustration of how digital technologies can create new sites of engagement that bring people together around common needs, expand their community of fate, and upskill participants in democratic civic practice and technological tools. The mechanisms of Safecast, however, support scaling participation (and the democratic benefits of collaborative problem-solving) in only relatively simple domains. To explore more complex domains, we turn to Code for America, which illustrates the importance of organizational forms and ecosystems to make collaboration work, especially in settings that require deep partnerships with government and deep levels of empathy around complex societal needs. This leads us to the following question: how can digital technologies support initiatives such as Code for America to further scale collaborative problem solving (and the opportunities they hold for civic learning) in complex domains? Crowdsourcing has mostly developed around scaling simple, parallelizable work. How can we develop technologies that support and scale organizational forms and ecosystems that are central for initiatives such as Code for America? We pick this question up, and its relationship to upskilling, in the final section.

MOVEON AND GETUP!

MoveOn started with the simplest of digital tools to mobilize people to use their signatures to better advance issues about which they cared.¹⁶ It was the brainchild of tech entrepreneurs Joan Blades and Wes Boyd, who realized the potential of the internet for political campaigns when their 1998 online petition to “move on” from the Clinton impeachment went viral. Initially, it was largely an email call for signing petitions and contributing money. It used the internet to urge people to vote, but there was little actual personal interaction, at least at first. Although it did solve certain time and information problems and did encourage (and may have even had an effect) on voter turnout, it did not solicit full engagement. While MoveOn does coordinate people for elections, meetings, and other actions, it relies more on nudges and a bit of new information rather than the creation of new organizational forms or personal interactions. It costs less than door-to-door canvassing and may prove equally effective (jury is still out). It reaches more and different individuals than was possible with direct mailings. However, over time, MoveOn has become as much of an irritant as those multiple pieces of solicitation in our mailboxes.

The Australian version, GetUp, goes beyond the internet to create community-based organizations and grassroots leadership. In the section of the website called “How Do We Do It,” GetUp states its mission as this: “Sometimes we gather in raucous protest, at other times we partner with policy experts to develop new solutions—and everything in between. Whatever we do, we do it with as many people as possible, using our hands, our hearts, our voices to fight for the issues that matter most.”¹⁷ The list of campaigns and the varieties of actions is significant, and GetUp has definitely developed an offline network of volunteers who engage in protests and voter solicitation but also lobbying and community-based organizing.

MoveOn and GetUp are examples of simple tools focused on mobilizing large-scale engagement in elections and political actions. They are good illustrations of open-call crowdsourcing, in which crowds are recruited en masse through targeted recruitment or social media to contribute to parallelizable collective action efforts. While this is useful for large-scale search or protests that can even topple regimes as in the Arab Spring, they tend to be limited in complexity, and participation is typically transient.¹⁸ As described by Cebrian, Rahwan, and Pentland, “Social media has been much better at providing the fuel for unpredictable, bursty mobilization than at steady, thoughtful construction of sustainable social change.”¹⁹

When there have been attempts at ongoing collaborations, it tends to be

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quite local. These organizations also tend to be associated with the more liberal or leftist side of the debate. This is an advantage for mobilization, but it may prove a limit to the challenge to beliefs and the development of the skill of persuasive argument, two hallmarks of a pragmatic democracy. They certainly build civic skills and, at least in the case of GetUp, are experimenting with democratic organization. However, their emphasis is on advocacy and mobilization rather than on collective and democratic problem solving or on significantly expanding the community of fate by reaching out to those with different ideological perspectives.

S A F E C A S T

On Friday, March 11, 2011, at 2:46 p.m., a magnitude 9.0 earthquake struck 70 kilometers east off the coast of Japan. It triggered tsunami waves reaching heights of up to 40.5 meters and traveling up to 10 kilometers inland. There were 15,895 deaths confirmed, 228,863 people displaced, and 402,699 buildings collapsed. The tsunami produced by the earthquake breached the walls of the Fukushima Daiichi Nuclear Power Plant and disabled its reactor cooling systems, leading to partial nuclear meltdowns and explosions resulting in releases of radioactivity.

This horrific series of disasters led to the Safecast story, a powerful illustration of rapid globally distributed community organized response to address a clear need: measuring radiation levels to determine whether living or traveling in certain areas is safe. It started with an email thread between Sean Bonner, Joi Ito, and Pieter Franken, individuals who each had authentic preexisting connections to the disaster area: “In the days following, the discussion moved from confirming safety of friends and family, to ensuring their continued well-being in part by getting Geiger counters into their hands. Commercially available supplies dried up almost instantly and the discussion changed from buying to building. A plan to distribute devices was developing.”²⁰ It became clear that the government would not be able to supply this service. In addition, data sets existed, but they were often not shared, not standardized, or limited in scope. Commercial Geiger counters were also expensive and not tailored to the measurements needed. Bonner, Ito, and Franken all had strong global networks and expertise in rapid innovation. As they identified issues that needed to be solved to build and distribute Geiger counters, they pulled in relevant experts into the conversation. Bonner and Ito were the organizers for a conference in Japan, which they decided to repurpose to focus on crisis response specific to the earthquake. This meeting, just one month after the earthquake hit, became the first in-person meeting

where they brainstormed the key idea for designing a measurement device, a Geiger counter that could be strapped to a car to log measurements in motion, and also where they decided to focus on collecting data and providing it in a publicly available online database and map.

Safecast was born. They set a one-week deadline for building out the initial prototype, which was created by a team at the Tokyo Hackerspace. Exactly one week later, they had a working device. In the following months and years, they produced several improvements to this device, added a new stationary device, and most importantly, built a network of volunteers using these devices to contribute to data collection. Safecast decided to be intentionally apolitical in the debate on nuclear energy, which enabled them to bring together governments, churches, academics, and businesses, all of which agreed on the importance of collecting and providing reliable data. Today, Safecast is continuing to provide measures for radiation levels but has broadened its mission to collecting reliable data for environmental measurements at large.

The Safecast story demonstrates the democratic power available to communities in a networked information economy that enables them to collaborate to meet a real need even when governments and the market fail to provide solutions or are even hindering it. It also illustrates how an expanded community of fate was created in the process of this effort. The effort was seeded by a small number of individuals who had authentic connections to the community in need, a strong network, and experience in innovation. However, this quickly expanded to a larger team through online and in-person interactions, and then to a large-scale data collection effort. This effort was able to bridge divides across typical communities of fate to encourage collaboration despite the sensitivity of the political debate on nuclear energy. As members of the community mobilized around data collection efforts, they learned technical skills related to radiation measurements and sensors, and they gained civic skills as they worked together with local community organizations. The sensor they created was open source and available as a “do-it-yourself” kit, enabling the community to self-organize in creating a large-scale and trusted source of data that was open and transparent to all.

However, this story also embodies some of the limitations of collaborative problem solving. One of these is the uniquely large network and expertise that Bonner, Ito, and Franken had, which enabled them to kick-start the process of forming a team and creating the device. This condition could be challenging to transfer and places disproportionate power in the hands of those with this ability. Another limitation is the relatively simple scope of collaboration involved in Safecast (putting together sensor kits and collecting data). In this scenario, this simple scope was enough for solving the need,

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and it naturally provided opportunities for upskilling and civic learning. Other problem-solving scenarios, however, may need sustained and interdependent expert participation. New mechanisms would be needed to support coordination and upskilling in more involved technical aspects of innovation as well as in leadership, deliberation, and other civic skills. In the absence of such mechanisms, it would be hard to take advantage of the opportunities for civic learning provided by collaborative problem solving.

Safecast is a good illustration of the many efforts around peer production and open source as well as in citizen science and crowd mapping.²¹ These efforts provide tremendous agency to community and nonprofit initiatives that was not possible before, and they exemplify upskilling in both technical and civic dimensions. However, they often rely on a small number of long-term experts to drive the complex and interdependent parts of an effort. The community at large typically engages in learning and contributing along simpler parallelizable dimensions of the problem-solving effort. Open source is the closest example of large-scale, complex initiatives that also provide opportunities for learning. However, even in these settings, novices encounter many challenges to going beyond peripheral participation to more central tasks, and projects are often dependent on a few core contributors.²² Longer-lasting success stories are often sponsored by a company and tend to center on frameworks, libraries, and other technical infrastructure as opposed to collaborative problem-solving initiatives.

CODE FOR AMERICA

In 2009, Jennifer Pahlka, who was then working at O'Reilly Media, realized that advances in technology could make government not only more effective and efficient but also more responsive to citizen needs and more user-friendly. She founded Code for America (CfA), with support from a wide group of technologists, government officials, and foundation sponsors. The organization tries to create an ecosystem supporting complex initiatives in a way that is consistent, replicable, and scalable. In many cases they develop apps that facilitate access to needed services (e.g., CalFresh, welfare benefits) and that remove obstacles that hinder flourishing (e.g., making it easier to pay off parking fines that must be cleared to obtain a job). Their team involves staff but also fellows (people who commit a full year to kick-start a project) and local brigades (volunteer midcareer professionals who partner with local governments on projects). The process upskills the fellows, the brigade members, the government officials, and often those they are serv-

ing. All become more engaged with one another, with projects that matter, and with the people whose needs they must listen to, address, and involve in improving their own lives. As the organization has grown, it has also evolved its strategy and its mission, now framed in terms of delivery-driven government.²³

The primary purpose of Code for America is to improve government with technology by empowering teams of volunteers and trained staff to analyze and solve problems. It has demonstrably succeeded in improving the quality of service provision in response to actual demands and needs while also upskilling its team members. Code for America also fosters democratic practice. It is relatively nonhierarchical and holds itself and its teams accountable to the government agencies they are assisting. Most importantly from the perspective of pragmatic democracy, it solves problems through careful experimentation with possible solutions and with giving its staff and fellows considerable voice in finding and implementing those solutions. Through the process of creating the ecosystem necessary to support collaborative problem solving in complex domains, CfA generates significant civic learning and upskilling opportunities for participants. Moreover, as participants engaged with government officials and poorly served populations in the process of improving service, the team members necessarily develop empathy for those outside their existing communities of fate. This may well prove a mechanism for expanding the community of fate.

Code for America develops digital technologies that support governments, and it uses diverse technologies to coordinate their own teams and to help government officials and recipients coordinate with each other. However, developing digital technologies that can better support and scale such complex initiatives is still an open question in crowdsourcing. Such technologies would need to better support in-person relationships, organizational structures, and ecosystems, as is required for delivering much more complex, sustaining solutions in partnership with governments. Recent studies have begun to explore ways to enhance collaboration around complex goals, such as through computationally enhanced organizations.²⁴ These, coupled with analytics on the digital exhaust of cloud platforms for team collaboration, may prove useful for scaling initiatives like Code for America.

We believe that a whitewater world requires finding new ways to better support collaborative problem solving, for providing both immediate benefits and opportunities for engaging participants in democratic civic practice, upskilling them in multipurpose transferable tools for work, and fostering an increased sense of obligation to others and an expanded community of fate.

Towards Society as a One-Room Schoolhouse for Professional and Civic Upskilling

As individuals engage with others outside their typical communities and develop empathy for those affected, they begin to contribute to expanded communities of fate. We saw that the availability of such opportunities depended on the complexity of the domain and the nature of collaboration. When there are ways to carve out simple tasks like data collection, many people can get involved, and a large literature in crowdsourcing provides tools for supporting such large-scale participation. However, when objectives are complex, it is much harder to expand participation to those without prior expertise or with limited time.

In this section, we discuss ongoing projects in the Tech4Good Lab at University of California, Santa Cruz, to develop tools that more deeply integrate upskilling and reskilling into the collaborative problem-solving process.²⁵ These tools not only upskill novices in the required professional expertise but also create new ways to align an individual's time so that time spent in professional learning can also be time spent in civic upskilling—in developing empathy and the pleasure of agency that comes from engagement in real-world societal collaborations.

Our work builds on research on motivating participation at scale in volunteer crowdsourcing through methods that align engagement with other activities such as learning, play, or hobbies.²⁶ In the following cases, digital technologies are integrated into more traditional forms of organization and learning, where they help to harness learning activities to advance collective goals. While they are only prototypes, we hope that they will provide new angles to thinking about how societal collaborations might incorporate skilling and reskilling of participants and to realizing a pragmatist democracy that provides greater opportunities for diverse voices, values, and commitments of a populace to contribute to collective problem solving for society.

LEARNER-POWERED COLLABORATION

In early 2016, the Syrian refugee crisis was escalating, with millions of people being displaced, up to a third of the country's population. This motivated David Lee to think about how crowdsourcing could scale and coordinate volunteer support for nonprofits. Initially, he wanted to start with more independent tasks that could be learned and carried out in parallel, like those illustrated in the Safecast story. However, in conversations with refugee resettlement agencies, he found that most of the ideas they were interested in

involved highly interdependent work such as designing and building web or mobile apps requiring longer-term skills-based efforts like those of Code for America. He started asking, “What would it take to organize volunteers, many of whom are short-term novices to support complex crowd work?”

Early attempts kept on failing, but they revealed a close connection between societal collaboration and upskilling. Even when participants had experience, they were experienced in different approaches and technologies. In order to successfully coordinate them, there needed to be a deeper integration of learning into the work process.

But more than that, it quickly became apparent that upskilling was also the key motivator for drawing initial engagement. Eighty-five percent of participants said they would be willing to participate even if they were just recreating existing websites. And most wanted to help only with web development and not with writing guides (for a cultural orientation app). But as they participated, their motivation evolved, and they began to ask for tasks that they previously did not want to do. They had begun to feel the pleasure of agency and to develop empathy for those affected. An expanded community of fate was growing.

There is an untapped opportunity for motivating societal collaboration through learning. In a whitewater world, individuals need to be continuously learning. In Heather McGowan’s words, “In the past, we learned in order to work. Now, we must work so that we can continuously learn.”²⁷ But finding opportunities to learn as you work, to learn experientially and in a situated real-world context, is really hard.²⁸ Even if you can commit an entire summer, for example, opportunities for internships are rare. It’s a vicious cycle where you need experience to get experience. And there are certainly no opportunities to obtain the tacit real-world knowledge of the workplace in small amounts of time, through small weekend or evening internships.

If it were possible to support learners in contributing to complex real-world work, this would not only meet the needs of learners but also open up new levels of access and opportunity for individuals to contribute to their communities and to support a pragmatist democratic vision of societal collaboration.

After our many early failed attempts at organizing volunteers to build web applications for nonprofits, we finally succeeded (for a simple case), and we were able to organize a group of learners with little to no background in HTML and SCSS to successfully build out static pages of apps for nonprofits.²⁹ We designed a platform for learning web development. But instead of progressing through a sequence of topics, like in a classroom, we modeled learning after the workplace, with users moving through small experiential

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roles that are structured in an organization-like hierarchy. The hierarchy provides a learning pathway for developing professional skills. And as people move through this pathway, they contribute to real-world projects for non-profits and mentor those below them in the hierarchy.

This pilot study was just a simple case but is being extended to more complex aspects of web development and design. The Tech4Good Lab currently involves forty undergraduate students, most of whom do not have experience when they first join, to make real and significant contributions to projects on education, work, and community engagement. One student said: “When I first joined the lab, I was still fairly new to programming, but I knew I had an interest in web development, tech for social good, and UI/UX design. Within the lab I was able to learn and develop my skills as a front-end developer, as well as find a passion for design. Best of all, I feel personally connected to our projects and mission in a way that I don’t in my core classes. Diving into HCI research and working on projects that help my community makes every day exciting.” These students aren’t just gaining technical skills, they are also getting the opportunity to develop a sense of empathy, experience the pleasure of agency in meeting needs beyond their own, and heighten their sense of obligation towards causes that might have previously only sparked a momentary pull. The learning of technical skills provides a pathway for them to do this and to align the work they need to do with the causes they want to contribute to. The result is a virtuous cycle where professional learning provides a back door to civic learning and where civic learning provides a powerful source of motivation to help individuals persist in the deliberate practice needed for professional learning.³⁰

SMALL-GROUP NETWORKS

In their current form, the hierarchies described so far are still best suited to domains focused on execution of a determined direction as opposed to the (arguably more critical) other parts of problem solving such as design or agenda setting. More work still needs to be done to extend toward these other domains. In another early stage project, we are exploring learning pathways that are based not on micro-roles in organization-like hierarchies, but on small-group interactions, which are more suitable for brainstorming and deliberation. Participants progress through a sequence of different small group types that support learning while also contributing to real-world work. These groups include exploratory reading to develop intuition, deep dives for mapping out literature and honing an idea, and ideation groups for brainstorming around a theme.

One interesting aspect of these small groups is the relational component that develops through the in-person interactions over a monthlong period, and the opportunity this provides for facilitating large-scale deliberation. Digital technologies have created a new reality in which large-scale deliberation is possible but built on tweets and posts. In a heterogeneous population, societal collaborations—as we know from the longshore and other cases—require new building blocks for deliberation that enable debate and learning in the context of trusted, in-person relationships. These small groups might be useful from this perspective.

In our early prototypes, small groups spend the first fifteen minutes of each meeting on team-building activities. The simplest default activity is “get to know you” questions posed by members of the group; these have ranged from simple icebreaker questions to deeper questions like “Where do you see yourself in 10 years?” or even vulnerable questions like “When was the last time you cried?” or “What is the most politically incorrect thing you believe?” We’ve found that students unanimously value this component and the relationships it has helped to foster.

Other activities directly involve the group in a deliberative process independent of the group’s primary purpose for meeting. For example, in one activity based on the six hats framework, the group gets a brainstorming prompt such as, “How can UC Santa Cruz better support the cost of living for graduate students?” or “How can the US best reform immigration?”³¹ Group members engage in a facilitated discussion during which they put on different hats representing different ways of thinking (e.g., black for critical, yellow for positive, white for information). The activity provides an opportunity to learn one simple framework for discussing, disagreeing, and working towards consensus in a group. The results from their group discussion are uploaded to the platform and contribute to a larger discussion that other groups can build on. This project is still a work in progress, but it provides another example of how digital technologies can help to align learning with new forms of large-scale collaborative problem solving and to provide opportunities for participants to get exposed to and develop a greater sense of obligation for issues in society.

TOWARD SOCIETY AS A ONE-ROOM SCHOOLHOUSE

The upskilling and problem-solving properties of the described projects do not, by themselves, meet the demands of democratic societal collaboration. They have the potential to provide greater agency to individuals and communities in meeting unmet needs and to provide greater opportunities for

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individuals to engage in civic learning. However, the extent to which they succeed depends on how they are deployed in practice. For example, the expertise needed to create such structures would limit their power to those with the ability to create them, unless they are provided in ways that are publicly accessible and adaptable. The use of digital technologies can be a boon but can also limit access to certain populations.

Additionally, these structures need to be consciously embedded in a larger ecosystem, in settings like the brigades of Code of America, where digitally mediated interactions could be tightly integrated with in-person relationships, organizational structures, institutional structures, and social spaces. There also needs to be much more research on supporting contestation and productive friction at scale in ways that also engender generous and generative listening. We need to continue developing more means to enable individuals to recognize their common community of fate with strangers.

Most importantly, we need to learn how to create governance structures that give priority to democracy in the sense Knight and Johnson required. That means devising decision-making institutions that recognize both specialized knowledge and common purpose but that put the ultimate power in the hands of the public via the vote.

Luckily, there are many others experimenting at the intersection of all of these themes. A growing literature in “learnersourcing” considers how to align learner activities with other objectives and how to create ecosystems to support communities of practice.³² Others have explored systems that support deliberation in civic settings.³³ Still others are experimenting with new forms of democratic practice.³⁴ We see these as each providing insights and small prototypes towards digital technologies that support democratic societal collaboration.

We return to the analogy we started from, our observation that we live in a whitewater world. How do we help people navigate whitewater rapids? They need to be provided with opportunities to train from lower-level rapids (with lower stakes and guardrails) before being thrust into higher level ones with real consequences. Our experiments with integrating professional and civic upskilling have so far been limited to small pilots, but we have begun to incorporate these ideas into coursework. What would it look like if a college student’s four-year coursework not only provided real-world problem-solving capabilities but also engaged the student in supporting initiatives like Code for America where he or she could learn about local or national issues, develop a greater sense of ownership over the community, and develop an expanded community of fate? And if possible for universities, why not for

K–12, with younger students working within smaller societal collaborations at the level of a school or neighborhood?

There are sixteen million college students in the United States alone, but only 10 percent of them are able to obtain internships each year. Imagine if all of them had opportunities for real-world learning, and not just during the summer, but throughout the school year, and in the context of supporting social innovators and nonprofits working on needs like climate change or homelessness. Many of these needs will never be served through financial markets, but maybe that's an opportunity. An opportunity to redesign education away from exams in a classroom and toward a community-engaged experience with society itself as a one-room schoolhouse for real-world learning, where education is highly integrated with civic engagement and supporting societal collaborations. These experiments are a start toward our larger goals. If successful, we will have a far firmer grasp of how to support participants through democratic societal collaborations to view a whitewater world not from the perspective of fear but from the perspective of an adventure.

Concluding Thoughts

This chapter is a modest beginning at tackling the creation of democratic societal collaborations that upskill their participants and forge expanded communities of fate. We hope it provides some new perspective on the possible affordances that digital technology may provide in supporting flourishing in a whitewater world. The value of societal collaboration derives not only from the outcomes produced but also from the process of collaboration itself. Flourishing goes beyond basic survival needs to social belonging, esteem, self-actualization, and self-transcendence. One of the promises of societal collaboration lies in its potential to provide people with the opportunity to contribute to something greater than themselves and to build relationships, dignity, and meaning without compromising their ability to survive economically. In the spirit of Dewey and of Knight and Johnson, our hope is that from some of these experiments in collaboration might emerge new democratic institutional arrangements better suited to navigating a whitewater world.

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