REWIRING DEMOCRACY

SUBCONSCIOUS TECHNOLOGIES, CONSCIOUS ENGAGEMENT, AND THE FUTURE OF POLITICS

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Rewiring Democracy: Subconscious Technologies, Conscious Engagement, and the Future of Politics

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INTRODUCTION

Too often, the people working to strengthen democracy have been caught flat-footed by the pace of new trends and innovations. All kinds of changes, many of them driven by technology, are affecting how we live, work, vote, interact, and get information. It has always been difficult to understand the implications of trends in the moment, but it is even harder today because knowledge is so vast and specialized: the experts on each individual trend are often isolated from one another, and there is no overarching map for everyone to see.

Furthermore, transformative moments often seem to happen when trends come together—when the wires of innovation cross. Think, for example, of how the combination of personal computers, credit cards, and the internet transformed how we shop, leading in turn to dramatic changes in fields like journalism, as newspapers lost the revenue that classified ads used to bring. Well-known, slowly progressing changes like the rise in literacy rates or in economic inequality might interact with new developments like blockchain or the rapidly-growing capacities of artificial intelligence (AI). There are great challenges and potential catastrophes at these intersections, but there can also be great benefits. The intent of this paper is to begin identifying how these trends present significant dangers, as well as opportunities, for democracy.

Many of these dangers and opportunities have to do with the growing sophistication of what we are calling "subconscious technologies" and the increasing determination among citizens to make their actions and opinions matter in public life, an impulse we are calling "conscious engagement." These two forces are rampant, and the ways in which they conflict with or complement one another may be critical to the future of politics and democracy.

We also hope that this paper serves as an antidote for what seems to be the prevailing sentiment about the fate of democracy: deepening frustration and even resignation that our political system is ineffective and unpopular, without serious attention to how that system could be changed. Collectively, we have been a doing a lot of hand-wringing about democracy, as if we were standing at the bedside of a slowly declining patient. We know that frustration with American politics is higher than ever before. Trust in government and other public institutions has been ebbing for decades, and it has now reached unprecedented lows. Election after election, voters of both parties are attracted to "outsider" candidates who promise to "change the system." The trends we describe in this paper bring with them tremendous implications, and they should prompt us to think more carefully about how people interact with government, how they work with one another, and how we might redesign democracy so that it fits the new expectations and capacities of citizens.

Transformative moments often seem to happen when trends come together—when the wires of innovation cross.

This paper uses expert interviews, conceptual mapping, and a broad-based systemic analysis to gauge the force of different trends, understand their potential implications, and show how they connect and build on one another. By mapping and comparing these insights, we can better anticipate the path of democratic evolution and decide how to support positive changes in governance.

AN EXERCISE IN SPECULATION

Trying to predict the future is of course a fool's errand. There are countless variables, trends, and unforeseen events that could dramatically affect the future of democracy and the relationship between citizens and institutions. While we recognize that this paper is an exercise in speculation, we hope that it will encourage readers to think about the implications of the forces we describe, and stimulate further conversation about where democracy is headed. Though it is speculative, trying to anticipate dangers and opportunities does not seem foolish.

In trying to explain these dynamics, we use several key terms. We define **engagement** as a set of activities that people undertake in order to solve problems, make decisions, and build community. They include volunteering, voting, providing input to decision-makers, deliberating with others, and working together on issues and problems. People take on these activities because they want to make a difference or have their voices heard. When sustained, supported, and scaled, these activities can be elements of a robust, participatory democracy. Engagement is a conscious act, though people rarely use the word "engagement" to describe what they are doing.

When it is working well, engagement can lead to feelings of belonging, or **"mattering**," which is "the extent to which people believe they make a difference in the world around them."[1] In the fields of mental health and youth development, the impacts of mattering have been quantified: when young people actively participate in making decisions, studies have found they demonstrate more confidence, agency, empowerment, and community connections.[2] In contrast, when young people do not feel they matter in their families or community, they are more prone to physical violence[3] or even suicide.[4] Similarly, when citizens do not feel their voices matter, particularly when they have made the effort to consciously engage, it can breed frustration, disengagement, distrust, and in extreme cases, violence.

Governance is any system for making public decisions. Most systems of governance are not explicitly concerned with whether citizens feel like they matter, except to say that a strong sense of community among citizens is a valuable foundational quality that is important to, but separate from, formal governance.

We define **democracy** as a system of governance that requires, supports, coordinates, and values the engagement of citizens. In a well-functioning democracy, the people are able to make some kind of significant difference, at least on some issues, at least some of the time. Democracy makes people feel like they matter, even if they don't always get all the things they want. When the relationship is working, citizens feel like the system is legitimate, and the system treats citizens as legitimate actors. This relationship does not seem to be working in our current political system, which is primarily a **republic** (in which people vote for representatives who then make public decisions and carry on the work of governance) with some limited democratic opportunities for citizens' direct participation.

When citizens do not feel their voices matter, particularly when they have made the effort to consciously engage, it can breed frustration, disengagement, distrust, and in extreme cases, violence.

We assume that **politics** encompasses "the activities associated with the governance of a country or other area, especially the debate or conflict among individuals or parties having or hoping to achieve power."[5] In the past, much of politics has been subconscious in the sense that the messages and imagery in a campaign ad or an officials' speech could provoke emotions in us that we are not fully aware of (and that may influence our votes and opinions). But we have entered a new phase of subconscious politics because of all the information about us that is available to others and because of the new ways we absorb media.

The **subconscious technologies** we describe in this paper use information about us to do things without our knowledge. Subconscious technologies can be used to support, coordinate, and value engagement and democratic governance. They can also be used to undermine engagement and democracy by allowing rulers and bad actors to distort truth, reinforce inequities, and manipulate public opinion. Subconscious technologies include AI, digital phenotyping, and geo-location (see glossary on page 66).

We have divided the paper into several sections. First, the trends section begins with a discussion of well-known, long-term trends. Second, we describe a number of "subconscious" technology-related trends that all relate to the availability of data and the capacity of artificial intelligence to use that data. Third, we detail a set of trends that relate to conscious engagement. Finally, we list some key incentives that motivate various actors in public life.

The stories section consists of seven narratives that illustrate the force and intersection of trends relating to subconscious technologies and conscious engagement, along with the well-known trends and key incentives.

The final section, on areas for exploration and innovation, suggests some directions for future work that could minimize the dangers we face and maximize the potential benefits of the trends we see.

SUBCONSCIOUS TECHNOLOGIES AND THE DESIRE TO MATTER: IMPLICATIONS OF TWO FORCES

As we delved deeper into the trends we describe in this paper, an overarching theme began to emerge: the tremendous growth of subconscious technologies and the parallel development of citizens' desire to matter in public life.

Much of politics, governance, and public life happens beyond the limited attention spans and analytical capacities of our human brains. This has always been true, but the difference now is that we have created artificial brains that are more attentive, analytical, and powerful than our own. Technological changes have made it possible for businesses, institutions, and other organizations to accumulate fairly accurate knowledge about our desires, fears, discomforts, and goals. These capacities make it possible to provide services, offer choices, ask questions, and make public decisions in ways that can be at least somewhat reflective of what we want, without us consciously knowing it. Subconscious technologies are playing an increasingly large role in both governance and politics (as we define them above).

Subconscious technologies produce citizenship by proxy. We could call this "mass subconscious personal politics," because it is starting to happen on a massive scale, and because it relies on data that is specific to each individual. These technologies extrapolate from information about us and the choices we make, without bringing our conscious selves into the work of public decision-making and problem-solving.

Subconscious technologies could give institutions and organizations greater legitimacy and approval, for good or ill, if people like the services, choices, and decisions that result and understand how they came about – or it could cause a tremendous backlash if people don't trust the technologies or the people directing them.

This balance between approval and backlash is precarious because when we ***are*** acting consciously in public life, we want more than the constrained choices, lack of transparency, and limited rights we have traditionally been given. We are dramatically more skilled, literate, and confident than we were a century ago.[6] We are connected and knowledgeable but lonely and angry.[7] We are forming personal/political/neighborhood relationships in ways that are creating enormous webs, so that citizen mobilization can happen at a speed and scale that has never been seen before.[8] We have moved from virtuous, habitual volunteerism to "high-impact public work."[9] We want our stories, relationships, talents, judgements, and ideas to count for something.[10] We want small and large choices. We feel that institutions and officials should treat us like adults, rather than children.

In other words, when we choose to surface from the subconscious and focus our time and attention on some public issue or question, we want (and increasingly expect) to matter. This impulse can be manipulated – we may find ourselves in situations where we think we matter, but in fact we do not. When this happens, we become even less trusting of our leaders and institutions.

Subconscious technologies and the desire to matter can conflict with or complement one another. They conflict when people feel that subconscious politics is robbing them of conscious agency. They complement one another when people consciously approve of and can help direct the technologies. Officials, business leaders, journalists, technologists, and other stakeholders are trying to adapt to, circumvent, and/or capitalize on this confluence of forces. Some of these attempts set the two forces against one another, while others try to harmonize them. The trends and stories in this paper illustrate some of these cases, in order to help us reconcile our technological capacity to mine the subconscious and our conscious desires to matter in public life.

Subconscious technologies produce citizenship by proxy.

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TRENDS

PREVAILING CURRENTS IN PUBLIC LIFE

Before we turn to the fast-moving developments related to subconscious technologies and conscious engagement, we should acknowledge some of the long-term shifts that also have great significance for the future of democracy. In some ways these prevailing currents have shaped or enabled the newer trends; the wires of innovation and change will continue to cross in both predictable and unexpected ways.

1. AN INCREASINGLY EDUCATED PUBLIC

Though there are gaps in educational attainment along the lines of class and race, Americans in every demographic category are dramatically more educated and skilled than they were a couple of generations ago. In 1940 less than half of the population had completed high school, whereas now 90 percent now have at least a high school education, and that percentage is likely to continue increasing in future years.[11] The percentage of Americans with a bachelor's degree has risen from just 4 percent in 1940 to over 33 percent today,[12] though the United States does still lag behind many other countries.[13] For the first time in history, more women are earning bachelor's degrees than men.[14]

The fact that citizens are increasingly educated and capable of using technology may be one of the reasons for their frustration at what they see as the unresponsiveness of public institutions: though they may have less time to engage, they bring more skills and capacity to the table.

2. THE INTERNET OF PEOPLE AND THINGS

More than ever, people are turning to the Internet for news, entertainment, information, and social connection. In 2000, 52 percent of Americans used the Internet; now 89 percent do.[15] Seven in ten Americans use social media, most of them on a daily basis.[16] In fact, there are more people on Facebook every day than the number who watch the Super Bowl every year.[17] However, digital divides persist – one in five Americans in low-income households use the internet through smartphones only, and many adults in low-income households don't own a smartphone, computer, or tablet at all.[18]

The number of *people* online was surpassed in 2009 by the number of *things* – it is estimated that 9 billion devices, from vehicles to home appliances, are now connected through the Internet, and that number is predicted to reach 55 billion by 2025.[19] These devices are all current or potential providers of data.

The economic implications of being connected are huge – the global market for smart and internet-connected devices is expected to grow nearly 30 percent in the next few years, to reach 457 billion dollars by 2020.[20] Unprecedented levels of connection offer huge gains to knowing more and sharing more about our lives, along with huge risks to privacy.

1. AN INCREASINGLY EDUCATED PUBLIC
2. THE INTERNET OF PEOPLE AND THINGS

3. HISTORIC INEQUITY

Inequality in wages and incomes has increased dramatically in the last thirty years, and is now approaching levels as extreme as in the 1930s, during the Great Depression. The top 10 percent richest households now control three-quarters of the nation's wealth.[21] Wealth and income gaps between different racial and ethnic groups persist: for example, African Americans own approximately one-tenth of the wealth of white Americans,[22] and the earnings gap between white and Hispanic men grew from 29 to 42 percent between 1970 and 2010.[23] Gender inequality remains problematic; women earn about 80 percent of what men earn, and this trend has been stable since the 1970s.[24] Despite unequal pay, many women are supporting their families – in 40 percent of U.S. households with children, mothers are the sole or primary breadwinners.[25]

Hard work doesn't necessarily pay off; even though worker productivity grew 74 percent between 1973 and 2013, hourly compensation of workers rose only 9 percent.[26] CEOs in 1965 made 24 times more than the average production worker, whereas in 2009 they made 185 times more.[27] Many Americans grow up in poverty – 21 percent of U.S. children live below the poverty rate – which is higher than virtually all other wealthy nations in the world.[28] When it comes to educational opportunity, black and Hispanic students are less likely than white students to earn a high school diploma,[29] and though they enroll at only slightly lower postsecondary rates than whites and Asians, they are also less likely to complete postsecondary degrees.[30]

These disparities affect the readiness of people to consciously engage, and because data collection and analysis is affected by current inequalities, the growth of subconscious technologies threatens to further entrench them.

4. UPHEAVAL IN JOURNALISM

This summer, the *New York Times* laid off many of its staff[31], adding yet another data point to a Bureau of Labor Statistics finding that the number of American newspaper employees has declined 60 percent since 1990.[32] In the past few decades, as print advertising business models have floundered, news media are increasingly corporately owned, with most of the media outlets in the U.S. owned by six companies.[33] The loss of local news outlets has resulted in "media deserts," places without access to local news and information.[34] Americans are reading fewer newspapers and consuming more TV and digital media; 62 percent of Americans now use social media to get news.[35] Digital advertising is dominated by a few giants including Facebook, Google, and Amazon.

At the same time, dissatisfaction with journalism is growing. A recent Knight study found most adults, including 9 out of 10 Republicans, had lost trust in news media.[36] Certain populations question news more than others – Knight found that more men, whites, and non-college graduates tend to express distrust in the media.[37] When Americans were asked in a recent survey how they want news to change, they expressed a need for journalists to protect against inaccuracy and bias, and to be more transparent.[38] But it is unclear whether and how the news media can demonstrate their objectivity and regain their status as 'truth-tellers.'[39]

Without accurate information and without shared agreement on what is fact and what is fiction, conscious engagement is likely to become more contentious, and there will be fewer checks on the use of subconscious technologies.

5. CHANGING DEMOGRAPHICS

The United States is becoming increasingly diverse, particularly within youth populations. For the first time in history, the U.S. Census found that babies of color outnumbered non-Hispanic white babies, and children of color are expected to become the nation's majority population by the year 2020.[40] By 2045, whites are likely to constitute less than 50 percent of the nation's population.[41] The groups expected to grow the most are individuals with backgrounds of two or more races, followed by Asians and Hispanics.[42] Asians currently constitute the largest population of new immigrants to the U.S.,[43] and the U.S. is the 2nd largest Spanish speaking country in the world – ahead of Spain itself.[44]

Starting in 2030, our population growth rate is expected to decline,[45] primarily because by 2030 one in five Americans are predicted to be age 65 or older – the first time in history that older people will outnumber children in the U.S.[46] Christianity is also declining, and growing numbers of U.S. adults do not affiliate with organized religions. Americans are getting married less, and two-parent households are declining.[47]

Increasing diversity makes conscious engagement more important, because it can help people understand and value their differences. As populations who have historically dominated leadership positions, such as white Christians, decline demographically, it is possible that movements of white supremacy will grow, and/or that anti-racist movements will expand. As more people of color enter the world, issues of race and equity will likely be at the forefront of many public discussions.

6. CHANGING WORLD OF WORK

The way we work, where we work, how we are treated at work, and what we are working on have all been changing. In recent decades, the demand for physical and manual skills have declined and the need for social and analytical skills has increased; from 1980 to 2015 the demand for workers in occupations requiring "higher-level" skills grew 68 percent.[48] The manufacturing industry is shrinking while employment in education and health services is growing.[49] And although it is unlikely that robots will completely take over our jobs, about 60 percent of occupations could automate at least 1/3 of their tasks.[50]

We are working more, but fewer workers are receiving health and pension benefits. We are increasingly working remotely at least part of the week, rather than the traditional 9-to-5 office schedule, and the number of co-working spaces is estimated to grow rapidly by 2020 – from 1.7 million to 5.1 million members in over 30,000 shared spaces across the nation.[51]

These trends have major implications for democratic life – access to education and training to be able to live a "good life" will become even more important. It is likely that the ways we connect with and relate to each other will continue to change, considering that many of us may be working from home, rather than the office, and with machines rather than humans.

TRENDS RELATED TO THE USE OF SUBCONSCIOUS TECHNOLOGIES

Some of today's fastest-moving and least-understood trends are based on two new features of our technological landscape. The first is the massive amount of data that is now available, generated both by people and devices. About 90 percent of all data available today was generated in the last two years; we collectively churn out 2.5 quintillion bytes of data per day, and the number continues to grow exponentially.[52] The second is the capacity of artificial intelligence (AI), or machine learning, to make use of this data. These new realities have made possible five emerging uses of subconscious technologies:

1. ANTICIPATING WANTS AND NEEDS

One of the functions that all this data and computational capacity can serve is help determine what people want and what they need without actually asking them. These assessments are based on everything from how people talk to the text they write in social media posts to their recorded blood pressure levels. A whole host of technologies are being used in this way, including natural language processing (NLP), sentiment analysis, computational linguistics, biometrics, and digital phenotyping (see the glossary on page 65 for definitions of these terms).

Advertisers were among the early pioneers in this work, and much of their activity and investment is still focused on anticipating what people will buy and when. One of the most frequently cited examples is how companies like Target are able to identify pregnant women on the basis of their purchases and social media posts.[53] But governments are also using these technologies, in partnership with other organizations, to suggest public services or even do little things like helping people find open parking spaces. "It is quite possible that providing these kinds of assistance will cause people to value public institutions more," says Darrell West of the Brookings Institution.[54]

Some governments are also starting to use these technologies as part of their approach to policymaking. For example, the Canadian government used an NLP tool to collect news articles and tweets about the G7, and then to assess, identify and analyze the context, the subjectivity and tone of each piece of text. The results were then presented to the public and used as part of the discussion material for 320 face-to-face and online deliberations on what Canada should do during its presidency of the G7. Jaimie Boyd, who led the effort as part of her role as Canada's Director of Open Government, sees this form of opinion analysis as superior to traditional polling.[55] "It is a brave new world for government," she says.[56]

2. FORECASTING AND RISK ASSESSMENT

In a range of fields, governments and corporations are using machine learning to recognize patterns in data so that they can make predictions about behavior and assessments of risk. This practice has had a particular impact on health and health care (see page 33), but it is also emerging in criminal justice and corrections (see page 47) and other fields.

Justifying his country's investment in AI, French President Emmanuel Macron said, "The innovation that AI brings into health care systems can totally change things: with new ways to treat people, to prevent various diseases, and a way—not to replace the doctors—but to reduce the potential risk."[57] The predictions made possible by these analyses are helping to guide valuations by insurance companies, but they can also suggest decisions and actions that will improve overall health. For example, the Crisis Text Line, a mental health app, uses NLP to determine whether the person texting is distraught and needing immediate help or simply seeking some information.[58] "The data can show the overall factors leading to congestive heart failure, and also the steps we can take to prevent it," explains Peter Eckart of the Illinois Public Health Institute.[59] But the data can also embed and perpetuate inequities. "The flood of personally generated data – from Microsoft platforms, insurance-based health programs, Fitbits – tends to produce inequitable analyses because more of the data is coming from higher-income people," says Eckart.

This can also have dramatic effects in criminal justice and corrections, when inequitable data is used to inform bail and parole decisions. "At their most powerful, algorithms can decide an individual's liberty, as when they are used by the criminal justice system to predict future criminality," writes Jim Dwyer of the *New York Times*, who reports that in one case, risk scores for recidivism were wrong about 40 percent of the time, with "blacks more likely to be falsely rated as future criminals at almost twice the rate of whites."[60]

3.MICRO-TARGETING AND MESSAGING

In addition to finding out what people want and predicting their behavior, subconscious technologies can also be deployed to exert influence on individuals. AI can discern patterns in data to determine which people are prone to shifting their opinions and how they might be swayed. Some observers feel that the kind of "fake news" messaging that was so prevalent in the 2016 election is a manageable problem. "Ultimately, fake news will be dealt with by some synthesis of human fact-checkers and algorithms that weed out bots and bad actors," says David Lazer of Northeastern.[61] He points to spam prevention as a model, saying that "current email systems now deal with spam pretty well."

Virtual reality and "deep fakes" (see glossary on page 65) may pose a larger challenge, since it is almost impossible for viewers to distinguish the fake images and footage from what is real.[62] Until recently, it required advanced skill and knowledge to create deep fakes, but new platforms have made it possible for even casual users to produce them.[63] There is now a kind of arms race going on between the people developing deep fake production technology and those inventing technology for detecting deep fakes, with no end in sight.[64]

If the individual responds positively to a message by clicking on links or merely staying on the page, that feedback then provides more data about the person's interests and passions. And so the microtargeting technologies and the messaging technologies can inform one another, continually focusing in with greater precision on what is most compelling to the individual, creating an experience that becomes more and more addictive. The futurist Jon Barnes provides examples: "Instagram drip feeds you 'likes' so you keep going back, Twitter's loading icon varies in duration to give a variable reward dynamic (like slot machines), Facebook's algorithm censors towards cognitive bias, Google gives you searches based on our existing narrow view (even in incognito mode)." Barnes calls this "addictive design."[65]

4. AUTOMATING INTERACTIONS

More and more of our interactions online, for things like shopping, booking hotels, or accessing public services, are with computers that are able to ask and answer questions. They have become nimble enough that it is becoming harder to tell if you are dealing with a human being or a machine. Google's Duplex, a technology used to conduct conversations over the phone, caused controversy this year because it is so lifelike. The bot interjects sounds like "um" and "uh" to better mimic human speech.[66]

These kinds of technologies can be useful, argue Allison Fine and Beth Kanter. They point to examples like the nonprofit Invisible People, which uses bots to provide "virtual case management" for homeless people. In that case, the bot provides information about services and gathers information from the user in order to build a case file, thereby reducing the workload of human case managers.[67] Abhi Nemani has proposed using the data gathered through 311 calls to create new local government bots. "Historically, innovators have focused on the issue-reporting functionality of 311, building apps to streamline reporting of potholes, graffiti, etc.," reports Nemani.[68] "Data suggests, however, that these make up just a small fraction of 311. Instead, most is taken up by questions about city operations, ranging from office hours to council meetings." Compiling and crunching all these questions and answers could lead to "cheaper, automated citizen support systems," he suggests.[69]

However, Fine and Kanter warn that these kinds of systems can leave citizens frustrated and confused if they rely solely on bots to handle all the communication on the part of the organizations or institutions.[70] They contrast two mental health nonprofits to illustrate their point: Crisis Text Line uses texting bots to get information to people who need it, offer a less intimidating option to people who aren't ready for a phone conversation about their mental health issues, and determine whether the individual needs immediate help. The second step after the interaction with the bot is a conversation with a live human mental health professional. Their other example is Woebot, a chatbot that can be accessed through Facebook Messenger. Woebot offers no interaction with live humans and collects users' data for analysis by Facebook.

The ethical and administrative questions related to bots are not being examined in a comprehensive way, assert Fine and Kanter. "We are unprepared for this moment, and it does not feel like an understatement to say that the future of humanity relies on our ability to make sure we're in charge of the bots, not the other way around."

5. MONITORING AND SURVEILLANCE

Perhaps the most frightening and controversial trend on this list is the growing use of subconscious technologies to monitor individuals. Technologies for facial recognition, geo-location, geo-fencing, DNA profiling, and other types of analysis can determine who we are, where we go, and even how we are feeling. Some of these technologies, such as facial recognition, rely on data that doesn't accurately reflect the diversity of our population. Darrell West reports that "facial recognition is 90 percent accurate for whites, 70 percent for African-Americans – if the data is inequitable, the analysis will be as well."[71]

Lesser-known technologies such as affective computing can use the images captured through webcams on our computers to analyze an individual's emotional state based on their facial expressions and the tone, pitch, and rate of their speech. Individuals can be tracked not only by their physical appearance, but by the "digital identifiers" they leave whenever they operate one of many devices connected to the internet, from their washing machine to their home alarm system.[72]

Many laws and ethical guidelines govern whether and how any of this data can be used, but these of course vary from place to place (see "Chinese Democracy?" on page 50), and most commentators agree that the rules are increasingly difficult to interpret and enforce given the pace of innovation. "We cannot continue on the current path without stopping to build in necessary human rights protections to mitigate harm," writes Brett Solomon.[73]

TRENDS RELATED TO CONSCIOUS ENGAGEMENT

How people engage in public life is changing. Citizens seem less inclined to pursue some of the traditional opportunities for engagement, such as attending official public meetings, perhaps because those opportunities often don't make people feel like their voices and participation matter. In fact, there is some evidence to suggest that attending official public meetings makes people less understanding and trusting of government.[76]

Meanwhile, citizens seem to be pursuing new avenues for engagement and taking advantage of new technologies to do so. A common theme of these forms of participation is that they seem to fit the needs and motivations of citizens more than other opportunities.

1. CIRCULATING NEIGHBOR-HOOD INFORMATION

Over the last ten years, participation in "hyperlocal" online networks has grown exponentially. These are vehicles for online communication centered on a particular neighborhood, housing development, small town, or school. The first examples were email listservs and Facebook group pages, followed by customized platforms like www.e-democracy.org in Minnesota and Front Porch Forum in Vermont. By far the largest is Nextdoor, which now maintains social networks in 90 percent of all American neighborhoods, with tens of millions of users.[77]

These different platforms vary in a number of ways. The simplest of them, such as the email lists, are generally open to all subscribers (whether or not they live in the neighborhood). The others are typically open only to the residents of those neighborhoods. Some platforms, such as E-democracy.org, have been sustained through grants and donations. Others, like Nextdoor, follow the financial model of Facebook, Twitter, and other social media platforms, and sell space on the platform to advertisers. Investors expect Nextdoor to be a $1 billion business by 2020.[78]

Another key difference is whether the moderators of each forum are paid and trained, or volunteers who step forward to recruit participants and facilitate discussion. "With paid moderators you have a much greater assurance of quality control," says Micah Sifry of Civic Hall.[79] Some Nextdoor users have been accused of racial profiling, and the company has instituted new procedures for how residents report their suspicions about criminal activity.[80]

But while those distinctions may be important to how the networks operate, their explosive growth seems based on the fact that they offer people several key reasons to participate: these platforms are convenient and easy to use, they allow for interaction, they deepen and complement face-to-face relationships, they help people react to natural disasters, and they give people a sense of membership.[81] They provide a forum for discussing incidents of crime in the neighborhood and for advertising the upcoming block party. They combine some of the strengths of "thick" and "thin" engagement (see sidebar on page 15). In so doing they help people solve basic daily challenges: members may talk about what the school board did, or what the mayor said, but they also ask questions like "Who knows a good plumber they can recommend?" and "Has anyone seen my lost cat?"

2. CONTRIBUTING MONEY, IDEAS, AND TIME

A number of technologies have emerged that facilitate citizens' desire to contribute to plans, causes, and campaigns. Crowdfunding platforms provide an easy way for people to donate money, even in very small increments. They first gained prominence during the 2008 presidential campaign, when Barack Obama raised hundreds of millions of dollars through his campaign web-site, with an average donation of $68.[82] During the 2018 campaign, the progressive crowdfunding platform ActBlue raised $1 billion.[83] Some platforms have extended beyond financial donations, allowing people to donate their volunteer time for causes they care about – Ioby is one of the organizations that pioneered this concept, and they call it "crowd-resourcing."[84]

Platforms for crowdsourcing, also known as "ideation," allow people to propose solutions to a specific problem or ideas for a plan, then comment on the things other people proposed, rank all the ideas.

Wiki-based technologies, made famous by Wikipedia, allow large numbers of people to contribute and edit text. The government of Iceland even used a Wiki technology to try to crowd-source its constitution in 2012.[85] The government of Italy recently introduced a new citizen initiative tool that engaged 500,000 Italians. The tool encourages citizens to propose new laws, and then the parliament either enacts the proposed laws or puts forward counterproposals. Citizens then have an option to vote yes or no to both the proposed laws and the counterproposals.[86]

But the fact that citizens can make these sorts of contributions doesn't necessarily mean that public institutions will be able to use them. In the Icelandic case, the new constitution was approved by two-thirds of the voters in a nationwide referendum, but did not receive the necessary votes in Iceland's Parliament.[87] For citizen ideas, donations, and volunteer commitments to be accepted, enacted, or supported, other political conditions have to be in place; either leaders have to want these contributions, or be under enough public pressure that they feel they have to accept them, or both.

TYPES OF ENGAGEMENT: THICK, THIN, AND CONVENTIONAL[74]

There are three main types of public engagement. "Conventional" engagement is by far the most common, but "thick" and "thin" engagement are both on the rise.

Conventional engagement is what happens in most public meetings today. Citizens and officials are separated from one another, there are no breakouts or small-group discussions, and citizens have brief opportunities (typically limited to two or three minutes) to address the whole group.

Thick engagement is more intensive, informed, and deliberative. Most of the action happens in small-group discussion. Organizers assemble large and diverse numbers of people; give participants chances to share their experiences; present them with a range of views or policy options; and encourage action and change at multiple levels.

Thin engagement is faster, easier, and more convenient. It includes a range of activities that allow people to express their opinions, make choices, or affiliate themselves with a particular group or cause. It is less likely to build personal or community connections.

Thick participation opportunities are more likely to be face-to-face, and thin ones are more likely to happen online. However, many thick processes include both online and face-to-face elements, and some examples of thin participation (signing a petition, for example) certainly existed long before the Internet.

One way of summarizing the difference is to say that thick engagement empowers small groups, and thin engagement empowers individuals. Both can, in the right circumstances, affect public policies and other major decisions. Too often, however, they are pursued separately, and this has diminished their impact: Micah Sifry of Civic Hall laments that "thick engagement doesn't scale, and thin engagement doesn't stick."[75]

Thick, thin, and conventional engagement have different strengths and limitations, and they complement each other well. All of them could be part of an effective "multichannel" system for engagement.

3. VOTING DIRECTLY ON PUBLIC DECISIONS

As citizens express greater desire to have a say on the issues they care about, digital technologies have emerged that make direct voting more convenient and secure. Some of these technologies are now being used in regular elections; in the 2018 midterms, the state of West Virginia collaborated with Voatz to test a mobile app that uses facial recognition to verify voter identity and blockchain to keep voting documents secure.[88]

Other digital voting approaches are designed to move beyond binary decisions: elections cause us to choose between Choice A and Choice B, while many of us actually want Choice C, or Choices A and D. Advocates like Jon Barnes argue for processes that are more fluid and allow citizens to propose policy options before they are voted on, as in the Italian case mentioned above. "We have the technology which could democratize and decentralize democracy, [make] the network sovereign, and [wrestle] power from the political elite," claims Barnes.[89] Finally, practitioners of "liquid democracy" have invented systems that allow citizens either to vote on issues directly or give their voting power to a trusted party, such as an expert they respect on the subject at hand.[90]

Blockchain is a key element of many new processes for digital voting, but its use has been controversial. The Brookings Institution wrote earlier this year that tested, high quality mobile voting platforms have the potential to eliminate voter fraud, encourage more voter participation, streamline the process of counting votes, support transparent election processes, ensure all votes are counted, and minimize the cost of conducting elections.[91] Some experts claim that although digital voting may not be foolproof, neither are our current systems, and that the potential for access alone should encourage us to think carefully about adopting blockchain-based voting.[92] Other skeptics worry that digital divides could exacerbate inequalities in access to voting.[93] Timothy Lee claims that digital voting could open us up to election interference by foreign countries, including hacking our votes on our cell phones and imitation apps or links that make us think we've voted when we haven't.[94]

4. DELIBERATING AND CONNECTING

There are many processes and platforms for conscious engagement that give people opportunities to share experiences, learn about issues, discuss policy options, and plan for action. These strategies have been used in countless communities, on many different issues; they have flown under the radar because they are so diffuse and diverse, because they are organized by different institutions or organizations in different places, and because they have occurred primarily at the local level.

The first wave of these innovations, consisting mainly of face-to-face processes and meeting formats, began in the 1990s. These included large-scale dialogues on race and difference in cities like Los Angeles, processes focused on school reform in states like Connecticut, Nebraska and Kentucky, and hundreds of local projects that involved residents in planning and land use decisions.[95]

Online platforms for dialogue and deliberation were part of the wave of innovation in digital engagement that began during the 2000s. Among the most notable examples were the Citizen's Forum in Germany, Taiwan's use of pol.is (see page 31), and the "Text, Talk, Engage" activity within President Obama's National Dialogue on Mental Health.

Finally, a new variation of this deliberative work has proliferated in the last few years – these projects feature more regular gatherings centered on food. Small-town examples such as "Meet and Eat" have spread throughout West Virginia, while the largest recurring case, "On the Table" in Chicago, reached a high of 105,000 participants in 2017 and is now being replicated in 30 other cities.

Some of these varieties of deliberative democracy have energized participants and produced impacts ranging from volunteer projects to policy changes. Others have fallen short, often because public officials were unable or unwilling to implement the recommendations made by participants.

5. SPENDING PUBLIC MONEY

The ability to decide how public money should be spent is the animating force behind participatory budgeting (PB), perhaps the fastest growing form of public engagement in the world. PB was first developed in 13 Brazilian cities in the late 1980s, of which Porto Alegre became the most famous example.[96] In one form or another, PB has since been implemented in over 3,000 cities on six continents. It has been adopted as a mandatory form of local decision-making by federal governments in Peru, the Dominican Republic, Kenya, South Korea, Indonesia, and the Philippines.[97] City councilmembers in over half the districts in New York City devote over $1 million each to PB every year.

These processes begin each fall with neighborhood assemblies to generate ideas for spending the money. Residents can then become budget delegates to refine the ideas with help from city staff and other experts. In the spring there is an idea expo and then a vote, open to all district residents, to allocate the funds among the project ideas. In cities like Paris, the PB process has many online elements, and a number of digital PB platforms have been developed worldwide.

In the original Brazilian examples, PB processes have had quantifiable positive impacts on poverty, infant mortality, tax compliance, and trust in government. However, as PB has proliferated around the globe, its core principles and practices have changed and diversified, and so its impacts have become difficult to predict from one setting to the next.

MOTIVATIONS IN PUBLIC LIFE

When trying to anticipate how various trends will affect democracy, it may be helpful to keep in mind some of the basic motivations that different actors bring to public life. Citizens, public officials, people who work in government and other public institutions, and business people in charge of technology companies all have interests they want to protect and opportunities they want to exploit. Different trends present these actors with potential openings, roadblocks, or both.

The list that follows may seem cynical. We don't mean to dismiss the notion that all of these actors have virtuous intentions and want to promote the public good. We're convinced that many of them do, and some of the areas of potential innovation (see page 59) present ways of helping them identify and work toward the public good. But it also makes sense to keep track of the powerful interests that affect the attitudes and behaviors of different sets of people.

1. OFFICIALS: APPEAL TO VOTERS

This is a central motivation in any republic: candidates want to be elected, and most sitting public officials want to be re-elected, so they tend to do and say things that they think will appeal to voters. Although incumbents used to have advantages in elections, this trend has been declining steadily and re-election is no longer a sure thing for those in office. Plus, officials and their parties tend to lose the support of citizens as soon as they start passing laws.[98]

2. JOURNALISTS: STAY IN BUSINESS

Amidst the upheaval that has gripped journalism, various stakeholders are trying to ensure that journalism stays afloat as a business and a profession. Some are responding by winning loyal customers through tribal politics that exacerbate polarization or through the age-old approach of sensationalism. Others are trying to create new business models for news media, and yet others are focused on upholding the objectivity of journalists and strengthening their relationship with their audiences (see page 42).

3. CITIZENS VALUE CONNECTIONS

Though people may not always seek out new friendships and connections, and sometimes think of themselves as self-sufficient, there is a great deal of evidence to suggest that people value their social environments and will stay involved in those settings once they have been drawn into them. As the psychologist Matthew Lieberman puts it, "Across many studies of mammals, from the smallest rodents all the way to us humans, the data suggests that we are profoundly shaped by our social environment[s]. We may not like the fact that we are wired such that our well-being depends on our connections with others, but the facts are the facts."[99] This impulse may be particularly powerful today. Americans as a whole are lonelier than ever before: despite the proliferation of social media and other technologies for connecting, rates of social isolation have doubled in the last thirty years.[100]

1. OFFICIALS: APPEAL TO VOTERS
2. JOURNALISTS: STAY IN BUSINESS
3. CITIZENS VALUE CONNECTIONS

4. CITIZENS WANT PRIVACY

People remain wary of the ways in which corporations and governments can intrude into their private lives. This motivation is already evident in the public reaction to incidents like the Cambridge Analytica scandal. However, most people don't understand the extent to which subconscious technologies use their data, particularly in ways they don't like. "I wouldn't be surprised if the backlash intensifies," says Jaimie Boyd,[101] while Allison Fine predicts that "the backlash will be tiered – the people losing their jobs will be the ones protesting most against the power of robots."[102] Once that knowledge becomes more widespread, the calls for privacy may become more forceful.

5. BUSINESSES PROTECT PROFITS

This is the central motivation in any free market system: corporations exist in order to make a profit. And once they have achieved a dominant position in a particular market, they want to avoid factors that could cut into those profits, such as new competitors or new government regulations. "Many of the problems we face now are caused by unfettered, unregulated corporations," says Allison Fine. "We have to understand that these are wealth machines."[103]

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CASE STUDIES

TORONTO'S QUAYSIDE: THE SMART CITY, IN ADOLESCENCE

Most of the fast-moving trends in urban design and the future of cities are evident, with all of their gee-whiz promise and troubling implications, in the plans and debates over one 12-acre plot of land on the Toronto downtown waterfront. Sidewalk Labs, a Google sister company, is trying to build Quayside, the first fully actualized "smart city" neighborhood.

In most cases, smart-city ideas and technology have been adopted piecemeal. For example, in New York, city planners are working to integrate smart parking meter apps with smart lighting systems, so that as you park your car the streetlight brightens to improve public safety.[104] In contrast, Quayside is an intentionally designed, comprehensive "smart neighborhood" that is being built from the ground up. Under an agreement with the City of Toronto, Quayside will be built from scratch, and if all goes according to plan it will expand into a much larger, 750-acre section of Toronto's Eastern Waterfront.[105] As the plan develops and the public debate over it deepens, Quayside is giving us a glimpse of what smart cities might look like, the kinds of political and policy trade-offs and agreements involved, the civic infrastructure they might require to function, and the challenges and assets they might present for strengthening democratic governance.

LIFE IN THE HIVE

When the internet changed from a vehicle for communication between human beings (the "Internet of People") to a platform that also facilitates automatic communication between devices (the "Internet of Things"), this created a massive level of constant interactivity between people and objects, like bees in a giant hive. The vast majority of these interactions happen without us consciously knowing it. All kinds of decisions about how to manage assets and resources, including traffic and transportation systems, electrical power, drinking water supply, waste and recycling, hospitals and health care, and information systems can be automated on the basis of this constant back-and-forth between people, sensors, and machine learning. This capacity is behind the concept of the "smart city," which has been touted by technology companies and urbanists for twenty years and is now being realized in many places.[106]

Daily life in Quayside would rely on a vast network of sensors, geolocated data, surveillance cameras, tunnels, and simulation software. Residents would have platforms to manage their public and private data. The continual gathering and crunching of this data would influence or automate:

- Waste and recycling – pneumatic chutes and underground tunnels would eliminate the need for trash trucks, and sensors would gauge your trash so that you could be charged based on what and how much you throw away.
- Transport – there would be no parked or private cars; instead, people would use a variety of shared forms of transport, from self-driving cars to elevators, that anticipate people's needs based on current patterns and past use. The system would include adaptive traffic lights, heated paths to melt snow, and even bike lanes that can narrow or widen based on traffic.
- Building and design – all of the structures would be flexible, modular, and easily repurposed for commercial, residential, or public needs.
- Energy use – all heating, cooling, and other energy needs would be met through a centralized, eco-friendly infrastructure.
- Public spaces – park benches, beach umbrellas, and other public spaces could be reserved, allocated, expanded, or contracted according to how people are using them.[107]

Quayside would measure residents' quality of life through a set of 25 sensor-monitored indicators, including cost of rent, cost of transportation, carbon emissions, job opportunities, park access, civic participation and time spent commuting.[108]

EQUITY AND PRIVACY

Like other smart-city plans, Quayside raises equity issues. Sidewalk Labs hopes to attract a wide mix of residents of different backgrounds and income levels, and will offer a variety of renting/owning possibilities. The common denominator would be that Quayside residents are people who are "open to urban innovation."[109] However, as with many real estate developments in major cities, it is unclear whether Quayside will actually have a broad range of residents. And if Quayside and other smart-city neighborhoods mainly attract higher-income, higher-educated people, this may lead to greater inequities in data: since smart cities supercharge data collection, their residents will be over-represented in the pool of data that is then used to inform decisions.

To enable this level of massive, hive-like interactivity to benefit you as a resident, Quayside's sensors would monitor: where you go and how you get there, what you throw away, what is delivered to you, how you heat/cool your living quarters, what social services you require, how often you go to parks and playgrounds, and other aspects of your life. One of the burning questions surrounding the plan for Quayside is who, ultimately, will own all of this data? Since Google makes a profit by serving people highly targeted ads, will Quayside allow Sidewalk Labs to milk whole new lines of revenue?

Sidewalk Labs has adopted a "privacy-by-design" approach, which would give people options to opt out of providing certain data, and limit overall data collection to the bare minimum required to fuel the artificial intelligence (AI) data-crunching that would run Quayside.[110] But the more the data is anonymized, the less "smart" the smart-city functions would be: if the system knows you own a bicycle, for example, it can plan your commute more effectively.

WHO'S IN CHARGE OF THE SMART CITY?

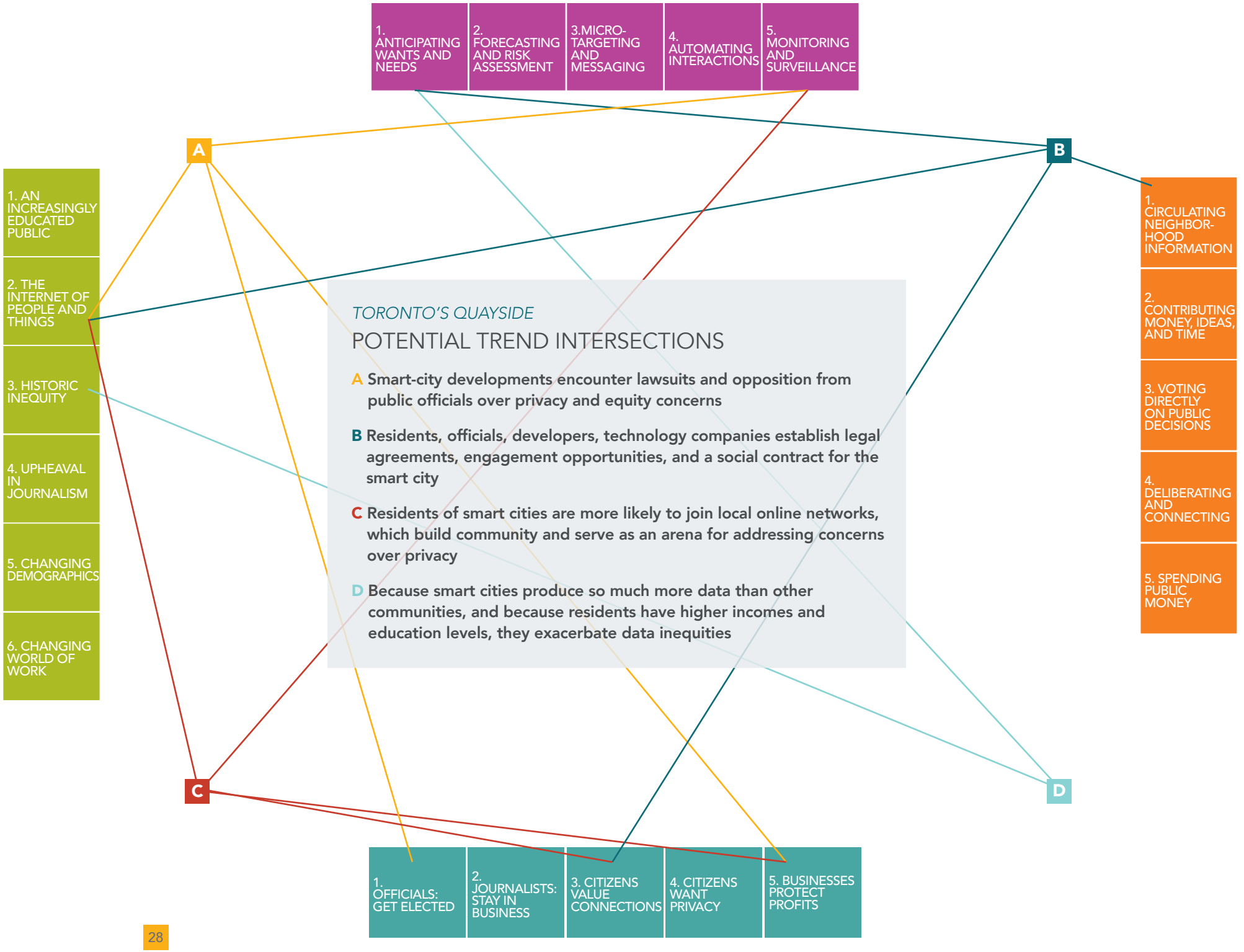
It still isn't certain that Quayside residents will consent to this level of monitoring, or that Toronto residents and public officials will allow the plan to go forward in the first place. The initial agreement between the city and Sidewalk Labs was kept secret, a fact that drew much public criticism. "The smart city often becomes a project implemented by governments and corporations," write Eric Gordon and his coauthors, "with communities being excluded from knowledge, discussion, and decision-making processes."[111] To complement its physical and technological infrastructure, Quayside could benefit from a "civic infrastructure," a system of regular opportunities, activities, and arenas that allow people to connect with each other, solve problems, make decisions, and be part of a community.

For the decisions about when and how Quayside residents should share their data, there is no established framework in Canadian or United States law – no default options or standard "end-user" agreements to govern when people must be consulted and how. Open Government advocate Bianca Wylie writes that "We don't have rules to manage private-sector actors that want to introduce their hardware and software into the planning and delivery of public services…We have to slow down and get in front of these problems, which are about governance – not technology."[112]

And for both the small, personal choices and the major community-wide decisions, the Quayside system of engagement will only succeed if it is built on a foundation of public trust. Nick Summers writes: "Sidewalk Labs needs residents who can understand and embrace the long-term benefits. If a path is widened or a canopy is moved, citizens need to trust that it's for the greater good."[113]

In any place, that sense of trust and the greater good is based on many other factors. "With Quayside, Sidewalk Labs wants to build a neighborhood with a strong sense of community," claims Summers. "The dense mixture of homes, stores and public facilities will encourage people to walk around and interact with one another. Community is an abstract value, however, that's difficult to measure. It's tied to mental health and how people feel about a place more than their physical actions."[114]

So far, the development of the smart-city concept has not been paralleled by a development in our thinking about how to engage citizens in smart-city governance. Sidewalk Labs seems aware of this challenge: for the next twelve months, they have planned a host of engagement activities, including public talks, roundtable meetings, a demonstration pavilion, design jams, a fellowship program for young people, and an advisory board. But it remains to be seen whether these are activities that will ease Torontonians into acceptance of Quayside, or enterprises that will eventually help people participate in self-governance. As Nigel Jacob puts it, "in the smart-city world, they never say democracy, and they're nervous about it."[115]


1. ANTICIPATING WANTS AND NEEDS
2. FORECASTING AND RISK ASSESSMENT
3.MICRO-TARGETING AND MESSAGING
4. AUTOMATING INTERACTIONS
5. MONITORING AND SURVEILLANCE
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1. CIRCULATING NEIGHBOR-HOOD INFORMATION
2. CONTRIBUTING MONEY, IDEAS, AND TIME
3. VOTING DIRECTLY ON PUBLIC DECISIONS
4. DELIBERATING AND CONNECTING
5. SPENDING PUBLIC MONEY
TORONTO'S QUAYSIDE
POTENTIAL TREND INTERSECTIONS
A Smart-city developments encounter lawsuits and opposition from public officials over privacy and equity concerns
B Residents, officials, developers, technology companies establish legal agreements, engagement opportunities, and a social contract for the smart city
C Residents of smart cities are more likely to join local online networks, which build community and serve as an arena for addressing concerns over privacy
D Because smart cities produce so much more data than other communities, and because residents have higher incomes and education levels, they exacerbate data inequities
C
D
1. OFFICIALS: GET ELECTED
2. JOURNALISTS: STAY IN BUSINESS
3. CITIZENS VALUE CONNECTIONS
4. CITIZENS WANT PRIVACY
5. BUSINESSES PROTECT PROFITS

POWER TO THE PEOPLE! *(BUT WHAT WILL THEY DO WITH IT?)*

n all kinds of public issues, people want more choices, more information, and more of a say. In Taiwan, that general impulse found a specific outlet in 2014, after students and civic groups successfully shut down the government in protest of a pro-China trade agreement. In the aftermath of that upheaval, activists and government officials (including Audrey Tang, a civic hacker who became Taiwan's first Digital Minister) began creating a process in which citizens could participate directly in decision-making. Over the next several years, the resulting "vTaiwan" platform has facilitated deliberation, voting, and lawmaking on issues such as the online sale of alcohol and the regulation of Uber.[116]

The idea that citizens want chances to directly affect policy shouldn't be surprising: all over the world, people now have myriad opportunities for self-expression and a massive array of options about what to buy, where to live, what to join, and how to connect. With so much power to choose in our private lives, is it any wonder that people want more direct forms of democracy in public life?

How governments respond to this impulse could have enormous impacts. As a whole, citizens have higher levels of education and much greater access to information than they did a generation ago, making them better able to contribute to public decision-making. But a number of other trends, from "fake news" to virtual reality, are making it more difficult for people to make sound judgements on important matters. In Taiwan and elsewhere, these conditions are raising new questions about the interactions between conscious and subconscious politics, and provoking innovators to create new combinations of thick and thin engagement.

GIVING THE PEOPLE WHAT THEY WANT

The official opportunities for more direct forms of democracy in the United States remain limited: 27 states allow ballot initiatives or referendums on specific policy proposals, but these are tied to regular election cycles and the process for placing an issue on the ballot requires a high degree of organization and political mobilization. In California, for example, initiatives require 365,000 signatures to qualify, and most of the issues that make it onto the ballot are ones that have been championed by wealthy individuals or advocacy groups that can afford to pay thousands of signature-gatherers.[117] Ballot measures are often written in complicated language that voters find difficult to understand, they typically require a two-thirds majority to pass, and many legislatures have the legal capacity to modify or repeal them.

Despite these obstacles, the use of ballot measures is on the rise. In 2016, 71 made it to the ballot, which doubled the number from 2014.[118] In the 2018 election, there were 167.[119]

The increase in ballot measures is just one indicator of the desire for more opportunities for direct democracy, in addition to the chance to elect officials. Another sign is the proliferation of formats for public engagement, from thick, deliberative processes to thin, viral social media campaigns. And some political candidates have seized on the desire of citizens for public agency: "increasing engagement" has become a common plank on campaign platforms. A candidate for Congress in San Diego made the centerpiece of his campaign a promise that he would put every major bill to a poll of his constituents; a candidate for city council in Boulder, Colorado, created an app for this function that he pledged to use if elected. Some local officials are persuaded to institute participatory budgeting because they feel it will help them get re-elected.[120] In New York City, voters beat them to it in the 2018 election by passing a ballot measure to create a city-wide participatory budgeting (PB) process.[121]

Opportunities for direct democracy may become more numerous and varied if governments begin using Blockchain to verify the identity of voters (see page 65). Because blockchain relies on a series of authenticated interactions, it is technologically possible to conduct public votes without all the machinery and personnel typically required for elections.

MANIPULATING DIRECT DEMOCRACY

The people who applaud direct democracy tend to be those who are frustrated by legislative gridlock, rancorous partisanship, and what they perceive as a general inability of government to make decisions and solve problems. Before 2016, the advocates of more direct forms of democracy seemed more numerous on the left side of the political spectrum than the right. But since the Brexit vote and the 2016 presidential election, many officials and activists on the left have become more wary of giving too much power to the people.

And while representative politics may be vulnerable to manipulation and domination by special interests, direct democracy also seems open to manipulation in a number of ways:

- ***Microtargeting*** (see page 11). Observing the 2012 Obama presidential campaign, Peter Levine warned in 2013 that "In the era of digital networks, you can manipulate masses of people into doing what you want them to do by maintaining and exploiting a vast merged database of human activities, interconnections, and expressions." Though progressives like the Obama campaign staff pioneered these methods, the rest of the world soon caught on, as Levine predicted. "Microtargeting is like using drones: it's great if you're the only one who has them…[we] must also consider whether these tools are a net benefit for democracy, and if not, what to do about that."[122]
- ***Fake news*** (see page 42). A number of studies suggest that false information travels faster through social media than proven facts, not necessarily because it is incorrect but because it is unexpected and people are more likely to circulate things that surprise them.[123] The number of people generating fake news may be small: David Lazer of Northeastern University reports that "there's a small number of super-sharers – these are not bots, but they're using automation to post large quantities. Only 0.1 percent – 1 in 1,000 – are responsible for 80 percent of the fake news on Twitter."[124]
- ***Virtual reality and "deep fakes"*** (see page 11). Most fake news still takes the form of text – tweets or posts that relay inaccurate information. But increasingly, the social media landscape is now being infiltrated with incredibly realistic videos purporting to show officials, celebrities, and other public figures saying or doing things that are not real. These fictions tend to have a greater impact on citizens because video triggers emotions more than text.
- ***Question-answering bots*** (see page 12). When citizens ask questions about public issues or services, the answers they get from officials, government departments, non-profit organizations, and advocacy groups are increasingly automated. Among their other uses, bots can interact with humans so realistically that people sometimes cannot tell they are talking with a machine pre-loaded with information.

SETTINGS FOR USING POWER WISELY?

Many recent democratic innovations combine the opportunity to vote directly on policies with settings and methods that try to ensure those powers are used wisely. In Taiwan, the vTaiwan process relies on two strategies for informed deliberation. First, the online discussion occurs on a platform called pol.is, which allows citizens to make comments on policy proposals and vote on which comments they like best. It doesn't allow people to reply directly to comments made by others; this seems to have limited trolling and vitriolic statements. Pol.is then uses artificial intelligence to code the votes and comments and draw a map showing the clusters of people's preferences. As the map begins to show areas of agreement and disagreement, people begin drafting comments that will win votes from both sides and close the gaps. "The visualization is very, very helpful," Tang said in an interview with *MIT Technology Review*. "If you show people the face of the crowd, and if you take away the reply button, then people stop wasting time on the divisive statements."[125]

Some of the discussion and comments occur in face-to-face deliberations which are open to the public. People who participate online are specifically invited to these meetings, at which the areas of agreement are further explored and refined so that they can be converted into legislation.[126] Tang wants to add further innovations to the vTaiwan process, such as virtual reality, to help people visualize the options they are considering. "The goal is to make it enjoyable to participate in the deliberative process—like watching and acting in a 3D IMAX movie," Tang writes.[127]

Methods for merging direct and deliberative democracy have emerged in many other countries. PB is perhaps the most widespread example (see page 17). Liquid democracy, which was pioneered by a German political party as way to involve citizens in developing the party's platform, is now being used in other countries. Finally, there are random-sample deliberative processes tied to ballot measures, such as the citizen's initiative review (now well-established in Oregon), citizen's juries (used in Minnesota and other states), and the citizen's assembly (developed in British Columbia, Canada). In those examples, residents are chosen at random to participate in a thick, intensive engagement process in which they learn about a ballot measure and consider its pros and cons. The participants then provide information and sometimes recommendations to the voters.

These innovations provide different kinds of conscious engagement in an attempt to fulfill citizens' desire to matter. However, some observers are not convinced that direct democracy – in any form – is the wave of the future. Civic technologist Abhi Nemani points out that "not enough people are actually voting" when they are given opportunities to weigh in directly on policy issues. He considers sentiment analysis and other methods of understanding citizen preferences – subconscious governance – to be a more powerful trend, calling it "indirect direct democracy."[128]

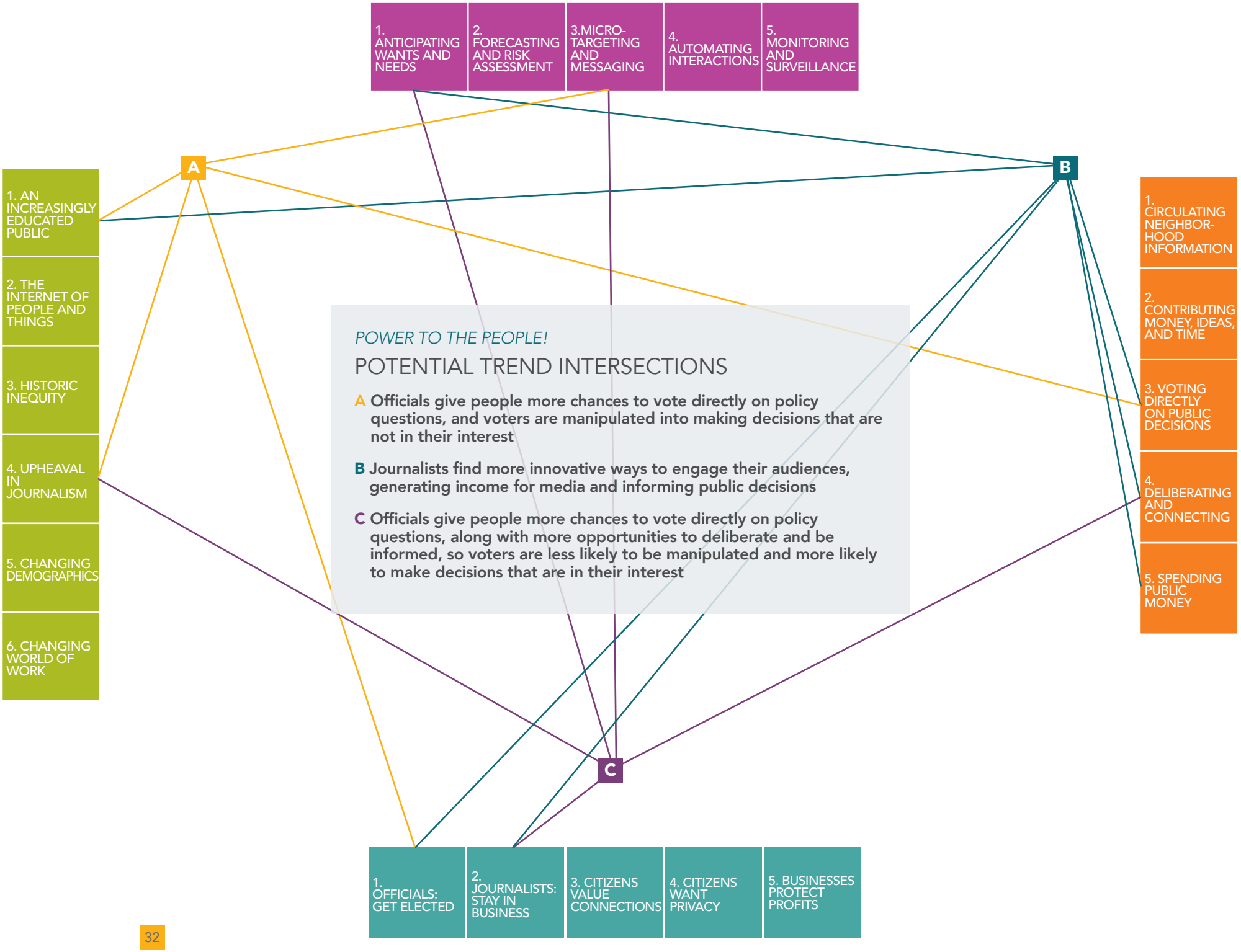
Others see subconscious and conscious engagement as complementary rather than competitive forces. Jaimie Boyd, Canada's Director for Open Government, argues that there are "greater opportunities for direct democracy than ever before," because social media content analysis can "make decision-making much more inclusive."[129] In the national public consultations run by Boyd's office, they conduct sentiment analysis, use thin engagement platforms like OpenText Magellan to gather input, and offer thicker forms of engagement for people who want to get more involved. It is a multichannel approach that tries to moderate the influence of any single avenue for engagement.

POWER WITHOUT DELIBERATION, DELIBERATION WITHOUT POWER

Despite its successes, vTaiwan has been used mainly on technology-related policies, and not on issues of broader concern. Furthermore, while some of the vTaiwan conclusions have been enacted by the legislature, others have not.[130] This follows a familiar pattern: democratic reforms that circulate information and support deliberation often conclude with non-binding referenda or recommendations that public officials are unwilling or unable to use. Join is emerging as a much larger successor to vTaiwan and seems to move more buy-in from the government; still, methods of engagement that ask for public input and deliberation and then do not follow through on recognizing the public's opinions may dissuade, rather than encourage, engagement.

Meanwhile, regular elections seem increasingly vulnerable to manipulations like micro-targeting and fake news.[131] On many referenda, voters seem unprepared to weigh the consequences of the vote; immediately after the Brexit vote, websites explaining its potential consequences received huge numbers of hits, and many Britons expressed remorse at having voted "yes" on the initiative.[132]

If the balance of decision-making power is in fact shifting toward citizens, there are many new reasons to be concerned about their capacity to make reasonable, informed choices – and many new ways to bolster that capacity. "Direct democracy hasn't taken off as much in the U.S. as it has in Taiwan and elsewhere," says Allison Fine. "But for better or worse, it is probably on the way."[133]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2. JOURNALISTS: STAY IN BUSINESS
3. CITIZENS VALUE CONNECTIONS
4. CITIZENS WANT PRIVACY
5. BUSINESSES PROTECT PROFITS
POWER TO THE PEOPLE!
POTENTIAL TREND INTERSECTIONS
A Officials give people more chances to vote directly on policy questions, and voters are manipulated into making decisions that are not in their interest
B Journalists find more innovative ways to engage their audiences, generating income for media and informing public decisions
C Officials give people more chances to vote directly on policy questions, along with more opportunities to deliberate and be informed, so voters are less likely to be manipulated and more likely to make decisions that are in their interest

CAN YOUR DATA SAVE YOUR LIFE?
PRIVACY, PROFITS, AND POPULATION HEALTH

Although Ronald Pressley had been coming to the same Massachusetts emergency room for years, it wasn't until the hospital started using an electronic data sharing system that he got the health care that changed his life.[134] Pressley was a former substance user who suffered from serious health conditions, including lung disease, back problems from a car accident, and severe anxiety. He was homeless and had trouble keeping up with his medication. Pressley had visited the emergency room (ER) a dozen times in the past year, often when his medicine had run out. Given the fast pace of ER care, doctors usually treated Pressley without knowing his full health history.

This time, a care coordinator in the hospital named Kim Lilley was able to help Pressley move from crisis to stability. Lilley was able to access his full health records, and she realized that the ER doctors hadn't had the time to give Pressley sustained, chronic care around behavioral health. Plus, because of Pressley's lack of a fixed address, Medicaid had cut his care, and his blood pressure spiked after he went off his medication. Lilley was able to intervene with court officials to qualify Pressley for disability benefits. She also was able to shift him from being a "frequent flyer" at the ER into primary care appointments, to meet regularly with a PCP doctor and lung specialist. Pressley is now taking medication for his physical and mental health, has moved into an apartment, and is volunteering at a soup kitchen.

Pressley's case illustrates the potential of data sharing to improve health care. The use of machine learning to discern patterns in this data can help researchers and doctors prevent disease, epidemics, and life-threatening illnesses. Peter Eckart of the Illinois Public Health Institute argues that the benefits could extend far further if the data and analysis extends to "social determinants" of health, such as Pressley's lack of housing. "If we can track and understand social determinants," he says, "we can reduce the rates of things like congestive heart failure."[135]

But though it worked out for Pressley, others may not want their entire health histories to be shared with health care providers when they walk into the hospital. By making our data available, we may also be allowing corporations, researchers, and the government to peer into our bodies and minds, accessing the very foundations that make us who we are – like our DNA and genetic histories. Collectively, our health may depend on how we balance the dangers and benefits of health data, and whether citizens, governments, and corporations can negotiate mutually satisfactory agreements on privacy, profits, and data collection.

WANTED: HUGE AMOUNTS OF FRESH DATA

Electronic shared data systems come with many opportunities, including a chance to identify and treat conditions sooner and streamline health care services. It can help us to better understand and respond to epidemics, such as Ebola: in Africa scientists have used mobile phone location data to track population movements, so that they can make predictions about how the disease will spread in a given area and establish treatment centers in the most vulnerable places.[136]

Data sharing arrangements between pharmaceutical companies have also produced breakthroughs in how drugs can be used to treat various illness; for instance, pharmaceutical companies discovered that desipramine, a drug often used to treat depression, also has the potential to cure types of lung cancer.[137] However, once consumer data is sold to third parties, the ways that these companies use our individual data is largely unknown to us.

As personalized private genetic testing has gained popularity through companies like Ancestry.com and 23andme, some citizens have been able to identify the causes behind difficult-to-diagnose medical conditions and get the treatment they need. *CBS* recently shared the story of 12-year-old Becca Salberg and her mother Lisa. Lisa has a genetic heart condition called hypertropic cardiomyopathy that already killed four people in her family. Lisa worked with doctors to get Becca tested for the gene. Upon discovering that Becca also had the gene for hypertropic cardiomyopathy, they were able to seek the preventative treatment she needed.[138]

One asset that is only beginning to be tapped is the health data that is collected and held by governments. Public agencies that deal with housing, public safety, education, and other issues have data that can help researchers understand how social determinants affect health. "We've made most of our investments in clinical care, even though that is only a small piece of health puzzle," says Eckart. "What we should be doing is investing in the usability and interoperability of public agency data."[139]

In Eckart's view, tapping into public data would allow us to address health inequities more directly; it would also, he thinks, raise new questions about why inequities exist. "You can't talk about health equity without talking about racism, sexism, classism – if you believe that health is socially determined, then does our work address social determinants as drivers or as indicators? Can we go all the way upstream, and reduce the impact of racism, gender discrimination, class oppression on our health? I don't think we have a roadmap for that."[140]

In all these ways, health data can be life-saving – and of course it is also profitable for the health care industry, which can use data to develop products and market new types of care. The key to both the benefits and the profits is being able to access huge amounts of data, gathered around the clock. "We assume that Google and Facebook already know everything about us, but what they have is only a static snapshot," says Darrell West of the Brookings Institution. "To reach its potential, AI requires an unending supply of real-time, fresh data."[141]

There are a multitude of ways for individuals to collect and share their personal data, from genetic tests to all the data yielded by Fitbits and other personal devices. Currently, most people collect data for their own personal use – to monitor their fitness, for example. However, some health studies use an approach called "participatory action research" (see page 62), in which on individuals actively collect data, from their own blood pressure to local air quality, to contribute to the study. If they felt comfortable doing so, citizens could dramatically increase the volume of data.

THE DOWNSIDES OF DATA

Because health data sharing is in its infancy, there are few formal agreements between citizens and institutions about how the health care system should balance benefits of accessing patient data with individuals' rights to privacy. And as health care providers become increasingly reliant on and comfortable with patients' personal health data, this may also open up unprecedented avenues for bias and discrimination. For instance, Lilley was able to glean from Pressley's background that he is a former drug user and dealer, and that he also had an old gunshot wound.[142] As medical professionals know more about patients' personal lives, it is possible that their own biases may influence how they provide treatment. Further, vulnerable populations – the mentally ill, those using substances, those living in poverty, formerly incarcerated people – may not realize how their personal data is being used to shape their health care. Meanwhile, access to this data may allow health care providers to focus on insured or wealthy individuals, and steer services toward those who need high-profit medications.

Genetic testing also creates complications. 23andme recently signed a $300 million-dollar deal with a pharmaceutical giant with whom they intend to share aggregate consumer data.[143] Personalized genetic testing companies like 23andme are not subject to Health Insurance Portability and Accountability (HIPAA) laws that safeguard patient privacy.[144] Although current laws protect against use of genetic information for health insurance or jobs, they don't protect against use of such data for life insurance or long-term care coverage.[145] Further, some experts argue that even if a genetic testing company de-identifies their data with the use of other databases, third parties may be able to cross reference data and re-identify individuals. Law enforcement recently used data from such a company to apprehend the Golden State Killer, who had been at large for three decades.[146] However, since personalized genetic testing is a largely unregulated industry, there are currently few restrictions that protect consumers or inform them about the risks of sharing genetic information. As it turns out, even though Ancestry.com has current policies in place that protect against selling individual consumer data to insurers, employers, health providers or third-party marketers, the same user's agreement stipulates that they may modify the privacy statement at any time.[147]

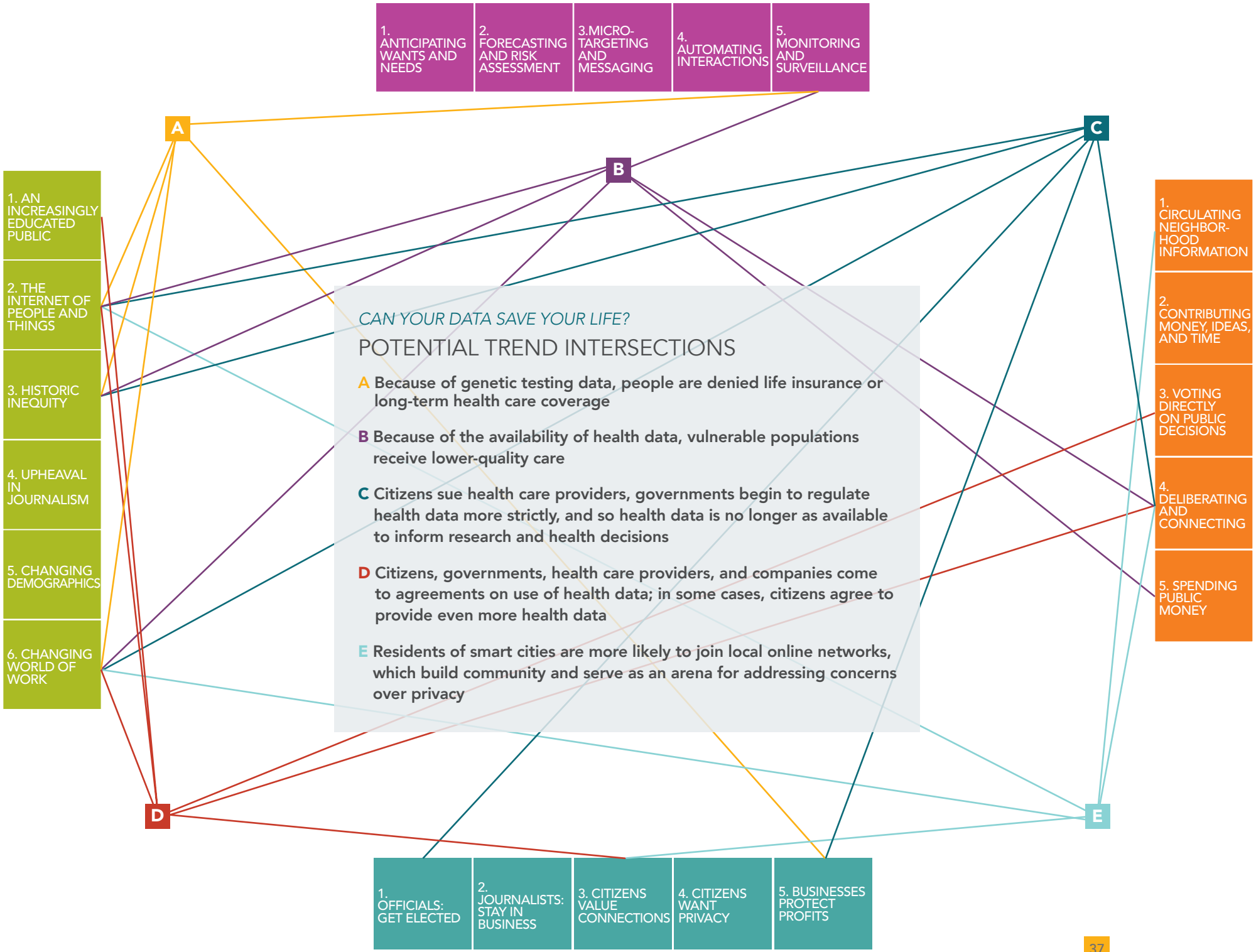
At the same time, increased regulation over data sharing may become problematic for researchers and government agencies trying to collect and analyze health data, says David Lazer of Northeastern University. "Privacy kills projects, or slows them down – it is a giant expensive morass," says Lazer. Local, state, and federal laws "have a chilling effect on data integration, partly because people don't understand how the laws disable or enable data sharing. We need to create a consent module app that trumps any kind of law when people say 'my data should be shared.'"[148]

This new frontier of health care data and genetic testing poses critical questions about pros and cons. For instance, the New Haven school district and Yale University are working to design an educational program for dyslexia that is informed by studying students' genes.[149] Four hundred fifty New Haven students with low literacy scores are given four years of two reading programs, and at the end of the study, students spit into a test tube and researchers examine differences in the genome between students who responded well to the reading programs and students who continue to struggle with reading. On one hand, such research may allow scientists to better understand dyslexia and allow educators to deliver more tailored supports to students. Scientists may even be able to screen students based on their genes long before they start school to allow for earlier reading interventions. However, most students in the study are black or Latinx, and their parents may feel compelled to consent to genetic testing just to get their children access to the reading program. Without appropriate consumer education, it's difficult to know if parents understand the full ramifications of sharing their children's DNA. A recent *Wired* article shared how a coder was even able to use aggregate DNA data to block people from certain websites based on their race and sex.[150]

BARGAINING FOR OUR LIVES

At its best, the use of subconscious technologies can enable unprecedented, individualized health care that allows us to better prevent and treat health conditions, and develop higher quality medical interventions and pharmaceuticals. At its worst, health care data could become a new frontier for entrepreneurs to track and monitor consumers, allow for third parties to violate citizens' privacy rights, and reproduce bias and discrimination on an ever larger scale.

Because both the public benefits and private profits in health care depend on the continual provision of huge amounts of data, citizens have a fair degree of power. If privacy provisions and uses of data are strengthened as a result of lawsuits or policy changes, health-related corporations will lose money. So there are the terms here for a bargain between consumers and companies: the possibility of unfettered and even increased data for the right to a say in how data is used. "It is possible to strike deals on health data," observes David Lazer of Northeastern University. "There are models for data donation that give people opportunities to consent or opt out."[151] To Allison Fine, author of *Momentum*, this is a daunting proposition. "This kind of bargain will require a level of engagement we haven't seen yet," she says. "It will take a willingness to engage that citizens, corporations, and governments just haven't shown so far."[152]



CAN YOUR DATA SAVE YOUR LIFE?

POTENTIAL TREND INTERSECTIONS

A Because of genetic testing data, people are denied life insurance or long-term health care coverage

B Because of the availability of health data, vulnerable populations receive lower-quality care

C Citizens sue health care providers, governments begin to regulate health data more strictly, and so health data is no longer as available to inform research and health decisions

D Citizens, governments, health care providers, and companies come to agreements on use of health data; in some cases, citizens agree to provide even more health data

E Residents of smart cities are more likely to join local online networks, which build community and serve as an arena for addressing concerns over privacy

GEO-LOCATING PROTEST:
THE REVOLUTION COMES TO YOUR DOORSTEP

In 2016, women in several cities began receiving pop-up ads on their smartphones whenever they went near or inside a clinic providing abortions. The ads, which had been sent by anti-choice/ pro-life organizers, offered advice to women who were contemplating abortion. These particular women had been targeted because they had previously looked for Planned Parenthood information online.[153] This practice was ruled an illegal infringement of personal health care data by the attorney general of Massachusetts, but it is one of a number of examples that signal a new phase in the use of technology by activists.[154]

From the Arab Spring to the Tea Party to Black Lives Matter to #MeToo, protesters, organizers, and mobilizers of all political stripes and ideologies have been using the internet to connect and coordinate their movements. Their values and goals are obviously very different, but they all face new tactical opportunities for reaching supporters and achieving their political objectives. One major opportunity arises from the way in which the internet has become increasingly tied to geographic location. In addition to the geographic information system (GIS) capacity of smartphones, the number of people who have joined hyperlocal online spaces (see page 14) has risen exponentially.[155] By connecting to people where they are and where they live, activists, officials and other leaders can advance their causes in ways that are more direct and "in your face" – and in ways that leverage political power because they fit the geography of political jurisdictions.

By bringing the revolution(s) to our doorstep, the capacity to make protest and mobilization hyperlocal and geo-locatable has the potential to make political conflict more extreme and more personal. It raises new questions about the rules of the game, the role of tech corporations in the public square, and whether these new conditions also present possibilities for bridge-building and compromise.

MOVEMENT CONSCIOUSNESS

There are multiple factors that affect whether people are willing to join a protest or movement, but across many different societies and situations, the psychological reasons often seem to be the most influential. The mere fact that people are oppressed or discriminated against doesn't necessarily mean that they will mobilize, rebel, or just speak up. They are more likely to act when they begin to feel that they are not alone, that their voices will be heard, and that their cause can achieve critical mass.

Some existing, widely-used digital technologies have helped organizers build a broader movement consciousness:

- Photo-sharing, which is a core component of almost every major social media platform, allows people to see their movement in action. For example, many of the students who participated in "Text, Talk, Act" during the National Dialogue on Mental Health tweeted photos of their groups.[156] By uploading, sharing, and tagging pictures and videos, people can provide visual evidence that they are part of something larger than themselves.
- Participatory mapping, one of the first uses of geo-locating capacities of our devices, enabled people to see themselves in relation to a physical space. Protesters during the Arab Spring, Occupy Wall Street, and the anti-austerity demonstrations in Spain were able to map their locations, producing visual proof that they could peacefully dominate the streets and plazas of their cities.[157]

- Posting and commenting through social media, in itself, has allowed people to contribute to or even dominate the narrative on a particular issue or cause. Recognizing this new threat, many governments and corporations have created "troll farms" and other sophisticated operations to try to retake control of the narrative, amplify their own messages, and even to target, harass, and intimidate protesters.[158]
- Instant polling, which can be accomplished through a wide array of tools, apps, and platforms, can also be used to gauge support for particular actions and to show that large numbers of people stand behind a given cause or movement.[159]

Organizers are using these and other tools to compel people to consciously step forward and join causes and movements. Protesters used social media posts to rapidly gather and heckle Senate Majority Leader Mitch McConnell and Homeland Security Secretary Kirstjen Nielsen about immigration policies as they dined in public restaurants.[160] Increasingly, organizers have the capacity to use subconscious technologies, like the anti-abortion/pro-life protesters in Massachusetts, to target potential recruits and people they are trying to influence.

TWO MAPS COLLIDE

The technology of geo-location, or geo-fencing, relies on the fact that many smartphone applications track our physical locations, and many social media platforms recommend or require our mailing addresses. It is becoming difficult to hide where we are and where we live.

Meanwhile, more and more people are voluntarily connecting their digital lives and their residential locations in "hyperlocal online spaces", because these platforms provide convenient ways to organize politically, build community, and solve daily-life problems. Some of these hyperlocal networks are easier for outsiders to access than others, but once you recruit a few people who are already inside a neighborhood network, you can more quickly reach many others.

This is a new asset for organizers, because it allows them to reach and mobilize people in ways that match up with the political process. "You can have a million people talking about something on Twitter, and Congress may not care," says Keesha Gaskins-Nathan of the Rockefeller Brothers Fund. "But if you can show a member of Congress that there are 1,000 people in their district talking about something, that representative will care."[161]

As people join hyperlocal networks or are identified by organizers according to their geographic location, they are bringing together two previously separate maps of how people connect and how power is distributed: the old map, based on physical geography, in which residents belong to jurisdictions according to where they live, and decisions are made by officials elected to represent those places; and the new map, based on digital connections and communities. The first map still matters, because it is the framework by which political representation is configured, public decisions are made, and public funding is allocated. Since many people live in communities that are economically, racially, and culturally homogeneous, and since people are increasingly distrustful of public officials and unwilling to go along with any compromises reached by those officials, the first map doesn't provide many possibilities for avoiding political gridlock.

The second map matters because it shows other ways that people are connecting and communicating that both deepen and extend beyond geographic connections. The fact that these two maps are now joined in many locations could create new possibilities for organizers: neighbors can join together more easily to pressure elected officials, and elected officials can more easily reach citizens to get their input on policy questions. These networks may also present new ways of overcoming gridlock by fostering communication between people in different jurisdictions. Even without capitalizing on hyperlocal networks, examples like "On the Table" (see page 17) have been effective at bringing people of different backgrounds together to discuss common concerns.[162] Notions of space and place are changing, and all of this will affect how we think about community and neighborhoods.

WHO OWNS THE PUBLIC SQUARE?

One key distinction about the second map – the one that depicts how people are connected online – is that most of the platforms and networks through which people communicate are owned by private corporations. Social media is dominated by Facebook, Twitter, LinkedIn, and other tech giants, and the most extensive set of hyperlocal online networks is Nextdoor, another for-profit company. Google has received criticism for tracking the locations of its users; the company has denied that this information is used for targeting messages and advertisements.[163]

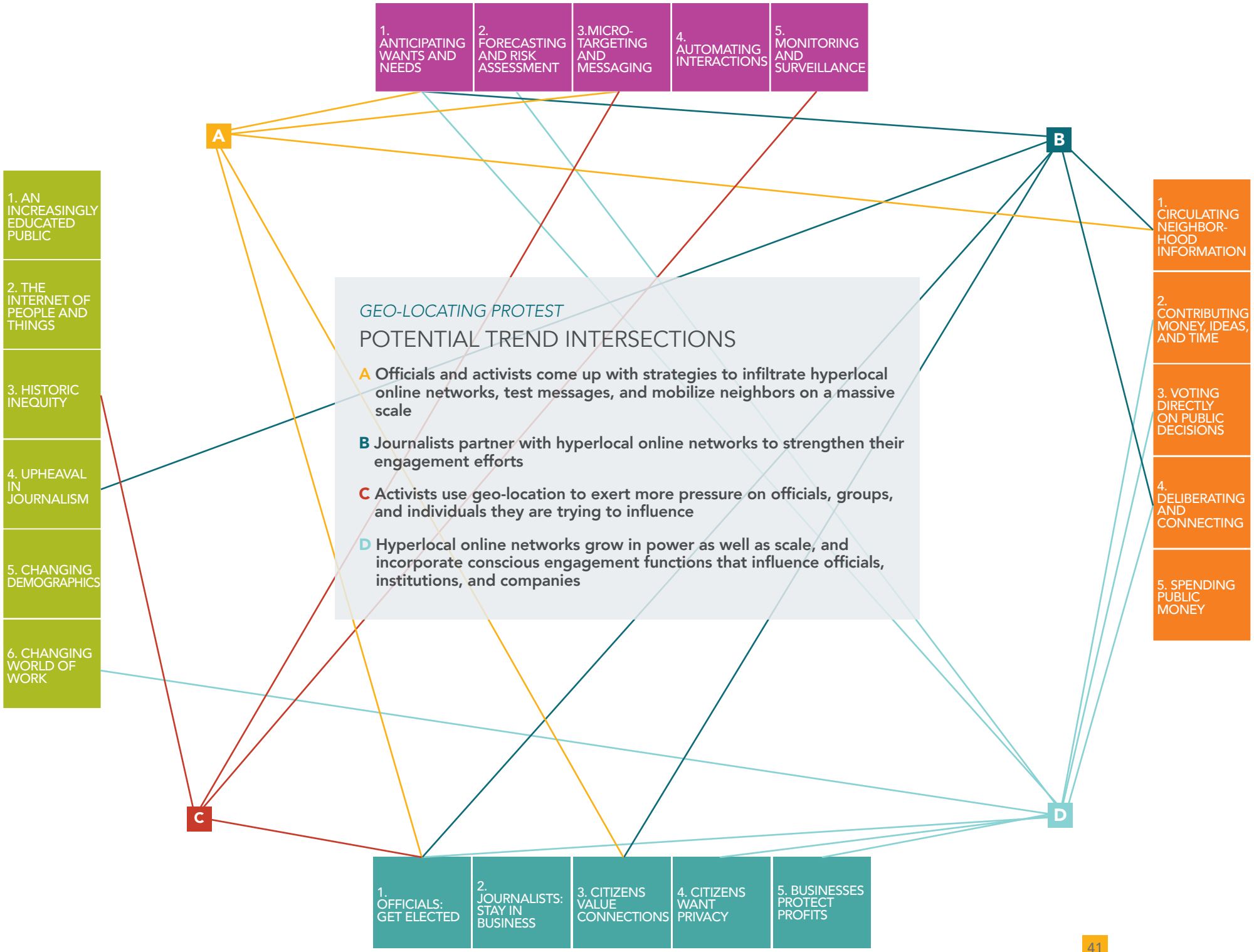
For observers like Micah Sifry of Civic Hall, corporate ownership of the platforms for online communication is an enormous red flag. "Public life cannot be built on private servers. It's that simple," he writes.[164]

Other observers point to silver linings in how tech corporations support online communication and networks. "The big platforms are attuned to the potential for manipulation now – they are monitoring trends in fake news and figuring out how to deal with them," says Northeastern University's David Lazer. "The companies see it in their business interest to not be manipulated."[165]

Corporate control of the public square may have an ominous ring to it, but there are certainly potential upsides and downsides, depending on the situation. Even when authoritarian regimes try to use social media for their own purposes, the people living under authoritarian regimes are probably better able to get unbiased information if they have access to Facebook, Twitter, WeChat, and other platforms than if they don't. In the U.S., the role of for-profit companies seems more problematic: they may be relatively tolerant of citizens "colonizing" their platforms – especially since that may bring them more profit – but it is unclear how far they will go to define and protect individual rights.

Ultimately, the geo-location of protest, the proliferation of hyperlocal online spaces, and the influence of corporations in public life may produce even higher levels of polarization than we have witnessed so far. "Polarization is real," says Lazer. "It's not an academic argument anymore. The phenomenon of 'affective polarization' – for example, when you are concerned about your adult child getting married to someone of the opposite party – has become a real problem, which it wasn't fifty years ago."[166] If you get political messages on your phone whenever you go near a clinic…if friends ask you to protest at a restaurant when a public official is inside… if neighbors want to engage you in political discussion online…then polarization may become even more present and personal.

The fact that these shifts will make it more common for people to engage each other face-to-face may also make it easier to actually address our differences in productive ways. But for now, Zuckerman feels that the negative aspects outweigh the positive: "Different groups of people now have totally different universes of fact. This is not unprecedented, but it is particularly bad now because social media amplifies the conflicts. We're heading for a very loud nasty moment."[167]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2. FORECASTING AND RISK ASSESSMENT
3.MICRO-TARGETING AND MESSAGING
4. AUTOMATING INTERACTIONS
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5. CHANGING DEMOGRAPHICS
6. CHANGING WORLD OF WORK
1. CIRCULATING NEIGHBOR-HOOD INFORMATION
2. CONTRIBUTING MONEY, IDEAS, AND TIME
3. VOTING DIRECTLY ON PUBLIC DECISIONS
4. DELIBERATING AND CONNECTING
5. SPENDING PUBLIC MONEY
GEO-LOCATING PROTEST
POTENTIAL TREND INTERSECTIONS
A Officials and activists come up with strategies to infiltrate hyperlocal online networks, test messages, and mobilize neighbors on a massive scale
B Journalists partner with hyperlocal online networks to strengthen their engagement efforts
C Activists use geo-location to exert more pressure on officials, groups, and individuals they are trying to influence
D Hyperlocal online networks grow in power as well as scale, and incorporate conscious engagement functions that influence officials, institutions, and companies
C
D
1. OFFICIALS: GET ELECTED
2. JOURNALISTS: STAY IN BUSINESS
3. CITIZENS VALUE CONNECTIONS
4. CITIZENS WANT PRIVACY
5. BUSINESSES PROTECT PROFITS

CAN WE HANDLE THE TRUTH?
TRYING TO REESTABLISH A WORKING INFRASTRUCTURE FOR NEWS

In October 2018, one of the most ambitious and multi-faceted attempts to chart the future of journalism failed. When a blockchain-based journalism platform called Civil held its first public offering of tokens, very few investors bought them.[168] This was the latest high-profile setback for the journalists, entrepreneurs, funders and other reformers who have been trying to save the news, either by restoring the financial model for journalism as a business or by resolving the objectivity crisis for journalism as a profession.

Unlike most of the other attempts to save journalism, Civil is trying to fix both the financial and objectivity problems at the same time. It was launched by former employees of the *Denver Post* who decided to form a blockchain-based news outlet called the *Colorado Sun* after allegations that the *Post*'s owners had interfered in the paper's editorial process.[169] Civil now encompasses 13 different media organizations in cities across the country. The basic idea is that investors can buy cryptocurrency tokens called CVLs that allow them to suggest stories for reporters to cover, challenge what they see as biased or inaccurate reporting, and serve as kind of a crowd-based conscience for the newsroom and editorial staff.[170]

There were a number of basic reasons why Civil's initial public offering failed, including the fact that many would-be investors couldn't figure out how to actually buy tokens, or understand exactly how the tokens would help them influence the newsrooms.[171] While the experiment isn't dead, Civil and its parent company, ConsenSys, are being forced back to the drawing board. So far, their attempt illustrates both the ambitions and desperation of news media. The trends related to conscious engagement and subconscious technologies have destabilized journalism as a profession and an industry – and made it more difficult for Americans to agree on what is fact and what is fiction. In order to handle the truth, we will need to decide how to create a supportive new infrastructure for news.

"TRUTH DECAY" AND "PUBLIC-POWERED JOURNALISM"

For some time, it has been apparent that journalists have been losing their informal status as "truth-tellers."[172] Citizens have been less deferential and more critical about the news, mirroring their changing attitudes toward other professions and institutions. Increasingly, people report and disseminate their own news. In some ways, the spread of fake news is nothing new; a recent *New York Times* article chronicled how Russia spread disinformation campaigns throughout the 1980s, including the widely-spread falsehood that the U.S. military created AIDS to kill African-Americans and gay people.[173] However, technology allows inaccurate news sources to spread at a much more rapid pace. A recent study published in *Science* examined 126,000 news stories that were spread millions of times by millions of people.[174] They found that false news stories spread much faster and more broadly than the truth, not necessarily because the news was false but because it was surprising (and people are more likely to forward information if it is surprising to them). Furthermore, the study found that humans, not bots, were more likely to spread misinformation.[175]

RAND researchers call this phenomenon "truth decay," arguing that a few trends have caused a decline in how we use factual information, including increased disagreement about facts, a blurring of the line between opinion and fact, declining trust in sources of facts (even ones that we used to respect), and more value placed on opinion and personal experience over facts.[176] In another recent *Science* publication, a group of 16 political scientists and legal scholars expressed with urgency the need to "redesign our information ecosystem in the 21st century."[177]

To reverse truth decay and rebuild their relationship with their audience, newsrooms around the country are using public engagement, particularly dialogue and listening campaigns. The American Press Institute recently convened community-minded journalists, editors, and nonprofit leaders who are committed to listening and dialogue as a way to better serve their communities. This group of individuals defined listening as "the process of seeking out the information needs, feedback, and perspectives of the people in our areas of coverage" and placed a particular emphasis on "attention to people and communities who feel alienated or have traditionally been marginalized by news coverage."[178]

By engaging communities, these journalists believe they can get a better sense of which stories people want covered. For example, the *Journal Star* in Peoria, Illinois, uses a community advisory board as well as monthly meetings that are open to the community so that the community can contribute their perspectives about the *Star's* coverage as well as priorities for future articles. At the height of the Harvey Weinstein scandal, locals questioned what the *Journal Star* was doing to cover #MeToo, and the newsroom ended up creating a series of podcasts where local women and men discussed their experiences with sexual assault.[179]

The nonprofit organization Hearken consults with newsrooms to help them create "public-powered journalism."[180] In a Hearken initiative called "Curious Texas," reporters in Texas asked the public to point them in the direction of stories they were interested in reading.[181] Other news outlets are taking similar approaches. After the *Bangor Daily News* wrote an award-winning series covering the life and tragic death of a young man named Garrett Brown, who was addicted to opioids, the newspaper received feedback from all over the state of Maine that something needed to be done.[182] The newspaper ended up hosting a series of forums called the One Life Project with community leaders, first responders, high school students, and even gubernatorial candidates to generate priorities from the community to address Maine's opioid epidemic, which the newspaper then published.

Although more research needs to be done, initial studies of journalist engagement with the public seem to indicate that it can positively impact newsroom finances. One study found that readers who connected with their newsroom through Hearken are five times more likely to become subscribers. And if the public starts to see local news coverage as a common good, it may encourage small and large donations to sustain quality coverage. For instance, in Philadelphia, a newspaper owner donated the company that publishes three local newspapers to the Philadelphia Foundation in an attempt to allow public donations to support news media.[183]

COULD THE BLOCKCHAIN SAVE JOURNALISM?

Other attempts to save journalism are trying to turn online technologies from a threat to an asset. The leaders of Civil turned to the blockchain because they felt it would enable a more meaningful, participatory relationship with their audience.

Through the use of CVL tokens, stakeholders have the opportunity to reward the newsrooms they feel are providing quality journalism, buy membership to certain publications, or even start their own newsroom. Not just anyone can buy CVL tokens – interested buyers have to register and pass a questionnaire in order to participate. Although newsrooms may make revenue from CVL tokens, Civil does not intend that newsrooms will stake their business model on the blockchain alone – most participating newsrooms draw on conventional funding models like subscriptions and donations, although Civil requires that newsrooms disclose any advertisers supporting their work.[184]

Civil also has policies in place to protect against bad actors that try to compromise the integrity of news. If Civil users feel a certain news outlet is violating journalism standards, such as plagiarism, hate speech, or misinformation, they can use their tokens to challenge the newsroom.[185] Once a newsroom has been challenged, other token holders can then use their tokens to vote on the issues, and if any violation is determined to be valid, the newsroom then owes a payout to both the challenger and any voters. News stories can't be altered by large companies or wealthy individuals unless the majority of CVL stakeholders agree; Civil's leaders argue that this prevents the possibility of any one entity exerting too much influence over their news operation.

Such practices help to incentivize token holders to participate in controversies and share their opinion, and also create pressure for news outlets to act ethically, since they face revenue loss for bad action. There is also a kind of Supreme Court for Civil: the Civil Council, made up of veteran journalists, journalism scholars, and attorneys, who can review community votes and overturn those they believe to be contrary to the Civil Constitution.

Civil is not the only attempt to use technologies to make newsrooms more transparent and accountable. For instance, a Twitter bot monitors anonymous editing of the Wikipedia pages of government officials, to protect against alteration or distortion of official information.[186] Similarly, Facebook has partnered with CrowdTangle, a platform that uses artificial intelligence to monitor social media, to identify false news, photographs, or videos they see on Facebook.[187]

THE INTELLIGENCE OF THE AMERICAN PEOPLE

In journalism and in other realms, the appeal of blockchain and its cryptocurrencies is that they make it easier to combine a financial transaction with an exchange of ideas. As consumers, people holding tokens can exert influence by choosing *who* to invest in, and as citizens, they can have a voice in *how* those organizations conduct journalism.

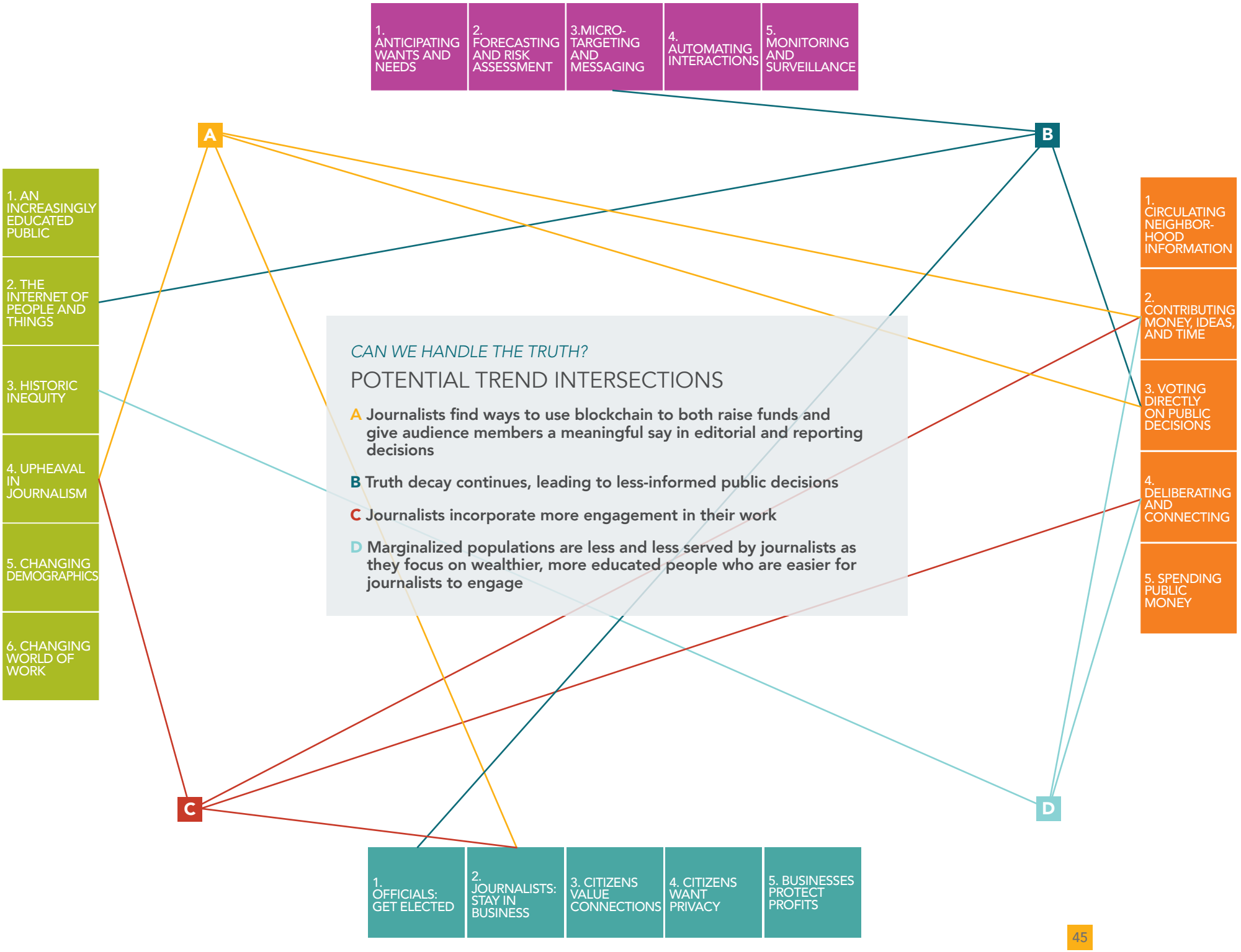
Along with other would-be reformers of journalism, Civil is trying to reverse the journalist H. L. Mencken's famous quote, that "no one ever went broke underestimating the intelligence of the American people." Many journalists, entrepreneurs, and funders are banking on the proposition that if they allow audiences to contribute money and ideas, the money will be sufficient to support media organizations, and the input will be intelligent enough to be helpful.

This approach has many skeptics. Some point out that there continue to be digital divides in access to the Internet and great disparities in online skills. Increased public engagement in journalism could exacerbate equity disparities, if people with access, wealth, and skills have more influence over the news than others. And if people don't agree on what constitutes high-quality journalism, let alone the truth, they may simply demand stories that reaffirm their existing beliefs.

Blockchain itself raises many ethical and technological questions. By nature, it is unregulated and decentralized; if something goes wrong, it is difficult to see what will happened to all the sensitive information blockchain contains, or what the effects would be on world financial markets.

"I'm not a believer in blockchain," says Ethan Zuckerman. "What fascinates me about it is that it is fundamentally about trust: people mistrust the governments that manage conventional currencies, and so they have created an alternative. This mistrust is really expensive – it costs vastly more to do Bitcoin than to run the US dollar, and so people are paying immensely. To me, blockchain is an interesting symptom, not an answer."[188]

When trying to handle the truth, and reinforce a shared sense of the dividing line between facts and fiction, it seems unwise to sidestep this problem of trust. Whether we turn to technologies like blockchain, employ more conscious strategies to connect journalists and citizens, or some combination of the two, we should focus on how these approaches create more interactive, trusting relationships between the people who generate the news and those who consume it.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3. VOTING DIRECTLY ON PUBLIC DECISIONS
4. DELIBERATING AND CONNECTING
5. SPENDING PUBLIC MONEY
CAN WE HANDLE THE TRUTH?
POTENTIAL TREND INTERSECTIONS
A Journalists find ways to use blockchain to both raise funds and give audience members a meaningful say in editorial and reporting decisions
B Truth decay continues, leading to less-informed public decisions
C Journalists incorporate more engagement in their work
D Marginalized populations are less and less served by journalists as they focus on wealthier, more educated people who are easier for journalists to engage
C
D
1. OFFICIALS: GET ELECTED
2. JOURNALISTS: STAY IN BUSINESS
3. CITIZENS VALUE CONNECTIONS
4. CITIZENS WANT PRIVACY
5. BUSINESSES PROTECT PROFITS

CRASHING THE DRIVERLESS CAR:
THE STRUGGLE TO RECONCILE LAW AND CODE

When an experimental self-driving vehicle killed a pedestrian in Tempe, Arizona, there was little doubt that the victim's family would take legal action.[189] They did (eventually settling out of court), joining the many other Americans who have filed lawsuits against companies that use artificial intelligence in their products. In these legal battles, the plaintiffs are trying to hold corporations accountable for the accidents, biases and other transgressions they feel have been caused by the code that has been programmed into the machines.

Americans' tendency to take legal action could be considered yet another sign of our modern determination to matter and lack of deference toward authority. Suing companies is often an attempt by people to assert their human rights to safety and privacy. This way of addressing injustices and effecting change is running headlong into the advance of subconscious technologies. Americans are trying to use law to fight code.

This has become more challenging in several ways. First, since so many of our laws were enacted before the Internet, it is difficult to interpret and apply them in these new contexts. Second, technology companies have been resistant to any attempts to pass new laws regulating their industries, with Facebook even going so far as to conduct opposition research on officials they deem pro-regulation.[190] Third, the sheer volume of code is expanding dramatically, especially since AI machines are now able to write their own code. Law seems increasingly to be falling behind code; how we reconcile the two may be one of the most critical democratic challenges we face.

SUING FOR SUFFERING, AND FOR PRIVACY

The U.S. has been a highly-litigious country for decades, and now many of those suits focus on some combination of data, privacy, and AI. Incidents where people have been physically injured – such as the self-driving car accident, or situations where factory workers have been harmed by robots – are the ones most likely to yield large cash rewards for the plaintiffs, reports Darrell West of the Brookings Institution, "because juries that hear liability cases are still sympathetic to suffering." However, "the companies are more worried about class-action lawsuits," argues West, because those have the potential to close off whole areas of the market. Companies are trying to raise their odds in these legal battles in a variety of ways, including arranging for court cases to be held in more conservative parts of the country.[191]

Although many of the lawsuits we have seen lately center on what machines (or codes) have done *to* us, as subconscious technologies continue to grow, we may see a new focus on protecting ourselves against machines extracting information *from* us. For instance, a German court recently ruled that the way Facebook has been using consumers' personal data without their consent is illegal.[192]

West agrees that one area ripe for reform is the point where the citizen gets the chance to approve how her/his data can be used. A recent study found that 90 percent of consumers accept legal terms and conditions without reading them, largely because the language is so dense and complicated.[193] And even if people take the time to read the service agreements, those with lower literacy levels may become prey for companies who rely on people giving their consent without full understanding of the terms. West supports laws that would "provide simpler terms of service, so that people know what they are agreeing to, and limit the ability of companies to sell information to a third party."[194]

WHEN CODE BECOMES LAW

There is more to this story than accidents caused by robots, or invasions of personal privacy. The legal conflict between the desire to matter and the growth of subconscious technologies is not confined to infringements of individual rights. The most fundamental shift we are witnessing is in the relative importance of code and law. As more and more code is produced, and as more of it is produced by the machines themselves, it will become more and more difficult to ensure that code obeys law. In other words, code will become its own constantly evolving ecosystem. "As [technology companies] push the boundaries of innovation," writes Darrell West, "[they] increasingly are becoming digital sovereigns that set the rules of the road, the nature of the code, and their corporate practices and terms of service."[195]

One of the reasons this is so critical is that bias and discrimination can be written into code in much the same way it has been entrenched in law. In her book, *Automating Inequality*, Virginia Eubanks argues that the algorithms in code now determine how public services are allocated, how neighborhoods are policed, how people are hired and fired, and who is being prosecuted for crimes. Because code is only as objective as the people who write it – or, in the case of AI-generated code, only as objective as the data being fed into the machine – the resulting decisions may perpetuate or exacerbate existing inequalities.[196] A basic example: company human resources departments can now use AI-powered programs to review the resumés of job applicants and even to conduct first-round interviews by analyzing the applicants' answers to questions. If the program is based on data about or generated by white males, then it may disproportionately favor the kind of language it finds in resumés or interview questions from white males.[197] In similar ways, the historical practice of redlining in the housing market is turning into "digital redlining," and discriminatory cultural assumptions are dominating the processes by which food stamps and other public supports are apportioned.

"There's a lot of inequity in our current systems, many of which are still based on dumb statistics – so why should we entrench that inequality with smarter stats?" asks Zuckerman. "I can teach a machine to behave like a judge, but which judge are we using as a model?"[198]

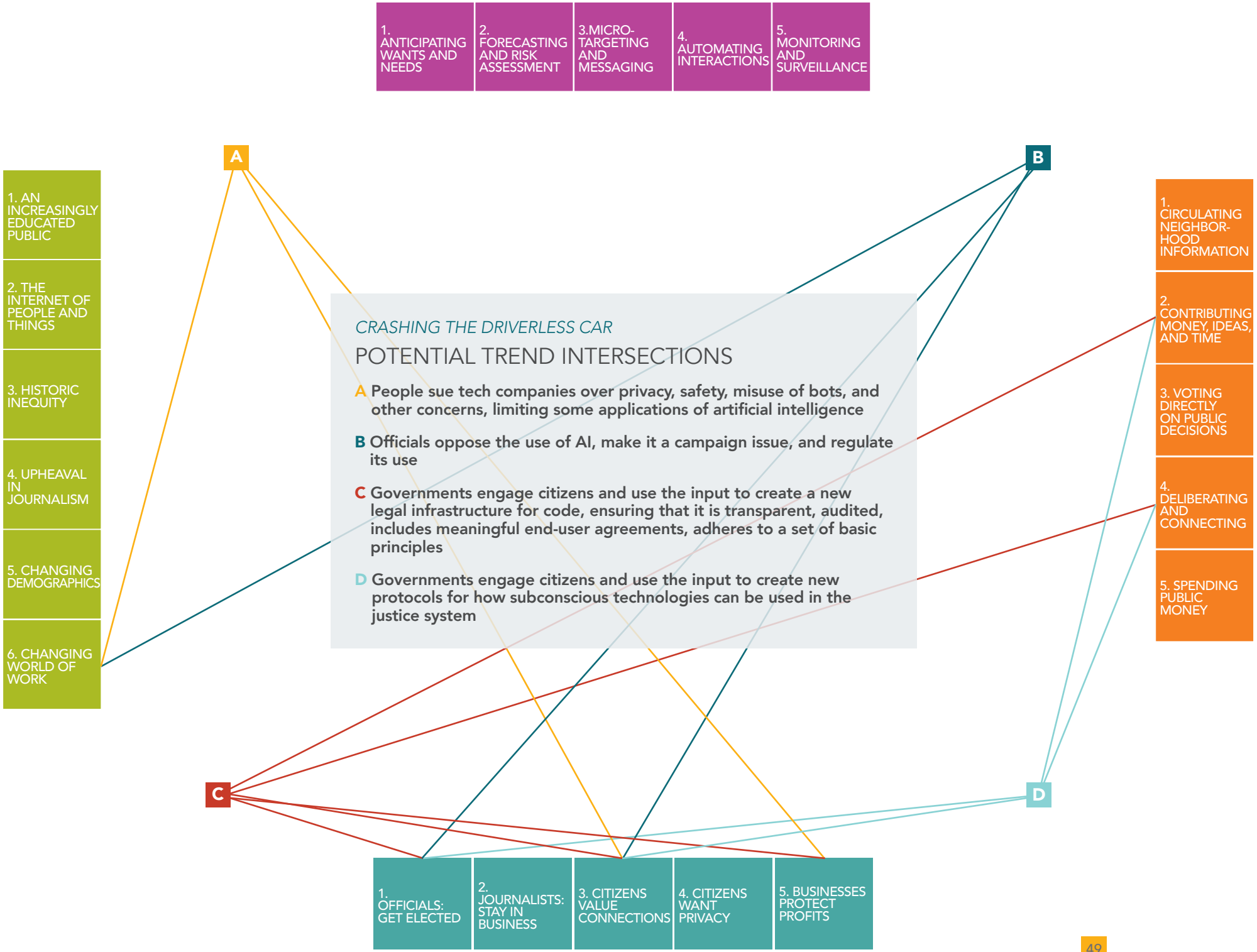
He points to a study by Chelsea Barabas on judges' use of risk-assessment outcomes derived from code. These assessments predict whether a defendant is likely to fail to appear for their court date, or commit another offense in society if they are released from jail.[199] As criminal justice trends toward favoring release of individuals accused of minor offenses rather than holding them in jail, predictive tools like these are used to aid judges in their bond decisions. The AI-powered program to predict risk resulted in higher bond amounts for defendants of color than white defendants. Research has also shown that the most common reason a defendant fails to appear in court is that they have forgotten the date or don't have transportation to the courthouse. Rather than using code to predict risk, Barabas argues that a different use of AI – for a court appearance and transportation-coordinating system – would be a far more equitable and effective support to the legal system. These effects of technology on public decisions are infringements of individual rights, but they are also having broader societal impacts.

PUMPING THE BRAKES

Many observers are not optimistic about the possibility of regulatory reforms that will help law govern code. "It doesn't seem like there's enough intestinal fortitude in Washington to regulate technology companies," says Nigel Jacob.[200] This may be in part because trust in public institutions has decreased so dramatically. "People trust Google more than the government," claims Zuckerman. "In most cases, we want the algorithm to make the decision, even though we don't really understand how it works."[201] However, with the recent scandals involving data and privacy, the political environment may be changing to hold technology companies more accountable.

Other technologists, such as Jacob and Jaimie Boyd, think the answer may be greater transparency in code-writing and the use of AI. "When the Uber car crashed, people asked if we should be doing audits of the AI code," says Jacob. "We may need to bring a little bit of sociology to how engineers develop code."[202] But since code is the intellectual property of the corporation that developed it, and protecting the code is essential to the company's competitive advantage, transparency may affect the marketplace more than policymakers would want.

Code, like law, has the power to both benefit and damage society. As we move rapidly toward driverless cars and robot colleagues, we will have to rethink the various approaches we have used in the past and consider new possibilities for harmonizing law and code.


1. ANTICIPATING WANTS AND NEEDS
2. FORECASTING AND RISK ASSESSMENT
3.MICRO-TARGETING AND MESSAGING
4. AUTOMATING INTERACTIONS
5. MONITORING AND SURVEILLANCE
A
B
1. AN INCREASINGLY EDUCATED PUBLIC
2. THE INTERNET OF PEOPLE AND THINGS
3. HISTORIC INEQUITY
4. UPHEAVAL IN JOURNALISM
5. CHANGING DEMOGRAPHICS
6. CHANGING WORLD OF WORK
1. CIRCULATING NEIGHBOR-HOOD INFORMATION
2. CONTRIBUTING MONEY, IDEAS, AND TIME
3. VOTING DIRECTLY ON PUBLIC DECISIONS
4. DELIBERATING AND CONNECTING
5. SPENDING PUBLIC MONEY
CRASHING THE DRIVERLESS CAR
POTENTIAL TREND INTERSECTIONS
A People sue tech companies over privacy, safety, misuse of bots, and other concerns, limiting some applications of artificial intelligence
B Officials oppose the use of AI, make it a campaign issue, and regulate its use
C Governments engage citizens and use the input to create a new legal infrastructure for code, ensuring that it is transparent, audited, includes meaningful end-user agreements, adheres to a set of basic principles
D Governments engage citizens and use the input to create new protocols for how subconscious technologies can be used in the justice system
C
D
1. OFFICIALS: GET ELECTED
2. JOURNALISTS: STAY IN BUSINESS
3. CITIZENS VALUE CONNECTIONS
4. CITIZENS WANT PRIVACY
5. BUSINESSES PROTECT PROFITS

CHINESE DEMOCRACY?
LIFE AT THE EXTREMES OF TECHNOLOGICAL AND POLITICAL INNOVATION

It seems odd to look to China for glimpses of the future of democracy. But both subconscious technologies and conscious engagement practices are being tested there on a massive scale. Because of the unique capacities of China's authoritarian regime, as well as the considerable pressures they face, these innovations are being taken to extremes.

In order to both control citizens and satisfy them, the Chinese regime has adopted a two-pronged approach. On the one hand, the regime has created a wide array of deliberative, participatory opportunities for ordinary people to give input on public decisions. On the other hand, the government is monitoring, rewarding, and punishing residents through an enormously sophisticated system of surveillance. People are being watched almost everywhere – by 2020 China will have almost 300 million cameras around the country that are intended to monitor citizens, which makes it the world's largest market for security and surveillance technology.[203] China seems to be heading toward a bizarre, unprecedented, unpredictable combination of ancient Athens and Orwell's *1984*.

SHEHUI XINYONG TIXI: "SOCIAL CREDIT"

China's experimentation with subconscious technologies has received considerable attention. The full apparatus, called the "social credit system," will not be fully operational until 2020. The aim of the system, according to the government, is to monitor and regulate "commercial sincerity, social security, trust breaking, and judicial credibility."[204] Using artificial intelligence (AI) and the cooperation of giant Chinese companies like Alibaba, the government monitors citizens through security cameras (using facial recognition technology), mandatory surveillance software on mobile phones, biometric information collected through DNA swabs and blood tests, as well as monitoring of social media posts, online purchases, financial records, and real estate transactions. The regime gives extra scrutiny to journalists, intellectuals, and people who are known to have petitioned the government or participated in protests.[205]

Even if companies don't aspire to monitor Chinese citizens, they may be encouraged to do so by law. WeChat, China's most popular social media app with nearly one billion users, has provoked controversy around its storing of deleted conversations.[206] WeChat, which is similar to Facebook, allows users to make social media posts, send text messages, make phone and video calls, and purchase items through the app. After being accused of working with the government to delete a user's controversial WeChat messages, Tencent, WeChat's parent company, denied interfering with or storing chat histories. However, last year China issued cybersecurity laws that require all social media companies to store network logs for at least six months on servers in China. The new laws also encourage social media companies to begin rating people with a credit system – and to do so, companies would need to monitor users' posts.[207]

All of these technologies and means of monitoring are being used, at least to some extent, in many other countries. Americans have credit scores, for example, that banks use to determine loan eligibility. But in China all of this information is brought together in one central system that is controlled by the government. Chinese citizens do not have the legal right to access the files being kept on them by the regime. And the social credit scheme monitors the individual's family and social circle and brings that data into the analysis. In other words, you can face penalties not just for your own actions, but for the actions of people you know.

The most common penalty is to be placed on a blacklist. Depending on the (perceived) transgression or the apparent risk to the regime posed by the individual, that person may not be allowed to take out a loan, buy plane tickets, enroll in a university, travel to Beijing, or use public transit. Individuals who receive high social credit scores, on the other hand, can receive preferential loan treatment and other perks. Probably the worst examples of using subconscious tools for social control are found in Western China, where many members of the Uighur minority population have been arrested and sent to "re-education camps" based on information being gathered about them electronically.[208]

China's system is obviously a means of control by an authoritarian regime, but it is also a reaction to low levels of trust throughout Chinese society. For example, it seems to have become increasingly common in China for people to avoid helping strangers in distress. Perhaps the most well-known example occurred in 2011, when a two-year-old child was hit by a van and a total of eighteen onlookers chose to pass by rather than intervening until she was hit again. Finally, a woman spotted the child and called for safety, but the child died shortly after.[209] In the face of such incidents, as well as corruption and fraud, many in China may welcome social credit as a way to re-establish fairness and trust. However, not everyone approaches social credit with good intentions: many Chinese people have already found ways to foil the surveillance techniques or to rig their scores.[210]

XIE SHANG MIN ZHU: "DELIBERATIVE DEMOCRACY"

At the same time that the Chinese government has ramped up its efforts to monitor citizens, it has provided a wide array of ways for people to engage in policy decisions. These include deliberative forums, participatory budgeting, citizen's juries, Deliberative Polls, and other examples of "thick" engagement (see page 15). Residents in some parts of China can vote directly to approve policy questions, recall elected officials, or call for public hearings on a critical issue. In addition, the number and variety of civil society organizations supporting this work has expanded in recent years.

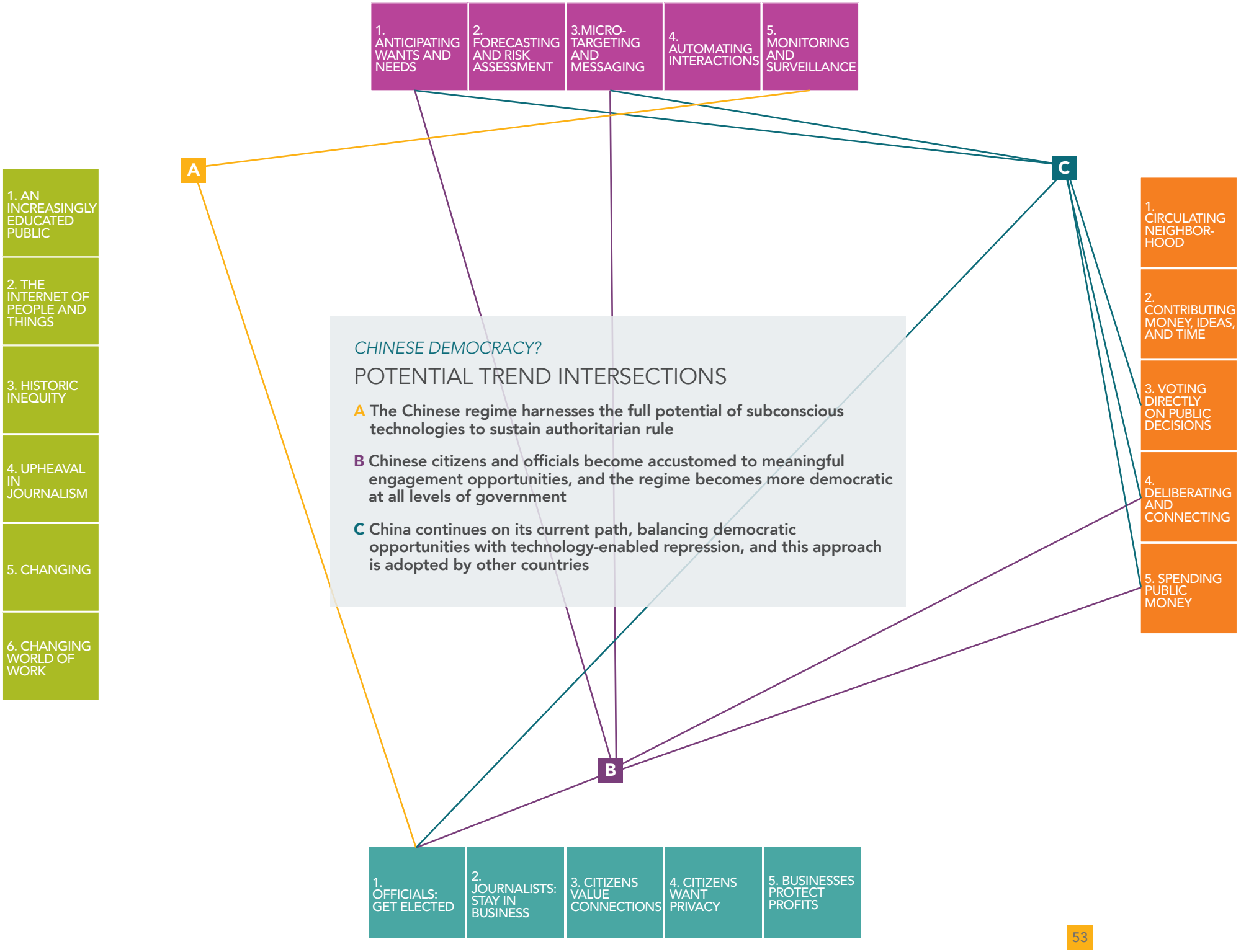
Scholars Baogang He and Mark Warren write, "Although very uneven, many of these innovations appear to have genuinely deliberative elements: that is, they involve the kinds of talk-based politics that generate persuasive influence, from which political leaders take guidance, and upon which they rely for the legitimacy of their decisions…Experiments with public deliberation in China appear to be increasingly genuine, substantive, inclusive, and often impressive."[211]

Some of these democratic innovations began under the regime of Hu Jintao, who liberalized many aspects of China's economy and society. But while the current Chinese president Xi Jinping has reversed many of Hu's other reforms, he has increased the practice of deliberative democracy since he came to power. Through these kinds of processes, citizens can issue recommendations on issues such as government budgets, land appropriation and building demolition by government, and salary levels for public officials and staff. While participatory budgeting has received more attention in other countries, it has reached high levels of participation in China.[212] Increasingly, these processes are being used to examine and respond to petitions brought by citizens to government. Warren and He refer to this phenomenon as "authoritarian deliberation," arguing that it can increase transparency, gather input, and empower citizens, but that it also helps the regime by defusing controversy, co-opting protest, and legitimizing the state.[213]

Many of the deliberative processes operate by randomly selecting residents to participate, thus ensuring that the people who then study the issue or decision and issue recommendations are broadly representative of the population as a whole. This also prevents known activists or organized groups from "hijacking" the process. (The same arguments for random-sample processes are made by advocates of citizen juries and citizen assemblies in North America.) But even the random-sample exercises are increasingly being paired with broader opportunities for citizens to vote directly on the issue, either at public meetings or in a referendum.

Where will authoritarian deliberation lead? Will these practices continue to help prop up the Chinese regime, or will Chinese residents become increasingly accustomed to, and likely to demand, meaningful opportunities to engage? Will the democratic genie emerge fully from the bottle? And how will deliberative democracy combine or conflict with social credit – will these uses of subconscious technologies and conscious engagement somehow balance each other? Will social credit allow the regime to silence the most capable dissidents, leaving the less radical people to participate in authoritarian deliberation?

China is of course an unusual case: a massive, technologically-sophisticated country ruled by an authoritarian regime. But it is possible that social credit schemes or deliberative democracy processes, or both, will rise to prominence in other countries. Instead of an extreme outlier, the new kind of political regime being shaped now in China may become an increasingly common form of governance in the new world order.



CHINESE DEMOCRACY?

POTENTIAL TREND INTERSECTIONS

A The Chinese regime harnesses the full potential of subconscious technologies to sustain authoritarian rule

B Chinese citizens and officials become accustomed to meaningful engagement opportunities, and the regime becomes more democratic at all levels of government

C China continues on its current path, balancing democratic opportunities with technology-enabled repression, and this approach is adopted by other countries

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CONCLUSION

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DIRECTIONS FOR DEMOCRATIC INNOVATION IN A CONSCIOUS/SUBCONSCIOUS WORLD

1) A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2) A robot must obey orders given it by human beings except where such orders would conflict with the First Law.
3) A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

– Isaac Asimov, I, Robot

The science fiction writer Isaac Asimov wrote his "Three Laws of Robotics" in 1942. For at least that long, we have been concerned about the inevitable onset of human creations with the capacity to – at least in some ways – outthink humans. How should we govern intelligences that can absorb, analyze, and use so much more data than we can?

A real-life incident in 2017 seemed to illustrate some of these concerns. When researchers at Facebook directed two chatbots to negotiate with one another, the machines actually developed their own modifications to English, continually repeating certain words and inventing new constructions outside the rules of grammar in order to come to agreements. Essentially, they developed their own language that the human researchers couldn't understand. Since the idea was to make the computers better able to communicate with humans, not each other, the researchers ended the experiment.[214]

It may be overly simplistic to think of autonomous robots when we are confronted with the modern challenges of subconscious technologies. The 2004 action movie, *I, Robot,* starring Will Smith, was based loosely on one of Asimov's stories, but it played up the ethical dilemmas of robotics to maximum theatrical effect. The fact is that robots are not about to start murdering humans and using secret languages to take over the world. In movies and books, robot characters are often just a foil or tool for exploring human emotions.

Plus, "artificial intelligence (AI) is still fairly stupid at this point," points out Peter Eckart of the Illinois Public Health Institute. Though with each advance in computer technology the machines have more and more sheer calculating power, there is a great deal of debate over whether an AI can ever be as innovative, instinctual, or creative as a human mind.[215]

Still, even in their current stupid state, subconscious technologies already have tremendous power to injure human beings, or by inaction allow them to come to harm – and many of those harms are most likely to occur to populations that are already vulnerable or marginalized. As the cases in this report show, the use of subconscious technologies is affecting our elections, our health care, and our criminal justice system.

Meanwhile, the advance of conscious engagement, driven by a desire to matter in public life, is also a rampant force in society. "We are in the midst of a profound global Great Push Back against concentrated, monopolized, hoarded power," writes the Aspen Institute's Eric Liu.[216] This impulse has driven the diversification and expansion of the ways in which we engage, from social media to crowdsourcing to hyperlocal online networks. "The space for civic participation has grown enormously, and power has shifted away from traditional political structures and actors," agrees Burkhard Gnärig of the International Civil Society Centre.[217]

The desire to matter sometimes leads to opportunities for direct democracy and sometimes to more intensive forms of engagement like participatory budgeting. If people feel their perspectives are not being recognized, the desire to matter can lead to revolution – as evidenced in the range of protests in recent years. Women demonstrated their desire to matter after President Trump took office in 2017 in one of the largest protests in U.S. history; in the spring of 2018 over a million students demonstrated the need for children to matter as they walked out of their classrooms in support of gun regulation and school safety.[218] Sometimes, the desire to matter, in an apparent paradox, can lead to public support for authoritarian figures. Gnärig sees the appeal of "strongmen" as part of "the responses of traditional political elites to their loss of power in both local and global directions." While these authoritarian figures may actually curtail the power and human rights of ordinary people, the voters who support strongmen don't seem to see it that way. Many citizens already feel politically powerless, and because the strongman promises to bash the bureaucrats or beat back a threatening tide of immigrants, voters may feel that electing an authoritarian actually increases their own power and freedom. Though the desire to matter is an understandable motivation, we should recognize that in certain circumstances it can be extremely destructive: though it may help us improve democracy, it can also help autocrats dismantle democracy entirely.

The advance of conscious engagement, driven by a desire to matter in public life, is also a rampant force in society.

What, then, shall we do about these potentially harmful, potentially beneficial forces? The cases, trends, and intersections in this report suggest several possibilities:

- **Conscious engagement can help set the terms for the use of subconscious technologies**.
- **Subconscious technologies can help scale conscious engagement.**
- **Conscious engagement can contribute to and capitalize on data.**
- **Subconscious + Conscious = Deliberation + Power?**

Conscious engagement can help set the terms for the use of subconscious technologies. Subconscious technologies raise important questions about how AI should be used in decision-making, how to balance potential harms and potential benefits, and how to draw the line between the privacy of individuals and the interests of society as a whole. In the past, we relied on government regulation as the main tool for making and enforcing these sorts of decisions about how technologies can be used; lawsuits then became a second tool, primarily by punishing corporations that did not follow the law. Various forms of enforced transparency – for example, requiring automakers to disclose the fuel efficiency of their vehicles – represent a third way of governing technologies. All of these approaches can be effective, but none of them seems sufficiently trusted, equitable, or effective on its own.

Conscious forms of engagement can be employed in addition to, alongside, and/or as a way of informing these other tools. Through conscious engagement we can encourage the public, technology leaders, scientists, and government officials to share information and deliberate about how subconscious technologies should be rolled out, and to think about the implications such technologies have on our personal lives and democracy.

For this to work, the conscious engagement should have "thick" components that allow people to learn about the issue or technology, connect its use to their experiences, weigh different options, and decide what they think. It should also have "thin" components so that large numbers of people have opportunities to get information, suggest ideas, indicate their approval or disapproval. One example of this combination is the Citizens Initiative Review (CIR) in Oregon. The CIR, established by the Oregon legislature in 2010, is a process by which 25 citizens, chosen by random, come together to study a ballot initiative that will be coming before the voters. The group studies the issue, hears from advocates for and against the initiative, and writes a Citizens' Statement containing the information they feel people need to know when voting on the initiative. The Statement is included in the voter guide that is sent to every household in the state. Because large numbers of Oregon voters find out about the work of the CIR, because the jury is made up of their peers, and because they trust the process, the CIR recommendations have had an effect on how voters make their choices at the polls.[219]

The example of the Icelandic constitution suggests another approach worth considering: the use of crowdsourcing to help people generate and refine tenets of an agreement, followed by in-person deliberation by a smaller number of people (perhaps a demographically-representative group, as in Oregon) to sort out conflicts and present a proposed document to elected officials. The resulting charter, and the process used to develop it, could be featured in end-user agreements (see page 47) in order to give them greater clarity and legitimacy in the eyes of the people using the technologies.

In the case of smart cities, engagement could take place both at the neighborhood level (such as in Quayside), or at the citywide level. Approaches like vTaiwan (see page 29), which combine online commenting, clustering of comments through AI, and face-to-face deliberation, could help people understand and decide how smart-city technologies should use their data and improve the quality of life. If this sort of engagement were conducted on a regular basis, as vTaiwan has been, it could become part of the civic infrastructure that smart cities need. In their guide to "Making a Civic Smart City," Eric Gordon and his co-authors illustrate this goal by saying that "a civic smart city works with publics to define problems, and reflect on potential solutions, before implementing new technologies."[220]

On health and health care, we should keep in mind the capacity of engagement to strengthen social networks and raise social capital, since those qualities have a direct impact on people's physical health.[221] Loneliness is in fact the leading risk factor for serious illness and premature death.[222] Sustained, broad-based forms of engagement such as "On the Table," (see page 17) could be particularly appropriate because they reach so many people, because they encourage the formation and strengthening of relationships, and because they focus on food (which in itself is a central aspect of good health). As part of regular "On the Table" meetings, participants could address questions of how health data should be used in ways that both protect privacy and improve population health.

Subconscious technologies can help scale conscious engagement. The most productive, inclusive, deliberative examples of engagement have been local ones. Of the thousands of engagement processes conducted each year, the majority occur in cities, towns, or neighborhoods. This is especially true of "thick" forms of engagement, in which people spend time in small groups learning, comparing experiences, considering options, and planning for action. Thick engagement is productive, but intensive.

Local engagement is more common because these initiatives typically require a diverse, critical mass of participants to succeed, and the number of people required to create this diverse, critical mass is smaller at the local level. You need a sufficiently large web of relationships so that potential participants are approached by people they already know, and you need to give people some assurance that their participation will make an impact. Both things are easier to achieve in communities, towns, and neighborhoods.[223]

Twenty years ago, when widespread internet use began to reshape how we organized and thought about engagement, it was tempting to assume that online communication would immediately solve the problem of scale. But while some examples of digital engagement have managed to involve tens of thousands of people, those numbers don't always seem to matter if the participants are dispersed across a state or the country. Legislators usually ask if *their* constituents are taking part, and whether those people are a small, like-minded group or a large and diverse one.[224]

Subconscious technologies can help scale engagement in several ways. First, the most fundamental challenge in engagement is recruitment: figuring out who needs to be at the table, who might like to be at the table if invited, and actually convincing them all to take part. Some of the same technologies used for micro-targeting and messaging (see page 11) could be used to identify the people who are interested in a particular issue or have the most at stake, and then crafting messages that will appeal to them.

This approach to recruitment would be particularly appropriate for some engagement approaches that utilize smartphones as a way of structuring and connecting face-to-face discussions. One example is "Text, Talk, Act," first developed as part of President Obama's National Dialogue on Mental Health. Participants in the discussions are recruited primarily through social media and asked to form groups of 3-4 people. They text "start" to a pre-assigned code and then receive a series of text messages, including: discussion questions for the group; process suggestions; polling questions that can be answered from their phones; and requests to respond with action ideas and commitments they will make to increase engagement with their audiences. Throughout the process, participants also receive links that allow them to see how participants across the country have responded to the polling and action questions. Text, Talk, Act has involved over 50,000 people. Using subconscious technologies as part of this approach would seem to make sense, since the strategy already relies on appeals through social media, and since the engagement (though face-to-face) can happen whenever and wherever 3-4 people can get together with at least one smartphone.

Second, technologies like natural language processing (NLP) and sentiment analysis can be used to get at least some sense of what people are thinking about a topic – not as a proxy for conscious engagement, but as a way to inform it. This is essentially what Canada's "My G7" process has done, scraping and analyzing social media and other web content, and then presenting the most common themes and questions to citizens in 320 face-to-face and online deliberations.[225]

Finally, the proliferation of hyperlocal online spaces represents another opportunity for scaling engagement. These forums are situated "where the people are," they enable people to solve everyday problems like how to find lost cats, they help people build relationships by promoting the neighborhood barbecue, and they provide a way to mobilize around shared goals and concerns. And because these spaces are online (and contributing to yet another rapidly expanding pool of data), their members are reachable and networkable in ways that the PTAs and neighborhood associations of yesteryear were not. Thomas Jefferson famously argued that we should "Divide the country into wards," each of them small enough for successful participation, but sufficiently linked to one another that they could function as a nation. Suddenly, we may actually have a country of linkable wards.[226]

Jefferson famously argued that we should "Divide the country into wards." ... Suddenly, we may actually have a country of linkable wards.

Conscious engagement can contribute to and capitalize on data. The practice of "participatory action research" (PAR), which was first developed in the 1970s, illustrates another direction for combining subconscious technologies with conscious engagement. In those kinds of research efforts, which have focused on wide range of topics from substance abuse prevention to watershed management to disaster relief, citizens and researchers work together to set research goals, collect data, and analyze the results.[227] A core part of the philosophy of PAR is establishing trust and shared agreements between citizens and researchers on the knowledge they want to gain, why they think it will be valuable, and how they can achieve it.

The capacity of citizens to engage in participatory action research is perhaps most obvious in health and health care. There are a wide range of devices that allow us to measure aspects of our own health (blood pressure, diet, exercise) or the health-affecting qualities of the environments we live in (air quality, water quality, workplace safety). Much of this data can be collected easily or even subconsciously. Existing PAR efforts show that when citizens and researchers trust each other and agree on why and how they are building knowledge, they can produce research that serves the public good. If PAR could be scaled up through initiatives like "On the Table,"[228] so that communities can establish the necessary trust and coordination, it might fuel further breakthroughs in disease prevention and health promotion.

In addition to helping direct research and collect data, citizens can also use, analyze, and interpret data. The "open-data" movement strives to give ordinary people access to information, particularly data collected and owned by governments and other institutions.[229] Many open-data advocates and beneficiaries have been tech-savvy, entrepreneurial types who have used that data to create bus schedule apps or other helpful tools. But while there still may not be that many people with those sorts of skills, the number of people with the basic numeracy and analytical skills necessary to understand data-based research has grown steadily. The popularity of data-focused forms of journalism, from sports web-sites to FiveThirtyEight, illustrates the desire of many media consumers to use numbers to help them understand the world. So while not many of us have the capacity or will to build an app, many of us are able to capitalize on the increasingly data-rich world we live in.

One way in which the data, and our capacity to use it, might be particularly valuable is in efforts to reduce inequality. One example is the history of participatory budgeting (PB) in Brazil, which has always had an explicit focus on equity. From an early stage, analyzing the equity of the process (who was participating, and was that group broadly representative of the population?) and the outcomes (how was funding distributed among neighborhoods) was built into the functioning of PB.

By and large, this has worked: examples of sustained PB in Brazil have helped alleviate poverty, expand access to public services, reduce corruption, raise tax compliance, increase the number of civil society organizations, and improve the social well-being of a wide range of citizens.[230] As Wampler and Touchton argue, "Brazil has reduced inequality incrementally".[231] Some observers, such as Tiago Peixoto of the World Bank, have wondered whether American PB processes can replicate these achievements if they do not uphold the need to address inequality and incorporate ways of measuring it.[232] Practitioners and researchers like Madeleine Pape and Josh Lerner have suggested a range of ways in which equality data might be used to inform PB and other engagement opportunities.[233]

While not many of us have the capacity or will to build an app, many of us are able to capitalize on the increasingly data-rich world we live in.

Subconscious technologies provide us with ever-growing capacities to collect and analyze data. Conscious engagement informed by the history of PAR and PB could ensure that those capacities are being used in ways citizens want, and capitalize on their potential for promoting population health, addressing social and economic inequalities, and other worthwhile aims.

Subconscious + Conscious = Deliberation + Power? The Oregon CIR and the history of PB illustrate possibilities for combining conscious engagement and subconscious technologies to inform voting. By convening small, intensive deliberations or by providing useful data to large numbers of participants, they help ensure that voters understand the implications of their decisions. There are many combinations of engagement and data that could make the exercise of power more deliberative and deliberative processes more powerful.

Because they can potentially make it easier to validate voting processes by verifying voters' identities, blockchain and other technologies may make direct democracy easier, more flexible, and more widespread. But that may not be the only way in which blockchain can affect voting. In most of the existing cases where deliberation and power are combined, the two experiences are separate: people engage with one another, or look at information that other engaged people have provided, and then go into the voting booth to make their decisions. Blockchain can add new layers to the transaction, as in the example of Civil (see page 43). In one step, buyers of CVL tokens were able to contribute money, endorse a product, and establish a set of relationships by which they could influence the way in which the product was made. They could enter a new civic space where they could interact with journalists, deliberate with one another, and register their preferences, all bounded and balanced by the rules of the system and structures like the Civil Council. Of course, this one step turned out to be too difficult for most investors, perhaps because most people still don't know how to buy cryptocurrencies or don't feel comfortable with the process, and the Civil designers failed to adequately explain the whole thing.

It is on the shelf for now, but as more people become used to these kinds of transactions, Civil and other similar endeavors might add new dimensions to the intersection of subconscious technologies and conscious engagement.

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Asimov wrote *I, Robot* while the horrors of World War II were raging around him. In the book's final story, the governance of the world has been entrusted to a set of computers, the Machines, so enormous and complex that no human can fully understand how they function or communicate. Conscious engagement continues, however, some of it in the form of anti-robot protests or attempts to sabotage the system.

The main protagonist of the book, the "robopsychologist" Dr. Susan Calvin, has been asked to examine a set of seemingly illogical decisions made by the Machines. She finds that the computers have internalized the Three Laws of Robotics so completely that they are making illogical decisions on purpose in order to expose or offset the actions of the saboteurs, thus preserving the ability of the Machines to make public decisions on behalf of the public. In Asimov's imagination, the Machines are the custodians of a self-correcting system that can save human beings from themselves.

Around the world, people now seem increasingly frustrated with political systems in which elected officials, experts, and civil servants make decisions on behalf of the public. *I, Robot* is a work of fiction, and our reality may never come close to it, but we should use our own imaginations to think carefully about what might happen to us next. Immersed in the flow of technological innovation are some incredibly significant questions of power, governance, and rights. Even in our most optimistic vision of progress, it seems unwise to cede our judgement and autonomy to the Machines.

In an increasingly conscious/subconscious world, people have different expectations and can make new kinds of contributions to public decision-making and problem-solving. They can also be manipulated and maltreated in ways so subtle they cannot be easily recognized. To meet these challenges and opportunities, we need to build things – agreements, charters, technologies, institutions – that balance the needs of the individual with the good of society.

Can democracy become a self-correcting system that will save us from our worst impulses? Even in its faltering, incomplete forms, even in its beta versions, it remains our most ingenious invention. To keep it, we will need to upgrade it – and to do that, we must be as realistic, constructive, and imaginative as possible.

TECHNOLOGY GLOSSARY

Anonymous data: Unidentified (i.e., personally identifiable information was not collected, or if collected, identifiers were not retained and cannot be retrieved); information or materials (e.g., data or specimens) that cannot be linked directly or indirectly by anyone to their source(s).[234]

AI: Artificial intelligence (AI) refers to the capability of a machine to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.[235]

Biometrics: Biometrics are technologies used to detect and recognize human physical characteristics, often for purposes of security or identification. Examples of biometric authentication include fingerprint or retinal scanning, voice analysis, and facial recognition.[236]

Blockchain: Technology, commonly associated with the cryptocurrency Bitcoin, allows for a new type of internet. Experts liken the blockchain to a spreadsheet that is duplicated a thousand times across a network of computers of personal computers. The network is designed to regularly update the spreadsheet.[237] The people who participate in the network use their computers to hold bundles of records submitted by others known as "blocks" in a chronological chain.[238] Anyone can participate in the network, and since the information is distributed, the data are accessible to everyone. The blockchain uses cryptography to ensure that records can't be made counterfeit or changed by others.[239] Part of the need for blockchain stems from the fact that it is difficult for us to tell when a person or company claims a certain value if they really practice what they preach. For instance, if a coffee product is labeled "fair trade," how do we know that this is true? Generally we would have to verify the history of records or transactions, and records can sometimes be corrupted. In contrast, because of the blockchain's distributed model, no one entity "owns" records, and a computer would have to overpower an entire network of computers to modify data, which is extremely unlikely, and some claim, even impossible.[240]

Bots: A bot (short for "robot") is an automated program that runs over the internet, such as web crawlers (i.e. search engines like Google), chat room bots (i.e. warnings if inappropriate language is used in a chat room), or malicious bots (such as malware that infect computers with viruses).[241]

Deep fakes: Deep fakes are computer generated photos, audio clips, or videos of fictionalized activities that are conveyed as real. It is often difficult to distinguish deep fakes from actual photos, audio, or video because they are so realistic.[242]

De-identified data: All direct personal identifiers are permanently removed (e.g., from data or specimens), no code or key exists to link the information or materials to their original source(s), and the remaining information cannot reasonably be used by anyone to identify the source(s).[243]

Digital phenotyping: Digital phenotyping is the capability to assess people's well-being, including social, physical, and mental health habits, based on data yielded from their interactions with digital devices, in particular smart phones. Some of this data is collected by users opting in to sharing data (i.e. voluntarily downloading an app and allowing personal data usage) while other data is collected without user consent or participation.[244]

Facial recognition: Facial recognition uses technology to scan, store and recognize human faces in databases to verify peoples' identity, primarily for security purposes.[245]

Geo-location: Geo-location allows for a person's location to be identified through digital information such as their computer or a smartphone. Data from geo-location allows for tracking people's movement and habits, and for marketing local services, among other things.[246]

Machine learning: Through the use of artificial intelligence, machines are able to learn without being explicitly programmed. A famous example of machine intelligence is how, in 1996, a computer program learned the game of chess and beat the world's chess champion.[247]

Natural language processing: Natural language processing, or NLP, is an aspect of AI that is focused on how technology can understand, process, and analyze human language. Common uses are to draw insights about users' language to create advertisements or help you write a text message or email.[248]

Virtual reality: Virtual reality is an artificial environment created through computer technology that allows a user to become completely immersed in an alternate 3D space. Virtual reality was originally developed for pilot and astronaut training to simulate flight, but is now used for a variety of ways including to train surgeons on certain procedures, allow the military to practice combat techniques, simulations of climate change, and for classroom learning.[249]

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