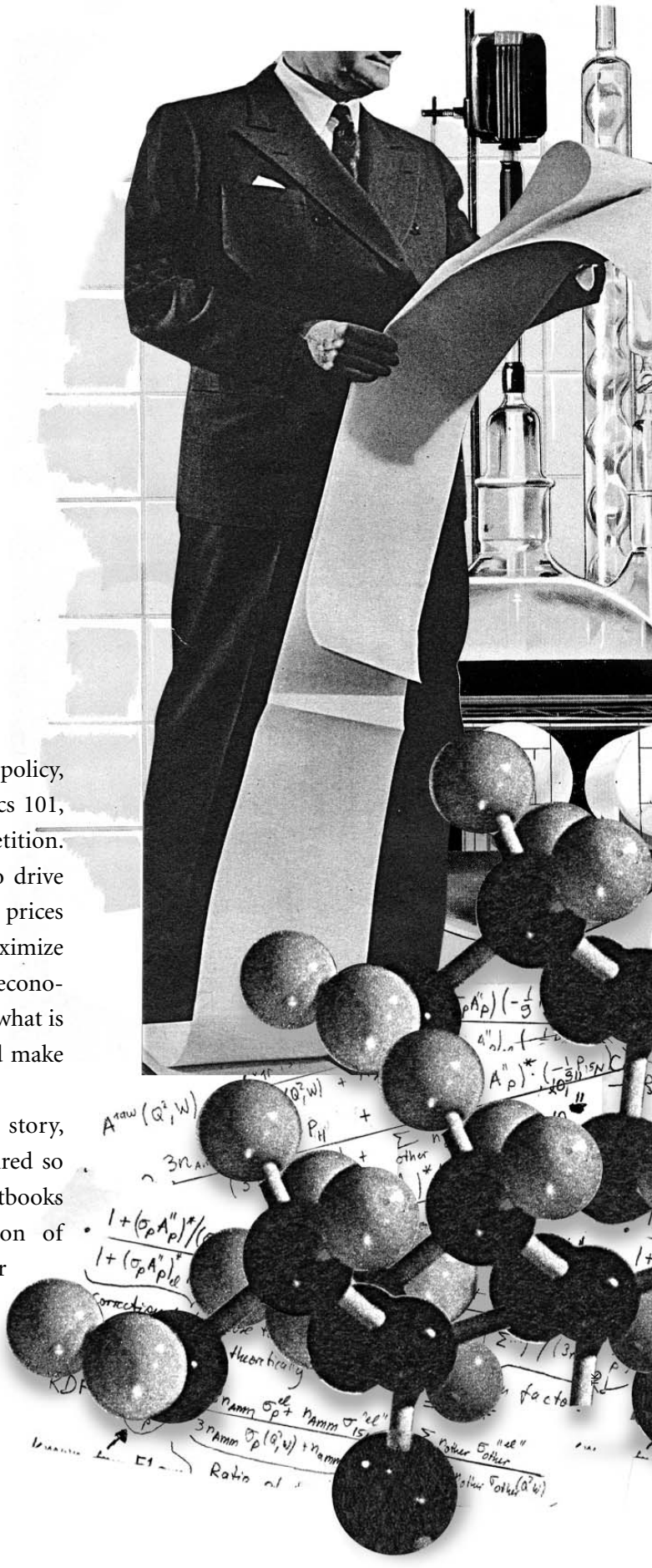
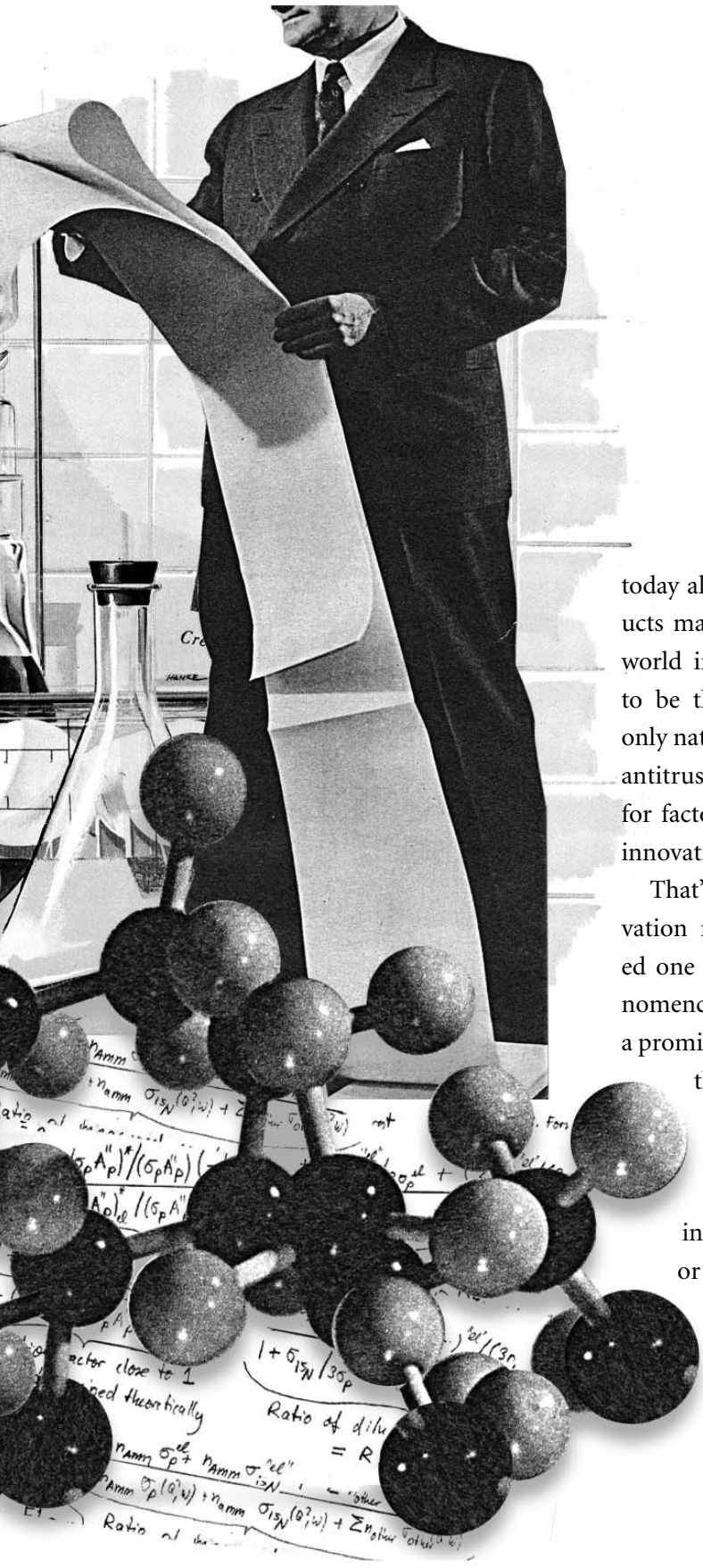
Antitrust



The point of modern antitrust policy, as everyone learns in Economics 101, is to preserve market competition. Competition, after all, tends to drive prices down toward costs. And prices that reflect costs tend to maximize efficiency – efficiency in the economist's sense that no changes in what is made, or how it is made, could make everyone better off.

That's hardly the whole story, though. The competition admired so much in those introductory textbooks ensures the efficient allocation of available capital, labor and other resources in the here and now. Yet economies don't stand still; market incentives in place



& Innovation

By Richard T. Rapp

today also affect the sorts of products made tomorrow. Indeed, in a world in which innovation seems to be the key to prosperity, it is only natural to make room in the antitrust-enforcement playbook for factors that affect the pace of innovation as well.

That's where the idea of "innovation markets" fits in – provided one can get past the confusing nomenclature. As Ronald W. Davis, a prominent antitrust lawyer, notes, the term innovation market is a "semantically confused, unhappy term, and anything but self-defining." The notion, in 50 words or less, is that consumer welfare is greatly affected by the pace of innovative activity. Therefore, antitrust enforcement

ought to be concerned with the impact of business agreements – in particular, mergers – on research programs likely to lead to new or better products.

If one sticks to generalities, it is hard to dispute the logic behind the innovation-market approach. A close look, though, suggests the idea is badly flawed in both theory and practice. Since the nature, timing and quantity of innovations cannot be predicted, antitrust authorities must content themselves with scrutinizing innovative effort – that is, research and development. Moreover, because innovation itself is not measurable, and R&D is a process rather than an outcome, regulators must remove themselves further from the object by examining the inputs to innovative effort: the available facilities and the money spent on R&D projects. This is, of course, a departure from analyses of mergers in conventional-goods markets, in which we examine output directly, not twice-removed.

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To date, the innovation-market approach has largely been used as a supplement to conventional merger analysis; the latter measures the expected impact of increased market concentration on prices and output. But there have been some striking exceptions – notably the Genzyme-Novazyme case, which demonstrates the paradoxes encountered in weighing consequences for innovation, and even offers a made-to-order plot for a TV movie. (See box on page 20.) Moreover, as the economy grows increasingly dependent on knowledge-based industries, one should expect the issues underlying innovation-market analysis to arise with increasing frequency – and with consequences that are very difficult to predict.

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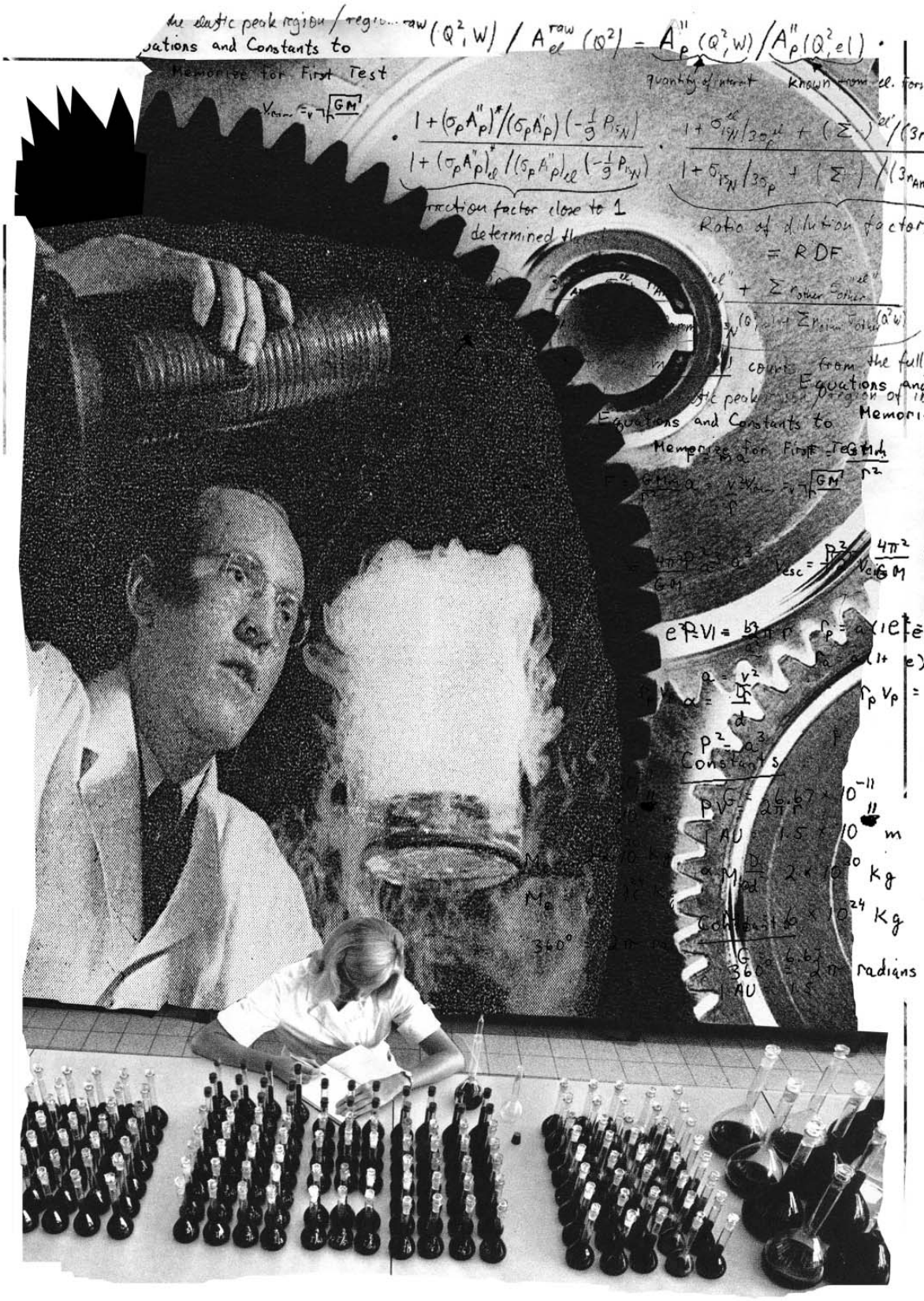
WHERE THE IDEA CAME FROM

The notion that a merger's impact on innovation should be considered by trustbusters has been germinating for at least two decades. The National Cooperative Research Act of 1984, passed at the height of concern that Japan, Inc. would leave American technology in the dust, gave antitrust regulators wide discretion to approve joint private research projects with procompetitive consequences. That same year, the Federal Trade Commission approved a joint production venture between GM and Toyota, in part because it would give struggling GM insights into Toyota's superefficient manufacturing techniques.

Then, in 1990, the FTC opposed the takeover of Genentech by Roche Pharmaceuticals, on the grounds that it would reduce competition in research as well as in the production and marketing of vitamin C, human growth hormone and a variety of AIDS drugs. There is no mention of innovation markets, however, in either the 1984 or 1992 versions of the federal government's Merger Guidelines, the official framework used by antitrust agencies to analyze proposed mergers.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The first explicit application of the full-blown innovation-market concept came in 1993, when the Justice Department opposed the merger of General Motors' Allison Transmission Division and ZF Friedrichshafen, the two largest manufacturers of automatic transmissions for big commercial vehicles like trucks and buses. In part, the complaint was conventional: Justice worried about the potential impact of increased market concentration on prices and output. But Justice also argued that the two companies' production plants offered unique facilities for testing innovations; thus, consolidation could slow technological progress. A year later, Justice opposed the merger of Flow International and Ingersoll-Rand's Waterjet Cutting Systems, which both made key components used in industrial cutting and cleaning, on a similar mix of conventional and innovation-market criteria.

After 1995, the FTC guidelines treated the incentive and ability to cut back R&D as an expression of market power.

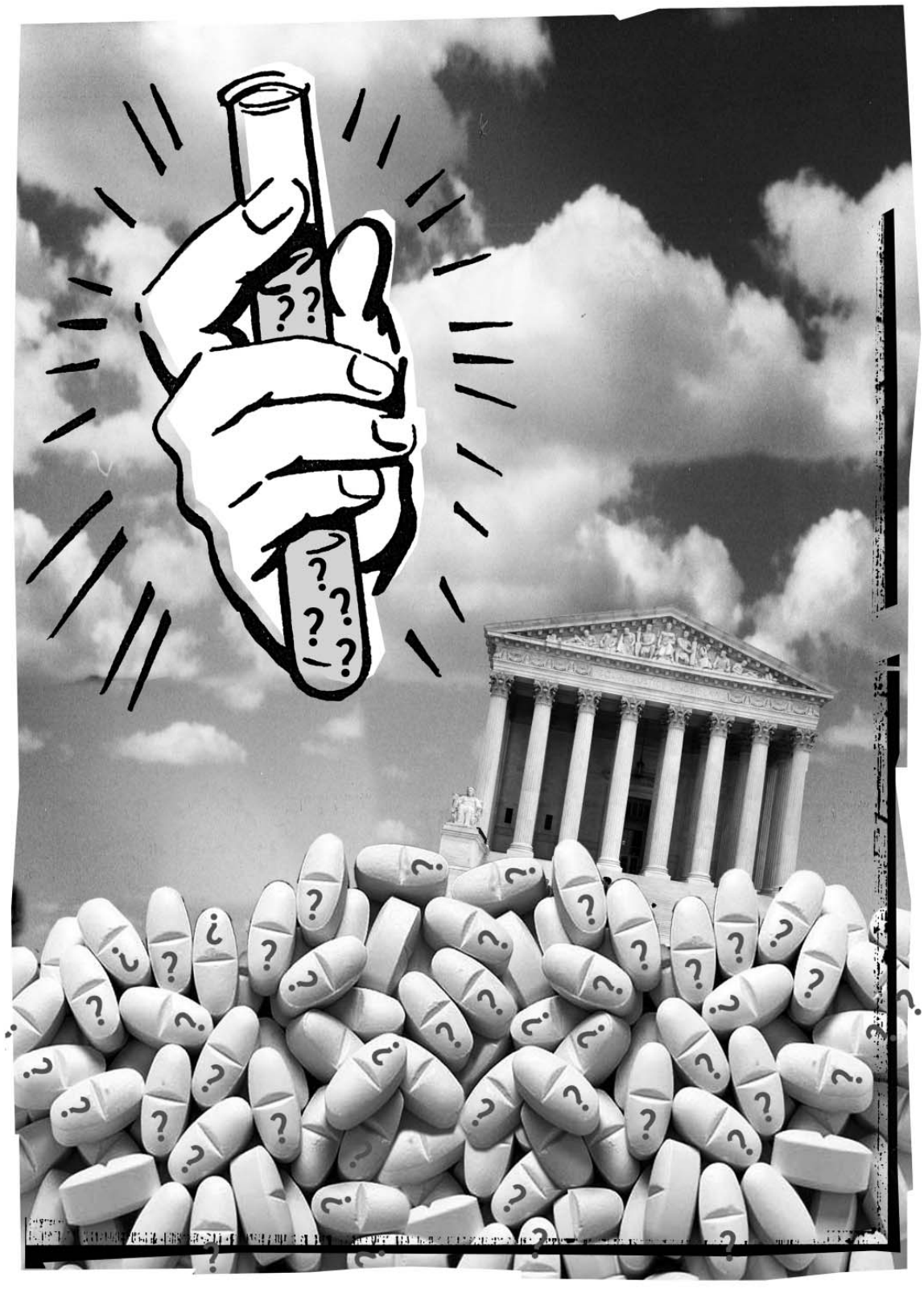
The innovation-market approach really built a head of steam, though, after 1995, when the Federal Trade Commission borrowed the more elaborate reasoning (as well as the term "innovation market") from the new antitrust guidelines governing the licensing of intellectual property like patents. Following the thinking of Richard Gilbert and Steven Sunshine (who were then senior officials in the Justice Department), the guidelines treated the incentive and ability to cut back R&D as an expression of market power.

Gilbert and Sunshine suggested a practical five-step procedure for deciding whether to challenge a merger on grounds that it would increase market power in an innovation market:

1. Identify overlapping R&D programs likely to affect product development.
2. Identify alternative sources of the R&D affected – i.e., third parties that would have the incentive and ability to fill an innovation gap after a merger.
3. Evaluate product competition down the road that would limit the inclination of the merged company to reduce total R&D.
4. Measure the potential increase in concentration in R&D expenditure.
5. Decide whether merging the R&D programs would generate offsetting efficiencies that would enhance the prospects for successful innovation.

A slew of reviews of multi-billion dollar mergers followed, each of which was partially dependent on innovation-market reasoning. The Justice Department used the concept in assessing the mergers of Lockheed Martin/Northrop (defense research), Halliburton/Dresser (oil-field technologies), and Monsanto/DeKalb Genetics (genetic engineering).

The FTC handled even more cases, largely because it is traditionally the lead agency in evaluating proposed mergers in the pharmaceutical industry. Pharmaceuticals are especially relevant here because (a) makers generally spend a lot on R&D, (b) the industry currently faces powerful economic incentives to consolidate, and (c) data available from the Food and Drug Administration makes it more plausible to infer the likely effects of R&D



When Innovation-Market Analysis Gets Personal

COURTESY OF JOHN CROWLEY

In 1998, John F. Crowley, a lawyer and Harvard MBA who worked as a management consultant in San Francisco, discovered that two of his three young children had Pompe disease, a rare enzyme-deficiency syndrome that was invariably fatal. Crowley soon found that a drug treatment for Goucher's disease, an illness in the same class (known as lysosomal storage diseases, or LSDs) had already been marketed by Genzyme, and that another company – a start-up led by an academic biochemist named William Canfield – was on its way to creating a drug for Pompe.

To help speed development of the drug, called HP-GAA, Crowley went to work as the CEO of Canfield's newly named Novazyme Pharmaceuticals in March 2000. HP-GAA had reasonable prospects for approval by the FDA. And, as a candidate for orphan-drug status protected against competition under U.S. law, it even had good prospects of being profitable. But Novazyme faced a daunting series of hurdles to get from here to there: clinical trials, FDA approval, manufacturing and marketing – all of which took scientific and managerial expertise, and lots of capital. Moreover, in the race for regulatory approval of orphan drugs, there is no second place: To improve the chance of an inventor earning an adequate return, the first approved treatment for a rare disease receives seven years of market exclusivity.

Genzyme was the only other firm independently working on a therapy for Pompe disease. It was ahead in the research race, with early preclinical trials already underway. Not surprisingly, in August 2001, Canfield, Crowley and the venture capital firms that had provided seed money for Novazyme decided to sell the company (and to transfer its research team virtually intact) to Genzyme for $137.5 million, plus another $87.5 million if the development panned out.

From the FTC's perspective, the acquisition

programs on product innovation. The FTC cases included American Home Products/American Cyanamid (which both had research projects in vaccines for the gastrointestinal rotavirus), Glaxo/Burroughs Wellcome (antimigraine drugs), Upjohn/Pharmacia (colon cancer drugs), Ciba-Geigy/Sandoz (gene therapies), Baxter/Immuno (sealants for controlling surgical bleeding), Pfizer/Warner-Lambert (drugs for solid malignant

was an innovation-market pure play – an investigation that dealt solely with the merger of two research programs aimed at a single objective. The FTC completed its review of the transaction roughly two years after the union. And Tim Muris, the FTC chairman, released a detailed statement explaining why the majority had voted to allow the combination.

Muris acknowledged the chief deficiency of innovation-market analysis – the lack of a theoretical or empirical connection between a decreased number of firms undertaking R&D projects and the rate of innovation – and therefore rejected inferences based solely on the reduction of Pompe research programs from two to one. Instead, as a good economist would, he relied on an analysis of incentives.

Muris noted that, given Genzyme's and Novazyme's respective pre-merger positions in their race to FDA approval, it was unlikely that either company would have an advantage in increasing R&D spending absent the merger. The likelihood that an independent Novazyme could overtake Genzyme was low, and Genzyme had every incentive, even taking account of Novazyme's distant second position, to move as quickly as possible to the FDA finish line and the prospect of profitable entry.

Muris then considered two potential post-merger outcomes. If the Genzyme research approach were to fail, the merged firm could proceed with the lagging Novazyme program. If the Genzyme program were to succeed, the merged firm might have an incentive to slow research on the Novazyme path. However, as an orphan product, the first drug to succeed would win exclusive marketing rights for seven years. Thus, the potential for cannibalization of Novazyme's approach was hardly an antitrust concern.

In sum, a study of the incentives of the pre-merger and post-merger firms led to the conclusion that the merger was unlikely to have provoked a delay in R&D. And since the speed to approval was the FTC's policy objective, the majority closed the investigation.

Common sense and good economics triumphed. But that triumph was not inevitable. The FTC vote was not unanimous, and the dissent, by Commissioner Mozelle W. Thompson, was the innovation-market critic's worst nightmare. It cited, among other factors, the substantial buyout price of Novazyme as a reason to suspect that Genzyme was motivated by a desire to suppress innovation. And it posited an imaginary, less-restrictive alternative where none had been shown to exist. According to Thompson, "Novazyme's research path could conceivably have brought a superior product to this Orphan Drug Act market if it were placed in the hands of a biotech industry member other than Genzyme's."

Postscript: Genzyme's therapy for Pompe disease has entered advanced stages of testing. The outcome is still unknown. Purely as a statistical matter, though, FDA approval is now likely.

tumors), and Hoechst/Rhone-Poulenc (anti-clotting drugs).

Note that the European Commission, as well as the United States Department of Justice and the Federal Trade Commission, now employ innovation-market analysis. Note, too, that there has been no court test of the innovation-market approach on either continent; nor are there any formal legal guidelines that dictate how it will be used.

THE DOWNSIDE TO INNOVATION-MARKET ANALYSIS

Stripped to basics, the approach turns on the validity of two assumptions. First, that an increase in the concentration of R&D programs is likely to reduce the amount of R&D actually undertaken, and second, that reducing the amount of R&D is likely to slow the pace of innovation. Both sound reasonable, but neither bears up well under close analysis.

Competition is indeed a powerful incentive to innovate. Yet firms in some concentrated markets – chemicals, microprocessors and mobile-phone handsets, for example – invest huge sums in R&D, while markets with the least-concentrated competition are lacking in R&D. In the most exhaustive review of the empirical research in the area, F.M. Scherer of Harvard concluded that neither firm size nor market concentration had an important impact on R&D outlays.

The real worry, after all, is that a merger will inhibit the development of a product that breaks the mold – perhaps the invention that obviates the need for faster microprocessors.

This finding has not shaken the conviction of innovation-market advocates that they are on to something. Traditional analysis, they point out, is based on the idea that concentration in product markets leads to market power – a notion that also lacks clear empirical backing. But there is a big difference. The market concentration/market power hypothesis fits very neatly into intuitive economic theory: small numbers of rival firms have an easier time fixing prices than large numbers. The incentive to collude to reduce R&D, by contrast, is far less obvious. Indeed, joint ventures in research have long been encouraged on the grounds that cooperative ventures will have a higher expected return and thus will be pursued more aggressively.

The second proposition – that less (more) R&D expenditures will lead to less (more) innovation – is equally problematic, even when one accounts for the uncertainty of outcomes. Managers often put their interests ahead of those of stockholders, making investments in R&D that cannot be justified before the fact by the expected return.

The same can sometimes be said for production decisions. But the discipline of the market – the consequences of failure – are weaker for efforts to innovate, because the research of even the most successful companies often doesn't pan out. Michael Jensen of Harvard points to the example of General Motors, which invested $67 billion in new models in the early 1980s, yet was left with a market capitalization of just $26 billion in 1985.

Note, too, that imperfections in capital markets can also lead to overinvestment or underinvestment in R&D. Companies with excess cash may feel compelled to invest, even if they have no good targets. Conversely, tough competition can lead companies to reduce R&D budgets – which apparently happened in the pharmaceutical industry in the 1990s with the advent of cost-cutting managed care in medicine. Indeed, it seems likely that the industry's efforts to merge R&D programs amounted to an attempt to get more R&D bang for a scarce buck.

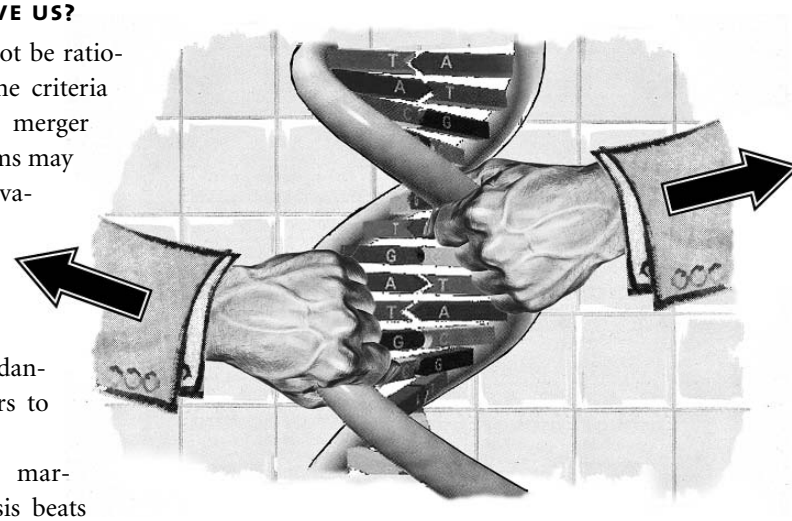
By the same token, the patent system may lead to overinvestment in R&D. Patent rights often produce winner-take-all races in which companies engage in redundant parallel research programs to get there first. Multiple programs may even slow the emergence of a useful new product. So again, one must wonder whether efforts to consolidate drug research programs do not in many cases increase efficiency by eliminating duplication of effort.

WHERE DOES THAT LEAVE US?

Competition in R&D cannot be rationally evaluated by the same criteria as price competition. The merger of competing R&D programs may reduce the pace of innovation, as innovation-market analysts generally assume. Or it may speed innovation and reduce its cost by eliminating redundancy and allowing researchers to achieve economies of scale.

Evaluating innovation markets on a case-by-case basis beats a hard-and-fast rule against consolidating R&D efforts. But that doesn't get us very far, since there is rarely a solid basis for predicting the consequences of consolidation. Presumably, it is easier to predict the effects if the research in question is related to a product that is reasonably close to what is already in production – say, a microprocessor that is faster than the previous generation of microprocessors. But innovation-market analysis is least valuable where innovations are marginal. The real worry, after all, is that a merger will inhibit the development of a product that breaks the mold – perhaps the invention that obviates the need for faster microprocessors. And in such cases, a pledge to pragmatism on the part of the analysts is not worth much, because the imponderables loom so large.

In most real-world merger cases to date, you'll remember, innovation-market issues are secondary to traditional questions of market concentration and market power. But paradoxically, that fact provides scant reassurance to those who worry about the blue-sky quality of innovation-market analysis. To gain the swift regulatory approval that is necessary if a merger is to be completed – few merger candidates are prepared to live with the ongoing uncertainty associated with litigation – managers are typically prepared to make concessions. And as the pharmaceutical cases cited earlier suggest, often the easiest concession to make is to divest an R&D program, even if it would make better economic sense to consolidate programs.



Does that imply society is losing a significant amount of innovation or spending too much to innovate, as firms drop or divest research that catches the attention of the innovation-market impresarios in merger initiatives? We don't know. Worse, we'll never know. And one has to wonder about the desirability of regulation whose consequences we cannot really evaluate.