

Part 3: Where are we going?

Since histories of the Internet can be told in many different ways, the account given here is by no means final or conclusive. Nevertheless, a few lessons can be drawn from the analysis to serve as useful guidelines for the scenarios to be developed in the remainder of the project.

First, both the historical overview in Part 1 and the analysis of current issues in Part 2 have confirmed the central premise of the project: social factors have played a crucial role in the development of the Internet. From the early days of networked computing, the complex interactions of small and diverse groups of researchers, policy-makers, business people, and—at least equally important—the many individual users have shaped the development and uses of the Internet. The diverse and not always research-related motivations of computer scientists at ARPA, UCL, CERN and other institutions turned out to be as relevant as the many smaller communities of hackers and hobbyists that formed around BBSes and university networks. It therefore seems appropriate to characterise the Internet not as a technical network or infrastructure, but as a cultural creation, which is “as much a collection of communities as a collection of technologies”.³⁵⁶ Not surprisingly, accounts that focus on technological design and standard setting tend to miss important aspects and run the risk of underestimating the complex mix of socio-technical interactions that generated the Internet as we know it.

Second, even though a historical account of the evolution of the Internet appears necessarily ordered, it is important to acknowledge the overall messiness and contingency of the process. What the Internet was at any given point in time has changed radically over the decades. Originally conceptualised as a solution to the rather narrowly defined problem of time-sharing in view of scarce computing resources, it soon became a medium for file exchange between trusted parties, developing into the pervasive multimedia platform of the World Wide Web. As many observers have pointed out, this development was not so much driven by the “vision”, “foresight”, and “planning” of a small number of chosen experts, but by accidents, coincidents, boredom, procrastination, tinkering, and trial-and-error of a large and uncoordinated group of people. However, this does not mean that there is no role for government in the development of a future Internet. On the contrary, as the success of ARPA has shown, government funding was instrumental in developing key technologies from packet switching to TCP/IP. The important lesson here is not to refrain from government involvement *per se*, but restrict it to certain stages. For example, ARPA had resisted the temptation to pick a “winner” early on—a mistake

³⁵⁶ Leiner et al., *supra* note 11.

that some European authorities made when trying to push the equivalent ISO standards. At the same time, there may be a need for coordination in the process as the example of the European GSM network indicates.

Third, the analysis has shown that social and organisational openness was crucial in the evolution of the Internet. Grounded in architectural principles like interoperability, redundancy, and the end-to-end principle, this openness allowed a large number of people to experiment and tinker with the new technologies for whatever purpose (or non-purpose) they pursued. As a consequence, business-minded entrepreneurs could come up with the first commercially viable Internet services, tech-savvy nerds and hackers developed killer applications like e-mail or bulletin board systems, and network operators built their own backbones to allow commercial uses outside the restrictions of a government-funded infrastructure. Following a Hippocratic approach of “first, do no harm”, public policy fared well in taking a back seat in all of these developments and allowing individual initiative to flourish.

Finally, a number of cross-cutting themes emerged from the analysis in Part 2. New forms of collaboration and user involvement have played a prominent role in a variety of contexts. For example, dedicated users have developed widely used software like GNU/Linux and Apache in their spare time without an official mandate or job description. Millions of people around the globe engage in social networking, micro-blogging, and other forms of computer-mediated communication on a daily basis, sharing photos, music, stories, health information, political opinions, and what they had for lunch – having a substantial impact on existing media business models. New forms of governance have emerged in online communities like Wikipedia or Second Life, resulting in sophisticated forms of ordering in the absence or the shadow of the law. Companies and increasingly governments around the world solicit feedback from their customers and citizens, and take advantage of the new forms of “user-centred innovation” Eric von Hippel first described.

A key challenge will therefore be to understand how best to harness and preserve this creativity, growth and collaboration while mitigating the risks and problems it entails. The future of the Internet is not just in the hands of decision-makers in business and government, but in the increasing proportion of the global population that bring it to life every day anew.