

Could decentralized networks help save democracy?

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Democratic movements can flourish online, but just as easily get censored. A group of researchers is developing solutions to the vulnerabilities and privacy problems with using big social media platforms like Facebook and Twitter.

Turkish President Recep Tayyip Erdogan disrupted communications between his opponents when he shut down Twitter during the run-up to the country's recent election. But in doing so, he provided yet more proof of how flawed social web activism can be. Whether the lessons in Turkey are heeded could have serious consequences for democracy.

Social networks such as Twitter and Facebook have enabled unprecedented levels of communication and have even received credit for at least one major democratic revolution. There's just one problem: because of their monolithic nature, these centralized networks expose users to snooping and interference of the kind Erdogan caused, says Sonja Buchegger, Associate Professor of Computer Science at KTH Royal Institute of Technology.

A single, large-scale platform provides an easier target for anyone who wants to interfere with online political activity, says Buchegger. "But, if Twitter were decentralized, and you had users cooperating and communicating directly, that wouldn't have been possible to disrupt.

"Decentralization allows for greater freedom of expression.

The good news is that there could be a computer science answer to the problem. Buchegger is leading a group of scientists at KTH who are creating building blocks that developers could use to launch decentralized, distributed networks, which would not only be difficult to interfere with, but would also protect people from government snooping.

"The internet itself is not centralized – it would be hard to shut down," Buchegger says. "It was built as a robust, decentralized tool to communicate; and we can do the same for other services that are now centralized, like social networks."

Whether the demand for such networks would go mainstream any time soon is hard to tell. Buchegger notes that it is difficult for most people to wrap their head around the notion that their [personal information](#) is exposed on web-based email and social platforms.

"The whole privacy issue online is very young, and the population is not used to thinking in this way," she says. "Offline, we know how to protect our privacy; we know who can overhear us; we see who is in the room with us and we know whether we can trust those people; but online we haven't really grasped who the audience is and how that changes over time."

Buchegger's research is focused on the privacy issues of distributed peer-to-peer (P2P) networks, that is, the underlying infrastructure for a decentralized system in which people could store their data beyond the reach of data miners or government surveillance.

"We are developing these little building blocks: this is how you do passwords in a distributed environment; this is how you do search in a privacy-preserving decentralized environment; this is how you make news feeds; this is how you control access", she says. "Then you can put the [building blocks](#) together and build a new communications system –

that's the idea."

For example, encryption tools are being tested that could provide users with "fine grain" control over their privacy. One could use encryption keys to decide specifically who can access or view a given piece of content. "You wouldn't have to worry about all the people you don't want to access it because the default is that access is denied," she says.

The research into privacy tools cuts right to one of the major weaknesses of centralized networks –they rely on centralized data centers for storage, thus exposing millions of people's personal information to prying eyes.

Buchegger says that as far as promoting democracy goes, distributed networks could outshine so-called "Facebook revolutions", encouraging more widespread activism, particularly for those whose only connection to the web is with a phone.

"This is a way of developing the idea of a commons, in which more people get together and organize and share resources," she says. "A decentralized [network](#) would also be a sort of commons because you could imagine how people with large servers could store encrypted data for others. It could enable access to resources for those who cannot store so much on their phone."

While distributed networks offer potential for greater communication and more effective organizing, Buchegger is quick to point out that technology is not a quick fix for promoting democracy. Ultimately political action depends on people assembling in the non-virtual world. "There is a danger that you think that just because you repost something on Facebook or Twitter that you are doing activism, but it's not actually doing something.

"Networks can reach more people and be used to organize physical activism, but they're not a substitute for activism."

Provided by KTH Royal Institute of Technology

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