

THEME 02

The internet is in need of a transition

TECHNOLOGICAL INNOVATION

SUSTAINABILITY TRANSITION

FIXING THE INTERNET

A growing number of experts agree that the internet needs to be “fixed” in order to protect the interests of society and individual users. Regardless of one’s exact interpretation of the phrase, “fixing the internet” will require new technology, new user practices, new business models, new regulations and possibly a new set of leading tech companies. As such, the challenge of “fixing the internet” is not all too different from the sustainability transitions that are ongoing in other domains such as energy, mobility and food and, indeed, we learn from these cases how this

Our observations

- As we have noted [before](#), the notion that the “internet is broken” is now widely shared by early digital pioneers (e.g. [Evan Williams](#), [Tim Berners-Lee](#) and [Marleen Stikker](#)). Even though consumers are obviously enthusiastic users of online services, they hold very little [trust in social media](#) and, on occasion, they switch to more “sustainable” platforms (e.g. in the case of [Digg and Reddit](#)). Politicians are also increasingly skeptical of the digital sphere and especially the [dominant role and apparent misbehavior](#) of a handful of tech companies. One Democratic presidential candidate in the U.S., Amy [Klobuchar](#), has even picked big tech as a focal theme of her campaign.
- Several initiatives seek to “[fix the internet](#)”: the European GDPR is an attempt to improve privacy, [Estonia](#) is well-known for its responsible use of digital tools for governance, in the Netherlands the [IRMA](#) app offers a privacy-friendly tool for identity management. On a more fundamental (infrastructural) level, there are many initiatives to reclaim power over the internet by building [decentralized \(blockchain-based\) solutions](#) for data storage, computing, identity management, and financial transactions. Recently, Tim Berners-Lee drew quite a bit of attention with a project to develop a decentralized web: [Solid](#).
- From a historical perspective, it is not unusual that our initial enthusiasm regarding the internet has given way to a much more critical stance. The same happened some two decades following the introduction of [electricity and the automobile](#) when people became more aware of the downsides of these revolutionary technologies. Even more so, we are still struggling to “fix” these systems and make them more sustainable (e.g. doing away with coal-fired power plants and gas-guzzling cars).
- Academics have studied such attempts to right the wrongs of past technological revolutions and labelled them “sustainability transitions” (or, from a broader perspective: socio-technical transitions). This interest started with the earliest wind turbines and makeshift electric cars and was followed by the current phase of mass deployment of these and other more sustainable technologies and the accompanying changes in consumer behavior, regulatory frameworks and business models.
- In each of these cases, an existing system needs to be replaced by a (radically different) new system. In the academic literature, the so-called [multi-level perspective](#) (MLP) is the dominant framework to make sense of the ongoing struggles. It distinguishes between three levels: the existing socio-technical regime (e.g. the energy system), an emerging (sustainable) technological niche that seeks to break the dominance of the regime and a landscape level that encompasses long-term trends in society and the economy that may or may not work in favor of the transition.
- Aside from providing more detailed accounts, the literature makes overly clear that these kinds of sustainability transitions are not simply about dramatic technological breakthroughs and sudden disruption, but rather lengthy and complex multi-stakeholder and multi-dimensional processes. That is, the existing regime (composed of businesses, their investments, consumers practices and matching institutions) is inert and resists radical change and the newly emerging niche needs time (and investments) to take shape and build up sufficient momentum (e.g. political power) to take on the fight.

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Connecting the dots

The debate over the broken internet and potential fixes tends to get stuck on either technological fixes or institutional fixes (e.g. policies or changing consumer practices). However, the literature on sustainability transitions makes it quite clear that these kinds of processes, including the transition to a more “sustainable” internet, need both technological and institutional innovation and that the one can never succeed without the other. New (sustainable) technology is unlikely to emerge or develop in a meaningful manner without public support and such support will be needed to create a(n) (early) market as well. At the same time, policy-making requires “evidence” from technology that there are indeed tools to meet regulatory demands (e.g. Germany would not ban nuclear power unless it was confident that alternatives were available). From this perspective, fixing the internet requires political will (and the desire for change among voters and consumers) as well as technological alternatives that provide a similar kind of online experience without the built-in flaws of the current World Wide Web. The basic tenet in the literature is that any emerging sustainable alternative has to fight an uphill battle against an existing regime. This regime derives its stability, or resistance to change, from hard factors such as dominant designs in technology, installed production capacity and networks of distribution, as well as soft factors such as public policies, consumer practices, societal norms and meanings. The emerging niche does not have any of these strengths at first: it is unclear which new technologies are most suited to take on existing technology, no scale in production and distribution and society struggles in terms of policy-making, developing new consumer practices and, really, making sense of the new system. When looking at the internet transition, it is indeed quite unclear what this should look like and, for instance, whether it necessarily requires a complete overhaul of the digital infrastructure

or whether some add-ons to the current web would do (e.g. better encryption or identity management tools). The kind of solutions, or imagined end-states people bring to the fore do not only vary between (groups of) people, but may also shift over time as societies develop new preferences and priorities. In order for the emerging niche to challenge the regime, the niche itself has to build up strength and momentum (through innovation and lots of experimentation and learning in an initially small market). Alternatively, a window of opportunity is created when the regime is destabilized as a result of a changing landscape. In the case of the energy transition, existing carbon-intensive regimes are destabilized as societal concerns over climate change grow. External shocks, such as a nuclear accident or an oil crisis, can even result in a sudden destabilization of the regime and [accelerate](#) the transition. In the case of the internet transition, the changing landscape consists of growing awareness of the (abuse of) power of big tech and its (supposedly) detrimental effect on democracy. Shock events, such as the Cambridge Analytica scandal or a massive data breach, can further add to these worries and increase pressure on the internet-as-we-know-it. Perhaps the biggest lesson from the literature on transitions is that niche actors, developers and proponents of alternative technologies and services, need to work together. Similar to a pack of wolves, they need to cooperate, even though they are also each other's competitors in a very small emerging market. Their collective action is most needed in terms of swaying politics to defect the regime and support the niche. The German Energiewende, for instance, only took off because individual developers banded together to lobby for regulations that would help their joint endeavor and not just serve their individual interests. That is, incumbent politics, at first, is always well aligned with the interests of the incumbent regime (and hence incumbent businesses), but a much more critical stance in politics is needed for a transition to succeed.

Implications

- The comparison between most sustainability transitions and the quest for a better internet goes a long way, but there are differences as well. Perhaps the biggest difference is the fact that digital technology can scale much faster and at lower cost than the likes of wind turbines, solar panels or electric buses. This implies that alternative systems (e.g. the Solid project) could overtake incumbent platforms much faster. At the same time, those alternatives, at first, lack the kind of scale and network benefits that big tech currently enjoys.
- It is still not quite clear what a “fixed internet” could look like. While experimentation (technologically and socially) is still necessary, some shared idea of the desired end-state of the digital sphere is also needed to build up momentum and take on the digital regime. On a national or regional level, different ideas about a better internet are likely to emerge. For instance, the European internet may develop quite differently from the American one and even in the U.S., some states or cities may opt for their own alternatives. These developments will further add to the formation of a “splinternet” (or the “Balkanization” of the digital sphere).
- A sociotechnical transition does not necessarily entail a full substitution of the old regime (e.g. including all key technology and companies). Alternative pathways can entail a gradual absorption of alternative technologies and norms by incumbent actors (e.g. big tech firms developing their own semi-decentral blockchain technology or improved privacy features on dominant social media platforms).