THE WALL STREET JOURNAL.

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Privatizing the Superhighway

In most countries, control over the Internet was handed to the state telephone monopoly. In the U.S., with AT&T gone, the market took over.

By **MARC LEVINSON**
Nov. 23, 2015 7:37 p.m. ET

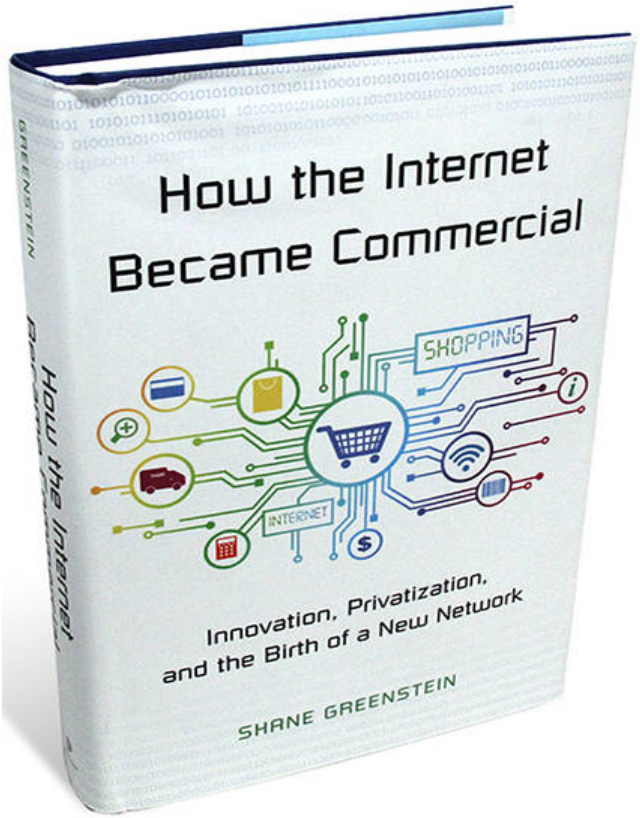
The revival of America's big cities is one of the most unexpected economic developments of the 21st century. Two decades ago, Washington, D.C., had been given up for dead, Chicago was a ghost town, and the only way to get a company to locate in Brooklyn was to pay it to go there. Now even former basket cases like Cleveland and Milwaukee are filled with millennials dining in chic cafes and inhabiting lofts with exposed brick walls.

What caused this astounding turnaround? One answer, Shane Greenstein suggests, may be the Internet. When the Internet boom started, around 1995, establishments in the biggest urban areas were far ahead of competitors in putting Internet connections to profitable use. The companies they turned to for technical help were in big cities, too, because they required large labor markets to find the talent they required. And big cities were more likely to have more than one Internet service provider—and thus more competition. The result was that the new communications network worked to the economic advantage of large metropolitan areas and against smaller ones.

The link between urban revival and the spread of the Internet is only one of the fascinating nuggets in Mr. Greenstein's "How the Internet Became Commercial." An economist at Harvard Business School, Mr. Greenstein treats the Internet as a phenomenon susceptible to careful study rather than a unique development that defies economic principles. His rich book thus goes far to explain why the Internet developed as it did—and why choices made by the U.S. government

proved critical to its rapid maturation.

The standard narrative, as you've surely heard, represents the Internet as a triumph of American innovation. The Defense Department conceived it, the National Science Foundation nurtured it, and young American techies invented ways to turn it into an economic engine by creating companies like Google and Facebook to do things that no one previously imagined doing. In Mr. Greenstein's telling, this narrative is too simplistic. The incredible commercial development of the Internet, he says, is the direct result of U.S. government decisions that encouraged competition.



HOW THE INTERNET BECAME COMMERCIAL

By Shane Greenstein
Princeton, 474 pages, $35

It almost didn't work out that way. In the early 1990s, the National Science Foundation was trying to figure out what to do with the network known as NSFNET, which was used mainly for communication among researchers. Fortunately, Mr. Greenstein points out, trustbusters had broken up AT&T a decade earlier, so control over Internet access was not handed to the incumbent telephone monopoly—unlike in many other countries. An IBM subsidiary sought to run most of the fiber backbone, from which it could collect revenue based on the amount of data that users pumped through the system, but that effort was swatted down as well. As a result, Mr. Greenstein says, when privatization went forward in 1994 and 1995, "although the process was disorderly and messy, the outcome was not captured by a single firm."

The government, he notes, had no master plan. “The shape, speed, growth, and use of the commercial Internet after 1995 were not foreseen within the government circles responsible for its birth,” Mr. Greenstein writes. But a series of policy decisions over two decades ensured that Internet access would be a competitive business, with service providers and end users free to use the hardware and software of their choice, with nobody in charge. That approach allowed what telecom geeks call “innovation from the edges,” as companies found unexpected ways to make money from the Internet.

One example is the rise of a little-known set of businesses known as caching services. These are companies that locate computer servers at key points in an Internet service provider’s network and rent out their space to content owners, providing faster delivery when a user calls up a Web page. Beforehand, no one imagined that caching services were necessary. After the fact, it’s hard to imagine how the Internet could operate at high speed without them.

Perhaps the most consequential commercial application made possible by the Internet was a decidedly unglamorous one: figuring out how to make businesses run better. Early promoters of the Internet pushed the notion that all which had come before was now obsolete—an ideology that Mr. Greenstein disparages as “Internet exceptionalism.” In fact, he shows, the big economic gains came from figuring out how to apply the new technical possibilities to the existing processes of millions of businesses. This was a job for large, well-established technology consultants with a thorough understanding of their customers’ business needs—think IBM and Accenture, not two guys in a garage.

During the dot-com boom of the late 1990s, Mr. Greenstein argues, many companies fell for the claim that new hardware or software alone could bring big productivity gains. “In fact, business process innovations were not often readily interchangeable with older products or processes,” Mr. Greenstein writes. This meant that investments in Internet-related activity often yielded negative returns until further inventions and innovations made the initial adaptations economically useful. This gave an edge to companies that already had competent technology departments, which could do the work needed to adapt new technology to the organization’s particular needs.

“How the Internet Became Commercial” won’t supplant the many books about how inventors and entrepreneurs have made their marks in the Internet age. But it is essential reading for anyone who wants to understand the broader context in which the explosion of Internet-

related innovation occurred. If I have one concern, it is that the book's length, 442 pages of text, may be more than many people interested in technology issues are willing to undertake. Might the author consider a version more suitable for reading on a smartphone?

Mr. Levinson is author of "The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger."