

# Access and Network Effects in a “New Economy” Merger: AOL-Time Warner (2000)

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## Introduction

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On January 10, 2000, Steve Case, CEO of America Online (AOL), and Gerald Levin, CEO of Time Warner, announced the acquisition of Time Warner by AOL. This merger was unique in many respects; it was at that time the largest merger ever proposed and consummated, valued at the time at \$183 billion; it also was the first merger of “old” and “new” media, and by far the most significant Internet-related merger to date. The Federal Trade Commission approved the merger with conditions on December 14, 2000. The Federal Communications Commission approved the merger with conditions on January 19, 2001.

The principal economic issues at the Federal Trade Commission were (i) should the merged firm be required to offer its cable broadband Internet channels to internet service providers (ISP) other than AOL? (ii) Would AOL’s acquisition of cable properties reduce their interest in deploying their ISP over DSL, a competitive technology to cable for broadband Internet access, in territories where both AOL and DSL competed? The principal economic issue at the Federal

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\* The author was Chief Economist at the Federal Communications Commission from July 1, 2000 through June 29, 2001, during which time the FCC considered this merger and issued its order approving it with conditions. The author wishes to thank various colleagues at the FCC, seminar participants at the American Enterprise Institute April 25, 2001, George Washington University Seminar March 1, 2001, Antitrust Division of the Department of Justice, May 8, 2001, and at the Corporate Control and Industry Structure in Global Communications Conference, London Business School, May 15, 2001. I am particularly indebted to Professors Jeremy Bulow (Stanford GSB) and William Rogerson (Northwestern) for extensive conversations regarding the analysis of this merger at the FTC, where both of them were active participants in the process. The views expressed in this paper are those of the author only, and do not represent the views of the FCC or any other party.

Communications Commission was the ability of AOL to leverage its dominant position in text-base Instant Messaging (IM) into next generation IM services using the cable assets they proposed to acquire?

## Authority for Merger Review

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The merger plans were submitted to the Federal Trade Commission (FTC) for antitrust review under Hart-Scott-Rodino.<sup>1</sup> In addition, the merger was also reviewed by the Federal Communications Commission (FCC), which is required by the Communications Act of 1934 to review all transfers of electromagnetic spectrum to ensure that such transfers are “in the public interest.” This merger required that the CARS (cable television relay service) licenses<sup>2</sup> held by Time Warner be transferred to the new merged entity, AOL-Time Warner; therefore the merger was subject to FCC approval.<sup>3</sup>

The FCC’s merger review authority is not without controversy. Merger parties frequently complain to legislators about undergoing two reviews, and legislators frequently complain that one antitrust agency is quite enough. Moreover, the FCC reviews mergers using a public interest standard and is therefore not limited to the standard antitrust standard of “substantial lessening of competition.” In fact, this public interest standard is not defined in the governing statute and is

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<sup>1</sup> In the past, the FTC has reviewed mergers in the cable industry, such as Time Warner-Turner in 1996. However, the Department of Justice has handled mergers in telecommunications, such as the AT&T-TCI and AT&T-MediaOne mergers, also involving cable firms. In this case, the FTC assumed jurisdiction.

<sup>2</sup> Cable television firms transmit video signals to their individual metropolitan distribution points using microwave systems; the CARS licenses required to operate these microwave systems are granted by the FCC in its role as the nation’s spectrum manager.

<sup>3</sup> This review authority is only granted for a spectrum license transfer; then-Commissioner Furchtgott-Roth pointed out that since Time Warner held the radio licenses in question, if Time Warner had acquired AOL, then no license transfer was required and the FCC would have no jurisdiction.

open to Commission interpretation (and court challenge). The Commission has been criticized for extending its writ to impose “voluntary” conditions on merging parties that perhaps are more properly considered under the Commission’s formal rulemaking procedures. Nevertheless, the FCC’s merger review authority has not been challenged in court nor has Congress sought to remove this authority; and it was not challenged in this merger.

## Industry Background and the Merging Parties

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Each company was a major player in its industry. AOL was founded in 1985 as a popular interactive services firm providing content and services to residential customers via dial-up modems. Originally, customers who subscribed to AOL were limited to AOL content and e-mail (as was typical of online service providers at the time). As the Internet grew in popularity, AOL also provided Internet access to the World Wide Web in addition to its proprietary content. Its simple intuitive interface and aggressive marketing led to extremely rapid growth in the late 1990s. At the time of the merger, AOL had 27 million subscribers (2 million in its CompuServe subsidiary), amounting to about 40% of total US online subscribers. The second-largest online provider was Earthlink, with 4.7 million subscribers (Grice (2001)), followed closely by Microsoft’s MSN, with 4 million subscribers (Kapadia 2001)).

Time Warner is both a content firm and a cable firm, created by the merger of Time Inc. and Warner Bros. in 1989. That merger brought together Warner’s video and music content of Time with Time’s print and editorial content and cable assets. The 1996 merger of Time Warner and Turner Broadcasting added to both the content assets and the cable assets of the firm. At the time of the AOL merger, Time Warner’s cable properties served over 18% of US cable

households, ranking number two in the country after AT&T (which had purchased TCI and MediaOne).

It also owned (directly or through subsidiaries) leading cable television networks, such as HBO, Cinemax, CNN, TNT, TBS Superstation, Turner Classic Movies, the WB Network and Cartoon Network. In addition, it owned several major music labels, the extensive video libraries of Warner Bros. and NewLine Cinema, and print media such as Time, People and Sports Illustrated. Time Warner's cable assets were controlled by various subsidiaries, notably Time Warner Entertainment (TWE), in which AT&T owned a 25.5% non-voting share as a result of its merger with MediaOne.

## The Major Issues of the Merger<sup>4,5</sup>

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### Open Access

The merger attracted a great deal of interest from the press, from public interest and consumer advocate groups, and from competitors and firms that did business with either or both companies. In its comments on the previous mergers of AT&T-TCI and AT&T-MediaOne, AOL had taken a strong and very public position that cable firms should be required to provide "open access" to their broadband Internet facilities (the "IP pipe") to any ISP that so requested it. During 1999, the open access movement gained many adherents. After AOL and Time Warner announced their merger in January, 2000, AOL changed its position, advocating voluntary open

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<sup>4</sup> Additionally, both agencies had concerns that AOL's control of the Time Warner cable assets could lead it to favor its own entry, AOLTV, into the nascent Interactive TV market. This issue did not play a large role in the merger analysis of either agency.

<sup>5</sup> Documents of the agencies that detail their merger analysis, remedies and orders are FTC (2000a), FTC (2000b), FTC (2000c), FTC (2000d) and FCC (2001).

access and promising that it would provide such access on its Time Warner cable facilities when the merger was consummated. Open access was clearly the most salient issue when the merger was announced, due in part to AOL's *volte-face* on the issue after the merger announcement.

The ISP market in the U.S. experienced remarkable growth during the 1990s, from zero to about 7,000 firms today, with over half of U.S. households connected to the Internet via an ISP. Until recently, almost all ISPs were reached by their customers via the voice telephone network and provided narrowband connections to the Internet. Customers initiated an Internet session by calling their ISP over the telephone system using a modem in or attached to their computer. In addition to connecting customers to the Internet via telephone, ISPs also provided e-mail services, disk space, web hosting, and portal services as well.

Broadband Internet connections, via either cable modems or Digital Subscriber Line (DSL) over telephone lines, functioned quite differently. The connection had substantially higher bandwidth (> 200 Kbps, often 500 Kbps to 1 Mbps), and the connection from the customer to the Internet was continuous, dedicated and "always on." No dialing was necessary. Even DSL service, which relied on telephone company access lines, used a high-bandwidth channel piggybacked on the standard voice access line and provided a dedicated "always on" connection. As a business matter, cable firms that provided broadband Internet service to customers provided connections via an ISP-like firm designated by the cable operator; the two most popular were [Excite@Home](#), principally owned by TCI (later AT&T), and RoadRunner, principally owned by Time Warner. Each of these firms provided Internet connections and the IP pipe for cable firms other than their principal owners. For example, [Excite@Home](#) provided service for Comcast Cable. Customers

had no choice of their ISP. There was concern that AOL coupled with Time Warner's share of RoadRunner would dominate the broadband ISP market post-merger.

On the DSL side, telephone companies that deployed DSL were required to provide the DSL channel on the access line to any firm that wished to offer DSL service, including co-location space at telephone company central offices and non-discriminatory operations and installation support. This requirement was imposed by the FCC's interpretation and implementation of the 1996 Telecommunications Act's mandate to achieve competition in local exchange telephone service via resale of local access facilities. In effect, telephone companies offering DSL service had an open access condition imposed upon them. It was a particularly severe "common carrier-like" condition, in that all competitors had to be accommodated; the telephone company could not choose whom to accept. Not surprisingly, local telephone companies used the opportunity of this merger to lobby for the imposition of open access on this cable merger, or to be rid of it themselves.

### Cable vs. DSL

Prior to the merger announcement, AOL had been quite active in seeking arrangements with telephone companies deploying DSL to offer AOL Plus, a broadband version of AOL's flagship ISP service. This effort did not go particularly well; telephone companies were rolling out DSL service very slowly in 1998-99, in spite of incentives provided by AOL. It is likely that this slow rollout was due to technical and operational problems, not to lack of enthusiasm for AOL (Faulhaber 2001). AOL's decision to buy itself a cable firm with broadband assets may well

have been influenced by its somewhat negative experience with telephone company DSL deployment speed.

However, AOL's purchase of a cable firm with broadband assets could certainly dampen its enthusiasm for DSL, a competing technology. In fact, the power of AOL in the ISP market could have been used to direct customers in Time Warner cable franchise territories away from DSL and toward cable, thus lessening competition in the conduit market.

### Instant Messaging

IM is a text-based means of near-real-time communication between customers who have signed up for the service. Customer *A* can send an "instant message" to customer *B* and receive an immediate reply, thus carrying on a text conversation. This service has roots in the original Unix system, in which users on the same server could exchange messages in conversation mode.

Instant messaging differs from e-mail in that it is a true dialog, operating in synchronous rather than asynchronous mode.<sup>6</sup> AOL introduced the service as a feature for its customers in 1989. However, it became wildly popular when AOL added the "buddy list" feature in 1996. This feature displays a small window that lists all the customer's (self-designated) "buddies" with an indication of whether each buddy is online. This feature ensured that if the customer sent an IM to a particular buddy, the customer knew the buddy would receive it immediately and could reply. With the advent of the buddy list, Instant Messaging became one of the most popular features of AOL. In 1997, AOL took the unusual step of offering AIM (AOL Instant Messenger)

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<sup>6</sup> In synchronous mode, both communicating parties must be simultaneously present in order to respond to each other as they speak. In asynchronous mode, a communicating party leaves a message for the other party, who need not be there when the message is left. The other party responds to the message at some later date, leaving the response for the originating party who is not likely present at the time of response.

as a stand-alone free download on the Web for non-AOL subscribers.<sup>7</sup> AIM customers could IM both other AIM customers and AOL subscribers using IM, and vice-versa; this is referred to as interoperation. In the same year, AOL bought ICQ, an instant messaging provider based primarily outside the US. However, AOL chose not to interoperate its AIM/IM services with ICQ.

In 1999, several firms established competitive IM services, including Microsoft, Yahoo!, Otigo, and Tribal Voice. However, these competitors quickly learned that few customers wanted to sign up for a service that couldn't IM with AOL's huge customer base, reported at the time to be over 30 million subscribers. These competitors designed their IM client software to be compatible with AOL's IM protocols (which they earlier had published on the Web) to allow their IM client software to interoperate with AOL's AIM/IM. AOL chose to interpret these attempts to interoperate as "hacking," and took immediate steps to block such attempts. During the summer of 1999, various attempts by competitors were temporarily successful but quickly blocked by AOL. By year's end, AOL had demonstrated that it had both the will and the capability of blocking all such competitor attempts to interoperate with its AIM/IM services.

AOL was criticized in the press for refusing to interoperate with other IM services. Indeed, many contrasted AOL's call for open access in the pending AT&T-MediaOne merger with their refusal to interoperate their AIM/IM services with competitors. AOL's response was that they had safety and security concerns on behalf of their customers, and were unwilling to expose them to nuisance or even pornographic IMs from non-AOL sources. They did indicate that they would

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<sup>7</sup> All other features of AOL, such as chat rooms and proprietary content, are provided only to AOL subscribers. AIM represents the first and only (to the author's knowledge) departure from this policy.

interoperate with competitors, but only when technical protocols were agreed to that ensured the safety and security of their IM customers.

## Analysis of the Issues

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### Open Access and DSL

On the face of it, a vertical merger between an ISP and a conduit has the beneficial effect of eliminating “double marginalization,”<sup>8</sup> and so should be favored on grounds of efficiency.

Though the merging parties did not use this argument, staff at both agencies understood this as a value to the merger. However, open access and the impact of the merger on DSL were viewed by the FTC as vertical foreclosure issues. In the case of DSL, the merger would make AOL less interested in DSL deployment in Time Warner franchise territory, thus reducing DSL’s competitive position vis-à-vis Time Warner cable. This was of particular concern to the FTC staff, whose analysis stressed the importance of competition between the conduits (rather than among ISPs on the same conduit). If AOL withdrew its support for DSL, this could well lessen DSL’s ability to compete with cable. The FCC staff saw AOL’s ISP strategy of ubiquity trumping the potential profit impact of weakening DSL by not offering AOL over that conduit.

In the case of open access, a merged AOL-Time Warner could either deny access to Time Warner cable systems to any competing ISP, or it could charge a very high price for such access, a classic vertical price squeeze. In order to offer a customer broadband service, both the cable access and the ISP are complementary services. For the customer, the total price is what matters,

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<sup>8</sup> Double marginalization occurs when two vertically related firms independently set their prices; the upstream firm prices to maximize profit, the downstream firm takes that price as an input price and then determines its output price to maximize profit. The result is that the total price to the consumer is greater and the total profit of the two firms is less than if the two firms jointly maximized profit. Vertical integration solves this problem.

not the price of each component. AOL could thus maintain an appearance of non-discrimination by setting a high fee for access to its cable IP pipe and a low price for the AOL ISP service. This high fee would not permit other ISPs to compete with AOL and still earn a profit.

There are two rather different forms of open access. The first is the common carrier model (applied to the telephone companies' DSL service), in which the conduit provider must provide service to all competitors that demand it. The second is the "shopping mall" model, in which the conduit provider chooses several ISPs to carry on its system as a business decision. Both models were considered at the FTC and the FCC. At the FTC, the common carrier model was rejected as "too regulatory," but the second model became the core of the FTC's case and the eventual Consent Agreement.

The FCC staff had concerns about open access in this merger, but recognized that the FTC would take vigorous action. As a result, open access played only a minor role in the FCC's findings. However, the FCC perceived that open access was an industry-wide issue, not simply an issue with this merger. The FCC had an advantage as a regulatory agency in that it had continuing authority over this industry beyond this merger (which the FTC did not), and in response to public demands for open access, it issued a Notice of Inquiry on High-Speed Internet Access on September 28, 2000.

During and after the merger, AOL professed to be in favor of open access, and indicated it would move toward sharing its IP pipe with a few selected ISPs after the merger.<sup>9</sup> This suggests that the shopping mall model is perhaps the more accurate model, if AOL's protestations were to be believed. In the event, AOL accepted the general thrust of open access, but was suspicious of a regulatory-driven approach in which a government agency dictated the terms of open access. The ensuing negotiations between AOL and the FTC were less over the general thrust of open access than over the specifics of implementation. AOL also pledged to continue working with DSL providers to offer AOL broadband on DSL facilities, and offered little objection to the FTC's proposed remedy for DSL.

Surprisingly, there was no economic analysis of the threshold issue of whether or not open access was efficiency enhancing. Competition among upstream ISPs is not likely to produce lower prices to consumers, as the cable companies are (usually) monopolies in their markets and can extract all the rents from consumers. Further, since virtually all content is available over all ISPs, having multiple ISPs is unlikely to increase the content available to consumers. And lastly, it is possible that in a dedicated access context such as cable (as opposed to dial-up access) that it is more efficient to integrate the ISP function with the IP pipe. Clearly, a careful economic analysis of open access is needed as a guide to policy.

Of course, pricing is critical in a vertical foreclosure case; what cannot be obtained by outright denial of access can be obtained by price strategies. The FTC considered an interesting pricing mechanism that promised to solve both vertical foreclosure problems of DSL and open access:

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<sup>9</sup> Since the cable IP pipe is a shared among customers (and therefore their ISPs), establishing rules and protocols for multiple ISPs to share are not technically trivial. It appears that these problems are currently being solved, as various cable firms conduct multiple ISP trials. In contrast, DSL is not a shared technology.

the “Rogerson remedy:”<sup>10</sup> Time Warner could offer conduit services to AOL at whatever price it wished, and AOL could offer its ISP service at whatever (incremental) price<sup>11</sup> it wished.

Customers would face the sum of the two prices. However, Time Warner was constrained to offer the same price for conduit services to any ISP on its system, and AOL was constrained to offer its ISP service on other broadband systems at the same (incremental) price as it offered over Time Warner systems. This remedy ensures that AOL does not unduly raise the conduit price and lower its ISP price on Time Warner (a vertical price squeeze) because it would then be required to charge the same low ISP price on other broadband systems at a loss. Conversely, it could not raise its price to DSL subscribers (thereby negotiating a hard bargain with telephone companies) with being forced to charge the same high price on Time Warner systems and suffer competitive losses. This elegant solution to the pricing problem placed only non-discrimination constraints on AOL-Time Warner, otherwise letting them set prices where they wished and relying on the incentives inherent in the scheme for AOL to avoid anticompetitive pricing.

The elegance of this remedy rests on the presupposition that ISP access to a cable (or DSL) firm’s IP pipe is a single, simple product with a single price. More likely, the conduit firm may offer a variety of prices for access, depending on the needs of its customers: (i) quantity discounts may be appropriate; (ii) bundling of ancillary services such as web caching; and (iii) whether the ISP chooses to perform its own customer account management or have the conduit firm do it. Of course, such price differentials among Time Warner service offerings have the

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<sup>10</sup> Devised by Professor William Rogerson of Northwestern University Department of Economics, who acted as a consultant to the FTC in the AOL-Time Warner case. Professor Barry Nalebuff of the Yale School of Organization and Management suggested a similar solution to the FCC at the FCC’s *en banc* hearing of July 27, 2000. See [http://www.fcc.gov/csb/aoltw/07-27-00\\_enbanc/yale.pdf](http://www.fcc.gov/csb/aoltw/07-27-00_enbanc/yale.pdf).

<sup>11</sup> As a practical matter, the cable firm charges the ISP (say) \$25/customer-month to the ISP, the ISP charges the customer (say) \$40/month, for an incremental ISP price of \$15. In this example, the customer is “owned” by the ISP that bills the customer.

potential to be anticompetitive. Policing a complex rate structure to ensure that such differentials are cost-justified becomes a highly regulatory exercise, and the remedy loses its elegance and could become a regulatory morass.

### Instant Messaging

Several consumer groups as well as an Instant Messaging trade group (IM Unified) lobbied both of the Commissions to adopt remedies requiring AOL to interoperate its popular IM service with other IM competitors, such as Yahoo! and Microsoft. Initially, IM was not considered a merger-specific problem; AOL had built up a compelling market lead in IM prior to the merger, and the merger did not appear to increase AOL's market power in IM at all. At both the FCC and the FTC, the IM issue was, at least initially, off the table.

IM did present at least one troubling issue; this was a communication service that in principle came under the FCC's regulatory jurisdiction. It was also clearly a service subject to network effects, in which the value of the service to each customer depends upon how many (and who) other customers are available on the service, similar to the telephone system (more fully described in the Appendix). The first mover (which AOL was) could build up a large customer base (which AOL had) and refuse to interoperate with competitors (which AOL was doing), thus keeping the network effects proprietary.<sup>12</sup> Refusing to interoperate reduces the value of an IM system to each customer, as that customer can reach fewer people. However, it reduces the value of IM providers with smaller customer bases even more, giving these customers incentive to switch to the larger provider.

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<sup>12</sup> In the telephone system, proprietary network effects are avoided via regulation: all carriers are required to interconnect with each other.

In this simple model, the strategy of refusing to interoperate is optimal if the increase in customers gained from smaller IM providers more than offsets the loss of value to existing customers. If AOL were large enough to have this “critical mass” of customers, refusal to interoperate could lead to near-monopoly and an almost insuperable barrier to entry for new entrants. In this view, while it is not a merger problem, it may well be a regulatory problem, perhaps best left to the FCC. However, the FCC has a long history of forbearance of regulation from data communications services, including the Internet. Changing this policy in order to regulate IM was never seriously contemplated.

Others would argue that this is not a problem at all. Proponents of the “serial monopoly” hypothesis in dynamically competitive markets<sup>13</sup> would contend that the problem is self-correcting. Some new technologically advanced product will eventually overturn this dominance, resulting in a new round of innovation followed by temporary monopoly.

Upon deeper analysis, the FCC staff learned that IM systems were enabled by databases of names, IM addresses, and presence information maintained on the IM provider’s server(s), which was referred to as Names and Presence Directory (NPD). It was clear that the network effects of the IM service resides in the NPD, which is the list of all customers who have “signed up” for this communication service and are available for communications. In a proprietary IM system, the IM provider keeps its NPD proprietary, and only customers on that system can check the presence of and communicate with customers on that system. In an interoperating IM system, each IM provider shares the relevant information in its NPD with other providers, thus ensuring

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<sup>13</sup> See Evans and Schmalensee (2001) for a compelling statement of this case as applied to antitrust analysis.

that customers of one system can check the presence of and communicate with customers of other systems.

However, today's text-based IM is simply one application of the underlying NPD. As IM providers roll out new IM services, the same NPD can be used to extend existing proprietary network effects into the new services. This raised the alarming possibility that as "next generation" IM services were introduced, AOL could use its existing NPD to leverage its current network effects market power in text-based IM (the "earned monopoly") into "next generation" IM services without diminution. If its current market power in text-based IM was particularly strong, then this power could be carried forward without loss into brand-new markets, thus affording AOL "instant monopoly" in next generation IM services.

Whether or not this concern required FCC action to forestall this leveraging of NPD market power into next generation IM services depended on several things:

1. Did AOL have sufficient market power in text-based IM that was worth leveraging? The FCC analysis focused on whether or not AOL's customer base had surpassed the "critical mass"<sup>14</sup> that could lead to near-monopoly.
2. Could this market power be leveraged into advanced next generation IM services?

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<sup>14</sup> This is sometimes referred to as "tipping," or "the market has tipped."

3. How confident was the FCC that such advanced IM services would emerge and that they would be NPD-based?
4. Without being able to identify or specify such services, how could a true next generation IM service (as opposed to an incremental improvement) be characterized?
5. If the present text-based IM service was an “earned monopoly,” why shouldn’t that earned monopoly be extended into future generations of IM?
6. Were these advanced IM services related in any way to the merger?
7. What was an appropriate remedy?

In the event, a majority of Commissioners was sufficiently convinced of the analysis prepared to respond to these points that they approved a remedy, but the issue was controversial at both the staff level and the Commission level.<sup>15,16</sup> In brief, the major points of controversy were (1) and (6) above. The arguments for the other points can be briefly summarized first:

2. The technologists’ analysis of the NPD concluded that existing network effects could easily be leveraged forward. All that was required was backward compatibility of IM client software.

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<sup>15</sup> Then-Commissioner and now-Chairman Michael Powell was particularly eloquent and forceful in his opposition to the IM remedy in his dissenting opinion, but he was by no means alone.

<sup>16</sup> For a more technical discussion of the IM analysis, see Faulhaber (2002b).

3. Projecting monopoly problems with future as-yet-unrealized services certainly placed the analysis well outside standard antitrust work, perhaps necessarily given the fast-paced nature of change in this industry. The analysis thus focused on the NPD as the underlying asset that carried the network effects, and the ability of AOL to roll this asset forward to provide new services but maintain its existing monopoly.
  
4. The advent of broadband gave a conceptual benchmark for next generation IM services: any service that required a broadband connection for its commercial viability was considered next generation. As a practical matter, the benchmark service chosen (for the remedy) was two-way streaming video, which is only viable with a high-speed connection. The difference between text-based IM and streaming video IM appeared compelling enough so that the latter could safely be called “next generation.”
  
5. Through how many generations of products should network effects be leveraged to provide sufficient payback to an innovator? Intellectual property law suggests that there is a limit to this, after which excess returns are just that, and no longer considered quasi-rents. In this case, the FCC faces the same trade-off: If a remedy removes proprietary network effects for next generation IM services, does that discourage future innovators from investing in the next “killer app?” On the other hand, does permitting AOL to use network effects into the indefinite future create a huge barrier to entry that would discourage current and future potential IM innovators? This is clearly a judgment call, as it is in intellectual property law. In this case, the FCC decided that a one-generation

monopoly is enough.

7. The remedy was clear in this case: require AOL to interoperate with any other requesting advanced IM provider on a mutual basis prior to offering advanced IM services itself (defined as two-way streaming video).

The proposed remedy clearly creates a disincentive for AOL to offer (otherwise worthwhile) advanced IM services that would cause them to lose the strategic advantage of non-interoperability. However, the remedy actually increases the incentives of competitors to introduce video streaming, thereby placing competitive pressure on AOL to introduce the feature itself. AOL must then choose either to interoperate or to lose the “feature war.” Feature competition at the very least partially offsets the direct disincentive, and may actually hasten the arrival of both video streaming as well as interoperability.

We turn now to the more contentious IM issues: (1) has the market tipped? And (6) is advanced IM merger-specific? The economics of network effects and tipping are straightforward: If a critical mass of customers has been achieved by the largest provider (i.e., the market has tipped), then that provider’s optimal strategy is to refuse interoperability with competitors for strategic advantage. If the critical mass has not been achieved, then that provider’s optimal strategy is to interoperate with competitors. Since AOL was clearly refusing to interoperate, the conclusion seemed clear. Of course, AOL could be refusing to interoperate for other reasons, and AOL

proffered a number of reasons as to why they were not interoperating,<sup>17</sup> discussed in the next section. The FCC carefully considered each of these possible reasons and found no evidence to support them. As a result, the economic conclusion was that the current text-based IM market (and therefore the underlying NPD) had tipped, indicating that AOL had substantial power in the IM market available to be leveraged into next generation services.

On the face of it, the concern (#6) with next generation IM services made the issue merger specific, since such services required broadband capability, which was exactly what AOL was acquiring in the merger: Time Warner's cable assets. Merging the NPD network effects with the Time Warner IP pipe assets enabled the combined firm to offer and then dominate next generation IM services that they may not be able to do absent the merger. However, AOL had the potential to leverage its NPD into next generation IM services using *any* broadband facilities, including those of AT&T, Comcast, Cox or other cable firm, provided it could contract with such firms to provide ISP services. It was not obvious that actual cable ownership changed AOL's strategic options regarding next generation IM services. If that were the case, then this concern of leveraging network effects forward would not be merger specific. But there are several reasons to believe that ownership of cable assets enhanced AOL's ability to leverage its existing NPD asset:

- a. AOL apparently had been in negotiations with major cable companies for at least a year seeking to gain access to their broadband IP pipes for AOL Plus, their broadband offering. For whatever reason, none of these deals closed. Contracting, as a practical

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<sup>17</sup> AOL publicly committed to interoperate at the FCC's *en banc* hearing on the merger in August, 2000, promising to interoperate "within the year," once it resolved certain security problems. As of this writing, AOL still does not interoperate with any competitors.

matter, was not apparently a good substitute for ownership.

- b. The premise of this merger was that combining the AOL franchise with the conduit and content assets of Time Warner would enable the firm to bring new compelling features and services to customers “better, faster, cheaper.” But if this superior performance was exercised to leverage an existing network-effects-barrier-to-entry into new services for almost one-fifth of US cable households, then even the hope of new entrants with better technology, etc., overturning these network effects would fade away almost completely. If the merger delivered on its promise of “better, faster, cheaper,” then the likelihood that the serial monopolist would soon be overturned was almost nil.
  
- c. With control of cable assets covering one-fifth of US households, AOL has the potential selectively to degrade competitor IM services.<sup>18</sup> Such degradation would be difficult to prove in practice, but may well give AOL’s advanced IM service a decided advantage over competitors.

These factors suggest that ownership of the cable assets will facilitate AOL’s leveraging of the proprietary network effects in its NPD into next generation IM services requiring broadband speeds. This economic analysis supports the merger specificity of the problem.

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<sup>18</sup> Again, the FCC technical staff confirmed this possibility. Routers and servers designed for use by cable modem systems give operators “bit level” control of the content of the IP pipe, allowing them to discriminate among different services, such as IM. See Faulhaber (2002) for more detail.

## AOL Objections

Although AOL claimed it intended to interoperate “soon” and that in any event it had no interest in advanced IM services, they raised vigorous objections to the proposed IM remedy (of requiring interoperability prior to offering advanced IM services), more so than any other part of the FCC’s order. We review the objections here, with FCC responses.

- a. *“Interoperation is technically difficult; even our competitors haven’t accomplished it, and the IETF [Internet Engineering Task Force] hasn’t achieved it either.”*

The FCC’s technologists did not find this assertion credible; their professional view was that interoperability of IM systems was only slightly more difficult than interoperability of e-mail, which is *technically* quite easy. Nor did AOL produce any evidence in support of this assertion.

The failure of AOL’s competitors to interoperate was most likely due to the fact that the only provider really worth interoperating with was AOL as they had by far the largest customer base.

The IETF is not a formal standard-setting body; it adopts standards for which there is an effective consensus. In the case of IM standards, there was no effective consensus. Their failure to settle on a standard was a consequence of consensus failure, not technical difficulty.

- b. *“We are concerned that interoperation would put our customers at risk; we will interoperate when we can solve these safety and security problems.”*

This was a legitimate concern; experience has shown that e-mail systems can bring junk mail, unwanted sexually oriented mail, and viruses, similar to the telephone system.

AOL claimed to aim for a higher standard for IM, which could well be a welfare improvement for customers, perhaps worth the wait for interoperability. On the other hand, the argument could be merely a delaying tactic, pushing off interoperability until AOL had driven its competitors out of business.

AOL was unable or unwilling to support its “safety and security” argument. It would have been easy to do so, in any one of several ways:

- A clear and explicit statement of the criteria for a “safe and secure” IM system in order for them to be willing to interoperate with it.
- An “alpha” version of the software and protocols for implementing such a system; since they claimed to be working on such a system for a trial in August, 2001, such a prototype should have been available in late 2000, but was never produced.
- A briefing by AOL engineers on how they were solving their “safe and secure interoperability” problems, and what their development timetable was. No engineers were produced to discuss this issue with FCC technologists.

AOL's unwillingness to provide supporting evidence (such as outlined above) for their safety and security argument tended to undermine what was likely their best case. In the event, the FCC reluctantly rejected this argument as without evidentiary support.

- c. *"Customers can download various IM clients and keep them all on their computer desktop, using each when he/she wants. Interoperability is really unnecessary, as there is no cost to the customer of maintaining multiple IM clients. In fact, many of our customers do this."*

It is true that every IM download is free, so customers can indeed have multiple clients on their screen without paying a fee. However, very few customers keep multiple clients of any sort on their desktop, even when free. For example, most corporate customers can get any word processor or spreadsheet they wish without personal payment, but few maintain more than one for active use. Apparently, it is simply too troublesome for most customers to switch between applications. There is no reason to suspect that IM is any different. In fact, the use of multiple clients in IM is probably more difficult than with other applications, as it is a communications service. Being unable to communicate simultaneously with buddies on different systems appears to be a significant drawback. The fact is that many customers do use multiple IM clients, and some become quite adept at it. However, this is not an indication that the cost of doing it is low; rather, it is an indication that the *net benefits* are high, at least for customers that use multiple clients. It is likely that for this group, even a bad form of interoperability is better than none, and they are willing to put up with an awkward, manual form of interoperability.

- d. *“Market share data from MediaMetrix<sup>19</sup> shows that Microsoft and Yahoo! had large customer base increases from July, 2000 to September, 2000, while AOL’s customer base increase was more modest. If the market has tipped, Microsoft and Yahoo!’s customer bases would be shrinking, not growing. Therefore, the market has not tipped.”*

This was the strongest economic argument AOL made against tipping. If in fact the IM market were stable, then this objection would be compelling as a matter of theory.

However, the market is not stable; it is growing quite rapidly. New customers are constantly entering the market, and their choice of provider is likely guided by marketing efforts of the providers, as they are likely to know little about the network effects of the business until they experience the service (and are unable to connect with friends on other services).

A model of network effects in a growing market is presented in Faulhaber (2002) in which under certain circumstances a growing market can indeed be tipped and yet competitors make investments in customer acquisition and grow their customer base as a result. The circumstances in which the theory leads to this prediction appear to comport with the circumstances present in the IM market at the time MediaMetrix collected its data: July-August, 2000. At that time, both Yahoo! and Microsoft were advertising their IM services quite heavily relative to AOL, yet all firms showed customer gains. Thus,

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<sup>19</sup> There was some question about exactly what the MediaMetrix data measured. Apparently, MediaMetrix creates a sample of users whose computers are polled every 0.5 seconds to determine which (Windows) screen is active. AOL presented data on average use of various IM clients as well as fraction of the sample that had used an IM client at least once in a month. However, different IM clients use different active screen strategies, so it is not clear whether this measure correlates with actual usage.

competitor growth in customer base is not, as a matter of theory, dispositive of market tipping. Therefore, AOL's strongest economic argument against tipping, based on market data and a theory of tipping applicable in a mature market, did *not* contradict market tipping if the market is growing.

AOL did raise serious objections to the IM tipping hypothesis. Unfortunately, they did not present serious evidence to support these objections (except in the case of the MediaMetrix data). Further, such support would not have been difficult to produce if the objections were valid. Absent such support, the FCC staff was unable to give credence to AOL's objections. Only in the case of the last objection did the FCC staff undertake significant analysis, even model-building, to assess this quite serious objection.

## The Remedies

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The processes by which mergers are resolved differ substantially between the two agencies. A merger review at the FTC (as at the Department of Justice) always anticipates the possibility of a complaint and trial should the agency have objections or insist on remedies. The agency's analysis and recommendations usually lead to negotiations between the agency and the parties, both seeking to obtain what they need and both seeking to avoid a trial. Should an agreement be reached, it is codified in a Consent Agreement.

At the FCC, no trial is anticipated. The legal context in which the review takes place is the CARS spectrum license transfer; this is accomplished by a Memorandum Opinion and Order (MO&O), which is adopted by the Commission. It is, of course, subject to judicial review, but not before an appeal to the Commission itself. The FCC has apparently never turned down a

request for a license transfer as part of a merger, although it has been fairly free with imposing conditions on the merging parties.

### Open Access and DSL

The FTC required AOL-Time Warner to negotiate an access deal in major markets before it would approve the merger. AOL chose Earthlink from a list of several “approved” ISPs. Additionally, when AOL offered broadband service over Time Warner systems (again, in major markets), it was required to enter into agreements with at least two other ISPs approved by the FTC within 90 days. If it failed to do so, the FTC’s “monitor trustee” could select two ISPs and negotiate contracts for carriage. Somewhat weaker conditions were imposed for Time Warner systems in smaller markets.

Additionally, all AOL contracts with other cable systems or DSL systems would be available (*in toto*) to ISPs on Time Warner systems, and AOL-Time Warner was not permitted to discriminate in terms of services provided ISPs in favor of itself: the same service levels, the same usage and performance statistics, and the same points of connections were to be made available to all ISPs on AOL-Time Warner cable systems. AOL was also required both to price and to market its DSL offerings over telephone company facilities identically in both Time Warner cable areas and non-Time Warner cable areas. This latter condition ensured that AOL would not attempt to disadvantage DSL in territories where it competed with Time Warner cable by failing to deal or charging high prices.<sup>20</sup>

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<sup>20</sup> This provision has elements of the Rogerson remedy, discussed above.

The FCC also adopted conditions related to non-affiliated ISPs on AOL-Time Warner cable systems, "...narrowly tailored to augment that [FTC] decree by preventing AOL Time Warner from utilizing certain indirect means to disadvantage unaffiliated ISPs on its cable systems ...” (FCC 01-12, January 22, 2001). These conditions impose non-discrimination obligations on AOL-Time Warner with respect to choice of ISP, customer billing, first screen, and technical capabilities such as caching, quality of service, and other technical functions.

### Instant Messaging

The FCC imposed the condition that AOL cannot offer advanced IM services until it satisfies one of the following three “grounds for relief:”

1. AOL demonstrates it has adopted a public standard of interoperability established by IETF or official standard-setting body (interoperability by standard).
2. AOL enters into interoperability contracts with at least two IM providers, and stands ready to negotiate in good faith with other IM providers under the identical technical interoperability standards (interoperability by contract).
3. AOL demonstrates that it is no longer dominant in IM, either using market share data or other evidence.

Advanced IM services are defined to entail the transmission of one- or two-way streaming video over Time Warner facilities using AOL’s NPD. In addition, this condition sunsets in five years.

The condition suggests the struggle of attempting to deal with future problems in a fast-moving industry. The FCC had no wish to insist that AOL adopt an industry standard when such a standard does not exist now and may never exist, not least as competitors may use the standard-setting process strategically. The FCC did not establish any technical standards of interoperability, preferring to leave that to independent technical standards boards or to the market. Additionally, the FCC wished to account for changing conditions; it could well be that a competitor could come to dominate the IM market as advanced IM services became available, and AOL would not then have market power. If this could be proved, then AOL would be relieved of the interoperability requirement (although as a business matter AOL would certainly wish to interoperate under these conditions).

Perhaps most important, if there really were no next generation IM services (or none that AOL wished to offer), then there was no interoperability requirement. The FCC gave tacit assent to the “earned monopoly” hypothesis, that AOL was entitled to the rents from its text-based IM innovation.

### Monitor Trustee

As previously noted, antitrust agencies such as the FTC do not have continuing jurisdiction over the merged parties, while the FCC typically does. However, the conditions of the FTC Consent Agreement with the parties was sufficiently detailed in its compliance requirements that the FTC appointed a Monitor Trustee to act on its behalf to supervise AOL-Time Warner’s conduct in implementing the Agreement. The Monitor Trustee reports to the FTC but has considerable

investigative power, including the ability to hire consultants and access to all records he deems necessary to monitor compliance.

## Denouement

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One year after the merger, AOL Time Warner is implementing a multi-ISP environment for its Time-Warner cable systems. Technical difficulties have been overcome. Complaints from ISPs that have been unable to negotiate access have been fairly steady, but multiple ISPs sharing a cable IP pipe appears to be a reality.

The FCC's Notice of Inquiry into High Speed Internet Access has attracted comment, as expected. The matter was under active consideration at the FCC, with a Notice of Proposed Rulemaking expected before midyear 2002. While there was no advance indication of the direction the FCC intends to take on this matter, it would be quite surprising if the current market-oriented Commission would impose regulatory open access conditions (and thus raising costs) on the broadband access industry in which it had professed interest in encouraging investment.

Several months after the merger, both Microsoft and Yahoo! announced versions of their IM products that supported streaming video. However, without extensive broadband connections, this apparently has had limited uptake. AOL continues to insist it has no interest in such a product, while insisting it is working hard on interoperation. Meanwhile, interoperation is still

not a reality; one year after the merger, AOL is still aggressively blocking attempts of other firms to interoperate with AIM (Bowman 2002).

The condition has drawn some fire from consumer groups that had hoped the FCC would impose interoperability on the current version of IM. These groups view the condition as ineffectual.

Generally, industry analysts did not see the condition as imposing any cost on AOL-Time Warner. The Internet community, ever alert to possible intrusions of government regulation into cyberspace, was relatively relaxed in their response to the condition. It is clear that the short-term impact of the condition as been virtually nil. On the other hand, the condition was designed to have an impact only in the future, and then only if there were a problem. In the absence of an obvious problem, the condition's short-term failure to cause costs to AOL-Time Warner should be considered a plus.

What of AOL Time Warner itself? Subsequent events were not kind to the new media giant. At the time of the merger announcement, the combined market capitalization of the two firms was \$290 billion (Loomis 2002); one year after the merger (and two years after the announcement) the merged firm's market capitalization was \$135 billion, a loss of \$155 billion in market cap. This loss in value was due in part to the significant downturn of Internet stocks, in part due to the advertising revenue downturn of the current recession, and in part due to the failure of AOL Time Warner to live up to the impossible financial goals it giddily set for itself at the time of the merger.

## Lessons of the Case

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Without question, the two salient issues of this merger were open access (at the FTC) and advanced IM services (at the FCC). Both represented challenges to antitrust analysis that derive from the “new economy:” Should we mandate access to new economy essential facilities or do we let the market sort it out? Should we seek to negate a network effects barrier to entry to new entry or recognize such barriers as a necessary part of investments incentive in the new economy?

The FTC required open access, believing that more competition must be good and adopting what appears to be an aggressively regulatory remedy. The remedy was a popular one; it was well received by consumer groups and the press. Whether customers are now better off than they otherwise would be remains unknown. The costs of this regulatory approach are not likely to be large; however, the precedent of having a monitor trustee provide ongoing supervision of an antitrust conduct remedy is somewhat disturbing. It is reminiscent of Judge Harold Greene’s decade-long supervision of the AT&T breakup, essentially creating another layer of regulation on the telephone industry.

The FCC answer to the second question was in the affirmative to both parts. While there was economic analysis aplenty, the case raised troubling issues more generally for antitrust in the new economy.

### Serial Monopoly and the New Economy

Some scholars working in the area of antitrust in dynamically competitive industries have argued that the competitive norm in such industries is temporary “winner take all” innovators, succeeded in rapid order by a new “winner take all” innovator, and so forth (Evans and Schmalensee 2001). The period of monopoly for each innovator is in fact a reward to such innovators and the temporary monopoly rents are merely the quasi-rents to a social beneficial activity. Imposing “old economy” antitrust to break that monopoly in fact will lesson innovation as it lessens the legitimate rewards to that innovation. In this view, temporary monopolies generate the quasi-rents to innovation much as patent protection helps generate quasi-rents for a limited period of time. The unstated assumption of the serial monopoly theorists is that somehow intellectual property protection is not available in these fast-moving markets. But even these scholars admit that anticompetitive behavior can still exist: for example, exclusive distribution contracts with today’s monopolist can inhibit the rise of the next monopolist. The current serial monopolist, in this view, cannot use its temporary market power to forestall new innovators and thus turn itself into a permanent monopolist.

The FCC specifically recognized that AOL had earned whatever rents it could garner from its IM innovation, and that network-effects barriers to entry could well be part of this rent generation. It also recognized that a temporary monopoly should not be used to foreclose new innovators and thus create a permanent monopoly. Its judgment was that the merger would create just such conditions and sought to forestall such actions. Its remedy was designed to ensure that the next-in-line serial monopolist would not be foreclosed by the use of merger assets. In essence, it argued that network effects combined with merger assets that dramatically improve deployment capabilities is similar in effect to exclusive distribution contracts; it makes entry by the next

serial monopolist almost impossible. Whether the factual case supports the remedy can be argued; but the theory of the case seems well within the confines of antitrust in the new economy. It also illustrates the difficulty of conducting the analysis and the case with those confines.

It also illustrates the dilemma of substituting antitrust enforcement (or non-enforcement) for intellectual property (IP) law. It may well be true that IP affords little protection to innovators in fast-moving markets, and perhaps antitrust enforcement needs to recognize the need for temporary quasi-rents to innovators. But the problem appears to be with the inability of IP law to afford protection in important fast-moving markets. This suggests that the appropriate policy conclusion is not to alter antitrust enforcement but rather to fix intellectual property law to provide such protection.

## Appendix

### NETWORK EFFECTS

Instant messaging fits the classic definition of a service imbued with network effects, in which the value to each customer depends upon the number of other customers (and who they are) who also use the service. The first example cited in the economics literature of a network effects business was telephone, in which each customer only derives value from the system if they can use it to communicate with their friends, neighbors and businesses they use (Rohlfs, 1974). The more customers that subscribe to the telephone, the more each customer values subscribership. Other industries were found to exhibit this property, sometimes referred to as “demand-side scale economies;” for a review of the extensive literature on network effects, see Katz and Shapiro (1994). Particularly important early work is that of Katz and Shapiro (1985) and an example of more recent research is Fudenberg and Tirole (2000).

Network effects can be beneficial; when all providers of a network service interconnect, then customers of even the smallest competitor get the benefits of connecting to everyone, which enhances competition. However, if a dominant provider chooses to not interconnect, then new entrants and smaller competitors can face a significant barrier to entry. If the provider is large enough, competitors may be driven from the market and near-monopoly may result. A monopoly based on network effects may be particularly difficult to unseat, even with a superior service. Because of this, network effects can raise important antitrust concerns. In a FTC Staff Report (1996), the staff found that “In sum, demand-side economies associated with networks warrant a heightened degree of scrutiny in assessing denials of access...” Evans and Schmalensee (1996) also discuss the importance of network effects for antitrust enforcement.

However, refusal to interconnect (or interoperate in this context) need not occur. The theory suggests that in an industry with a number of firms of roughly equal size, the more profitable strategy is to interoperate.<sup>21</sup> Otherwise, a firm that refuses to interoperate may find its competitors agreeing to interoperate, thus establishing a critical mass and condemning the non-interoperator to lose share and eventually disappear as its customers move to the more attractive interoperating coalition. There is some evidence that the Internet backbone market is a network effects business in which the larger players agree to interoperate (“peering”), as described in Kende (2000); see also Cremer, Rey and Tirole (2000). But if a large provider dominates a network industry, that provider could refuse interoperability, driving its competitors’ customers toward its own larger customer base and eventually (near-) monopolizing the industry. This phenomenon is colloquially referred to as the market “tips” in favor of the largest provider. “Tipping” occurs when a single provider reaches a critical mass of customers that are so attractive to others that competitors must inevitably shrink, in the absence of interoperation.

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<sup>21</sup> In fact, interoperation in the case of roughly equal-sized firms is a dominant strategy; each firm is no worse off by offering mutual interoperation no matter what other firms do, and is strictly better off if at least one other firm offers mutual interoperation.

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