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Governance, Security, and Justice Series

No. 2, May 2019

'Ike Pono—Designing the Political and Economic Systems of the Internet Generation

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Mr. Anderson wrote this paper while serving as the Diplomat in Residence at the East-West Center in Honolulu. This report is about the influence of new technologies on governance, the "Open World" Movement, and the design of the political and economic systems of the internet generation.

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'Ike Pono

Designing the Political and Economic Systems of the Internet Generation

FORWARD

Like the Open World Movement, ‘Ike Pono itself is written using the principles of collaboration, transparency, sharing and empowerment. The stories and ideas in this introductory paper are, in effect, crowdsourced from numerous intellectuals into a single document. While the original working document is published by the East-West Center, an editable live version of the document resides on a collaborative wiki found at https://github.com/Ike-Pono/Open-World-Movement/wiki/Introductory-Paper.

The ‘Ike Pono Introductory Paper is a collaborative document. Great efforts were made to ensure accuracy and give proper credit to its contributors, however, papers of this nature inevitably fall short of that goal. So, in the true spirit of the Open World Movement, corrections, edits, and further ideas are welcome to be made directly to the paper using the collaborative wiki by anyone concerned.

Besides being a collaborative and shareable document. ‘Ike Pono is empowered using social media. A concentrated push has been made to share its contents with the people referenced throughout the paper. If you have social media followers that would benefit from this knowledge, please share. Discussion can be followed by using #IkePono on Twitter. The real power of the Open World Movement and design of the political and economic systems for the internet generation will not come from one person or one paper, but from the collective that contributes to these ideas.

‘Ike Pono

- *To see clearly; to know definitely; certain knowledge. - Hawaiian Dictionary*
- *Hawaiian value - To know what is right*

SUMMARY

"We are 21st century citizens doing our very best to interact with 19th century designed institutions built with an information technology of the 15th century. I am convinced that it is up to us to design the political and economic systems for the internet generation."[1] This was the call for action made by in 2014 by Pia Mancini, a political scientist and activist from Argentina[2]. Her words summed up the "Open World" movement, articulated by numerous thought leaders, to transform the democratic systems of the time. "'Ike Pono" is the Hawaiian term for certain knowledge. It is the shorthand I am using here for this dynamic collection of work by thought leaders that explains this movement, reveals its foundations, examines its tool, and provides a vision of what the political and economic systems of the internet generation will look like.

Daniel Tokaji begins the discussion explaining the democratic system in the U.S., and the rationale behind it. Don Tapscott follows with four principles, collaboration, transparency, sharing, and empowerment , that are driving the "Open World" movement pushing society from the Industrial Age into the Age of Networked Intelligence. Each principle is broken down by various thought leaders explaining how they were founded, and the tools that have emerged. The tools are combined together to explain the rise of decentralized organizations revealing a vision of what the political and economic systems of the internet generation look like and how they are created.

I. REPRESENTATIVE DEMOCRACY

The political and economic systems of the internet generation will be rooted in the democratic systems of the government where they operate. Their design will not replace existing forms of governance, but rather identify weaknesses and create tools to make existing democratic systems more effective.

The Constitution of the United States laid the groundwork for it to become the first modern democratic nation. This was done during an age when monarchies ruled over much of the world. The U.S. model was known as an "experiment" of sorts that continues to play out today. However, this political system

[1] Mancini, Pia. 2015. Could We Open Source Democracy? Guy Raz Interview by . Radio. NPR. https://www.npr.org/templates/transcript/transcript.php?storyId=449200409.
[2] Wikipedia contributors, "Pia Mancini," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=Pia_Mancini&oldid=891211055 (accessed April 10, 2019).

was not a pure democracy where everybody votes on everything, but rather a republican system of government, or representative democracy.[3] In this system, laws were made by elected representatives rather than directly by the people.

Daniel Tokaji, author and Associate Dean at Ohio State University, explained that the republican system of government was chosen on purpose for several reasons. He points out that it was James Madison in Federalist No. 10[4] who argued that a republican form of government, run by representatives, "would control the effects of 'faction'," which Madison described as a group of citizens "united and actuated by some common impulse of passion , or of interest, adverse the rights of other citizens".[5] Madison further reasoned that a republican system would ensure those elected to the national legislature would have the wisdom and capacity to rise above parochial considerations and promote the "public good", and provide a "safeguard against the tyranny of the majority."[6] Under this system elections were held every several years to determine the representatives that would make the decisions on behalf of their constituents.

A representative government provided new ways for individuals to organize in order to participate in government. Each person now had a specific point of contact to hear their concerns. As the democratic system became more sophisticated, individuals learned that they could have more influence on their elected representatives by forming unions, lobbies, and other civic groups. These groups flourished but their demands overwhelmed elected officials, unable to respond to every request. As a result, civil society groups, often with similar interests, were compelled to compete with each other for attention from their representatives and for resources from the public. Elected officials, on the other hand, faced a barrage of demands from the groups without the tools to aggregate demands, prioritize and communicate back with them. Elected officials and civil society groups needed a more effective way to collaborate.

The representative government changed the way that people established trust. Communities had traditionally relied on their personal knowledge of officials and local reputations, and decisions about

[3] Tokaji, Daniel P. 2013. Election Law In A Nutshell. St. Paul: West Academic Publishing, 2.
[4] Madison, James. 1787. "The Federalist No. 10". Constitution.Org. http://constitution.org/fed/federa10.htm.
[5] Tokaji, 2013, pg 3
[6] Tokaji, 2013, pg 3

governance were often backed and enforced through "mob rule." However, with the republican form of government, personal knowledge of an elected official became increasingly rare and people turned towards placing their trust in institutions. Such institutions included the Federal Election Commission and state level election bodies who were entrusted with enforcing the rules and carrying out elections. However, executing all the rules and elections was difficult for the institutions. They were subject to enforcing weak campaign finance laws, and criticized in cases of voter suppression, and lost or uncounted ballots. Civil society became more critical of the government's ability to manage elections, and suspect of its motives. Elected officials and civil society groups needed a more effective way to provide transparency and re-instill trust in the system.

The representative government reacted by changing the way information was shared. With the rise of government institutions, information from separate communities could be consolidated and shared. However, release of information was enforced through a hierarchical structure, or a bureaucracy. While limiting access to information was necessary in some cases, elected officials and civil society groups looked for more open ways to share information to spur growth and advancement.

Technological innovations, such as the printing press and later radio and TV, improved communication and empowered the representative government. Leaders were able to be seen and heard by all constituents, and not from the top of a soap box but in newspapers and broadcast media. Still, the communication was largely one way, from elected official to constituent.

The republican system was created at a time when the tools for better collaboration, transparency, sharing and communication didn't exist. It survived for 200 years but new technologies emerged that could enhance the system. Contrary to Madison, few people argued that elected officials continued to promote the "public good."

Don Tapscott, an author, consultant and speaker, who specializes in organizational transformation and the role of technology in business and society,[7] described this change in how we govern ourselves as "Open World", a movement driven by four principles, collaboration, transparency, sharing, and empowerment.

[7] Wikipedia contributors, "Don Tapscott," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=Don_Tapscott&oldid=867725111 (accessed April 10, 2019).

II. COLLABORATION

The political and economic systems of the internet generation are designed through collaboration. It was Tapscott's first principle and was applied to help elected officials and civil society organize information better. In the history of humanity, information was initially organized by individuals and passed from generation to generation verbally through stories, myths and legends. The invention of the printing pressed improved on the organization of information and the quality by putting it down in static written documents written by more authoritative sources. The Age of Networked Intelligence made further improvements using technology to allow a more dynamic and inclusive way to organize information. Tapscott said, “Humanity is building a machine and this enables us to collaborate in new ways." The machine he referred to was the internet which he explained "...is becoming a giant global computer, and every time you go on it you upload a video, you do a Google search, you remix something, you're programming this big global computer that we all share." It is allowing collaboration to occur on an astronomical basis."[8]

Clay Shirky, a writer, consultant and teacher on the social and economic effects of Internet technologies and journalism[9] explained what motivates people to collaborate. He stated that people have non-financial motivations that come from a desire to have a sense of autonomy or competence and refers to this as cognitive surplus. Cognitive surplus motivates people to volunteer and to "collaborate on large, sometimes global, projects.” Shirky said cognitive surplus was made up two things: 1) the world's free time and talents, and 2) a way to automate the management of information about what is going on.[10] The world's free time and talent (over a trillion hours of time committed to shared projects) has always been there, but what changed was the emergence of tools to automate the management of information. The internet allowed anyone to contribute data easily which could then be assembled together to provide information. This became known as "crowdsourcing" and was the new way to collaborate in the Age of Networked Intelligence often organized by using wikis.

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[8] Tapscott, Don. 2012. "Transcript Of "Four Principles For The Open World"". Ted.Com. https://www.ted.com/talks/don_tapscott_four_principles_for_the_open_world_1/transcript.
[9] Wikipedia contributors, "Clay Shirky," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=Clay_Shirky&oldid=877017860 (accessed April 10, 2019).
[10] Shirky, Clay. 2013. What Motivates Us To Collaborate? Guy Raz Interview by . Radio. NPR. https://www.npr.org/templates/transcript/transcript.php?storyId=191616897.

Wiki Wiki



"Wiki Wiki Shuttle" by jdnx is licensed under CC BY 2.0

The first Hawaiian word Ward Cunningham heard was “wikiwiki” as they were trying to direct him to the wikiwiki bus between terminals in Hawaii. “Wiki” is Hawaiian for “quick” and so “wiki wiki” means “very quick.” Cunningham had been interested in making cards about how ideas moved through his company. Initially, the system was built on the assumption that if you wanted to make a link to another card you would know what was on the other card and it would already exist. However, when he talked to people about how ideas moved through the company, he found they were always talking about moving the company to someplace that there wasn't a card for. So, Cunningham tweaked the program he had been working on to allow people to type the name of something into the program, and if a card didn't exist, it made a new card where the person could write about the topic themselves.

At first, Cunningham's program operated on his company's network but, in the summer of 1994, he learned of the World Wide Web and was asked to move his wiki project to the web. It had always technically been called wikiwiki web but when Cunningham wrote the script that made it work on the web, it was abbreviated and called just "wiki". [11] The wiki became a popular platform on which to crowdsource information. Although it was designed for business purposes of tracking ideas through a company, it became a useful tool to collaborate on all kinds of information.

Wikipedia

Ward Cunningham's wiki laid the foundation for collaboration but it was Jimmy Wales, an Internet entrepreneur,[12] who developed the wiki into its most famous application, Wikipedia, an online

[11] Wikimedia Foundation. 2014. Ward Cunningham, Inventor Of The Wiki. Video. https://upload.wikimedia.org/wikipedia/commons/transcoded/3/31/Ward_Cunningham%2C_Inventor_of_the_Wiki.webm/Ward_Cunningham%2C_Inventor_of_the_Wiki.webm.480p.vp9.webm.
[12] Wikipedia contributors, "Jimmy Wales," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=Jimmy_Wales&oldid=891354594 (accessed April 10, 2019).

organization of researchers committed to writing an encyclopedia for the world. Like Cunningham's wiki that crowdsourced business ideas, Wales wanted to use crowdsourcing to write the world's largest online encyclopedia. The wiki was the perfect platform because it took advantage of cognitive surplus. People were willing to write encyclopedia articles in their spare time because it was interesting and it was rewarding enough to contribute something to humanity even if they were not paid for it.

However, a problem Wales faced as Wikipedia grew was getting contributors to agree to the content that should be provided in an article. Shirky explained this was a problem of collective action, a problem eventually faced by any group of people undertaking a particular effort in a way that made the decision binding on individual members.[13] Wales overcame this obstacle by introducing the idea of an arbitration committee and other roles for users to sort out conflicting or contentious information on Wikipedia.

Arbitration Committee

The Arbitration Committee was a panel of editors that had the authority to impose binding solutions to disputes between editors. Arbitrators were volunteer users, usually experienced editors and administrators, whom the community of editors at large elected to resolve the most complex or intractable disputes that could arise within the community. In addition to its role in dispute resolution, the Committee determined which editors had access to CheckUser and Oversight permissions .[14]

CheckUser

Wikipedia's Checkuser team used a tool to establish whether two or more accounts were being operated by one individual or group of people, and then protect Wikipedia against disruptive or abusive behavior. The tool allowed Checkusers the ability to view a list of all IP addresses used by a user account, a list of all edits made by an IP, or all user accounts that had used an IP address. They could also view a log of all CheckUser actions.[15] When the Checkuser team found multiple accounts being operated by the same user, the accounts could be deleted.

[13] Shirky, Clay. 2009. Here Comes Everybody. New York: Penguin Books, 51.
[14] "Arbitration Committee". 2019. En.Wikipedia.Org. https://en.wikipedia.org/wiki/Wikipedia:Arbitration_Committee.
[15] "Checkuser". 2019. En.Wikipedia.Org. https://en.wikipedia.org/wiki/Wikipedia:CheckUser.

Oversight

"Oversight" (the power to suppress edits) was entrusted to a restricted number of users, who could suppress material if it triggered an alert. Use of these tools was monitored by other oversighters who patrolled the log, and by an Arbitration Committee.

The suppression feature was approved for use in the following cases:

1. Removal of non-public personal information, such as phone numbers, home addresses, workplaces or identities of pseudonymous or anonymous individuals who have not made their identity public.
2. Removal of potentially libelous information
3. Removal of copyright infringement
4. Hiding of blatant attack names on automated lists and logs, without disrupting the history of edits.
5. Removal of vandalism.[16]

Administrators

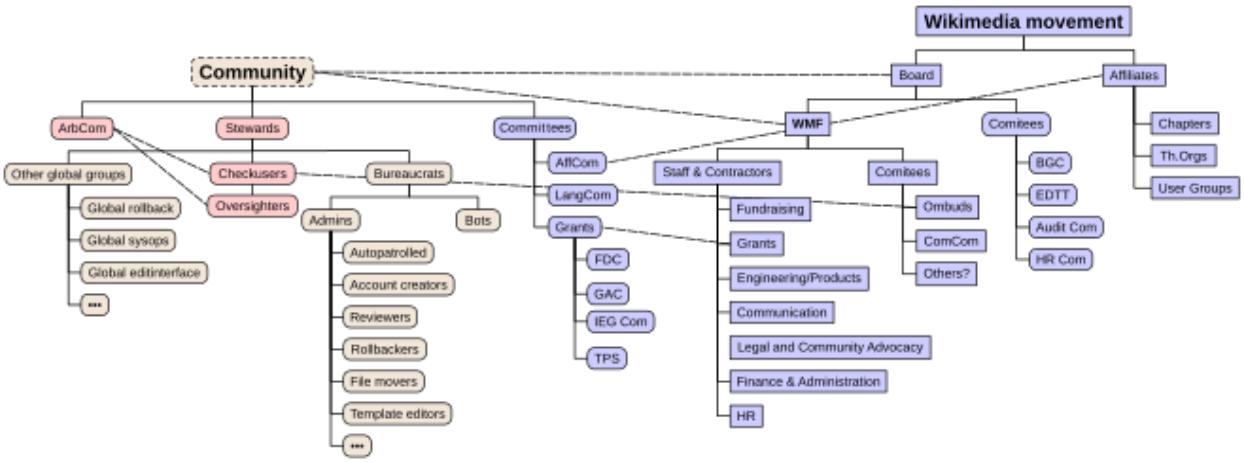
CheckUsers and Oversighters were generally made up of Administrators. Jimmy Wales proposed the idea of an administrator role during the development of the first version of MediaWiki[17] and directly appointed the first administrators. The English Wikipedia had no official requirements to become an administrator. Anyone could request adminship ("RFA") from the community, regardless of their Wikipedia experience. However, administrators were expected to have the trust and confidence of the community, so requests from users who did not have considerable experience were not usually approved. Any registered editor could comment on a request, and each editor would assess each candidate in their own way.

A discussion took place for seven days about whether the candidate should become an administrator. Per community consensus, RFAs were advertised on editors' watch lists. The community instituted a question limit: no editor could ask more than two questions of a candidate. The RFA process allowed other editors to get to know the candidate, and explore the candidate's involvement and background as an editor, conduct in discussions, and understanding of the role they were requesting, and to state if they supported or opposed the request, along with their reasons and impressions of the candidate. An uninvolved bureaucrat then determined if there was consensus to approve the request. This

[16] "Oversight". 2019. En.Wikipedia.Org. https://en.wikipedia.org/wiki/Wikipedia:Oversight.
[17] "Wiki Administrators". 2019. Nostalgia.Wikipedia.Org. https://nostalgia.wikipedia.org/wiki/Wiki_Administrators.

determination was not based exclusively on the percentage of support, but in practice most RFAs above 75% passed. Adminship was granted indefinitely, and only removed upon request under circumstances involving high-level intervention, or temporarily for inactive admins.[18]

Administrators were generally made up of Editors or "Wikipedians". They were the volunteers who wrote and edited Wikipedia's articles, unlike readers who simply read them. Anyone could become a Wikipedian by making changes when they found something that could be improved. By 2019 the English Wikipedia had over 35 million Wikipedians who had registered a username. A full breakdown of the Wikipedia administrative structure is shown below.[19]



https://en.wikipedia.org/wiki/Wikipedia:Administration#Human_and_legal_administration

Licensing

Jimmy Wales also invested time in getting the licensing done right so that content could be legally shared. The text of Wikipedia was copyrighted (automatically, under the Berne Convention) by Wikipedia editors and contributors and was formally licensed to the public under one of several liberal licenses. Most of Wikipedia's text and many of its images were co-licensed under the Creative Commons Attribution-ShareAlike 3.0 Unported License (CC BY-SA) and the GNU Free Documentation License (GFDL). Every image had a description page that indicated the license under which it was released or, if it is was non-free, the rationale under which it could be used.

[18] "Administrators". 2019. En.Wikipedia.Org. https://en.wikipedia.org/wiki/Wikipedia:Administrators.
[19] "Wikipedians". 2019. En.Wikipedia.Org. https://en.wikipedia.org/wiki/Wikipedia:Wikipedians.

The licenses Wikipedia used granted free access to its content in the same sense that free software was licensed freely. Wikipedia content could be copied, modified, and redistributed if, and only if, the copied version was made available on the same terms to others. Copied Wikipedia content therefore remained free under an appropriate license and could continue to be used by anyone, subject to certain restrictions, most of which was aimed to ensure that freedom. This principle is known as "copyleft" in contrast to typical "copyright" licenses.[20]

In order to design the political and economic systems for the internet generation that Mancini spoke of, collaborative tools utilizing wikis began to be used to replicate the democratic processes described by Tokaji. Nonprofits such as OurSay, an Australian organization founded to improve the way government engages with communities, adopted wiki like platforms to collaborate on advocacy issues. Using Oursay, constituents proposed legislation for their representatives to be reviewed and acted upon.[21] On Change.org, people started campaigns, using wikis to organize petitions to mobilize supporters, and work with decision makers to drive solutions.[22] Ushahidi, which translates to "testimony" in Swahili, was a wiki developed to map reports of violence in Kenya after the post-election violence and organize protests.

While collaborative platforms on their own were useful tools, they were not always transparent. Wikis could be used as collaborative forums to bring people together and show support for democratic initiatives. However, initiatives needed to show support by tracking people and their opinions. However, wikis lacked a sophisticated structure to validate individuals and store their positions that ensured security and transparency. As Tapscott explained, collaboration is only one of the four principles in the Open World movement. To accelerate the transformation from the Industrial Age to the Age of Networked Intelligence, additional principles needed to be incorporated into collaborative platforms.

III. TRANSPARENCY

The political and economic systems of the internet generation are designed ensure transparency. It was Tapscott's second principle and applied to establish trust in the system designed through collaboration.

[20] "Copyrights". 2019. En.Wikipedia.Org. https://en.wikipedia.org/wiki/Wikipedia:Copyrights.
[21] "About Us | Oursay". 2019. Oursay. https://home.oursay.org/about-us/.
[22] "Change.Org - The World'S Platform For Change". 2019. Change.Org. https://www.change.org/about.

Neha Narula was director of research at the Digital Currency Initiative, a part of the MIT Media Lab where she taught courses and led cryptocurrency and blockchain research.[23] She told the story of an island in Micronesia called Yap where the people traditionally used a form of money she found interesting. "They used these limestone discs called Rai stones," she explained. However, "The Yapese didn't actually move the Rai stones around or exchange them the way we do with our coins, because Rai stones could get to be pretty massive. The largest was about four tons and 12 feet across. So the Yapese just kept track of who owned part of what stone."



Bartek.cieslak at Polish Wikipedia

One day, Narula tells, "There were these sailors that were transporting a stone across the ocean when they ran into some trouble and the stone actually fell in the water. The sailors got back to the main island and they told the others what had happened. And everyone decided that, actually, yes, the sailors had the stone and -- why not? -- it still counted. Even though it was at the bottom of the ocean, it was still part of the Yap economy."[24]

The point Narula made was that people did not need to physically possess something in order to record its value. She explained how the same idea was employed in 1932 when the Bank of France asked the United States to convert their holdings from dollars into gold. "It was too inconvenient to think about actually shipping all of that gold over to Europe. So instead, someone went to where that gold was being stored and they just labeled it as belonging to France, and everyone agreed that France owned the gold. It's just like those Rai stones."

The objects had value because everyone agreed that they did. “Money,” Narula explained, "...is about the exchanges and the transactions that we have with each other. It's about a collective story that we tell each other about value." The Yapese used Rai stones as a collective global knowledge of transfers. The French kept records of where their gold was stored, both systems were simply different ways of maintaining a ledger.

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[23] Narula, Neha. 2019. "Neha Narula | Speaker | TED". Ted.Com. https://www.ted.com/speakers/neha_narula.
[24] Narula, Neha. 2016. "Transcript Of "The Future Of Money"". Ted.Com. https://www.ted.com/talks/neha_narula_the_future_of_money/transcript.

However, as Tapscott explained, in the rest of the industrial world, people relied on big intermediaries like banks, government, and credit card companies to record transactions and establish trust in our economy. These intermediaries performed all the business and transaction logic of every kind of commerce, from authentication, identification of people, to clearing, settling and record keeping, but Tapscott noted growing problems.[25]

1. They were centralized making them easier to hack than a decentralized system where data was replicated across many systems.
2. They excluded billions of people from the global economy who didn't have enough money to have a bank account.
3. They slowed things down, taking days or weeks to move money through the banking system across a city.
4. The intermediaries charged transactions fees for processing, in some cases 10 to 20 percent just to send money to another country.
5. They captured people's data, undermining their privacy and did not let people use it in ways to monetize or better manage their lives.[26]

Tapscott proposed moving away from the centralized system run by the intermediaries to a decentralized system to store a collective global knowledge of transfers. He described a vast, global, distributed ledger running on millions of computers and available to everybody. One where every kind of asset, from money to music, could be stored, moved, transacted, exchanged and managed, all without intermediaries.

Bitcoin

Tapscott's vision began to take form when an anonymous person with the pseudo-name, Satoshi Nakamoto, developed a protocol for a cryptocurrency called Bitcoin. The cryptocurrency enabled people to establish trust and do transactions without a third party. The underlying technology was called blockchain.

Nakamoto's blockchain established trust by "collaboration, cryptography, and by some clever code." Assets like money were not stored in a central place, but distributed across a global ledger, using cryptography. When a transaction was conducted, it was posted globally, across millions of computers.

[25] Tapscott, Don. 2016. "Transcript Of "How The Blockchain Is Changing Money And Business"". Ted.Com. https://www.ted.com/talks/don_tapscott_how_the_blockchain_is_changing_money_and_business/transcript?language=en.
[26] Tapscott, 2016

Transactions were grouped into "blocks" which were validated by "miners" who decrypted the code using their own computers. The first miner to validate the block was rewarded in digital currency. Then, the block was linked to the previous block and the previous block to create a chain of blocks. Every block was time-stamped. So, if a person wanted to hack a block and pay with the same money, they would have to hack that block, plus all the preceding blocks, the entire history of commerce on that blockchain, not just on one computer but across millions of computers, simultaneously, all using the highest levels of encryption making it infinitely more secure than the computer systems of the day. Nakamato's Bitcoin became the first widely used cryptocurrency.[27]

Trust

Given the problems of intermediaries and rise of new mechanisms such as the blockchain, people stopped trusting institutions and started trusting strangers. Rachel Botsman, an author and lecturer at Oxford University's Saïd Business School explained how this happened. “There were three patterns, a ’trust stack’, that people followed when technology transformed trust between people.”

1. Trust the idea
2. Have confidence in the platform
3. Use information to decide whether the other person is trustworthy

Local Trust

Botsman explained that trust had only evolved in three significant chapters throughout the course of human history and that the latest evolution was being accelerated with the emergence of the blockchain. Local trust was the first kind that existed until the mid-1800s. It was built around tightly -knit relationships. If someone lived in a village where everybody knew one another, and wanted to borrow money, someone might lend it but if they didn't get paid back, everyone else would know they were not to be trusted. They would get a bad reputation and villagers would refuse to do business with them in the future. Trust was mostly local and accountability-based.[28]

[27] Tapscott, 2016

[28] Botsman, Rachel. 2016. "Transcript Of "We've Stopped Trusting Institutions And Started Trusting Strangers"". Ted.Com. https://www.ted.com/talks/rachel_botsman_we_ve_stopped_trusting_institutions_and_started_trusting_strangers/transcript.

Institutional Trust

Institutional trust was the next kind of trust. In the mid-19th century society went through a tremendous amount of change. People moved to fast-growing cities and local bankers were replaced by large corporations that didn't know people as individuals. People started to place their trust into black box systems of authority like legal contracts, regulation, and insurance, and trust less directly in other people as they had with local trust. Trust became institutional and commission-based. Like Tapscott, Botsman agreed that trust in institutions and many corporate brands was declining. She was stunned by major breaches of trust: the News Corp phone hacking, the Volkswagen emissions scandal, the widespread abuse in the Catholic Church, the fact that only one banker went to jail after the great financial crisis of Year 2008, or how the Panama Papers revealed how the rich can exploit offshore tax regimes.[29]

Distributed Trust

The breaches led to the rise of the third kind of trust, “distributed,” for which the blockchain was designed. Botsman explained distributed trust pushed people from the Industrial Age to the Age of Networked Intelligence by changing the way people trusted by using platforms such as the blockchain. She noted that the shift would only accelerate with the emergence of the blockchain because it removed the need for any kind of third party to facilitate an exchange and simplified the "trust stack.” She said “with the blockchain you still have to trust the idea, you have to trust the platform, but you don't have to trust the other person in the traditional sense."[30]

Smart Contracts

The Bitcoin blockchain was a new way to instill trust for dealing with currencies but a Russian-Canadian programmer and writer named Vitalik Buterin saw the possibility for blockchains to be used to keep track of other assets as well. He developed a new blockchain called Ethereum which allowed users to build smart contracts. A Smart contract was a contract that self-executed, and handled the enforcement, the management, performance, and payment of an agreement.[31]

[29] Botsman, 2016
[30] Botsman, 2016
[31] Tapscott,2016

Identity

Bettina Warburg, a blockchain entrepreneur and researcher, explained how blockchain smart contracts could reduce the uncertainties that would transform our economic systems. The first was identity management through the creation of an open global platform on which to store any attestation about any individual from any source. She compared this to the multiple profiles users had showing their reviews and ratings. More than a profile, the open global platform meant people could selectively reveal the different attributes about themselves that help facilitate trade or interaction. For instance it could reveal that a government issued you an ID, or that you were over 21. This allowed creation of a user-controlled portable identity. Tapscott commented that this was "a wonderful thing, because it could also help us protect our privacy, and privacy is the foundation of a free society."[32]

Asset Tracking

The next uncertainty the blockchain removed was not having transparency into interactions. Smart contracts allowed for asset tracking. Using the blockchain, a shared reality was created across non-trusting entities. Nodes in the network did not need to know each other or trust each other, because they each had the ability to monitor and validate the chain for themselves. Vendors could interact using the same database as the customers with some degree of transparency. Customers could see if the product they bought was the same one that arrived in the mail and there was a record for how it got there. This was important for many kinds of goods including medicine, luxury goods, any kind of data or product that wasn't to be tampered with.[33]

Reneging

The last uncertainty blockchain smart contracts removed was one of the most open-ended, reneging. What if an item ordered was not received? Blockchains allowed code to be written creating binding contracts, between individuals and then guarantee that those contracts would bear out without a third party enforcer. For example, to ensure items were received before payment was made, escrow could be part of a contract. A person could finance an item for purchase, but the funds were not to be released until verification that all the conditions had been met. In this way, Warburg noted that mutual distrust

[32] Tapscott, 2016

[33] Warburg, Bettina. 2016. "Transcript Of "How The Blockchain Will Radically Transform The Economy"". Ted.Com. https://www.ted.com/talks/bettina_warburg_how_the_blockchain_will_radically_transform_the_economy/transcript.

would actually make the system stronger and that binding contracts could be written without third party enforcers.

Mike Schwartz, Partner and Managing Director at Manhattan Beach - Digital Ventures explained another practical application of blockchain smart contracts. "Just imagine a software engineer in Tanzania working for a company in Canada. The company's payments are first placed in escrow by a blockchain resident smart contract, quite simply a contract that can be read and executed by machines once the software engineer submits their final product. This smart contract gets to work given agreed inputs. Does it produce the required outputs? Is it bite-sized enough for consumer-friendly download? Was it delivered on time? Only upon the passing of these machine run tests does the smart contract itself release payment to the engineer's digital wallet. Our software engineer doesn't even have a bank account. Neither party can game this system because the smart contracts pre-agreed terms are now incorruptible by humans. The software engineer is empowered to participate in the global economy in a fair and frictionless way, while a company has unearthed entirely new ways of doing business sourcing new suppliers and automating Quality Assurance. And neither party is subjected to the layers of fees that are typically associated with cross-border payments so they both improve their margins."

Identity management, asset tracking, reneging and contractual nature of smart contracts was easy to apply to democratic systems. People organized together using wikis to show support for democratic initiatives and also had a "trustless" way of identifying others and their opinions. The blockchain added Tapscott's principle of transparency. It was used for the crucial democratic functions of voter identity and also to store votes in a standardized format and universally accessible location that would protect the privacy of the voter. Furthermore, smart contracts could be combined with collaborative tools, such as the wiki, where identities and votes could be crowd sourced from multiple sources and stored on the blockchain. However, integration of blockchain smart contracts and wikis into a single platform that would track identities was both conceptually and technically difficult. It would require another Tapscott principle to fuel the research and development required to design the new political and economic systems, sharing.

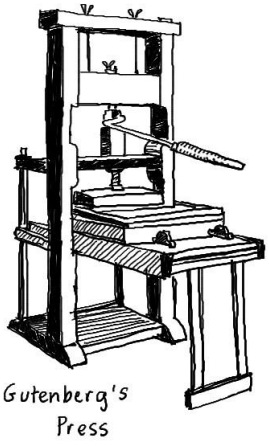
IV. SHARING

Wikis provided the crowd sourced collaboration on which the political and economic systems of the internet generation were designed, the blockchain provided the way to build trust in the system, but to actually build the systems the way information was shared had to change as well.

The changes in sharing information goes back to the Middle-Ages, when the primary way to acquire knowledge had been through apprenticeship to a master, or expert. However, what made that practice less effective was that most "experts" were very secretive and their modes of communication making it difficult to share knowledge with other experts in the field. With the invention of the printing press around 1440, this changed radically.

Printing Press

Shirky explained that the scientists of the day decided to stop the practice of being so secretive about their knowledge because they weren't making much progress. "They thought they would make more progress by talking to each other, and as the cost of printing and the press fell, suddenly there was this other model where you could share things with people dozens or hundreds of miles away, and everybody would know the same thing at the same time. And so they switched the cultural norms to say we're all in this together, and we will all together make more progress than if we had just hidden our results. "[34]



"Information technology and revolution" by Dave Gray is licensed under CC BY-ND 2.0

According to Shirky, in the mid 1600s the first scientific journal ever published in English “was created by a group of people who were known as the “invisible college.” They were a group of natural philosophers who only later would call themselves ”scientists” Shirky explained. “The journal provided an open forum where scientists could share their claims and how they did their experiments. It also allowed them to quickly synchronize what other natural philosophers knew in order

[34] Shirky, Clay. 2015. Can Open Source Be Traced To The 17th-Century? Guy Raz Interview by . Radio. NPR. https://www.npr.org/templates/transcript/transcript.php?storyId=449181119.

to encourage proper discourse. With the invention of the printing press, these scientific journals were published quickly and knowledge expanded rapidly as a result.[35]

Scientific journals became the dominating form of spreading cutting-edge knowledge during the Industrial Age. Having a scientific article published in a journal became a rite of passage for researchers and scientists. It showed that they had acquired enough knowledge to be able to engage in intelligent discourse with their peers in their given area of expertise. While it was a great improvement in sharing from the secretive guilds of the middle ages, scientific journals and the societies they created led to information being siloed. In other words, the information was out there and available, but if you were not a member of the organization that curated it, it would be difficult to know of its existence or obtain it.

Computers and the internet brought in a new era for sharing information. Instead of printing books, information could be digitized and stored electronically. Jumping from document to document became technically easier through the use of "hypertext" a term coined by Ted Nelson, a pioneer of information technology, as part of a model he had developed for creating and using linked content.[36] With these advancements in place the stage was set for the beginning of what would be called "open source", the concept of sharing information without restrictions.

World Wide Web

Tim Berners-Lee made a critical contribution to the idea of open source with the development of the world wide web. The internet had actually already been around for 20 years but was primarily only used between academic institutions to exchange information. The information was siloed because there was no standard protocol for sharing information between networks of computers. For instance, hypertext existed in documents, but it would only link to other documents that were located on the same network. In the early 1990's Berners-Lee, a programmer at the European Organization for Nuclear Research, known as CERN, developed a protocol called the world wide web, or www, that allowed users to follow hyperlinks directly to documents on computers of other networks. But it was among several competing protocols and was not the most widely used. The most popular of the time was a file transfer protocol system developed by the University of Minnesota called "Gopher." Gopher was actually out

[35] Shirky, 2015

[36] Wikipedia contributors, "Ted Nelson," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=Ted_Nelson&oldid=886005505 (accessed April 10, 2019).

pacing the World Wide Web until the University announced it would charge people to use its system to navigate the Internet. By charging money, the University had signaled that Gopher would be proprietary, a completely closed system. This was fundamentally different from Berners-Lee's- idea for the World Wide Web.[37]

People wanted to know if Berners-Lee planned to do the same thing with the World Wide Web as the University of Minnesota did with Gopher. So Berners-Lee set about convincing his bosses at CERN to draft an official announcement that read, "CERN relinquishes all intellectual property rights to this code for anyone to use."[38] Shortly after, all the internet traffic for Gopher dropped off and the World Wide Web became the standard for document sharing across the Internet. While there were many protocols that existed across the web, what enabled the World Wide Web to succeed was not the technology itself, but the open license or open source policy that it chose to follow.

Ironically, while the internet was benefiting from the open source policy established by Berners-Lee, programmers still operated in the traditional system of labor management, where information continued to flow through hierarchical structures. Shirky explained how this applied to writing a computer program.

"Once you get more than one person writing a program, it's very easy for any two programmers to overwrite each other's work if they're working on the same file, or to send incompatible instructions that simply causes the computer to choke, and this problem grows larger the more programmers are involved." Shirky noted the traditional solution to this problem was a version control system in which a canonical copy of the program was placed on a server and then only certain programmers, with certain permissions, were allowed access and even those programmers were only allowed access to certain parts of the program. Shirky continued to explain that"...when people draw diagrams of version control systems, they look like [corporate organizational] charts, and you don't have to squint very hard to see the political ramifications of a system like this. This is feudalism - one owner, many workers."[39]

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[37] Berners-Lee, Tim. 2015. How Did The World Wide Web Start?Guy Raz Interview by . Radio. NPR. https://www.npr.org/templates/transcript/transcript.php?storyId=449180060

[38] Berners-Lee, 2015

[39] Shirky, 2015

Open Source Software

This method of programming was about to be revolutionized by a young programmer names Linus Torvalds. Shirky explained that the core promise of open-source software was that "everybody should have access to all the source code all the time."[40] However, such an approach had traditionally caused too much chaos, which is why version control systems existed. But, Torvalds reasoned that if you adopted a tool you should also adopt the management philosophy embedded in that tool. His goal was to create an operating system, that he later called Linux, and to allow its code to be contributed from a community of largely volunteer programmers. Torvalds ran the process out of his inbox, manually merging code from contributors that had been agreed on. Shirky explained that "Linus was the first person to consciously use the entire world as his potential talent pool. Because by that point ... pretty much anyone who had the technical skills needed to contribute to an operating system was also online."

Git and GitHub

While proprietary systems like Microsoft Windows and Apple IOS continued to dominate desktop computing, Linux, whose code was available for anybody to use, became the background operating system for other computers such as Android devices. Initially, people complained that the Android devices such as smartphones or tablets, weren't quite as smooth as their proprietary competitors. However, when manufacturers were given a choice between developing their own operating system from scratch or modifying the Linux operating system, it was more cost effective for them to use Linux, and as Android devices spread to the masses, the open source software developed by the Linux community became the most widely used operating system on the planet.

Managing changes to Linux through his email box became an increasingly difficult challenge for further development so Torvalds eventually looked to automate this process with a new type of version control software. In 2002, the Linux kernel project began using a proprietary version control software called BitKeeper. However, using proprietary software violated Torvald's principle of adopting an open source management philosophy. Inevitably, Bitkeeper's free-of-charge service was revoked[41] when Bitkeeper

[40] Shirky, 2015

[41] Mhatre, Saurabh. 2016. "The Untold Story Of Github". Blog. Medium. https://medium.com/@smhatre59/the-untold-story-of-github-132840f72f56.

suspected a member of the Linux community had developed a client to access the Bitkeeper repository with open source tools which allegedly violated Bitkeeper's license agreement.[42]

The revocation prompted Torvalds and the Linux community to develop their own tool based on some of the lessons they had learned while using BitKeeper.[43] Torvalds created "Git" in 2005 as a better way to build Linux. Git made it easy for many people to work on the same Linux code at the same time—without stepping on each other's toes. In short, Git let anyone readily download a copy of the Linux source code to their own machine, make changes, and then, whenever they felt like it, upload those changes back to the central Linux repository. And it did this in a way that everyone's changes merged seamlessly together.[44]

The development of Git led the way for the creation of GitHub, a site where any other software project could operate much like the Linux project, one that the average coder could easily grasp. The irony of GitHub's success was that by using it, the open source world actually returned to a GitHub central repository for all its free code. But this time, having one central location allowed people to collaborate more easily on projects. And because of the unique way GitHub was designed, the eggs-in-the-same-basket issue wasn't as pressing as it was before. Thanks to Git, coders could not only move code on to their own machines as they worked on particular projects, but could easily "fork" code as well, creating new and separate projects. They could keep some code private while publicly exposing the rest on GitHub, or have nothing private at all. GitHub became the biggest site for coders, and a marketplace that offered just about any piece of code a person might want, and much of it for free. [45]

Distributed Research and Development

David Lang taught a valuable lesson about sharing and using an open source approach for product development. In 2012, he set out with partner, Eric Stackpole, to discover the truth about a legend of buried gold in a cave in California. The story behind the gold was that some time during the late 1800's a few renegade Indians attacked and killed the miners of a small hydraulic mining operation near the town

[42] McAllister, Neil. 2005. "Linus Torvalds' Bitkeeper Blunder". Infoworld, 2005, https://www.infoworld.com/article/2670360/linus-torvalds--bitkeeper-blunder.html.
[43] Mhatre, 2016
[44] Metz, Cade. 2015. "How Github Conquered Google, Microsoft, And Everyone Else". Wired, 2015. https://www.wired.com/2015/03/github-conquered-google-microsoft-everyone-else/.
[45] Metz, 2015

of Hayfork, in Trinity County, in northern California. The Indians apparently stole about one hundred pounds of mostly nugget-gold from the dead miners.

Since the Indians were on foot, and also carrying a very heavy load, it did not take long for the posse to catch up with them. In fact, as a last ditch effort to get away, the Indians stashed the gold somewhere so they could move faster. When the posse caught up with them, only the Indians knew where the gold was. The men in the posse told the Indians that they would not be hung for their crimes if they would tell them where they had hidden the gold. The Indians told the posse that they had hidden the gold in Hall City Cave. Then they were promptly hung on the spot.[46]

As it turned out, Hall City Cave had a deep, submerged cavern at the back of the cave that was said to be bottomless. And of course, not the posse, or anyone else, ever found the gold.[47] However, Lang and Stackpole were intent on discovering whether the gold was actually there, and after an initial visit, they confirmed the cavern existed. They decided a tool needed to be built in order to explore the submerged cavern and set about building a remote operated vehicle (ROV). As Lang recalls, "Eric had an initial design idea for a robot, but we didn't have all the parts figured out. So we did what anybody would do in our situation. We asked the Internet for help. More specifically, we created this website, OpenRov.Com and shared our intentions and our plans."[48]

Lang, who admittedly was not technical at all, began to get feedback from makers and hobbyists and even professional ocean engineers who had some suggestions for what he and Stackpole should do. Some people had actually tried making their own ROVs and offered solutions to the problems they faced. After eight months they finished their ROV and headed back to the cave. They didn't find any gold but by this time, their story had been picked up by the *New York Times* generating more interest in their ROV. They put their project on Kickstarter and within hours were able to raise enough money to begin producing the kits and ship them all over the world.[49]

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[46] Stackpole, Eric. 2011. "Hall City Cave - OPENROV". Web.Archive.Org. https://web.archive.org/web/20120122115405/http://openrov.com/group/hallcitycave.
[47] Stackpole, 2011
[48] Lang, David. 2015. How Can We Open Source Exploring Our Oceans? Guy Raz Interview by . Radio. NPR. https://www.npr.org/templates/transcript/transcript.php?storyId=449202146
[49] Lang, 2015

By publishing their designs online, Lang and Stackpole used the nonfinancial motivations Shirky described to supply the research and development for their ROV. They created a distributed R&D network that enabled them to move faster than any venture capital backed partnership. They also created a community of Do-It-Yourself Ocean Explorers all over the world that pushed the limits of ocean exploring using open source ROVs.[50] Lang and Stackpole showed how an open source approach to product development could be successful. This begged the question, if open source research and development could be used to build ROV's could it also be used to develop other kinds of tools?

Apps to Help Communities

Jennifer Pahlka established the nonprofit Code for America. Her vision was to bring together coders with city governments to build apps to help communities. When the City of Boston was hit with blizzard that brought two feet of snow, it was a coder from Code for America who was able to quickly develop an app to geotag all of the city's fire-hydrants on Google Maps. Having tagged the hydrants, the coder created an adopt-a-fire-hydrant program where residents, by supplying their contact information, could name a hydrant and, at the same time, volunteer to dig it out when necessary. If a volunteer did not follow through and dig out his personalized hydrant, it could be transferred to another resident who could rename it and assume the responsibility. Digging out fire hydrants was a practice many residents had already taken part in with no recognition, but the additional organization and recognition by the app created a surge in adoptions and helped the city keep its hydrants accessible for emergencies.

Apps created, like adopt-a-fire hydrant, showed how open source could be used to code programs for public use. Pahlka claimed that this process suggested how government could work more like the Internet itself and that advances in governance could be permission-less, open, and self-generating. She noted, "It's not just Code for America, fellows, there are hundreds of people all over the country that are writing civic apps everyday in their own communities."

Organizations like Code for America, created communities for research and development. The communities could share knowledge using platforms such a GitHub. Together they could improve transparency by creating blockchain applications using smart contracts. By using wikis, people could collaborate on the use and design of these applications. The components were in place to build

[50] Lang, 2015

Mancini's political and economic systems for the internet generation. The tools now only needed to be brought together in Tapscott's fourth principle of empowerment and Mancini's call would finally be answered.

V. EMPOWERMENT

The political and economic systems of the internet generation are empowered through social media. Don Tapscott explained that the last principle, empowerment, was a naturally occurring distribution and decentralization of power that was underway in the world, simplifying ways to show dissent, rebellion, and insurrection. The change was in the way people communicated with each other. During the Industrial Age, mediums such as newspapers, radio, and TV had powered communication allowing *one* source to broadcast to many recipients. However, the Age of Networked Intelligence brought a new form of communication, social media. The advent of which changed communications by allowing *many* sources to broadcast to many recipients. This was the change that would empower the Open World Movement.

Facebook

Mark Zuckerberg's mission from the beginning was to connect people. It was based on the simple theory that if the world were more connected, it would be a better place to live.[51] Zuckerberg was no stranger to insurrection. As a freshman in college he hacked into Harvard's school computers to collect images of students which he used to populate a website he created called "Facemash." "It maintained an entire list of Harvard students ranking which ones were the most attractive by "hotness".[52] The popularity of his site quickly got the attention of the Harvard administration board who charged him with breaching security, violating copyrights, and violating individual privacy. However, by then Facemash was a campus sensation. Zuckerberg saw his future working on a similar social networking site based on the Harvard student directory called the Facebook. He partnered with classmate Eduardo Saverin who helped fund the project and launched Facebook in 2004. Quickly, the site became the way for college students to connect with one another and usage spread from college to college. A year later

[51] Bloomberg. 2013. Mark Zuckerberg: Building The Facebook Empire. Video. https://www.youtube.com/watch?v=5WiDIhIkPoM&list=PLRwVvnmMRwoh1oMv84k8-WCEEZ7RHfQcl.
[52] Bloomberg, 2013. Mark Zuckerberg: Building The Facebook Empire.

the site would have a million active users on college campuses nationwide[53] before finally going mainstream, allowing anyone in the world to join the social network.

Twitter

While Facebook sprang from a college dorm room with the simple desire to connect people, Twitter began making inroads into social media built on the principle that "the open exchange of information can have a positive impact,"[54] but its story went back even further. It was the late 1990's and the internet was growing rapidly. People, wanting to share information about their lives, turned to the internet to create web logs. However, publishing on the internet required technical skills that made it difficult to publish "Blogs" easily. Evan Williams was a Blogging Pioneer who wanted a way to broadcast messages to the world. Seeing the need, he used his computer programming talents and created the website Blogger.Com to facilitate the publishing of blogs for people who wanted to concentrate on content and images rather than the technical aspects. It was an opportunity for people to publish something short about their lives. Blogger.Com grew in popularity and was eventually bought by Google where Evans continued to work.

Biz Stone was Creative Director at a competing Blogging site called Zynga.Com until he met Williams and joined him at Google. In 2005, they met with Jack Dorsey who had been running his own startup creating software systems for sending or dispatching messages instantly. For years Dorsey had been looking to explore the potential of a dispatch system that could help friends stay connected. The concept was very simple, "Here's what I'm doing, anyone who's interested can follow along in real time."[55] Dorsey had a chance encounter with Williams and described his idea of sending out a message from his phone and have other people read it in real time. Williams gave Dorsey two weeks to come up with a program. Dorsey reached out to Stone who helped develop the graphics and visual elements and on March 21st, 2006 Dorsey sent his first message. The product was a success. However, the "Friendship Dispatch System" needed a catchier name. The name “Twitter” was found after scouring the Oxford

[53] Bloomberg, 2013. Mark Zuckerberg: Building The Facebook Empire.
[54] Bloomberg. 2013. Bloomberg Game Changers: Twitter. Video. https://www.amazon.com/Bloomberg-Game-Changers-Bill-Corona/dp/B0785GFHGC/ref=sr_1_fkmrnull_1?keywords=bloomberg+game+changers%3A+twitter&qid=1554944506&s=gateway&sr=8-1-fkmrnull.
[55] Bloomberg, 2013. Bloomberg Game Changers: Twitter

Dictionary and finding the definition "short bursts of information." Williams helped the three form a new company in 2007 and called it Twitter.[56]

The trio decided to display their new product at the South by Southwest Music Tech Festival. They rented two screens, and put them in hallways where they showed what people were saying about South by Southwest in real time. The feed caught on showing how people were moving as one at the festival. By the end of the festival, Tweets on Twitter had jumped from 20,000 to 60,000 per day.[57]

Zuckerberg, WIlliams, Stone, and Dorsey had provided platforms to connect people and have an open exchange of information. No longer were newspapers, radios and TVs the only way to broadcast to the world. With Facebook and Twitter, everybody could broadcast to everyone. The use of social media tools grew to hundreds of millions of people globally as a way to share personal stories. Many stories were about the mundane routines of people's lives. However, other stories were powerful and meaningful to those who read them because they had similar stories of their own and felt connected. A person posting their story could be followed, or "friended" by others which created small groups with shared interests. The more compelling a person's story, the bigger the group became. It was only a matter of time before these groups, empowered by their shared interests and numbers, would turn online engagement into real world action.

Arab Spring

Wael Ghonim was the Head of Marketing of Google Middle East and North Africa.[58] While browsing Facebook in 2010, he saw a photo of the tortured, dead body of a young Egyptian man named Khaled Said. Khaled was a 29-year-old Alexandrian who had been killed by police.[59] Ghonim tells, "The photo was



[56] Bloomberg, 2013. Bloomberg Game Changers: Twitter
[57] Bloomberg, 2013. Bloomberg Game Changers: Twitter
[58] Wikipedia contributors, "Wael Ghonim," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=Wael_Ghonim&oldid=888481721 (accessed April 11, 2019).
[59] Ghonim, Wael. 2015. "Transcript Of "Let's Design Social Media That Drives Real Change"". Ted.Com. https://www.ted.com/talks/wael_ghonim_let_s_design_social_media_that_drives_real_change/transcript.

horrible. He was tortured, brutally tortured to death."[60] The regime said that Khaled had choked on a pile of hash and was a criminal. But Ghonim and others did not believe that.[61] Ghonim said, "Because of the Internet, the truth prevailed and everyone knew the truth. He was a middle-class guy. His photo was remembered by all of us. [62]Gohnim saw himself in his picture and thought, "I could be Khaled." [63]

Ghonim knew that platforms like Twitter and Facebook were helping people cope because it basically gave them the impression that they were not alone. Consequently, Ghonim decided to anonymously create a Facebook page and called it "We are all Khaled Said." In just three days, the page had over 100,000 followers, mostly fellow Egyptians who shared the same concern. "Whatever was happening had to stop."[64]

Ghonim recruited co-admin, Abdel Rahman Mansour and worked for hours crowdsourcing ideas from page followers. The two engaged the followers, called collectively for actions, and shared news that the regime did not want Egyptians to know. The page became the most followed page in the Arab world. It had more fans than established media organizations and even top celebrities.[65]

On January 14, 2011, Tunisian President Ben Ali fled Tunisia after mounting protests against his regime. Ghonim saw a spark of hope. Egyptians on social media were wondering, "If Tunisia did it, why can't we?" Ghonim posted an event on Facebook and called it "A Revolution against Corruption, Injustice and Dictatorship." He posed a question to the 300,000 users of the page at the time: "Today is the 14th of January. The 25th of January is Police Day. It's a national holiday. If 100,000 of us take to the streets of Cairo, no one is going to stop us. I wonder if we could do it?"[66]

In just a few days, the invitation reached over a million people, and over 100,000 people confirmed attendance. Social media was crucial for this campaign. It helped a decentralized movement arise. It made people realize that they were not alone. And it made it impossible for the regime to stop it. On

[60] Ghonim, Wael. 2011. "Transcript Of "Inside The Egyptian Revolution"". Ted.Com. https://www.ted.com/talks/wael_ghonim_inside_the_egyptian_revolution/transcript.
[61] Ghonim, 2011
[62] Ghonim, 2011
[63] Ghonim, 2015
[64] Ghonim, 2015
[65] Ghonim, 2015
[66] Ghonim, 2015

January 25th, Egyptians flooded the streets of Cairo and other cities, calling for change, breaking the barrier of fear, and announcing a new era.[67] The protests led to the overthrow of President Hosni Mubarak, who was later convicted of corruption and ordered to stand trial for ordering the killing of protesters.[68]

Why Social Media Campaigns Fail

While social media empowered the overthrow of a dictator in Egypt, it would later be criticized for lacking the leadership and organization necessary to back revolutions and replace existing power structures. While initially successful, Ghonim complained that the post-revolution events in Egypt were like a "punch in the gut[69]". The euphoria faded, protesters failed to build consensus, and the political struggle led to intense polarization. On the 3rd of July 2013, the army ousted Egypt's first democratically elected president, after three days of popular protest that demanded his resignation.

While Social Media was effective in the short term for campaigns, this principle of empowerment was not successful long term if there was no organization at its base. Zeynep Tufekci was a techno-sociologist known for her research on the social implications of emerging technologies in the context of politics.[70] She noted that social movements follow a different trajectory. Going quickly from zero to 100 miles an hour but unable to cope with counter forces because groups had only been together for a limited time with no organizational depth. "There's something that comes from working together and making decisions day in and day out over a long period of time." she said. "You develop ways of trusting each other and you develop ways of decision-making together that this way of participating in movements through social media doesn't allow..." she continued. "...you can use technology to do things in an ad hoc manner, or you can use it to build long-lasting communities that know how to think together." Tufekci stated that movements have to be reflective and thoughtful because "...if you just

[67] Ghonim, 2015
[68] Wikipedia contributors, "Arab Spring," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=Arab_Spring&oldid=891881638 (accessed April 11, 2019).
[69] Ghonim, 2015
[70] Wikipedia contributors, "Zeynep Tufekci," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=Zeynep_Tufekci&oldid=881128493 (accessed April 11, 2019).

sort of say, oh, here's my hashtag and I'm just going to sort of get something big, that doesn't lead to the next step".[71]

Tufekci contrasted modern day social media movements with the civil rights movement explaining that during the civil rights movement people called each other, talked to each other, distributed leaflets. The people who were boycotting the buses had to go to work so they organized a massive system of carpools. They had to meet basically every day, just to take care of the arduous logistics of operating a shadow bus company for a year with no budget. "You can use technology to do things in an ad hoc manner. Or you can use it to build long-lasting communities that know how to think together, Tufekci summarized.[72]

Communities That Think Together

Like Tufekci, Tapscott also recognized that empowerment from social media had its problems but asserted, it didn't matter, "the train had left the station"[73]. Groups recognized that they needed to be organized better to be effective long term and they organized into communities which created well thought out campaigns to achieve their goals.

Goals and Messages

Alan Rosenblatt, a digital & social media strategist, explained that successful communities that thought together constructed social media campaigns with inside goals and outside goals. Inside goals supported activities to increase the size of the community.[74] Outside goals were employed to persuade broad audiences to support a given issue.[75] To achieve these goals, campaigns used non-complex messages directed at a sympathetic audience.

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[71] Tufekci, Zeynep. 2015. Why Are Social Causes Easy To Launch But Hard To Win? Guy Raz Interview by . Radio. NPR. https://www.npr.org/templates/transcript/transcript.php?storyId=401738765

[72] Tufekci, 2015

[73] Tapscott, 2012

[74] Rosenblatt, Alan. 2014. "Social Advocacy & Politics: Is Your Social Media Audience Optimized For Advocacy?". Social Media Today, 2014. https://www.socialmediatoday.com/content/social-advocacy-politics-your-social-media-audience-optimized-advocacy.

[75] HuffPost. 2016. "What Did Hillary Clinton Leave On The Social Media Table?", 2016. https://www.huffpost.com/entry/what-did-hillary-clinton-leave-on-the-social-media_b_58419d99e4b04587de5de94d.

Social Network Platforms

The communities chose which social media platforms they would use to support their campaigns. Facebook was a must. By 2016, 71% of Americans were already on Facebook and given its size and depth, communities had to use it if they were using social media to target people. Even though it was only used by 28% of Americans, Twitter was also routinely adopted because it included almost all of the press, all members of Congress, most members of state legislatures, policy influentials, and a lot of organizers and very socially influential activists. Rosenblatt noted that Facebook was designed to reach, rank-and-file but in small chunks because it was all based on who follows or who liked pages. Twitter, however, was a very large broadcast, with a big focus on reaching influencers. [76]

While Facebook and Twitter were necessary for almost any campaign, other platforms also worked well with certain demographics. Rosenblatt noted that, "Pinterest was a very interesting platform, if the target audience was women. The average age of Pinterest users were 45 years old and 80% of them were women. Another platform, Tumblr, tended to appeal to a much younger audience and was more culture oriented. Instagram, was one of the most popular channels for young people like teens and young adults.[77]

Audiences and Actions

Social media allowed online communities to target different groups with different messages based on what the community wanted that audience to do and what value the issue had to audience members. The key was to reach the right people, who had the right interests, the right age groups, and the right location. To begin with, there were basically four types of audiences:

1) The general public
2) Influencers
3) Policymakers
4) The Press

General Public

Social media campaigns used specific messages to mobilize the general public to take action and raise their awareness. The public, in turn, took basic social media actions by liking and sharing in order to

[76] Rosenblatt, Alan. 2019. "Targeting And List Building". Presentation, George Washington University, 2019.
[77] Rosenblatt, 2019. Targeting And List Building

spread the message further and wider. Other messages sought to alarm people and get them to sign up to follow an issue or donate money to the campaign by clicking on a fundraising link.

Influentials

Twitter allowed campaigns to build their own audiences. They were able to go into individual Twitter accounts of people or organizations that were influential in a certain issue space and see who the influentials followed and who followed the influentials. This made it easy to quickly build lists of influential people on just about any cause and target them with appropriate messages.

Policy Makers

Social media was used to deliver a campaign's messages to policy makers. A report entitled Social Congress from the Congressional Management Foundation[78], provided survey data of congressional staffers that verified a tactic and strategy of using Twitter and Facebook to send messages from constituents directly to Congress. "The idea is you tweet at a member of Congress and, every time somebody retweets that Tweet, it's like they sign a petition, or you go to a member of Congress's Facebook page, being driven there by a campaign, and post comments on the Facebook wall to the member of Congress saying that they should do xyz, vote for this bill, vote against that bill," Rosenblatt explained.[79] The social Congress report, showed that it took as few as ten to thirty messages from constituents via social media on a member's Facebook page or Twitter to get them to actually pay attention to that issue. The big advantage was public accountability, Rosenblatt concluded. "If I tweet at them or post on their Facebook page, that's happening in public"[80] and that created accountability. Because they were publicly visible, campaigns made sure that the press also saw those Tweets and Facebook wall posts.[81]

Building a Twitter Press List

Every Member of Congress had a short list of local reporters who covered that member regularly. It was part of the job for these reporters to keep tabs on the votes they took and to find interesting ways to

[78] Fitch, Bradford, and Kathy Goldschmidt. 2015. "#Socialcongress 2015". Washington DC: Congressional Management Foundation. http://www.congressfoundation.org/projects/communicating-with-congress/social-congress-2015.
[79] Rosenblatt, Alan. 2019. "Campaign Advocacy Actions". Presentation, George Washington University, 2019.
[80] Rosenblatt, 2019. Campaign Advocacy Actions
[81] Rosenblatt, 2019. Campaign Advocacy Actions

show their impact on real people in their district. Social media campaigns connected with and developed relationships with members of the press (including bloggers). It required finding the press on Twitter by conducting issue related keyword searches on social media sites like Twitter and Facebook and in Blogs like Techcrunch and Mashable or simply Googling and reading recent local newspaper and radio stories. Campaigns found that a lot of the same reporters' names came up over and over again when articles were written about certain elected officials. Gathering a list of those names, and finding email addresses and social media accounts marked the beginning of the press list.[82]

Deepening Relations With the Press via Social Media

With press lists in hand, campaigns were able to deepen their relationships with reporters via social media by contacting them and pitching their issues as stories they could cover. In order to pitch, campaigns found the right reporters to cover their beat and prioritized them for pitching. To initiate a conversation with a reporter, campaigns read some of the things the reporter had written, and would like, share, and comment about it. Campaigns could, even send the reporter an email with an intelligent question to get some name recognition for themselves. After getting on the reporter's radar by contributing to something the reporter was interested in, campaigns could approach the reporter with similar yet different issues they were concerned about and direct them to their social channel for discussion and content related to their issue.

Targeting

Social Media was used to find target audiences, either using organic targeting methods like hashtags and tagging people or by using paid targeting options like Facebook.com/business or Twitter ads.

Hashtags

Most social media generally, used hashtags as a way to target communities. Essentially, a hashtag was used in a message by putting the pound sign or the hashmark (#) in front of a word, phrase or acronym without any spaces in it. When a message was posted, that hashmark or hashtag turned into a link that ran a search for all posts using that #. In the short run, it was a conversation aggregator, but as people used a hashtags over time, they became an established conversation community or group. Campaigns could search keywords for issues on Twitter and see what hashtags people were using when talking

[82] Indivisible On Offense: A Practical Guide To The New, Democratic House. 2019. PDF. Washington DC: Indivisible Project. https://docs.google.com/document/d/1PpG87rpuh6eUCEKp3eQsjESnFvO6OfWzCe-Ha3C-PJo/edit.

about those issues. Then they could do other searches on Twitter, using the keywords as hashtags, to see how popular the hashtags were.[83]

Tagging

Campaigns could also target specific individuals. On Twitter, in particular, people could tag specific audience members with the at (@) sign and their Twitter handle. On Facebook, people could do a similar kind of thing where they typed @ and somebody's name if they were friends, or the @ sign and an organization name regardless of whether they followed them and be able to tag that person or organization in posts.[84]

Promoted Posts

Campaigns could also pay to promote posts on Facebook and on Twitter. In particular, they could use the boost in Tweet or promote a wall post on their Facebook page. Even paying as little as five or ten dollars could increase the exposure of a tweet or Facebook wall post by thousands of people, or even tens of thousands.[85] Campaigns used the Facebook.com/business self-serve platform to target people who either:

- Lived in a specific location
- Were in a specific age range
- Liked particular topics and issues or people
- Had certain types of jobs or worked for certain companies

Using all of these different types of targeting capabilities, campaigns targeted posts directly at people who fit their specific criteria.

Retweets

If a person using Twitter posted interesting messages, others could "follow" them. By doing so, new messages from the person would automatically appear in their follower's message feed. If a person found a post to be particularly interesting, they could share it by "retweeting" which would automatically send the message to anyone who followed them. Likewise, any of their followers could also retweet the message thereby, extending the reach of the message even further. Therefore,

[83] Rosenblatt, 2019. Targeting And List Building
[84] Rosenblatt, 2019. Targeting And List Building
[85] Rosenblatt, 2019. Targeting And List Building

encouraging retweets became an important way to share messages with large audiences. By using more appropriate hashtags, retweet rates could be increased. One strategy to increase retweet rates was to compare the number of retweets for two hashtags, both about equal in frequency. The preference would be for the one that had the highest ratio of retweets to tweets over a fixed period of time.[86]

Social Media Metrics

Social media gave campaigns the advantage of sophisticated metrics with which they could measure the success of their messaging and improve the quality of their audience, increasing engagement, and strengthening the quality of their messages. There were, in fact, many metrics that could be used to analyze social media but only some provided meaningful analytics about social media performance. Rosenblatt suggested the most important metric was the quality of the audience.[87] It was the most important metric because it showed whether people who cared about an issue were being reached and if they were willing to make some efforts by likes or retweets to spread the message. Followerwonk.com was used to compare users and get a better sense of what audiences were more appropriate for a campaign. Using Followerwonk.com, campaigns could click to Twitter accounts and start to engage appropriate people. Followerwonk.com also measured social authority, showed geographically where the followers were, when they're online, what the audience was tweeting about, and key words they used, based on word clouds. Tweetreach.com provided a free report of the last one hundred Tweets, and top contributors. Targeting these contributors helped campaigns amplify messaging.

The next most important metric was engagement.[88] Engagement statistics showed that even if the quality of audience was high, there must be some engagement with them to garner interest in an issue. Analytics.twitter.com showed engagement rates including the total number of clicks on links and the total number of retweets over the previous month or during the current month. It also showed the total number of likes on Tweets, and the total number of replies. ActionSprout created a useful metric turning engagement into an "engagement score" which can be benchmarked and used to improve engagement.

[86] Rosenblatt, 2019. Targeting And List Building
[87] Rosenblatt, Alan. 2019. "Social Media Metrics Part I". Presentation, George Washington University, 2019.
[88] Rosenblatt, 2019. Social Media Metrics Part I

Also important was the quality of messages.[89] Good quality messages improved the quality of the audience and increased engagement. Perhaps more importantly, the messages communicated the information about the issue a campaign was trying to promote. Analytics.twitter.com showed the total Twitter impressions, the best performing Tweets, and the top followers. ActionSprout ran a comparison of all posts showing which post did best. Socialmention.com showed what keywords were being used and how many unique authors were tweeting using that particular search term.

Organizing without Organizations

Social media transformed the way people organized. It provided sophisticated tools for anyone, be they an organization or an individual, to use in mobilizing people around a common mission and in organizing the operations of campaigns. The traditional model for campaigns had been to identify a team to manage an issue, however, social media campaigns identified the issue first and then crowd sourced the teams to manage the issue. As Shirky explained with social media, "...you take the problem to the individuals rather than moving the individuals to the problem."[90]

Social media led to the fracturing of traditional campaigns and advocacy groups. If someone was concerned about an issue, they no longer needed to join someone else's campaign, they could build their own. As a result, there were more campaigns, even small ones. In fact, every little complaint about an issue could be considered a micro campaign looking for some support. But these small campaigns died if they could not join forces with others.

Because of the fracturing, campaigns needed to be more concerned with finding partner campaigns and building coalitions. Historically, this had been difficult for traditional campaigns since these types of non-profit organizations often competed with each other for funding. However, having issues at the center of funding (rather than organizations) changed the dynamic. Donations became issue specific, and campaigns benefitted from forming coalitions with other campaigns to amplify their issue by sharing and retweeting each other's messages. Using readily available tools in Twitter for example, organizations could share lists of followers, growing both their audience and funding.

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[89] Rosenblatt, 2019. Social Media Metrics Part I

[90] Shirky, Clay. 2005. "Transcript Of "Institutions Vs. Collaboration"". Ted.Com. https://www.ted.com/talks/clay_shirky_on_institutions_versus_collaboration/transcript.

The rise of coalitions necessitated better data management. Traditionally, data concerning voters, issues, and elected representatives had been managed independently by each organization. However, social media and the coalitions it formed created the need for decentralized data that could be controlled with proper permissions but be available to everyone. The blockchain was ideal for this. Decentralized data, in turn, gave rise to changes in how information was paid for. Individuals, for instance, could actually be paid for revealing personal data and voting preferences. This took much of the guesswork out of voter profiling for large campaigns as it provided voter profile information authored by the voter, and put voters in control of their own data.

VI. THE RISE OF DECENTRALIZED ORGANIZATIONS

Tapscott's principles fueled the Open Source Movement on many fronts (i.e. commerce, education, science) but for Mancini's call to design the political and economics systems of the internet generation, the significance of the movement was that it led to the rise of decentralized organizations capable of combining the principles to bolster the democratic system.

In 2010, the Tea Party started out as an organic movement built on small local groups of dedicated conservatives. These groups began talking to each other online and eventually realized that their locally based discussion groups could be a powerful tool. Tea Party groups could be fewer than 10 people, but they were highly localized, and they dedicated significant personal time and resources to their cause. Members communicated with each other regularly, tracked developments in Washington, and coordinated advocacy efforts together. The Tea Party efforts were somewhat modest. Only 1 in 5 self-identified Tea Partiers contributed money or attended events. On any given day in 2009 or 2010, only 20 local events (meetings, trainings, town halls) were scheduled nationwide. In short, a relatively small number of groups had a big impact on the national debate.[91]

The Tea Party was almost purely defensive. They focused on saying "No" to elected representatives on their home turf. While the Tea Party activists were united by a core set of shared beliefs, they actively avoided developing their own policy agenda. Instead, they had an extraordinary clarity of purpose

[91] Indivisible: A Practical Guide For Resisting The Trump Agenda. 2016. PDF. Washington DC: Indivisible Project. https://docs.google.com/document/d/1DzOz3Y6D8g_MNXHNMJYAz1b41_cn535aU5UsN7Lj8X8/edit#heading=h.he8mndfdfxw9.

rooted in a united opposition to President Obama. They didn't accept concessions and treated weak Republicans as traitors.[92]

The Tea Party organized to end hope for progressive reform under President Obama. Their members:

1) Changed votes and defeated legislation
2) Radically slowed federal policymaking
3) Forced Republicans to reject compromise
4) Shaped national debate over President Obama's agenda
5) Paved the way for the Republican takeover in 2010 and Donald Trump in 2016

These were real, tangible results by a group that represented only a small portion of Americans. However, Tea Partiers were not the only ones capable of forming a decentralized organization.

Ezra Levin and Leah Greenberg, former Hill staffers, were visiting family over Thanksgiving after the U.S. election of 2016 when they met up with a friend who told them about a Facebook group she was running dedicated to resisting President Trump. It had 3,000 fired-up members, but no clear direction, the friend complained.

Levin and Greenberg explained how Tea Party protesters had shaken up Congress in 2009 and 2010, spelling out what works to pressure an elected representative. There were guides but none were practically oriented for people looking to do something on a daily or near-daily basis.

Levin and Greenberg put their thoughts down into a Google Doc and shared it with politically savvy friends back in Washington, refining the guide along the way. The document, which they called the Indivisible Guide, was made public in December 2016. Soon after, Indivisible chapters began popping up around the country.[93]

In 2017, Indivisibles went to town halls, "die-ins", and district offices. They helped defeat TrumpCare, rallied for immigrants, and turned the Republican tax cut for the rich and corporations into an enormous political liability. On election day in 2018, Indivisibles helped flip the House, along with 6 state legislatures, and moved the whole country to the left. After the 2018 election, 317 out of 435 Congressional districts (73%) were more blue than they had been in 2016.[94]

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[92] Indivisible: A Practical Guide For Resisting The Trump Agenda, 2016

[93] The Intercept. 2018. "How Donald Trump Saved The Democratic Party From Itself", 2018. https://theintercept.com/2018/11/05/democratic-party-donald-trump-election/.

[94] Greenberg, Leah, and Ezra Levin. 2018. "INTRODUCING: INDIVISIBLE ON OFFENSE". Blog. Indivisible. https://indivisible.org/blog/introducing-indivisible-offense.

Voting Simplified

Decentralized organizations such as the Tea Party and Indivisible were effective at using the the democratic system but to make them stronger, their tactics needed to be simplified by returning to the basics of democracy, voting. As Eric Liu, founder of Citizen's University, explained voting mattered because "it is a self-fulfilling act of belief. It feeds the spirit of mutual interest that makes any society thrive. When we vote, even if it isn't anger, we are part of a collective creative leap of faith. Voting helps us generate the very power that we wish we had… everyday Democracy already gives us a playbook for revolution."

Re-election was a significant motivator for elected officials. To get re-elected, elected officials were obsessed with crafting their local image as good, diligent, and attentive representatives. [95] Tactics were crafted on several fronts by campaigns to leverage the vulnerability of elected officials wanting to maintain their public image. The most effective tactics were as follows:

1. Gathering groups for district office visits to meet with staff or the representative and draw attention to concerns.
2. Flooding a representative's phone line with coordinated phone calls concerning an issue.
3. Earned media events by visiting a local representatives office for protests to be covered by the media.
4. Town halls and public events were ideal for showing up in a group and making voices heard, demanding their attention and disrupting their preferred narrative.
5. Public letters increased the pressure by demonstrating the depth of local support for a cause.
6. Letters to the editor in the local newspaper that mentioned a representative by name.
7. The op-ed sections of local newspapers were used to write narratives and shape public opinion.[96] [97]

Organized groups like Tea Partiers and Indivisibles showed up. They threatened elected representatives with votes and, in the course of showing up, they changed American politics. They did that by using the fundamental tool of representative democracies, voting. However, the voting system was cumbersome, inefficient, and too infrequent to bring about change. Entrepreneurial organizations searched for ways to increase voting turnout by making the process simpler and more accessible. The organized groups

[95] Indivisible Guide 2.0

[96] Indivisible On Offense: A Practical Guide To The New, Democratic House, 2019

[97] Connelly, Joel. 2009. "Marching Orders On The Right: Disrupt Early And Often". Blog. Seattlepi.Com. https://blog.seattlepi.com/seattlepolitics/2009/08/03/marching-orders-on-the-right-disrupt-early-and-often/.

took a lesson from Robert Woodruff, Coca-Cola's leading figure from 1923 until his death in 1985. Woodruff promised to put Coke's products "within arm's reach of desire" and he succeeded almost everywhere, placing Coca-Cola in convenient sized cans that could be purchased in convenience stores and vending machines throughout the world . By 2015, Coca-Cola sold nearly two billion drinks every day.[98] Voting needed to be more like Coca-Cola, within arm's reach of desire.

New platforms emerged making voting more like reaching for a can of Coke. Mancini created Democracy OS. An open source mobile app where users could build proposals with the change they wanted to see, debate it in a platform that rewarded the best argument, and then vote with a clear deadline to avoid endless debates. The OurSay company was founded to improve the way government engaged with their communities on decisions that affect them.[99] Much like Democracy OS, OurSay created a platform where people became members of a community of people that were interested in advocating for an issue. The platform allowed people to vote on different questions they wanted to ask government officials and facilitated the top five questions. Often it resulted in issues going straight to the politicians that were handling those particular issues and having a sit down session.[100]

However, voting platforms needed to avoid making every little vote become a referendum, which, in some ways, made democracy less functional.[101] Deborah Gordon, a biology professor at Stanford University, noted that all systems without central control are regulated using very simple interactions. Power systems, on the other hand constantly need to be maintained and reinforced and controlled and fought over. So it takes a lot of work to maintain a hierarchy. Therefore, it's more effective and efficient to have a system without any central control, where the whole thing can keep working without having to put in the extra effort of maintaining a hierarchy.[102] The defensive tactics of the Tea Party needed to be followed by simplifying voting and bringing it to the masses. Campaigns needed to focus on the officials themselves with simple approval/disapproval votes. A new system was needed to track the activity of decentralized groups and their progress. A system that would unite all four of Tapscott's Open

[98] Skapinker, Michael. 2015. "Coca-Cola: 'Within Arm'S Reach Of Desire'". Financial Times, , 2015. https://www.ft.com/content/f0f57086-bb76-11e4-b95c-00144feab7de.
[99] About Us | Oursay", 2019
[100] Davidson, Peter. 2012. "Leveraging The Chaos Of Crowdsourcing: Peter Davison At Tedxmongkok". Youtube. https://www.youtube.com/watch?v=0Bm5QIiIGp4.
[101] Mancini, 2015
[102] Gordon, Deborah. 2015. Why Don't Ants Need A Leader?Guy Raz Interview by . Radio. NPR. https://www.npr.org/templates/transcript/transcript.php?storyId=401735715

World principles. Blockchain voting presented this solution. It would be built using open source development, utilize the blockchain to store approvals/disapprovals, allow for collaboration on content using wikis and be broadcasted to the world with social media.

Blockchain Voting

Blockchain voting was simply taking the process of voting in an election and bringing it online, in an attempt to make it easier, more secure, and more cost effective for everyone involved. To use a blockchain voting system, the voter began by installing an app or accessing a website on the personal device of their choice (i.e. desktop computer, laptop computer, smartphone, or tablet). From there, the voter submitted appropriate identity information in order to have his/her identity verified by an Identity Verifier, which would be approved by the organization hosting the election ahead of time. Once their identity was verified, the voter requested his or her ballot, and was issued the correct ballot type by a registrar. The voter then completed his/her ballot and securely submitted his or her vote(s) to the blockchain-based ballot box. To obtain proof of casting his/her ballot, the voter could print out a receipt. If allowed by the organization hosting the election, the voter could vote early and could even re-enter the application to change his/her vote if he or she changed their mind in the days leading up to the election. When the polls closed on Election Day, the most current votes submitted by each voter were considered the official votes and, voters could follow their vote through the application to ensure that their vote was cast as intended and counted as cast. If they choose to do so, each voter could audit each ballot in the ballot box to confirm the vote totals being reported by the blockchain voting system were accurate, without revealing the identity of each voter.[103]

Using blockchain voting, people were able to gain transparency into elections, without compromising their privacy, and had a way to mathematically prove that the elections results were accurate. Blockchain technology reduced the costs of elections and freed up taxpayer money to be spent on other important aspects of society. Increasing voter turnout was also a byproduct of bringing elections securely online.[104]

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[103] "Blockchain Voting: The End To End Process". 2019. Follow My Vote. https://followmyvote.com/blockchain-voting-the-end-to-end-process/.

[104] "The Online Voting Platform Of The Future - Follow My Vote". 2019. Follow My Vote. https://followmyvote.com.

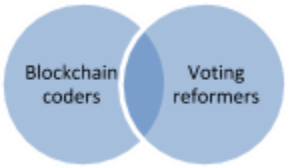
Blockchain Voting Campaigns

Social Media gave rise to the formation of groups focused on changing political and democratic systems. The groups recognized that blockchain voting represented a technological solution that could ensure security and privacy of voters while increasing participation. Using the power of social media these groups launched campaigns to implement blockchain voting measures. Their goals were threefold:

1. Create a community to develop distributed applications (DApps) that could be used by the general public for blockchain voting
2. Use the blockchain voting apps to run elections parallel to official elections
3. Encourage officials to adopt blockchain voting technologies for use in general elections

Target Audiences

The campaigns focused on numerous organizations interested in issues surrounding voting such as voter suppression, voter registration, get out the vote campaigns, early voting, and voting equipment. They also focused on groups of individuals interested in coding applications for use of the blockchain. The initial problem was that there was very little overlap of these two groups. But the campaigns sought to bring these groups together through social media.



They targeted blockchain voting enthusiasts for their ideas and to highlight their work and initiatives. They targeted computer programmers who could code programs for use on the blockchain and, in turn, inspired them to join a community of coders building an actual blockchain voting application. They targeted press contacts who actively reported on blockchain voting developments to amplify the issue through the media. Then, they used collective audiences to target state level secretaries of state lobbying them to adopt blockchain voting procedures in general elections.

Supporting Messages

The campaigns contacted their audiences with variations of messages supporting blockchain voting. Primary messages were:

- Blockchain voting is verifiable - It is easily checked to ensure votes are accurately recorded.
- Blockchain voting fosters greater voter participation - Votes may be cast by computer or mobile device instead of having voters show up at a local polling place or cast a mail-in-ballot to be processed manually by election officials.
- Blockchain voting offers ballot security - It integrates cryptography into software in a unique way to create an immutable tamper-free record.
- Blockchain voting offers lower cost - Manpower is not needed to staff polling stations and tabulate votes. It reduces productivity lost by workers spending time away from work while voting.
- Coding blockchain voting apps was an opportunity for programmers to apply their skills to improve democracy and join a community of other programmers to learn more about the blockchain and Smart Contracts

Social Media Channels

The majority of blockchain voting audiences used Facebook and to a lesser extent Twitter. GitHub was also used primarily by programmers who could engage with each other using GitHub's social media platform, Gitter. Accordingly:

1. Campaigns used Facebook to educate citizens on how the blockchain can be used for voting. Facebook messages demonstrated how blockchain voting worked and explained its principles. Videos could be shared to further explain the process. Messages could also push developers to join the community on GitHub and contact their state secretaries to encourage them to adopt blockchain voting.

    ⇒ https://www.facebook.com/votetheblock/

2. Campaigns used Twitter primarily to share news and opinions promoting blockchain voting. The purpose of Twitter language was to engage in lively discussion and try to build some credibility and a following with influencers, experts, and the press. Posts focused on current events and comments about other blockchain voting entities. There also needed to be a call for action. Like Facebook posts, campaigns pushed people to check out and develop blockchain voting tools on GitHub and get followers to take action by contacting U.S. State Secretaries to adopt limited blockchain voting in their upcoming election.

    ⇒ https://twitter.com/votetheblock

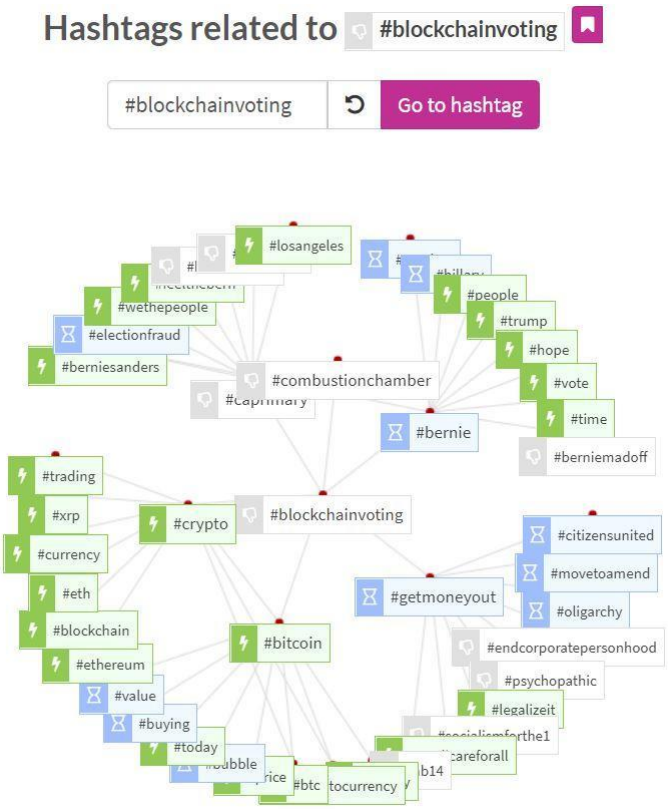
3. Campaigns used GitHub as a development community to create voting DApps. Using GitHub developers shared each other's work and became exposed to the larger community of blockchain voting. Gitter was the social channel of GitHub and allowed campaigns to post messages in existing "rooms" which were part of larger "organizations." Messaging on Twitter and Facebook pushed programmers to GitHub. The GitHub wiki became, in effect, a landing page for programmers interested in coding blockchain voting applications. Discussions among programmers building blockchain applications were linked to Gitter.

   ⇒ https://github.com/Ike-Pono/Blockchain-Voting/wiki

Social Media Toolkit

Key Hashtags

Campaigns used the hashtag **#blockchainvoting** on all Twitter messages. Initially, it had few (but relevant) followers and was easy to employ for the purposes of identifying messages related to campaigns. Additional, more popular, hashtags were also added to messages to ensure greater distribution. Campaigns used RiteTag.Com to find hashtags related to #blockchainvoting that had long life or were "hot now". As a result, the following hashtags were also included on all messages:



#blockchain, #evote, #electionfraud

Key Influencers

The first group of influencers were blockchain voting enthusiasts. Campaigns retweeted and followed influencer messages to build their audience. The influencers were comprised of nonprofit organizations covering blockchain voting, thought leaders speaking about the blockchain and governance, and people from the developing community that had written blockchain open source voting apps. There were also commercial ventures touting voting apps that could be retweeted and followed to spur development and overall adoption.

Campaigns developed lists of active journalists with Twitter accounts that covered Blockchain voting stories along with additional bloggers who were found on Techcrunch and Mashable. They used their lists to retweet and follow their blockchain voting messages to establish a rapport and que them in to valuable information about their campaigns.

Elected officials who could eventually enact blockchain voting practices were the last group of influencers in the campaign. The use of blockchain voting by West Virginia's Secretary of State during the 2018 elections led many enthusiast to believe it possible to get the Secretaries of State from other states to consider allowing blockchain voting for their next election. A list of current State Secretaries in the U.S. and their handles were used to Tweet with encouragement to adopt blockchain voting in the next election cycle. It also was used to direct the general public to post on their Facebook pages to encourage them to adopt blockchain voting during the next election cycle.

VII. THE POLITICAL AND ECONOMIC SYSTEMS OF THE INTERNET GENERATION

Mancini's call for to design the political and economic systems of the internet generation had been answered. The new system augmented the existing representative form of democracy by applying Tapscott's four principles to change the way people collaborated, trusted, shared and communicated. The application of these principles drove the Open World Movement, moving governance from the Industrial Age into the Age of Networked Intelligence. This, in turn, brought more clarity, certain knowledge, and promoted the value of 'Ike Pono, the Hawaiian value of knowing what was right.

The blockchain was the ideal medium for creating a secure, decentralized, approval/disapproval record. Campaigns turned towards social media to crowdsource programmers who could code the blockchain voting apps necessary to track the progress of their campaigns. Creation of the blockchain application was accomplished through open source development using applications such as GitHub to bring coders together. To coordinate the work of blockchain voting app development, people organically built sites, assembled information, and shared their ideas using wikis.

Simple blockchain voting apps were developed that eventually transformed into standardized ledgers with up-to-date approval ratings of elected officials. Afterwards, wikis were created using the data from the blockchain to track approval rating for candidates. Wikis eventually became known as Reputation Exchanges.

All four principles had been brought together to revolutionize the political and democratic systems Mancini spoke of. Approval ratings became like markets and could be charted along with other key statistics. They also could be customized providing additional data to track protest events related to the elected official, fundraising, and even, to cast votes where permitted. Administrative roles were established to monitor the quality of the wikis. Assembling key information into easy displays was key to functionality, especially for the adoption of mobile platforms. As time passed the blockchain voting apps and related wikis became even more sophisticated including reference material that supported a person's approval or disapproval of a candidate, such as links to a news articles, blogs, or comments. As well, such links could help identify the official being voted on.



The most valuable information became the information about the person themself, who was voting. Voter verification became increasingly important to give the vote more credibility. More apps and services emerged to verify and authenticate voters. The growth in voter verification led to increased voter personal data being stored on the blockchain. While this was uncomfortable for some initially, people eventually

grew to trust that their information was secure on the blockchain because they could control to whom it was released. Because their information was verifiable and private, their votes and identifying information became valuable.

The value of a person's personal information and the versatility of the blockchain, particularly the use of smart contracts, allowed voters to easily release personal information in exchange for payments. Political campaigns that had traditionally paid for voter profiles to guess how likely a voter would support them could now access actual voting preferences of verified voters. The rise of reputation exchanges not only allowed for real time tracking of an elected official's approval ratings but also gave campaigns the option to access voters' private information with proper permission. While some voters would choose to make certain private data available for free to the political campaigns, others, could charge small fees for releasing their private information. Since election spending had grown so much, this was a win for the common voter in terms of controlling their information, a direct monetary benefit for sharing their information, and a way to have their voice heard. It also was a benefit for political campaigns who could receive increasingly reliable information about verified voters on which they could adjust their policy platforms.

Voters realized that their approval/disapproval could even be more powerful if it was linked to certain actions taken by the elected official such as by voting a certain way on a piece of legislation. Or reaching a certain goal such as lowering the deficit. Wikis could bring people together to enact advocacy issues, and the blockchain could be expanded to track and tie actions and issues to the elected official. Using a unified system to track officials, the blockchain data could be shared and used to provide data for multiple platforms. Voters learned if they could sway other voters to join them by linking their votes to certain actions, they could even have more influence with the elected official because their terms now carried multiple approvals/disapprovals. This led to the rise of blockchain coalitions, large groups of voters, demanding specific actions be taken or goals be met in exchange for their approval and votes.

21st century citizens no longer had to interact with 19th century designed institutions using an information technology of the 15th century. The ease of blockchain voting, organized through wikis, made available to everyone, and broadcast through social media led to growth in civic participation in government resulting in more accountable elected officials, who were better informed of the desires of their constituents. Mancini's vision of political and economic system for the internet generation was finally complete.