The FTC’s Review of the Synopsys/Avant! Merger

By Scott A. Sher

On July 26, 2002, by a unanimous vote, the Federal Trade Commission closed its antitrust investigation and approved the merger between Synopsys, Inc. and Avant! Corporation. Although the investigation neither resulted in a challenge to the merger nor required the parties to restructure the deal in any way, the FTC’s inquiry was searching, lasting almost eight months. And in an admonition to the post-merger company, three Commissioners—Anthony, Leary, and Thompson—separately drafted public statements, announcing to the industry that although the agency cleared the merger, it did so only hesitantly and urged “customers and competitors to keep the Commission fully appraised of post-acquisition market developments, in case a future enforcement action becomes necessary.” The Commissioners gave notice that the Commission would be watching the activities of the combined firm closely and would not hesitate to intervene if the FTC learned that the company engaged in anticompetitive conduct. Commissioner Leary cautioned that such caveats might become more common in the future.

The FTC’s antitrust investigation and subsequent clearance of the Synopsys/Avant! merger is an important event for several reasons. First, the close scrutiny paid to the merger should serve as a warning to high-tech companies that in this period of significant consolidation the government will continue to consider mergers in high-tech industries carefully. Second, the Commission’s admonition that it will be watching the merged entity closely must serve as a significant cautionary sign to practitioners and their clients that the Hart-Scott-Rodino merger review process is just one component of antitrust review. The agencies increasingly are seeking out, investigating, and challenging mergers outside of the HSR context, either because the transactions were too small to trigger the HSR notification thresholds, or because a post-hoc merger analysis demonstrates that a previously consummated merger has given a combined entity the ability to raise prices, reduce output, or slow innovation. Finally, the decision in Synopsys/Avant! suggests that the Commission may be retreating from its past more aggressive vertical merger jurisprudence.

Overview: The Consolidation of High-Tech Industries

The Bush Administration antitrust agencies have signaled through actions and words that there would not be wholesale changes in antitrust enforcement policy resulting from the shift in party control. As FTC Chairman Timothy Muris put it: “A vigorous enforcement program is necessary to fulfill the agency’s mission to protect consumers. . . . Continuity will be the norm, with changes at the margins.” With that charge, the agencies have continued to scrutinize activities in high-tech industries and have been decidedly active, challenging several mergers in high-technology industries over the course of the past eighteen months.

Driving this heightened review is the rapid consolidation of high-tech industries. According to one recent report from market research firm Gartner Dataquest, more than 25 percent of the leading software companies have disappeared in the last year as a result of increased merger and acquisition activity in the industry. Gartner Dataquest anticipates that this pace will increase over the next three years, and a full 50 percent of the software industry will take part in this “period of massive consolidation.”

As a result of this significant consolidation, software (and other high-tech) firms must prepare for the inevitable antitrust scrutiny that will follow. In fact, within the last year alone, we have seen the agencies invest significant time reviewing several transactions in high-tech industries, including the Hewlett-Packard/Compaq merger,7 the DOJ’s unsuccessful challenge to the SunGard/Comdisco merger,7 the administrative review of two previous acquisitions made by MSC.Software,7 and countless other Second Request high-tech merger investigations.

Because of the substantial consolidation in many high-tech industries, the regulators have begun to consider whether some segments of these industries—for example, certain aspects of the Electronics Design Automation (EDA) market in which Synopsys and Avant! compete—have become so concentrated that the few remaining players will have the ability (and possibly the incentives) unilaterally to affect competition adversely through foreclosure strategies.8

The EDA industry certainly has been, and will continue to be, one focus of the antitrust authorities. EDA tools are used by integrated circuit (IC) designers to create a logical description of an IC and translate that description into a physical map of a wafer. The EDA industry has a number of separate components. Some firms specialize in the “front-end” design software—logical synthesis tools—while others focus on the “back-end” layout tools—complex “place and route” programs that physically map out the structure of the IC.9 Still others focus on testing and optimization software

Scott A. Sher is an associate with the law firm of Wilson Sonsini Goodrich & Rosati, PC.
that ensures that the place and route programs have created a design that both “works” (i.e., leads to a chip that performs the function intended) and is optimized in terms of speed and accuracy.  

According to the FTC, Synopsys is the dominant “front-end” designer (with an approximately 90 percent share in the logical synthesis market) and Avant! (along with Cadence Design Systems) is a leading place and route/back-end tool provider (with a 40 percent market share). Those high market shares alone (along with the potential for vertical foreclosure) likely served to prompt the significant investigation of the proposed merger conducted by the FTC staff—even though the Commission later concluded that the merger would result in very little actual horizontal overlap in the product offerings of the two companies.

New Scrutiny under the Clayton Act

The Synopsys/Avant! merger investigation was unique in many respects. Under the HSR Act, parties to a merger are not able to close the deal prior to expiration or termination of the mandatory waiting period. In this instance, after a six-month HSR investigation, the parties substantially complied with the Second Request, the FTC did not challenge the transaction, and the Synopsys/Avant! merger closed. Nevertheless, the FTC continued its investigation under Section 7 of the Clayton Act for another seven weeks to determine whether or not to bring an administrative complaint and challenge the already consummated merger. This investigation was a stark reminder that, while the pre-merger notification rules of the HSR Act facilitate government merger review, they in no way proscribe agency investigation and/or challenge of problematic mergers at any time—even years after the companies combine.

The antitrust agencies have exercised increased vigilance in their review of previously closed transactions. Indeed, the agencies have emphasized that they will continue to scrutinize deals closely after they close and will seek to unwind them if they raise competitive concerns. In Synopsys/Avant!, several Commissioners intimated that they would not be reluctant to do so if the combined Synopsys/Avant! firm acted anticompetitively. Practically speaking, acquisition participants in consolidated industries must be aware that their actions will be closely monitored even post-consummation, and recognize that the agencies will seek relief where they conclude that a dominant player is engaging in suspect activity.

In separate statements, Commissioners Thompson, Anthony, and Leary warned that the agency would “be on the lookout for anticompetitive conduct stemming from this acquisition, which could justify a future enforcement action against Synopsys,” and that “the Commission will act swiftly and forcefully if we detect any anticompetitive effects. Only a quick enforcement response will prevent an unfortunate ‘too little, too late’ situation in the fast-moving EDA industry.” Specifically calling on EDA experts to warn the Commission if they learn that Synopsys has taken steps to close its front-end platform to Avant!’s back-end competitors, Commissioner Anthony recognized that in a complex industry like EDA, “we must rely on knowledgeable industry participants to assist us in our ongoing monitoring efforts.” Nevertheless, after an eight-month investigation, the Commission concluded that there was insufficient evidence to presuppose that the merger would likely lessen competition. In the words of Commissioner Anthony, there were too many “mights” and “maybes” to impose structural relief that ultimately could have injured consumers. Commissioners Thompson and Leary agreed.

Only time will tell whether these admonishments are harbingers of eventual enforcement action. Do such warnings work in general? Behavioral scientists suggest that such threats of future action are deterrents only when potential offenders have reason to believe that the authority figure will follow through on its threat. In this instance, the question becomes whether high-tech firms should have reason to heed the Commissioners’ warnings. Early indications suggest that they should. The agencies have made painstakingly clear over the course of the past year that they will review transactions outside of the HSR process, and will challenge consummated mergers when they learn that the combined entity has acted in an anticompetitive manner. Perhaps the agencies’ goal is to demonstrate that they will take action to remedy competitive harms stemming from consummated mergers in order to deter anticompetitive conduct in increasingly concentrated markets.

The separate statements of the Commissioners raise other interesting and potentially significant issues. Commissioner Leary noted that if the Commission’s decision to clear the merger ultimately proves to be incorrect, “then it will be necessary to inquire further about ultimate market effects and perhaps seek relief that addresses the underlying transaction. In this inquiry, it would be appropriate to apply the standards of Clayton Act merger law rather than the more rigorous standards of Sherman Act monopolization law.” Of course, the Clayton Act is an incipiency statute, in contrast to the Sherman Act, which requires a much more rigorous analysis of actual competitive harm stemming from monopolistic behavior before liability will attach. Commissioner Leary’s comments indicate that even post-closing, the Commission possibly could review and seek relief from Synopsys without demonstrating actual harm, instead needing only to allege a likelihood of harm if Synopsys, for example, closed its platform entirely to other back-end vendors. This approach would be a powerful tool for the Commission, and at the same time, must raise warning flags to firms with substantial market shares whose transactions are not challenged during the HSR waiting period. One may indeed wonder whether there is ever repose from government review if the antitrust agencies can forever rely upon the more lax Clayton Act Section 7 standard to challenge a merged firm’s future conduct. Would the Commission, for example, be able to step in
five years after the merger has closed and unwind it because of a “likelihood” of competitive harm?\textsuperscript{17}

The Commissioners’ warnings also beg the question of whether post-merger administrative review could ever sufficiently redress future competitive harm in rapidly changing high-tech industries. If, sometime in the future, a merged entity engages in anticompetitive behavior, will an administrative proceeding—a process that often takes a considerable amount of time to initiate and potentially longer to run its course—be sufficient to answer Commissioner Anthony’s “too little, too late” concern in “fast-moving” high-tech markets? Even if administrative review could quickly resolve such issues, what remedy would be sufficient if such behavior by a dominant high-tech firm has already “tipped the market” in favor of their product?

Finally, one must question whether the Commission’s decision to continue with Part III litigation immediately after concluding an HSR investigation contravenes in law or in spirit the Hart-Scott-Rodino Act. Should the Commission be able to continue reviewing a merger and demanding discovery after the parties fulfill their notification and production obligations under the Act? Does the Act’s statutorily fixed time-period to conduct a pre-close investigation permit the agencies to continue indefinitely an investigation after the conclusion of that HSR period? As the House Report accompanying the passage of the HSR Act notes: “In sum, the chief virtue of this bill is that its provisions will help to eliminate endless post-merger proceedings . . . and replace them with far more expeditious and effective premerger proceedings.”\textsuperscript{18} And a primary intention behind the passage of the Act was to “advance the legitimate interests of the business community in planning and predictability, by making it more likely that Clayton Act cases will be resolved in a timely and effective fashion.”\textsuperscript{19} If the agencies have the ability to continue a merger investigation indefinitely beyond the HSR time-period, much of the planning and predictability guaranteed by the Act is lost. With an investigation looming that may require structural or conduct relief, businesses will have much more difficulty merging their operations, attracting customers, and making long-term strategic business decisions.

**Recent Vertical Merger Enforcement in High-Tech Markets**

Although the merger resulted in little actual horizontal overlap, the FTC investigated the transaction to determine whether the merger raised foreclosure concerns. (Synopsys is the dominant logical synthesis designer and Avant! is a leading place and route/back-end tool provider.) Specifically, the Commissioners expressed unease that the merger might enable Synopsys to foreclose Avant!’s back-end competitors from connecting their tools to Synopsys’s front-end logical synthesis platform. In other words, the Commission asked whether Synopsys, after acquiring Avant!’s dominant back-end tool suite, would have any incentive to keep its logical synthesis platform open to other back-end vendors. Without access to Synopsys’ front-end platform (which accounted for 90 percent of the market), back-end vendors would not have a compatible platform to which they could connect their back-end products, creating a substantial likelihood that customers would not purchase their software. In an industry where optimization of platforms has become increasingly essential, the Commissioners noted that an attempt by Synopsys to make it just slightly more time-consuming or marginally less beneficial to use back-end products other than the Avant! suite could serve as a tremendous inducement for customers to purchase only Avant! tools.\textsuperscript{20} However, because there was no evidence to suggest that Synopsys in the past had ever done so, the Commission was reluctant to predict that the company would suddenly reverse course in the future.

Any analysis of a vertical theory of competitive harm must begin with the 1984 Department of Justice Merger Guidelines.\textsuperscript{21} The 1984 Merger Guidelines provide in Section 4.2 that a vertical merger can produce horizontal anticompetitive effects by making entry less likely if (1) as a result of the merger, a new entrant would have to enter simultaneously into two or more markets, and (2) such simultaneous entry would make entry less likely. Essential to this vertical theory of harm is an analysis of whether the merger creates new and significant barriers to entry. In addition, under the 1984 Merger Guidelines, the government must also demonstrate that the market is highly concentrated “and, therefore, so conducive to non-competitive performance that the increased difficulty of entry will likely affect performance.”\textsuperscript{22} Finally, any vertical merger analysis will require the government to evaluate the degree of harm resulting from the concentration.\textsuperscript{23}

Synopsys/Avant! was not the first time that the FTC was faced with a substantial foreclosure inquiry in the EDA industry. In 1997, the FTC investigated and ultimately required significant relief in the merger of Cadence Design Systems, Inc. and Cooper & Chyan Technology, Inc. (CCT), two parties that at the time were the dominant platform and application vendor, respectively, for certain EDA place and route tools.\textsuperscript{24} After a lengthy merger investigation, the agency filed a complaint to enjoin the merger, contending that it raised significant vertical foreclosure concerns. The parties ultimately agreed, pursuant to a consent decree, that Cadence would open its source code to other software application vendors.

Cadence had developed an EDA platform that enabled the construction and design of ICs used in a wide range of devices, including personal computers, handheld devices, and mobile telephones. CCT developed and marketed a software router that worked within a layout environment like Cadence’s, allowing users to plot wiring connections within an IC. Thus, the two companies’ products, according to the Complaint, were complementary.\textsuperscript{25} CCT’s router program was unique; it was the first “shape-based” router in the indus-
try, and it provided an efficient way to plot connections in customized, highly sophisticated integrated circuits.

Combining these two products and their dominant positions in their respective industries, the FTC contended, would have given Cadence the incentive to close its platform to other software routing firms. The remedy, according to a sharply divided Commission, was to require Cadence to open its platform to independent routing software vendors. According to the majority, if the two companies merged, successful entry into the routing tool market is more likely to require simultaneous entry into the market for integrated circuit layout environments. Without a consent order that mandates access to Cadence's layout environment, and thus lowers the barriers to entry in the market, a combined Cadence/CCT will face less competitive pressure to innovate or to price aggressively. Thus, competition would likely be reduced as a result of the acquisition.

In dissent, Commissioner Roscoe Starek questioned whether the majority's theory of vertical foreclosure had any merit, reasoning that even if Cadence had market power in the market for design layout software, "it has no incentive to restrict the supply of routers." Commissioner Starek argued that Cadence had exactly the opposite incentive postulated by the majority: if another company introduced a less expensive or better router than the one offered by Cadence, that would increase the value of Cadence's design layout because it would increase the demand for Cadence platform software. It follows, according to Commissioner Starek, that keeping the platform open to these new and potentially attractive routers would provide Cadence with the opportunity to sell its platform to customers who were interested in that new routing technology. Thus, according to Starek, the remedy mandated by the consent was both unnecessary and unduly burdensome.

The Synopsys/Avant merger, in theory, raised many of the same issues as Cadence/CCT.

The Commission's Change of Position in Synopsys/Avant!

Although predictions as to changes in public policy are by their very nature speculative, Synopsys/Avant! appears to represent a subtle shift in the FTC's policy toward vertical merger analysis. As was the case with the Cadence/CCT merger, the Synopsys/Avant! merger apparently provides a company with a leading position in a platform (Synopsys), with a significant position in the market for the tools that run on that platform (Avant!). In Cadence/CCT, the FTC concluded that such a combination was alarming enough to require the parties to offer significant relief before they would approve the merger.

If the Commission's presumptions regarding the combined Synopsys/Avant! entity are correct (namely, that Synopsys enjoys a 90 percent market share in the logical synthesis market and Avant! enjoys a 40 percent market share in the place and route market), then it follows that the Commission might have had similar concerns regarding foreclosure. As three commissioners noted, the merger of Cadence and CCT would make successful entry into the routing tool market possible only with simultaneous entry into the market for integrated circuit layout environments. Without a consent mandating "access to Cadence's layout environment, which thus lowers the barriers to entry in the market, a combined Cadence/CCT will face less competitive pressure to innovate or to price aggressively. Thus, competition would likely be reduced as a result of the acquisition." Similar concerns might have been raised with regard to the Synopsys/Avant! merger: If Synopsys closed its logical synthesis environment to other back-end tools' providers, other EDA vendors would be foreclosed from integrating their tools with a substantial portion of the front-end market, thus making it more difficult for such providers to compete effectively.

Based on the short statement from the Commission on the Synopsys/Avant! merger, it appears that the Commission concluded that the risk of foreclosure was minimal because, post-merger, Synopsys would have no incentive to impede other back-end EDA providers from access to its front-end logical synthesis platform. As Commissioner Leary noted in his separate statement, "the analysis can proceed step-by-step. As my colleagues point out in their own statements, there is good reason to believe that Synopsys has neither the incentive nor the intention to adopt a strategy of total or partial foreclosure (by impeding connections)."

It appears that there was insufficient evidence to demonstrate that Synopsys would indeed have any reason to close off its platform. By contrast, in Cadence/CCT, the Commission had evidence that, in the past, Cadence had closed its platform to competitors after acquiring an application provider, allowing them to draw the "past behavior as inference of future conduct" conclusion.

The Commissioners' statements show that Synopsys also presented persuasive evidence that the merger would create efficiencies by allowing the combined company to integrate front-end and back-end EDA tools to create a more seamless product. In an industry where even a seemingly small improvement in the overall speed of production design represents a lifetime in the progress of the technology, the Commission deferred to the argument that the integration efficiencies of a combined company could be extraordinarily beneficial to many EDA customers. As Commissioner Leary noted:

On the one hand, a merger that could even slightly reinforce the position of an already dominant firm raises serious questions. On the other hand, it is possible that this merger will facilitate an eventual seamless integration between the front-end and the back-end tools. This could result in a vastly improved product, which would be a genuine merger efficiency. We would not want to interfere with this development even if it made life very uncomfortable for competitors at either end.
ARTICLES AND FEATURES

If the Commission had some concern about the potential for competitive harm resulting from the merger, it is possible that it still could have structured relief to allay those potential competitive concerns without sacrificing the merger efficiencies put forth by the parties. Presumably, the combined entity would still have realized its integration efficiencies—a better, faster, and more seamless EDA product—even if the Commission required the combined firm, as it did in Cadence/CCT, to open its platform to other vendors. Customers would then have the choice to purchase the seamless Synopsys/Avant! product suite, or purchase other back-end (or front-end) tools instead. The Commission’s decision not to impose such relief suggests that the agency has tilted towards the rationale set forth in Commissioner Starek’s Cadence/CCT dissent and may be less aggressive with enforcement actions in future vertical mergers. Future decisions will surely shed light on whether Synopsys/Avant! represents such a shift.


8 The EDA industry has not become so concentrated that every transaction has received—or will receive—extended scrutiny from the regulators. In fact, Cadence Design Systems recently completed the acquisition of two companies—Plato Design Systems and Simplex Solutions—without receiving a Second Request, as did Mentor Graphics in its acquisition of Innoveda, Inc.

9 See Anthony Statement, supra note 2.


12 See id.

13 Anthony Statement, supra note 2.

14 Id.

15 See, e.g., MSC Software Corp., FTC Docket No. 9299, available at http://www.ftc.gov/os/adpro/d9299/index.htm; FTC v. Hearst Corp. (Complaint Oct. 11, 2001), available at http://www.ftc.gov/os/2001/04/hearstcmp.htm. As Commissioner Muris foreshadowed in his August 7, 2001, speech: “If you have clients that are concerned with a transaction, let us know—whether or not it has been consummated. We are quite prepared to go after consummated mergers or mergers that are too small to require an HSR filing.” Muris, supra note 3.

16 See Leary Statement, supra note 11.


18 H.R. REP. No. 94-1373 at 10 (1976).

19 Id. at 11.

20 See Leary Statement, supra note 11.


23 See id. at 1226.


26 See id. at 15–16.


30 In Silicon Graphics, the FTC’s complaint alleged that Silicon Graphics had a 90% share of the market for the workstations that run such graphics software. Complaint at ¶ 9. Silicon Graphics proposed acquiring Alias and Wavefront; only one other company, Softimage, Inc. (a subsidiary of Microsoft), also developed 3-D graphics software. See id. at ¶ 14. The parties ultimately settled and entered into a consent decree. The consent agreement sought to solve the vertical problems raised by the merger by requiring the combined firm to keep Alias’s software compatible with other workstations in order to maintain competition in the workstation market. In addition, the consent required Silicon Graphics to maintain an open architecture and make public its application interfaces, enabling graphics software developers to port to the workstation. See id., Order, Part IV.

31 Chairman Muris joined in the unanimous decision to terminate the investigation without individual comment. In a speech before the Brookings Institution last year, he noted, without referring to any of these cases, that “prohibiting a merger based on predictions of vertical foreclosure when the merged firm will have only a small purchasing market share should require a high degree of confidence and hence of proof. It is important to consider the likely adaptive responses of other market participants.” Timothy J. Muris, Merger Enforcement in a World of Multiple Arbiters (Dec. 2001), available at http://www.ftc.gov/speeches/muris.htm.

32 That is not to suggest that the facts of the two investigations were entirely the same. In Cadence/CCT, Cadence acquired the only shape-based router available in the industry. In Synopsys/Avant!, there were alternatives to Avant!’s back-end product suite post-close. The facts necessary to establish foreclosure, though, seem sufficiently similar, and likely the Cadence/CCT investigation served as significant precedent for the Commission.

33 Statement of Chairman Robert Pitofsky and Commissioner Janet D. Steiger, supra note 27.

34 Leary Statement, supra note 11.