Meet the Man With a Radical Plan for Blockchain Voting

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In a café on the Upper East Side of Manhattan, a one-time videogame developer turned political theorist named Santiago Siri is trying to explain to me how his nonprofit startup, Democracy.Earth, aims to fix the world's broken politics with the help of the blockchain.

The conversation has already covered a dizzying amount of ground. We've discussed the emergence of the Westphalian order of nation-states in the 17th century, Russia's interference in the 2016 US election, the total collapse of Venezuelan society, and Siri's own experience of political corruption in his native Argentina. But he finally boils it all down to one short sentence.

"We want to tokenize the *like*," Siri says. At the center of the project is the creation of what he calls "political cryptocurrency"—blockchain-generated tokens that users of Democracy.Earth's software can spend as votes.

Siri grew up in Argentina, where he saw the effects of corruption on democracy first hand.

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The way Siri sees it, we have traded in the original liberating potential of the internet for sterile corporate serfdom. Our time spent online retweeting and upvoting and clicking on emojis serves mainly to help unaccountable corporations like Facebook, Google, and Twitter to better target us with advertising. Siri dreams of a new kind of social media platform on which we spend "vote tokens" that can do anything, from electing politicians and passing referendums to enacting the bylaws of a social club or establishing the business plan of a corporation. It's democracy by click.

The vision is a radical departure from the one-person, one-vote, once-every-year-or-two trip to the ballot box we are familiar with—and by which, in Siri's view, we are so ill-served. Users of Democracy.Earth's one-size-fits-all governance platform—code-named Sovereign—would have infinite flexibility to vote on any kind of topic or person, whenever they log on. In the Democracy.Earth future, every day will be election day, and the ballot will include anything that enough of us think should be there.

In this perfect world, Siri argues, the supposedly unhackable and absolutely transparent blockchain will ensure that no centralized election authority is required to tabulate a vote, and no corrupt politician or gridlocked legislature can interfere with the popular mandate.

But coming up with a superior form of voting technology is just the beginning; the larger, far more revolutionary goal is to devise a decentralized decisionmaking process that eliminates the necessity for any kind of central government at all.

“We are not in the business of selling e-voting machines or helping modernize governments with internet voting,” Siri says. “We want to empower people down to the individual level without asking for the permission of governments.”

If the dream of bitcoin, the token generated by Satoshi Nakamoto’s blockchain, was to free *money* from central bank control, then the dream of Sovereign is to free *politics* from central government control.

Siri’s complicated, multilayered solution to democratic dysfunction raises a host of questions and paradoxes. There is no shortage of secure-voting-systems experts who believe that radical blockchain democracy could cause more problems than it solves, and is in fact an invitation to gaming and manipulation at odds with the idea of transparent, fraud-free voting.

Still others question how Democracy.Earth plans to solve the gnarliest quandaries faced by any voting system: How does one simultaneously ensure transparency in the voting process while guaranteeing the anonymity of the voter? How can one enfranchise direct voting without running the risk of a feckless tyranny of the majority motivated by short-term passions making terrible decisions?

But nothing raises more eyebrows than the jewel in Democracy.Earth’s crown: the vote token. Because—like bitcoin, like Ether, and like so many of the cryptocurrency tokens sold by blockchain startups in initial coin offerings, known as ICOs, to fund their own operations—the Democracy.Earth vote token has a financial value.

According to Siri, early in 2018 Democracy.Earth raised $1.5 million in a vote-token “presale.” It has plans to mint “a maximum” of 500 million tokens, provisionally priced at 12 cents each, for a company valuation of $60 million. Democracy.Earth employees will be compensated for their labor with tokens. The bottom line: There will be a financial market for the mechanism that Democracy.Earth users employ to vote.

And that’s a headscratcher.

“Ask yourself,” says Joseph Kiniry, CEO of Free & Fair, a company that provides secure election services, “if combining the idea of an ICO and democratic elections sounds fishy or not.”

The Trojan horse that rolled through Buenos Aires in 2013 was designed, like its ancient Greek forebear, to catch the unsuspecting eye. Towed down the streets by a car, 20 feet high and exquisitely carpentered, it caused an immediate sensation. Kids ran alongside. An

excited crowd gathered when it came to a halt in front of the Palace of the Argentina National Congress, the political heart of the South American country.

Argentina's Partido de la Red—Party of the Internet—used a flamboyant Trojan horse to symbolize its entrance into the nation's politics.

Courtesy of Santiago Siri

The publicity stunt aimed to spread awareness of an upstart new force in Argentinan politics, the Partido de la Red. “Until then, we were just the guys from Twitter, the nerds, playing politics,” says Siri, a cofounder of the party. “But then everyone was like, ‘What the hell is that?’ People started taking selfies. It became a symbol of the campaign.”

Partido de la Red means “Party of the Net”—as in, the internet. It was founded to represent the interests of an emerging generation of millennial, always-online activists thoroughly dissatisfied with decades of Argentina’s endemic political corruption and spectacular financial crises. Its affiliation with the internet was meant to signal faith in a new kind of collaborative democracy. One of its primary goals was to elect politicians who would commit to uphold decisions made by party members in open, online debates. No more closed-door maneuvering. No more voting according to who delivered the most cash.

“We had one rule,” Siri says. “Obey the internet.”

The Trojan Horse’s symbolism ran deep. Like the original equine that carried hidden Greek warriors into the city of Troy, it represented the idea that the Partido de la Red would sneak its way into the established order and wage war from the inside. But it was also a play on the computer world’s co-optation of the name. This party was a computer virus designed to breach the security of Argentinian politics.

At first, things seemed to be going well. In its first attempt to contest an election, the party captured 1.2 percent of the national vote, considerably better, Siri says, than the 0.2 to 0.3 percent a new party usually gets. “We had a lot of followers online,” Siri says. “It became a movement. We got into the game.”

“And then,” Siri says, “things started to get really strange.”

Provocateurs began showing up at party meetings. Siri’s car tires were slashed. A shadowy character told him that a “donation” of a million pesos to a federal judge would magically solve his party’s registration problems. He discovered that “changing the system from within was not going to happen,” Siri says. “The system was going to change you first.”

So instead of trying to infiltrate the old system, Siri decided to build an entirely new one. He started putting together his blockchain governance platform. In January 2015, he made his way to Mountain View, California, where he had 10 minutes to impress Sam Altman,

president of legendary startup incubator Y Combinator.

It wasn't going well. Siri remembers being "super nervous." When Altman asked him a question about how many users the fledgling enterprise might eventually have, "I invented a number out of thin air." The 10-minute window was closing fast.

Then he showed Altman Instagram pictures of the Trojan horse.

"They were like, 'What!? What did you do!?,'" Siri says with a smile. "They loved us."

Democracy.Earth's white paper, "The Social Smart Contract," is a tract that is equal parts crypto-libertarian manifesto and a technology road map for Sovereign. When stripped of its rhetoric ("The internet is incompatible with the nation-state," "Representative democracies are an accident of the information technologies of the 18th century"), it breaks down into half a dozen major pieces.

In addition to the blockchain and vote tokens, there is also a flexible ruleset for voting called "liquid democracy," a complicated system for identity validation involving video selfies and "attention mining," and even a version of a universal basic income scheme that will regularly "drip" new vote tokens into the accounts of Sovereign users.

Fully explicating the potential and pitfalls of any single element of Democracy.Earth's technology requires a lengthy journey into mostly unmapped territory. Consider, just for starters, the concept of "liquid democracy"—an approach to voting that is radically different from Western democratic electoral systems. In Sovereign's scheme, users are allocated a stockpile of votes they can use (or spend) in a variety of ways.

Siri approaches politics with the mindset of an engineer, meticulously tracking his ideas in notebooks.

Sasha Arutyunova

They can vote more than once on a particular topic, to express a heavier "weight" of intent. They can delegate their votes on a topic to trusted experts who are expected to understand the issue at hand in greater depth. They can even change their votes or retract their votes after the fact, if they change their minds on a subject or if they believe an elected representative has failed to deliver on their promises.

Log on to the beta version of vote.democracy.earth for the first time, and you start off with 1,000 votes to do with as you please. A scroll of questions, action items, and ongoing debates occupies the center of the screen. *Should there be a second Brexit vote? Should Venezuelan opposition leaders maintain dialogue with the repressive Maduro government? Do you think a universal basic income should be granted unconditionally*?

Liquid democracy is an always-on mashup between direct democracy and representative democracy. Voters are simultaneously constituents of multiple overlapping organizations: local, international, aspirational. In Siri's imagination, dipping into liquid democracy's never-ending flow will fit as naturally into the lives of the smartphone generation as checking Twitter or Instagram.

Moritz Ritter, managing director of Berlin-based advocacy group Liquid Democracy, which is unaffiliated with Democracy.Earth but has been pushing similar ideas about how elections can be reimagined for years, says the purpose is "to take the current system of representative democracy and make it more responsive and distribute power more equally. In our view, this is necessary, because we see a growing disconnect between political actors and citizens manifested by shrinking numbers of members in political parties, dramatically shrinking voter turnout in elections, and growing mistrust of political systems."

"Democracy.Earth," Ritter says, "is a really thorough approach for rethinking online voting and allocating political power without centralized institutions."

As described by Ritter, it's easy to see the appeal of liquid democracy for a constituency dissatisfied with politics as currently practiced. But it may be a mistake to try to map what Democracy.Earth is doing directly to our current status quo. Whenever I asked Siri how exactly his technology would affect something like the emergence of Donald Trump in US politics or the authoritarianism of President Maduro in Venezuela or, in perhaps the most formidably dismaying scenario, the total power of the Chinese Communist Party, Siri would change the grounds of discussion away from the political exigencies of the moment and toward the contemplation of more ethereal, long-range goals.

The internet and the blockchain, he believes, have smashed the old nation-state era to dust. In this new, profoundly globalized, borderless, and increasingly decentralized universe, we are no longer defined by our geographical location in a particular territory. Instead, we are citizens of the world, and in the future we will require the evolution of new, decentralized organizations aligned with the constraints of our new reality. Democracy.Earth, I gradually came to understand, is an ongoing research laboratory and thought experiment in how to design decisionmaking mechanisms appropriate to this new world.

"Our aim is to provide a token that can be trusted for governance because of the legitimacy we can bring in regarding identity validation and liquid democracy rules," Siri says. "I think we are discovering the building blocks for creating purely digital institutions—institutions that never need to go through a bureaucracy or a bank or a state in order to exist."

The proposition that new solutions are necessary for our strange new world is hard to argue against. The problem lies in proving that something as complex as Democracy.Earth fixes more than it breaks. Consider the most fundamental piece of Sovereign's infrastructure, the blockchain.

The case for the application of the blockchain to voting systems is that blockchains are supposed to be perfectly transparent scorekeepers that can't be hacked by Russian bots or bought off by Super PAC fund-raising or corrupt Argentine politicos. The immutability of a "distributed ledger" shared on multiple computers is an article of faith in the crypto community. Using Sovereign, Siri says, voters will be able to track their votes on the blockchain; they will know without any doubt that their vote was cast and counted as intended.

Herb Stephens, a veteran Silicon Valley entrepreneur who serves as Democracy.Earth's treasurer, says the goal is a system in which "everyone has a copy and everyone can monitor the things that matter to the public in general."

Or, as the white paper puts it, "with a blockchain-based democracy votes become censorship-resistant and every single voter can audit an election without requiring any kind of access rights to infrastructure."

Experts in secure voting systems disagree.

"It is a terrible mismatch for the voting and election space," says Josh Benaloh, a senior cryptographer at Microsoft Research who has spent 30 years researching secure voting systems. "It seems attractive, until you scratch under the surface. There are so many ways in which blockchains don't solve the real problems, they just make everything worse."

Dan Wallach, a professor specializing in computer security at Rice University, believes that the crypto-infatuated generation is far too optimistic about what their new toys can achieve.

"Blockchain people haven't really been paying attention to the threat models inherent in voting, particularly bribery and coercion," Wallach says. "They tend to make naive assumptions about voters' ability to control the cryptographic keys and software used to express their votes. None of these systems are suitable for use in real-world municipal elections."

Wallach and Benaloh both reiterated the classic "garbage in, garbage out" problem that has long afflicted computer programming. Certainly, once things are recorded on the blockchain it is very hard to change them. (As Harper Reed, Barack Obama's 2012 campaign chief technology officer, told me, "the blockchain is great for knowing whether people are messing with your stuff.")

But Benaloh is worried about vulnerabilities that occur *before* data is encoded in the blockchain. There could be malware on your smartphone that alters your vote as soon as you try to spend your token. Even worse, there could be an agent of a repressive state with a gun to your head dictating exactly how you vote.

Or, your vote could just get bought—something that some researchers think will be even easier on the blockchain than at the old-school ballot box.

Although Democracy.Earth intends for Sovereign to ultimately be "blockchain-agnostic"—that is, it should be compatible with a multitude of different public and private blockchains—right now it is being designed to take advantage of the "smart contract" capabilities built into the Ethereum blockchain.

These contracts automatically execute transactions on the blockchain when certain conditions written into the blockchain's code are met. Sovereign's vote tokens, therefore, can automatically trigger smart contracts. For example, an organization debating whether to spend funds on a particular project holds a vote; if a majority spends their tokens voting yes, the funds are instantly released.

But in a system where the decisionmaking entity—the vote token—is itself something bearing a financial value, the potential for smart-contract mayhem is enormous, says Ari Juels, a Cornell Tech computer scientist who studies blockchains and smart contracts. In early July, Juels coauthored a blog post pointing out that smart contracts could be equally as effective at "buying elections" as they would be properly executing the results of an election.

"The Democracy.Earth scheme offers a clear and simple illustration of the type of attack we're concerned about," Juels writes in an email. "Very simply, someone can anonymously launch a smart contract that buys people's votes by purchasing their Democracy.Earth voting tokens.

The broader point is that the very transparency of blockchains can be a liability in elections, as it exposes the choices of voters. Smart contracts can automate vote buying, guarantee payment, and otherwise undermine election integrity. The white paper suggests that the connection between identities and cast votes might be broken using new techniques. But breaking this connection when a voter *wants* it in place in order to sell her vote is hard."

"I hold the same opinion as the rest of the international experts in crypto and elections," says Kiniri of Free & Fair.[1] "There are nearly only 'cons' to using blockchain technology in the voting process."

The son of a corporate lawyer and slipper company entrepreneur, Siri grew up in Buenos Aires, idolizing both Steve Jobs and Che Guevara. Before getting involved in Argentinian politics, he carved out a successful niche as a videogame designer, launching two game companies as well as cofounding a game developer association. He dreamed, he tells me, of building a game like *SimCity*, "only with actual citizens." He jumped on the blockchain bandwagon early, although he notes, just a tad ruefully, "I wish I bought more."

"But I bought enough," he concludes.

Santiago Siri photographed in New York City in August 2018.

Sasha Arutyunova

As far as his own politics are concerned, Siri says that he's been "introduced in different places around the world as either a revolutionary leftist or a Davos-man entrepreneur engaging in politics. Both are flattering to me."

There's no question he's hard to put in a box. Every conversation I had with Siri was a roller-coaster: Game theory, the quantum nature of reality, the failure of the Bolshevik revolution, the internet's responsibility for the polarization of our current information ecology—in real time, you can feel Siri restlessly trying to figure out how all the pieces fit together. He's a big thinker, tackling problems that are as big as they get.

But the more we delved into the nitty-gritty of Democracy.Earth's technology, the more difficult it became to evaluate its objective merits. When I pointed Siri toward Juel's blog post about smart-contract vote-buying and shared Benaloh's critique of the blockchain as applied to real-world elections, his answers took me further into the labyrinth.

"Of course there are all kinds of concerns as we expand our understanding of how to architect systems built only with information," he wrote via email. "We are aware of the diverse set of attacks that can happen. But voting isn't a uni-dimensional problem. It's just the name we give to transactions happening within the wider realm of governance. Elections, as we understand them under the traditional sense on how they've been held by the nation-state, are probably not the fittest form of governance to be delivered in digital form … That's why intrinsically understanding how blockchains can scale social consensus is definitely the way to go."

What Siri seemed to be saying is that Sovereign isn't really intended as a replacement for how the United States elects a president or California passes an initiative. Instead, it's really an exercise in figuring out how to use the blockchain to make group decisions in the crypto-digital domain. Sovereign, in other words, represents government of the crypto-people, by the crypto-people, and for the crypto-people.

Ultimately, maybe, the crypto-people will soon just be *the people*. But we're not there yet. Underlying everything in the Democracy.Earth platform, and more generally in the whole crypto-libertarian project to remake society into a decentralized utopia free of coercion and exploitation, is a near-evangelical faith in the premise that computer code can solve the messy realities of human life.

"The interesting thing about crypto," Siri says, "is that you can start creating institutional models that no longer rely on the fallibility of human authority but are strictly based on code, mathematics, and encryption; you can start building an institutional reality where the checks and balances are protected by hard promises, by fundamental mathematical

constructs that are simply impossible to break due to the intrinsic properties of how information works."

This is a difficult argument to challenge by picking away at potential smart contract vulnerabilities, or any other objective critique of the blockchain as it exists now, because the answer to every problem is a new technological solution that just hasn't been discovered yet. And it's an impossible argument to challenge by pointing out such things as the possibility that a centralized database with really strong security provisions is probably a more efficient way to run an election than by using the blockchain, when the whole point of the project is to avoid having a central authority in the first place.

A primitive version of Sovereign was tested during the 2016 Colombian referendum held to approve a peace treaty between the government and the FARC rebels. One thousand expatriate Colombians who were unable to register to vote in the actual election took part. In a preliminary stab at implementing the flexibility of liquid democracy, the trial group was given the opportunity to cast a symbolic vote on seven different propositions relating to the peace accord, rather than just a binary yes/no on whether to pass the accord.

Siri says the approach helped explain the surprise real-world defeat of the accord, because the Sovereign-using voters approved six of the peace-related proposals, while overwhelmingly rejecting a proposal to allow FARC to participate in government.

As an experiment in how voting could be conducted with more nuance than conventional models, the FARC referendum is interesting. But it still falls short as proof of how a full-fledged Sovereign exercise of vote-token fueled liquid democracy might work, because too many pieces of the puzzle still remain in development. Most critically, there has been, to date, no real-world test of the use of Sovereign's blockchain generated vote tokens. And that is precisely where the whole Democracy.Earth experiment is most provocative.

The main reason voting-technology researchers cast a leery eye on the merger of cryptocurrency and voting stems directly from the example of bitcoin, which evolved from means of exchange to speculative commodity. Instead of being used to actually buy things, bitcoin has turned into the digital equivalent of gold—a way to get rich by simply buying and selling when the price is right.

So what's to stop "owners" of vote tokens from buying and selling them as commodities instead of using them to vote?

Siri and Stephens both acknowledge that the potential for vote-token speculation is a real concern. At the very moment I was posing them the question in early July, the entire Democracy.Earth team held a one-week retreat to figure out how to guard against exactly such a scenario. After the retreat was over, Siri sent me a preliminary draft of their new "token economics" white paper. Along with another dollop of rhetoric—"we consider token-

based liquid democracies to be the most flexible form of democratic governance that can be constructed with digital technology"—the paper made a pledge that Sovereign's vote tokens would be built with incentives designed to keep token prices stable.

Like many elements of the Democracy.Earth technology roadmap (and this is a common aspect of ICO white papers) the goal sounded more aspirational than grounded in executable code. But two different academic cryptocurrency researchers with whom I discussed the plan said they were hard put to figure out why a vote token had to have monetary value in the first place. One suggested that the primary motivation was likely "business reasons"—that is, funding ongoing operations or, more simply, *profit*.

Even worse, to participate in this form of voting, you have to be able to afford the vote token in the first place. Someone has to cover the cost of computation on a public blockchain. In the world of old school politics, "paying to play" is generally frowned upon. Perhaps in theory Democracy.Earth's outline of a universal basic income scheme could address that issue, but that's also another example of adding complexity to an already Rube Goldbergian contraption.

Siri's rejoinder is that there has to be some real skin in the game to make online voting meaningful. "The purpose of using a blockchain is for decisions that aim to be immutable, and hence able to trigger cryptocurrency transactions or execute smart contracts," Siri says. "Our aim is to evolve the experience using social media into something that is effectively able to push institutional change with transactions that are backed by economic drivers brought in by the users themselves." In other words, paying to play is a good thing.

Harper Reed, Obama's former CTO, professed himself a bit befuddled by how blockchain dreams intersect with the kind of door-knocking and phone-banking that modern American election campaigns are built on. "Winning an election is all about committing to a space, committing to a locale, and actually organizing," Reed says. "I have a hard time understanding how, as a borderless crypto person, you can effect change. By definition, you are standing outside of a space instead of committing to it."

Siri agrees that politics work best on the ground. "That's how politics works everywhere," he says. But he thinks he is as committed to grassroots organizing as any clipboard-wielding pavement pounder. It's just that his precincts are all online.

"We are on a mission to create a 'new space' and breed a sense of global citizenship within it," Siri says. "In essence, we want to help you migrate from your political system without needing to change countries. Think of the people in Venezuela: They're under a tyrannical regime that has a hyper-inflationary currency, and the majority is unable to leave their families and loved ones. Our aim is precisely to work with those communities to provide them a set of tools able to empower them in a way that gives them an exit."

What he means by “exit,” however, is not a chance to physically leave the country but a chance to “leave” oppressive financial and political systems of authority. He sketches out a scenario: Imagine there’s an organization that aims to represent Venezuelan dissidents. Some have left the county, some are still inside the country, but all of them have identities validated on Democracy.Earth’s blockchain. The members take a vote (with their anonymity protected) on whether to digitally “airdrop” some cryptocurrency assets on a group of dissidents within the country. A “yes” vote executes a smart contract that releases the funds. Now the dissidents are no longer trapped by the hyperinflating insanity of the bolivar or state controls on currency exchanges. In theory they will enjoy financial security backed up by the blockchain. (Provided, of course, that there are ways to actually spend that cryptocurrency on food or shelter or whatever, which does not seem to be an insignificant quibble.)

It is precisely in a place like Venezuela, Siri argues—where the politics are irremediably broken and civil society is in such shambles—that people will be most likely to experiment with new ways to exercise their sovereignty. But the goal isn’t necessarily to replace President Maduro with someone else. It’s far more radical than that—the goal is to make the president, *any president*, irrelevant to the needs and desires of a self-organizing population taking advantage of blockchain-generated tools to transcend primitive electoral democracy.

“If we can effectively build a new model that makes the existing one obsolete, maybe we are worthy of not needing governments anymore,” Siri says. “I know it’s ambitious. But either we build tools that help us adapt to our new weird reality or we go back to the dark ages.”

More than once, listening to Siri, I found myself inwardly gaping at what seemed like windmill-tilting to the nth degree. *Getting rid of government altogether? Come on!* But every time I emerged from my daze and took a hard look at the world around me, the prospect that a new dark age was looming on the horizon seemed less fanciful.

And the notion that our weird times might call for weird measures seemed less quixotic.

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[1]In an earlier version of this story, this quote was misattributed to Ari Juels.
