Google, the new master of network effects

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Bill Gates, who walked away from full-time work at Microsoft last month, was perhaps the foremost applied economist of the second half of the 20th century.

Gates and Microsoft fundamentally shaped how people think about the behavior of modern markets in which technology plays a central role. Under Gates, Microsoft also challenged the conventional wisdom about competition, business strategy and even antitrust law.

Now, in the early years of the 21st century, Google is the company prompting a rethinking of assumptions.

Microsoft was a master practitioner of "network effects," the straightforward precept in economics that the value of a product or service often goes up as more people use it. There is nothing new about the concept. It was true of railways, telephones and fax machines, for example.

Microsoft, however, applied the power of network effects more lucratively than any company had done before it.

Microsoft attracted consumers and software developers to use its technology, the software that controls the basic operations of a personal computer. The more that people used Microsoft's operating system (DOS and later Windows), the more that third-party developers built products to run on Windows, which attracted more users.

So Microsoft's success snowballed, and the company owned the essential technology, making it harder for users and developers to switch to alternatives.

But the Internet has changed the rules of networked competition, partly because Internet software standards are more open than those in the PC industry. That helps explain why Microsoft has struggled to catch up with Google in the rich new market for Internet search advertising.

Google's huge, widening lead in that business suggests that while some weapons of competition have changed, the market dynamics are similar, say economists and industry

experts. At this stage, they note, Internet search appears to be a market that is winner take most, if not all.

Google, it seems, is the emerging dominant company in the Internet era, much as Microsoft was in the PC era. The study of networked businesses, market competition and antitrust law is being reconsidered in a new context, shaped by Google. Google's explanation for its large share of the Internet search market — more than 60 percent — is simply that it is a finely honed learning machine. Its scientists constantly improve the relevance of search results for users and the efficiency of its advertising system for advertisers and publishers.

"The source of Google's competitive advantage is learning by doing," said Hal R. Varian, Google's chief economist.

In the Internet marketplace, Varian notes, users can easily switch to another search engine by typing in another Web address, so there is no tight technology control, as there is with proprietary PC software. Similarly, Varian says, advertisers and publishers can switch fairly easily to rival ad networks operated by Yahoo, Microsoft and others.

But economists and analysts point out that Google does indeed have network advantages that present formidable obstacles to rivals. The "experience effects," they say, of users and advertisers familiar with Google's services make them less likely to switch. There is, for example, a sizable cottage industry of experts who tailor Web sites to get higher rankings on search engines, which drive user traffic and thus ad revenues. These experts understandably focus their efforts on the market leader, Google — another network effect, analysts say.

Google executives often point out that personal data in its services like Web e-mail is not held in proprietary document formats, as it is in PC software. Formats aside, however, a person with a year or so of e-mail housed in Gmail is highly unlikely to switch as a practical matter, analysts say.

Taken together, these networked advantages enjoyed by Google are significant, most analysts agree. "It certainly does have an impact on whether other companies can be competitive threats to Google," said Michael Katz, an economist at New York University's Stern School of Business. "But it's a very different way to lock people in than it was for Microsoft. It would be a lot easier for people to walk away from Google."

Michael Cusumano, a professor at the Sloan School of Management at Massachusetts Institute of Technology, sees the difference in terms of what he calls "direct network effects" and "indirect network effects." The direct effects, he says, include software document formats and technology standards that are owned by one company and that are

incompatible with a rival's technology. The indirect effects, he adds, include large numbers of users, the ability to learn from those users, the power of a well-known brand and user inertia.

"For Google," Cusumano said, "the indirect network effects are very powerful."

Google's market power, it seems, is the economic equivalent of what in foreign affairs is called "soft power," a term coined by the political scientist Joseph S. Nye Jr. This is the power to co-opt rather than coerce.

The implications of Google's market power for antitrust law are just beginning to be considered. The Justice Department is reviewing Google's planned partnership with Yahoo. Under the agreement, Yahoo, the No. 2 company in search, would farm out some of its search advertising to Google, the leader. Google has said the deal is simply a voluntary outsourcing arrangement, while opponents say it will reduce competition in search advertising even further.

Google's market share alone invites scrutiny worldwide. In the United States, antitrust law defines a dominant firm with potentially monopolistic power as a company with 70 percent market share or more. In America, Google has garnered more than 60 percent of searches conducted and about 70 percent of the search ad market. In Europe, the definition of a dominant firm is one that has as little as 35 percent of a market, legal experts say.

Still, dominance alone is not an antitrust problem. The issue is the powerful company's behavior, says Andrew Gavil, a professor at the Howard University School of Law. "You have to be big and bad, not just big," he said.

The telltale signs of a company's bad behavior include raising prices, hindering innovation and excluding competitors. There is no evidence that Google is engaged in suspect behavior, but it could be hard to spot. Its ad auction system, for example, is essentially a private marketplace run by Google, without much disclosure to advertisers or to Web publishers.

Varian, Google's chief economist, acknowledges that the company has been criticized for its lack of transparency. But he says that the Google approach is a byproduct of its virtue as a fast-moving learning machine. "The system is constantly evolving to optimize efficiency, improve ad quality and make the pricing smarter, so you don't want set rules that say we do X and we don't do Y," Varian explained.

Whether that kind of "trust us" explanation will satisfy government regulators, if Google's market power continues to grow, remains to be seen. But Google seems to have learned a

lesson from Microsoft and its antitrust troubles. Varian said antitrust training is mandatory now for Google managers.

"Google looks at what happened to Microsoft, and we're going to follow the rules," he said. "If you're really successful, you need to know about antitrust. That goes with the territory."