

Reviews

Andrew Robinson

Net entanglement



Seat of power

James Ball's new book argues that the Internet needs to be regulated because Facebook and the other "big four" Internet companies hold too much power.

The System: Who Owns the Internet, and How It Owns Us

James Ball

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The Internet – our latest innovation in the history of written communication, which itself began in the fourth millennium BC – is now half a century old. It dates from the moment in October 1969 when a computer at the University of California, Los Angeles, accessed a computer at the Stanford Research Institute in Menlo Park. It spread slowly, funded by the US Department of Defense's Advanced Research Projects Agency, as a project known as ARPANET. In 1970 it connected about 10 computers, and by 1977 there were around 100. Not until 1985 did the number reach 1000. From then, the numbers grew exponentially: from 10 000 by 1987, to 100 000 by 1990, to 10 000 000 by 1993, following the invention of the World Wide Web by Tim Berners-Lee at CERN in 1989. Today, about half of the world's population has access to the Internet, and the total number of Internet-connected devices is estimated at around 25–30 billion – that is, four devices for each person on the planet.

Thus, the Internet went from being "a closed community of US government staff and academic researchers, to a fringe community of nerds, to the bright shining hope of capitalism, to suddenly being critical infrastructure", writes author and journalist James Ball. "And all of that happened with few of us paying attention and fewer still thinking even one step ahead." His latest book, *The System: Who Owns the Internet, and How It Owns Us*, is a compelling historical analysis.

But it also serves as a clarion call to attention and action before the Internet degrades and becomes a source of division instead of its earlier source of unity – more like the profit-driven website Facebook than the non-profit Wikipedia, so to speak. "The joy and the wonder of the Internet is that everything is connected. Clearly, for anyone trying to look at how to fix its problems, the fact that everything is connected makes everything a lot harder, too."

Ball is well qualified to write on this subject. He was a self-proclaimed

teenage Internet nerd. Then, after graduating from a UK university in 2008, he became an investigative journalist, who has now spent more than a decade reporting on the Internet. In 2014 he was a member of the *Guardian US* team awarded a Pulitzer Prize for its coverage of US National Security Agency online surveillance, arising from the whistleblowing of Edward Snowden.

The System begins at the beginning in 1969 with a section, "The mechanics", on the structure and operation of the Internet, divided into three chapters. "The architects" discusses the engineers and academics who invented the system. "The cable guys" covers the less glamorous fibre-optic companies that provide the physical links. "The custodians" profiles those who supervise its operation, notably ICANN, the Internet Corporation for Assigned Names and Numbers: until 2016 a US government agency, but now an international body that makes its income by taking a portion of the fees paid by people buying online addresses.

The second section of the book, "The money", deals with the venture capitalists and chief executives responsible for starting and promoting Internet companies – some of whom have become billionaires – and the invasively inquisitive system of online advertising that earns these vast profits.

The third and final section, "The melee", picks up on earlier discussions, covering topics such as government intelligence agencies and anonymous hackers ("The cyber warriors"), and the US Federal Communications Commission ("The rulemakers"). The final chapter, "The resistance", focuses on activist groups, such as the San Francisco-based Electronic Frontier Foundation, trying to hold the Internet's power in check.

Along the way, Ball includes many significant interviews with pioneers in the field, including Steve Crocker, a software engineer present at the first log-in in 1969; Goran Marby, a Swedish regulator who took over the helm of ICANN in 2016; Brian O'Kelley, the former chief executive of huge online advertising company AppNexus; Cindy Cohn, a lawyer who directs the Electronic Frontier Foundation, and Wikipedia founder Jimmy Wales. But certain key play-

ers do not feature in interviews, notably the founders of Amazon, Facebook and Google, or, unsurprisingly, the intelligence chief in charge of the National Security Agency at the time of the Snowden revelations.

In discussing the need for future regulation of the Internet, Ball makes an illuminating historical comparison. The four best-known Internet companies – Amazon, Apple, Facebook and Google (now formally called Alphabet) – are “engines running along the railway lines set out by the Internet’s very structure”. And “just as railways could be used to create new monopolies in other industries – by charging different rates to different companies, or playing favourites” – so too can the Internet, when its structure has been harnessed by the big players.

Following Tim Wu, a Columbia Law School professor and author of *The Curse of Bigness: Antitrust in the New Gilded Age* (2018), Ball argues that hard-fought competition

Hard-fought competition laws introduced to regulate railway monopolies must now be reinvented to control the Internet for the good of the world

laws introduced to regulate railway monopolies in the early decades of the 20th century, must now be reinvented to control the Internet for the good of the world, rather than just a group of billionaires. As Wu con-

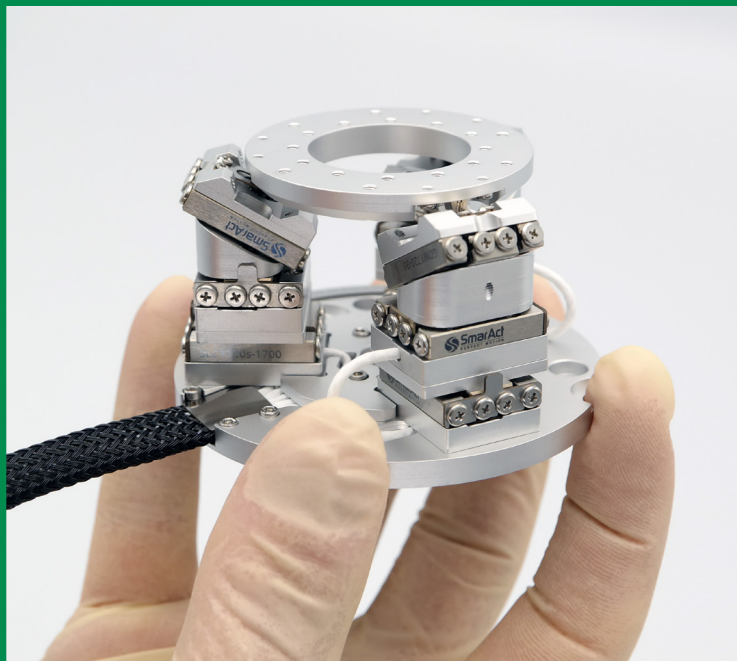
cludes: “If there is a sector more ripe for the reinvigoration of the big case tradition, I don’t know it.” Otherwise, the major Internet companies will continue to follow the example of Facebook’s 2014 purchase of WhatsApp for \$19bn, as well as an analytics app that had allowed Facebook to spot and quash potential rivals. As Ball comments, “no-one was there to stop it, or even to question it. No-one ever is” – until now that is.

Maybe, he speculates in conclusion, the spur to democratic reform and regulation will be the current rise of authoritarian China’s technology giants and the consequent ebbing of the US dominance of the Internet after half a century. If so, ironically, a world-changing innovation originally triggered by military research may once again benefit from military considerations.

Andrew Robinson is the author of many books on the history of science, most recently *Einstein on the Run: How Britain Saved the World’s Greatest Scientist*

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