


ARTICLE

The Stock Market and the Space Age

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Having emerged from World War II as a permanent feature of American political and economic life, the “glamour” of research and development (R&D) would soon take hold of Wall Street. By the 1960s, shares of high-tech electronics and aerospace firms became irresistible to the flood of young men entering the securities business with the hopes of getting rich quick off capital gains. For this generation, R&D spending today came to mean earnings growth tomorrow, and in periods of financial hardship, executives under pressure to meet earnings expectations changed R&D accounting policies to boost their bottom lines. With this change, firms experiencing significant losses could maintain the appearance of profitability while reinforcing public perceptions of R&D as a magic bullet for growth. Contrary to the mythology of the “space age,” however, those intimately involved in R&D and tracking its costs insisted that expenditures so incurred failed in practice to qualify as assets. Drawing from arguments made by industrial researchers and cost accountants, this article problematizes the “R&D underinvestment” consensus that emerged in the wake of the space age and suggests dropping the R&D asset view wherever it circulates, including in academic scholarship.

Keywords: accounting, R&D, stock market, assetization

“The Soaring Sixties,” the “Booming Sixties,” the “Space Age Sixties.” So opened a *New York Times* article from February 1960, listing a set of recently coined idioms that conveyed the hopes of a prosperous and high-tech “World of Tomorrow.” “But there is still another description that is more pertinent and more definitive,” proclaimed the *Times*: “the Research and Development Sixties.”¹ On Wall Street, R&D spending in general and defense contracting in particular were quickly becoming entangled in a speculative fervor for capital gains not seen since the late 1920s. In the new investment climate of the “space age,” share prices soared on the belief that R&D today meant earnings growth tomorrow. Such was the R&D mystique. Despite clarification from the Industrial Research Institute and others that “if there is one characteristic of industrial research, it is that of uncertainty,”² many an executive soon lost sight of this fact.

1. Richard Rutter, “Research and Development Will Help Shape America’s Economic Future,” *New York Times* (hereafter *NYT*), February 13, 1960, F1.

2. Staff Report, “Proceedings of IRI Study Group,” 36.

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In times of financial hardship, executives under pressure to meet earnings expectations introduced changes in accounting policies that boosted their bottom lines. By reporting R&D expenses as “deferred” capital assets, firms experiencing significant losses could maintain the appearance of profitability while simultaneously reinforcing public perceptions of R&D as a magic bullet for growth. The shift in financial reporting practices, Wall Street’s elevation of capital gains over dividend income, and the stream of defense contracts coming out of Washington, all helped to effect R&D *assetization*—a concept recently introduced to convey the “wide cultural process consisting precisely in turning things into assets.”³ Following a decade of earnings manipulation involving the use of R&D deferrals, this process was dealt a serious blow in the early 1970s when accounting standard-setters developed a mandate prohibiting the capitalization of R&D for financial reporting purposes. Though adopted by the Securities and Exchange Commission (SEC), the new mandate did not extend beyond corporate financial disclosures and, outside this realm of valuation, R&D assetization would continue unabated.

Faced with the crumbling economy of the 1970s, policymakers grasped after the possibility of an exploitable, law-like relationship between R&D “investment” and economic growth. After a few false starts, faith in the existence of this relationship was successfully translated into law in autumn 1981 with the introduction of the nation’s first R&D tax credit. Echoing the magical thinking pervasive on 1960s Wall Street, R&D’s privileged tax status rests on the expectations that R&D operates like capital investment, and that to incentivize private sector R&D spending is to accelerate economic growth. And like in the late 1960s, the consequences of this logic are gradually starting to come (back) into focus.

Only a few years after President Barack Obama permanently extended the R&D tax incentives, his former vice president ran on an election platform that condemned the incentives’ effects. Within three months of taking office, President Joseph Biden voiced his concern once more: “A fireman, a teacher paying 22%—Amazon and 90 other major corporations [on the Fortune 500 list] paying zero in federal taxes? I’m going to put an end to that.”⁴ That same day, another veteran of the Obama administration chimed in with a tweet. Far from being unlawful, said Jay Carney, senior vice president at Amazon and former Obama press secretary, use of the R&D tax loophole is precisely what successive US congresses and presidents “strongly intended.”⁵ He is certainly not wrong.⁶

3. Birch and Muniesa, *Assetization*, 4. I part ways with assetization theorists in the proposition that technoscience has ushered us into “the latest stage of capitalism” (Birch and Muniesa, *Assetization*, 2). Long-standing analytical problems with capitalism theorism are wonderfully summarized in Lipartito, “Reassembling the Economic,” 127.

4. On March 31, 2021, Biden delivered a speech twice referencing a December 2019 report by the Institute on Taxation & Economic Policy. Gardner, Roque, and Wamhoff, “Corporate Tax Avoidance.” Three months later, Amazon hired former Obama Treasury official Joshua Odintz to lobby on behalf of issues related to R&D tax credits.

5. Jay Carney (@JayCarney), “If the R&D Tax Credit is a ‘loophole,’ it’s certainly one Congress strongly intended. The R&D Tax credit has existed since 1981, was extended 15 times with bi-partisan support and was made permanent in 2015 in a law signed by President Obama.” Twitter, March 31, 2021, 6:14 p.m. <https://twitter.com/JayCarney/status/1377383927216750595?s=20>, accessed August 3, 2022.

6. Geunther, “Research Tax Credit,” 11–14.

Rather than diminish the question of R&D tax loopholes, Carney's observation heightens the need to problematize the R&D mystique and the credence it lends to R&D investment metaphors. This article is one effort in that direction. Concerned with ongoing interpretations of R&D as capital, asset, or investment, this article concludes by inviting scholars to help recover what assetization has obscured: the very uncertainty of outcomes that makes all forms of inquiry, R&D included, so valuable to society and yet so untenable as capital.

A New Generation Arrives on the Street

In his televised farewell address to the nation, outgoing US President Dwight Eisenhower warned of "grave implications" attending a "permanent armaments industry of vast proportions"—a feature of American life that Eisenhower himself helped build up. It was then January 1961 and, by that time, Eisenhower had grown impatient with what seemed to him increasingly gratuitous wheeling and dealing between officers of the armed services, private sector defense contractors, and members of Congress. Perceived Soviet aggression toward the American way of life had made necessary what Eisenhower famously referred to as the military-industrial complex, but toward the end of his second term in office, the president grew fearful that "public policy could itself become the captive of a scientific-technological elite."⁷

Rather than heed this warning, neither the incoming administration of John F. Kennedy nor those on Wall Street paid the aging general much mind. The former vice president of Convair, a defense contractor, spoke for many when he said: "I believe President Eisenhower to be an honorable, well-intentioned and amiable man... I also believe him to be mortal, fallible and culpable, [that] he has listened to the drums of a bygone day—out of tempo with the space age."⁸ For his part, Kennedy had campaigned to "get this country moving again" while sounding the alarm about a science-based "missile gap." Closing this gap required an expanded defense budget, and to this proposal, though not to Kennedy's social reform programs, Congress was more than happy to oblige.

By this time, a fresh cohort of investors, brokers, and fund managers had arrived on Wall Street, bringing with them a taste for stocks that promised to ride the wave of Kennedy's space-age brand of militarism. As stock exchange historian Robert Sobel has shown, by the late 1950s, this new kind of investor had begun displacing the veterans of Wall Street, those for whom the memory of 1929 and its aftermath had lost none of its potency.⁹ To the older generation, share prices that rose faster than warranted by underlying business conditions were an indication of speculative gambling, not investing, and were to be avoided. This was a lesson hard learned through experience.

When the market turned bullish again in 1954, old-timers who had led the 1949 bull market now brushed up against a growing number of new arrivals who viewed speculation far more favorably. For this younger crowd, the importance of regularly paid dividend income paled in

7. See Ledbetter, *Unwarranted Influence*.

8. "Lamphier Details Views on Defense Needs," *Aviation Week*, April 11, 1960, 127.

9. H. J. Nelson, "The Trader Gives His Views of the Market," *Barron's* column, August 8, 1947, 2.

comparison to the fortunes that could be reaped through stock price appreciation. Here was a generational shift: for the older crowd, the analysis of a company's average performance functioned as an approximate limit on what one could expect of that company's future. For the postwar generation, the future was limitless.¹⁰

Space Racing

Changes in the norms governing investment habits were well underway when, in autumn 1957, the Soviet Union beat the United States in a race to shoot satellites into orbit.¹¹ Having successfully launched *Sputnik I* in October atop an intercontinental ballistic missile, the Soviets were quick to add insult to injury only one month later. To commemorate the fortieth anniversary of the Bolshevik Revolution, a much heavier satellite, *Sputnik II*, was sent into orbit in November with a dog named Laika in tow. As Nikita Khrushchev went about publicly exclaiming Soviet technological superiority, anyone with access to the Gaither Report may have had their worst fears confirmed.

The product of a government panel known as the Gaither Committee, named after its chairperson H. Rowan Gaither, this confidential report sounded an ominous tone about US vulnerability.¹² The country's deterrents were deemed inadequate to guard against the vast civilian casualties guaranteed by a nuclear attack—"a catastrophe which defies imagination," read the report, "and which almost certainly would bring national disintegration."¹³ Sometime in December, following the embarrassing and televised explosion of the first US satellite launch, the alarming contents of the Gaither Report were leaked to the press and helped change federal spending dramatically.

During the weeks that followed, critics in Congress and their allies in the military seized the opportunity to publicly demand increases in defense spending. Frustrated by what he later described as the "blinding" light of *Sputnik*, Eisenhower ultimately failed to contain the ensuing panic.¹⁴ Top-secret pictures taken from U-2 spy planes had convinced him that the "missile gap" was not the threat the Gaither Report and congressional Democrats made it out to be, but his refusal to come forward with this evidence and imperil the reconnaissance program left the president with few tools to comfort a frightened public.

In the wake of these events, the administration's plans for economizing defense spending fizzled out. Budget ceilings were lifted and new contracts entered into as the government embarked on a series of multibillion-dollar programs to expedite development in satellites and missiles. Share prices of defense contractors had taken a dip since the end of the Korean War, but expectations for new contracts were bringing them back to life. Following the shift in defense priorities from manned aircraft to missiles, plane makers rebranded themselves as members of a forward-looking "aerospace" industry, while firms in the hodge-podge

10. Sobel, *NYSE*, 224.

11. See Divine, *Sputnik Challenge*.

12. Snead, *Gaither Committee*, 49.

13. Quoted in Snead, *Gaither Committee*, 120.

14. Eisenhower, *White House Years*, 206.

“electronics” industry focused on guidance, control, and sensor systems for the new generation of missiles. Together, aerospace and electronics firms constituted the so-called glamour industries of Wall Street.

During the 1920s, Paramount, General Electric, RCA, Famous-Players-Lasky, and other stocks with higher price-earnings ratios than the typical issue were considered “glamorous,” especially in the radio, automobile, and motion picture industries. To the young Wall Streeters leading the 1958–59 bull market, the glamour that enrobed electronics and aerospace was irresistible. According to David L. Babson, president of a Boston-based investment firm, the “vast increase in neophyte investors” was accompanied by a “growing army of security analysts,” typically in their thirties or early forties.¹⁵ Though publicly lamenting the “veritable flood of young men coming into this field,” such complaints did nothing to ebb the flow of new arrivals and their R&D-oriented speculations.

“Years ago,” wrote a contributor to *Research Management*, “the investment analyst talked principally about price-earnings ratios, consumer disposable income, gross national product, and margins before and after taxes ... but the analyst today is just as much concerned with magneto-hydrodynamics, thermionics, and moletronics ... if he is to properly serve his clients.”¹⁶ Toward this end, wrote Sobel in 1975, Wall Street men began spending their evenings “pour[ing] over physics texts so as to understand the terminology of newly glamorous industries. People who only a few years before had been concerned with railroads and automobiles, utilities and grocery chains, now spoke knowingly of transistors, klystron tubes, space travel, and the like.”¹⁷

Learning the lingo as they went, brokers, fund managers, and analysts busily sold a vision of a high-tech future, yet the investing public was no passive actor. Eager buyers, looking to be among the first to spot a bargain, were more than happy to answer these sales calls.¹⁸ Millions of Americans, who before had kept their money in savings accounts and bonds, were now diving into the stock market. In 1962, following completion of the latest New York Stock Exchange (NYSE) shareholder census, NYSE president Keith Funston was able to declare that one in every six adults owned shares of stock; a decade earlier, that ratio had been one in sixteen.

According to the NYSE census, more than 10.5 million Americans had become shareholders between 1952 and 1962, with estimates for 1952, 1956, 1959, and 1962 holding the approximate figures at 6.49, 8.83, 12.49, and 17 million shareholders, respectively.¹⁹ Already by 1959, one investment banker could observe how “several million individuals have been initiated to the exciting exhilaration of easily-made capital gain or the mental depression of ill-afforded capital loss.”²⁰ Bonds and savings accounts offered no such excitement; and heading

15. Babson, “Performance,” 130. Also see Allan, “Brokers Hire More Analysts”; Mennis, “Investment Manager of the Future”; and Richard E. Rustin, “Brokers Fear Current Upswing in Trading May Produce Another ‘Back-Office Crunch,’” *Wall Street Journal* (hereafter *WSJ*), September 22, 1967, 2.

16. Roehl, “Evaluation of Industrial Research,” 144.

17. Sobel, *NYSE*, 238.

18. Sobel, *NYSE*, 224.

19. See “U.S. Shareowners Reach New High,” *Commercial & Financial Chronicle* 195, June 28, 1962, 44.

20. Bower, “Economic Barometer,” 34.

into the next decade, a growing number of entrepreneurs began capitalizing on the resurgence of investor speculation.

Many young R&D-intensive firms—often with little or no track record to recommend them—watched as their share prices soared in over-the-counter trading. Known today as high-tech start-ups, an SEC special study at the time described these new issues as representing “in many instances young, untried, small businesses frequently with scientific-sounding names ending in -namics, -onics, or -mation. Among these were Digitronics, Hedtronics, Pacotronics, Microsonics, Nucleonics, Techmation, Pneumodynamics.”²¹

Though speculation was wildest in unregulated over-the-counter markets, organized exchanges saw their share of the action. To be listed on the NYSE or other formally instituted markets, certain accounting figures and corporate details had to be registered with the SEC; and in the latter half of 1961 alone, the SEC received a record number of new filings.²² By the close of the government’s fiscal year ending June 1962, the number of registered statements reached 2,307, representing a 26 percent rise over fiscal 1961. According to the SEC’s annual report, this number “far exceeded that for any previous year in the Commission’s history.”²³

In such markets, rumors were enough to send some stocks flying, and when NYSE president Funston issued repeated warnings “against investing on vague tips and the scramble for new issues,” few seem to have listened.²⁴ As the head of the recently organized National Stock Exchange explained, newly listed missiles or electronics firms could be expected to sell “at prices as high as 40 or 60 times earnings or sometimes at very attractive prices with no earnings being shown at all, the price being based largely on promise” and on the “romance of possibly investing a founder’s dollar in a General Motors of tomorrow.”²⁵ Made possible by a massive federal contract system that provided the majority of R&D dollars spent by industry, the “promise” of capital gains and the “romance” of spotting growth opportunities had become hallmarks of the space age.

Warnings from the Margin

Not everyone was so enthused. A columnist at *Barron’s* was deeply disturbed by “the frantic bidding-up of space age stock on the basis of earnings projections stretching” several years into the future. In this kind of speculation, “virtually no margin has been left for even modest miscalculation, to say nothing of misfortune.”²⁶ At the *Commercial & Financial Chronicle*, one article derided the widespread “pie-in-the-sky ‘cheap-at-any-price’ attitude,”²⁷ while

21. Committee on Interstate and Foreign Commerce, *Special Study*, 824.

22. “A Record Number of Concerns ‘Went Public’ in the Second Half of 1961, SEC Reports,” *WSJ*, January 3, 1962, 4.

23. Securities and Exchange Commission, *28th Annual Report*, 4.

24. H. J. Nelson, “Trader Gives His Views of the Market,” *Barron’s* column, May 22, 1961, 2.

25. Lawrence H. Taylor, “When to ‘Go Public’ for the Acquisition of Capital,” *Commercial & Financial Chronicle* 195, February 1, 1962, 33.

26. Nelson, “Trader Gives His Views of the Market,” May 22, 1961, 2.

27. A. Wilfred May, “Observations...,” *Commercial & Financial Chronicle* 197, January 3, 1963, 4.

another cautioned of “ominous signs that investors are becoming indiscriminate in their eagerness to buy anything with the magic ‘electronic’ on the stock certificate.”²⁸

Among the more vocal critics, San Francisco’s Ralph A. Bing repeatedly called on his fellow analysts to demonstrate greater humility before an unknown future. “Financial analysis is bound to remain an incomplete science, handicapped by limited foresight and the crudeness of yardsticks.” Bing did not mince words. “Let us admit this freely instead of trying to convert it into a pseudo-science.”²⁹ Equally strident admonitions were voiced by Benjamin Graham, a retired finance professor and Wall Street veteran who emerged from the 1929 market crash convinced that security analysis worthy of the name demanded careful study of the firm itself, not merely its share price.

At a meeting of the American Finance Association in December 1961, the sixty-seven-year-old Graham observed that the “stock market level has not been governed primarily by the level of business.” This left him with “a feeling that the financial world has become too complacent about the future, too confident of the invulnerability of common stocks as a whole to a drastic change in their fortunes.” Graham spoke solemnly. “My own inward picture of the present stock market, is that of an institution cut adrift from old standards of value without having found dependable new standards.”³⁰ That the size of a firm’s R&D budget never qualified in his eyes as a “dependable new standard” was suggested by changes introduced in the fourth edition of Graham’s coauthored textbook, *Security Analysis* (1962), and clarified in a follow-up essay published a year later.

Regarded as an “investor’s bible” since its 1934 debut, *Security Analysis* gave considerable recognition to R&D for the first time in its 1962 edition. Given the “tendency to consider the possession of research facilities as the *sine qua non* of industrial progress,” the 1962 edition acknowledged the practice of looking to R&D spending and “reflect[ing] the expected benefits therefrom in the projection of future earnings and in the rate of capitalization thereof.”³¹ These valuation practices, Graham later explained, are a thing apart from security analysis proper and should be clearly represented as such in advice to clients. After all, he added, “technological change is one of the *most speculative* elements in the valuation picture.”³² Whereas R&D spending may enter into the estimation of a firm’s “speculative component of value,” argued Graham, it had no place in the determination of a firm’s “investment value—[understood] as a kind of ‘minimum true value.’”³³ As with Eisenhower’s parting statement, however, such warnings went unheeded.

Graham, once revered as the “Dean” of Wall Street, was now pushed to the margins by the postwar generation for whom R&D spending today signaled profits tomorrow.³⁴ With

28. Neil Jacoby, “The Broad Economic Features of the American Electronics Industry,” *Commercial & Financial Chronicle* 193, April 27, 1961, 29.

29. Bing, “Appraisal of Stocks,” 46.

30. Benjamin Graham, “Are We Too Confident About Invulnerability of Stocks?,” *Commercial & Financial Chronicle* 195, February 1, 1962, 32. Also see Graham, “Some Investment Aspects.”

31. Graham, Dodd, and Cottle, *Security Analysis*, 429. For a brief history on discounted present value in financial analysis, see Rutterford, “From Dividend Yield.”

32. Graham, “Future of Financial Analysis,” 66.

33. Graham, “Future of Financial Analysis,” 69.

34. Broman, “Investor Overpricing”; Bohmfalk Jr., “Growth Stock Philosophy”; Hazard, “Why Growth Stocks?”; Priest Jr. “Evaluating Research”; Feick, “Digging Deeper”; Kolb, “Research, Development”; “Side-lights: Research Called Key to Growth,” *NYT*, June 26, 1962.

hindsight from 1976, one analyst mocked how readily investors of the 1960s had been lured by such messages:

Are you instinctively uneasy when urged to buy an investment at 20, 30, 40, or 50 times earnings with a miniscule—or perhaps no—dividend return? Don't fear, come into our analytic parlor and we will prove by charts, statistics and smooth talking that you will be able to sell your investment, some time, at a profit, to someone even more foolish than you are.³⁵

To those still soaring in the sixties, however, the old buy low, sell high maxim seemed quaint when one could just as well buy high and sell higher.³⁶ So common was this belief that a tongue-in-cheek quip of the time accused Wall Street of not only discounting the future but “the hereafter” as well.

Even as speculative fever came to a lull with the “Flash Crash” of mid-1962, fantastical projections quickly resurfaced. IBM, Litton Industries, Polaroid, Xerox, and other high-flying “growth” and “glamour” stocks had been hit especially hard and fast, yet they seemed to bounce back just as rapidly. Already by January 1963, an article in *Research Management* observed a widespread “feeling that the act of performing research will carry with it a magic growth producing effect on the corporation; presumably, the more research, the more corporate growth.”³⁷ Rather than dulling space-age glamour, the 1962 experience seemed only to validate beliefs about the ability of high-tech stocks to withstand what others could not.

Performance a Go-Go

By summer 1967, trading was feverish in shares of new, untested firms selling on the basis of rumors, high-tech branding, and sales pitches that some in the press called mere “fads,” “stories,” or “outright touting.”³⁸ For the first half of the year, turnover kept setting records in shares of more established firms listed on the NYSE and in shares of less seasoned firms on the American Stock Exchange (Amex). By June, however, trading on the Amex began rising faster than on the NYSE, and as the *New York Times'* Terry Robard put it, such “unexplained volatility of a host of issues with few fundamentals to back them up” signaled a worrisome acceleration in speculation. The “netics-onics syndrome” had made Wall Street especially ravenous for shares of unlisted firms trading over the counter. Volumes and prices were approaching levels not seen since 1961, and it was commonplace for new issues to quickly double or triple in price, with a few even selling at 700 to 800 percent over

35. Smith, “New Rationalizations.”

36. See Brooks, *Go-Go Years*.

37. Goldman, “Government Contracts,” 56.

38. Terry Robard, “Speculative Fever on Busy American Exchange Is Worrying Wall Street,” *NYT*, July 2, 1967, 63.

initial offers.³⁹ And all of this, he added, “at a time when the economic outlook is hazy at best.”⁴⁰

With an eye on war-fueled inflation, ongoing federal budget deficits, rising interest rates, growing unemployment, a weakening balance of trade, and other downturned economic indicators, some believed a market correction was imminent. Instead, speculative activity went soaring into 1968. During this time, the influx of young men entering the securities business was unrelenting; the number of brokerage offices multiplied across the country; and the population of American shareholders grew to 26.4 million, up from 23.9 million in 1967. Furthermore, by this time it was clear that institutional investors and their money managers were playing a distinct role in fueling the new normal on Wall Street.

Once considered the most even keeled, “sophisticated” group in the business, institutional investors had spent the latter half of the 1960s “stirring up storms of trading” in “unseasoned issues,” according to *Washington Post*’s Philip Greer. “Mutual funds, pension funds—even college endowments” were embracing the speculative craze as a new generation of money managers dove into and out of the “hottest” growth issues, trading in large blocks of stock at a time in a race to outperform one another and attract high-ticket clients. With gaggles of admirers following their lead, the more successful fund managers enjoyed a kind of celebrity status on Wall Street where their buy or sell decisions could make or break the value of a company’s stock.

Critics characterized the competition for quick fame and fortune as the “cult of performance,” while enthusiasts knew it as “Go-Go” trading. One disciple of “the ‘What have you done for me lately?’ aggressive approach” ridiculed the older generation and its “invest-and-retain” school of thought. Wrote an elated John M. Birmingham Jr., finally “younger men are taking the helm of important institutions” as “old line financial institutions are seeking to employ, promote, and encourage performance-able young executives.”⁴¹

By November 1968, Greer’s reporting reflected the heightened anxiety among observers of Wall Street. “The fact is,” he wrote, “unexplainable price jumps are fast becoming the rule and ... brokers are piling up money faster than ever. Yearly paychecks of \$100,000 or more are common, even among salesmen and analysts in the under-30-years-of-age crowd, with only a few years in the business.”⁴² With their only experience limited to a prolonged bull market, Wall Street’s recent arrivals were overconfident and underprepared for what came next.

A Convenient Paradox?

This was the investment paradox of the space age: to those deciding which stocks to recommend or buy, a weak earnings history no longer disqualified a firm from the running, especially if its business reflected the glamour of R&D. The allure of this paradox, of course, was its

39. Terry Robard, “New Issues Hit Market at Fast Pace,” *NYT*, September 24, 1967, 159. By the end of the year, a couple dozen new issues were selling at 1,000 percent of their opening offers. Terry Robard, “On High-Fliers and the Counter,” *NYT*, February 3, 1968, 38.

40. Robard, “Speculative Fever on Busy American Exchange,” 63.

41. Birmingham, “Quest for Performance,” 93–94.

42. Philip Greer, “Wall Street Agrees Reforms Are Needed,” *Washington Post*, November 10, 1968, F1.

assumption of endless growth. And some executives, such as Republic Aviation's Mundy I. Peale, tried using this paradox to great advantage in the public sphere.

R&D costs, declared Peale, were "the true capital of the Space Age." More telling was the added flourish: "We have more in our knowledge account than we do in our bank account."⁴³ As one might expect, Peale was overselling his company, which was in poor shape at the time and only a couple years from being bought out by what eventually became Fairchild Industries. This same fate befell Douglas Aircraft when, following a series of disappointments in the commercial jet business, the company found its stock quietly being bought up by McDonnell Aircraft, the takeover completed in 1967.

Even with a space and missile program "widely regarded as one of the healthiest in the industry," Douglas Aircraft lacked the capital necessary to remain independently viable beyond 1966.⁴⁴ In December of that year, *Fortune's* John Mecklin set out the desperate scene:

For decades under Douglas Sr., the company followed conservative accounting practice of writing off development costs of new planes, such as the DC-8 [commercial jet], as they were incurred; that is, such costs were shown as expenses charged against current receipts. In 1963, as one of the changes introduced by Douglas Jr., this system was abandoned. Since then the company has postponed writing off development costs of new planes until the burden could be eased by income from sales of the plane itself. While the DC-9 was being developed, the \$100 million in such costs was shown as an asset under the heading of "deferred charges" on the company's balance sheet.⁴⁵

At first, the decision to change accounting methods from current expensing to deferral seemed to be paying off. By no longer absorbing R&D costs as they were incurred, red ink was successfully turned into black for all of 1965 and the first quarter of 1966.

By May, however, the magic had worn off. For a variety of reasons, revenues fell short of expectations and could not keep pace with the R&D amortization schedule. With losses mounting, shareholders sued the company for failing to explain the change in R&D accounting policy and its effect on earnings.⁴⁶ In Mecklin's words, deferred R&D costs had become, "to say the least, extraordinarily inconvenient."⁴⁷

Far more impetuous than his conservative father and with a far narrower breadth of experience, Donald Douglas Jr. committed his company to what proved to be an unsustainable method of financing.⁴⁸ "Junior," as employees called him under their breath, had been named vice president of contract administration in 1951, joined the board of directors in 1953, and succeeded his father as company president in 1957. Entitled, personally aggressive, and dismissive of those who disagreed with him, Junior was resented in nearly every corner of the firm. He just "doesn't have his father's financial acumen," said a former company official.

43. Peale, "Research and Development," 45.

44. John Mecklin, "Douglas Aircraft's Stormy Flight Path," *Fortune* 74, December 1966, 256.

45. Mecklin, "Douglas Aircraft's Stormy Flight Path," 256.

46. Douglas W. Cary, "Douglas Aircraft Faces Three Suits," *NYT*, October 20, 1966, 61.

47. Mecklin, "Douglas Aircraft's Stormy Flight Path," 258.

48. Walter J. Boynce, "The Rise and Fall of Donald Douglas," *Air Force Magazine* 89, March 1, 2006, 76–80.

A local management consultant agreed: “Douglas Junior doesn’t dig deep enough into problems and doesn’t investigate the second and third layers of management. He doesn’t know how the nuts and bolts are made.”⁴⁹ From the executive suite on down the line, many either left on their own volition or were summarily fired in what Mecklin described as “a bloodbath that Douglas people still discuss in subdued voices.”⁵⁰

The timing of his rise to power, his cocksure disposition, and his lack of proven experience suggest Junior embodied much of the archetype of the postwar management elite. Citing Mabel Newcomer’s 1955 study of demographic changes among executives, Alfred Dupont Chandler summarized the distinct features of Junior’s generation.⁵¹ These executives, he wrote, “had moved into the ranks of middle management during the years of American hegemony and international dominance. They were sure of themselves; they ... were committed to growth and had become accustomed to a high rate of return.” The result was what Chandler, in a rare moment, referred to as “managerial hubris.”⁵²

Under Junior, project costs at Douglas were continuously deferred in the hope that today’s earnings would amortize yesterday’s deferred charges; that tomorrow’s earnings would amortize today’s deferred charges; and that this could continue indefinitely. So long as income proved sufficient to amortize the accrued charges, this system worked as planned. To those subscribing to the latest growth theories on Wall Street, there was every reason to expect future income would be forthcoming.

At different times, involving different amounts, firms such as General Dynamics, Lockheed Aircraft, Honeywell, Forest Laboratories, Combustion Engineering, Milgo Electronics, Analex, Rockwell International, Continental Vending, Xerox, Scientific Data Systems, Digitek, and Memorex all made the same decision to defer R&D expenses whenever financial pressures began piling up.⁵³ No longer classified as business expenses, R&D was thereby relocated from

49. See “The Son Also Rises: More Firms Ban Hiring of Relatives, But Many Still Ardently Favor It,” *WSJ*, April 1, 1964, 12.

50. Mecklin, “Douglas Aircraft’s Stormy Flight Path,” 170.

51. See Newcomer, *Big Business Executive*.

52. Chandler, “Competitive Performance,” 16, 18.

53. Filter, “Accounting Practices,” 44–52. “The New Rules for R&D Accounting,” *Businessweek*, June 15, 1974, 34–35; “The Heady Dreams at University Computing,” *Businessweek*, May 1, 1971, 54–58; “The CPAs Get Mixed Reviews,” *Businessweek*, September 14, 1974, 31; “CSC Seeks the Midas Touch,” *Businessweek*, July 29, 1972, 45; “The Year That Set a Write-off Record,” *Businessweek*, January 15, 1972, 25; “Software Suffers Unprogrammed Woes,” *Businessweek*, June 20, 1970, 68–75. Dan Dorfman, “Continental Vending Revises Sharply Upward Its Fiscal 1962 Deficit,” *WSJ*, May 24, 1963, 10; Dan Dorfman, “Heard on the Street,” *WSJ* column, December 15, 1969 and January 20, March 31, and July 13, 1970; “Recognition Equipment Says Accounting Change Caused Fiscal ’70 Deficit,” *WSJ*, November 9, 1970, 13; “Forest Labs Set Up \$2.5 Million Charge in Accounting Change,” *WSJ*, May 29, 1974, 10; “National Cash Register Estimates Share Net Fell in 1970, 4th Period,” *WSJ*, January 28, 1971, 7; “Potter Instruments Co. Posts \$13.1 Million Loss for Year Ended June 30,” *WSJ*, September 5, 1972, 11; “Memorex Posts Slim 9-Month Net on Volume Climb,” *WSJ*, November 16, 1972, 4; “Vernitron Had ’70 Loss of About \$13.9 Million on Slight Sales Decline,” *WSJ*, March 26, 1971, 15; “Memorex Ended 1971 in Black After Losses of \$13.3 Million in 1971,” *WSJ*, March 12, 1973, 18; “Autogyro Firm Reports Heavy Losses in ’71,” *Los Angeles Times*, April 18, 1972, D13; “Digitek Losses Surpass Sales,” *Los Angeles Times*, January 21, 1967, A12; Harry Anderson, “Day of Reckoning Arrives for R&D,” *Los Angeles Times*, August 4, 1974, L1–L2; Robert Metz, “Market Place,” *NYT* column, August 30 and November 23, 1972; Robert Metz, “Memorex Amends Its Report to S.E.C.,” *NYT*, September

the income statement to the balance sheet, where it appeared grouped among a firm's assets. Although a successful tool for managing earnings, the creation of such an "asset" had at its core little more than a hope and a prayer.

Assetization Contested

Beginning in the late nineteenth century, deferred charges began appearing with increasing frequency under the Assets heading on balance sheets. Just prior to this time, the term "assets" appeared in accounting literature as a synonym for the more conventional term "property." Both terms represented "things owned, the wherewithal to meet financial obligation."⁵⁴ If a given item in one's possession could not be used, sold, or liquidated to make good on debts, then it did not qualify as an asset. With the arrival of deferred charges, this definition was expanded to include expenditures the benefits or services from which would be realized over future periods of time.

Early examples of this new asset form were prepaid expenses, such as the cost of a multiyear lease on land that had been fully paid-for upfront. Because property values were stipulated in contracts with the force of law behind them, this extension of the term "asset" did not stray far from "wherewithal to meet financial obligation." Such was not the case with deferred R&D expenditures, however, for economic benefits therefrom could be realized *only if* R&D projects proved successful. By listing R&D expenses among a company's assets, the *possibility* that a project could result in income-generating or cost-reducing products was refashioned as a near *certainty*. This may have fooled some creditors, lenders, and shareholders, but to company accountants responsible for tracking R&D spending and the results therefrom, R&D's status as an asset was far from certain.

One of the earliest recorded debates to mention accounting for R&D (or "experimental expenses") took place in September 1921 at the Second International Cost Conference, in Cleveland, Ohio. The country was in a recession at the time, and on the second day of the Cost Conference, a panel of Americans convened to discuss the problem of losses due to unabsorbed overhead expenses. By then, the cost of R&D devoted to improving the production process was being handled by some firms as charges to manufacturing overhead. But in times of depression, those that adapted by reducing output found themselves unable to absorb their overhead expense. To deal with this problem, some firms, such as the Haynes Corporation of Chicago, deferred these expenses as assets.

One of several speakers on the panel, the efficiency engineer Hasbrouck Haynes, defended his company's deferral policy in the following terms:

14, 1973, 57; Richard Austin Smith, "How a Great Corporation Got Out of Control, The Story of General Dynamics: Part I," *Fortune* 65, January 1962, 61–69 and 178–184; Richard Austin Smith, "How a Great Corporation Got Out of Control, The Story of General Dynamics: Part II," *Fortune* 65, February 1962, 120–122, 178–188.

54. Williams, "Definition and Quantification of Assets," 1. Assets or property were thus "real things, existing things or rights, which were exchangeable for cash." Williams, "Assets in Accounting," 163.

I can well appreciate that many will argue that there is no advantage in deceiving one's self by juggling the accounting figures so as to show a profit ... when there is actually a loss. Possibly the answer to that can be best made by asking a few other questions. Why is experimental or organization expense carried on the balance sheet as an asset to be later wiped out by subsequent profits? Why is the stock of many new corporations watered through the good will and patent accounts in the hope that subsequent profits will later squeeze it out?. ... During dull periods the monthly profits are not distorted due to excessive overhead, and the depressing influence of large book losses is thereby avoided.⁵⁵

This was a justification for R&D deferral grounded in earnings manipulation. By allocating expenses however they pleased, companies in the red could be made to seem profitable, at least on paper. Yet, to Haynes's fellow panelists at the Cost Conference, "juggling the accounting figures" was judged a most unwise business policy.

A.S. Merrifield, of the Norton Company, argued: "Deferring expense from the present mortgages the future. The coming periods will have their own quota of expenses, which may be all that they can take care of. The 'pay as you go' policy is the only sound procedure."⁵⁶ Philip F. Clapp, of Robert Douglas and Company, agreed: "It seems to me that this would be both an unsound and a dangerous procedure. Each period should be made to stand on its own feet; and to [do otherwise] would result, I think, in misleading and inaccurate accounting."⁵⁷ Horace G. Crockett, of Scovell, Wellington and Co., wrote: "What advantage do we gain? We are only postponing that evil day because ... nobody can say with assurance that [even the] average of the past will hold for the future."⁵⁸

As the 1920s wore on, the recession came to an end and more firms began opening their own experimental labs; and though the problem of overhead persisted, accounting for R&D gradually emerged as a topic of debate in its own right. In professional conferences, in local chapter meetings of the National Association of Cost Accountants (NACA), and in the *NACA Bulletin*, later known as the journal *Management Accounting*, how to account for R&D remained a point of contention between those who believed outcomes were too unpredictable to justify a deferral policy and those who took as granted management's prerogative to allocate costs and expenses at whim.

On the eve of World War II, the problem had become large enough for NACA research staff to embark on a survey of R&D accounting. In their final report, one finding stood out from the rest: questionnaires returned by 106 participating firms had revealed "a very great reluctance to capitalize research and development expenses."⁵⁹ In 1955, a follow-up study by NACA research staff showed little had changed. As before the war, the majority of companies were still writing off such expenditures as they were incurred. One of the "principal reasons for this," the 1955 report concluded, was "that the outcome of experimental work always involves a degree of uncertainty."⁶⁰

55. Haynes, "Distribution of Overhead," 209–210.

56. Merrifield, "Distribution of Overhead," 212.

57. Clapp, "Distribution of Overhead," 226.

58. Crockett, "Distribution of Overhead," 221.

59. See Marple, "Present-Day Practice," 895–896.

60. NACA, "Research Report 29," 1379.

As a working group of the Industrial Research Institute explained in 1962, “any new research project is fraught with uncertainties in the costs involved, the time required, the manpower that will be expended, and the technical results which are achievable.”⁶¹ Yet, without foreknowledge of the ultimate success, total cost, and duration of an R&D project, plans to amortize the deferred charges were built on little more than wishful thinking. Such forecasts had proven useful in manufacturing, where the production costs and sales income of an established product could be studied, standardized, and optimized to increase production efficiency. But, as Eastman Kodak’s famed research director Charles E. K. Mees made clear as far back as 1920, manufacturing was a sorry analogy for R&D.⁶²

Unlike with manufacturing, no amount of additional money or any efforts at economizing could make the results of R&D any more certain. “This may be difficult for many industrial accountants to understand,” wrote David S. Moffitt, of the Connecticut Hard Rubber Company, “because, with modern accounting tools, it is very easy to segregate development costs applicable to independent orders, products or sales propositions.” Nevertheless, said Moffitt, there was no getting around the fact that “the results of research and development are unpredictable.”⁶³ This made it impossible in practice to associate R&D spending in one period with enhanced profits or reduced costs in another. Moffitt was hardly alone among experienced cost accountants and research directors in emphasizing R&D’s inexorable uncertainties.

According to the vice president of Research at Borg-Warner Corporation, any effort to relate R&D expenditures to the company’s bottom line was merely an “arbitrary exercise.”⁶⁴ After all, explained the vice president of Research and Engineering at Owens-Illinois Glass, company accountants “have wrestled with the problems of figuring the returns for money expended and have long discovered that the techniques employed to measure the effectiveness of certain other phases of company operations do not retain their precision or meaning when applied to the research and development effort.”⁶⁵ The controller of RCA’s Laboratories Division noted that “with an unknown task or problem and a very indefinite ‘end product,’ ... any application of [strict cost controls] is rendered impracticable, if not impossible.”⁶⁶ When business school academics like Robert N. Anthony and James B. Quinn studied the nation’s R&D organizations through in-person interviews and observations, they too reached the same conclusions.⁶⁷ A firm’s R&D spending simply could not predict its future performance.

61. Staff Report, “Proceedings of IRI Study Group,” 33.

62. Mees, *Organization of Research*, 127.

63. Moffitt, “Own Product Research,” 1253.

64. Collier, “How Should Management Determine,” 14.

65. Hackett, “Proceedings of Industrial Research Institute,” 178–179.

66. McFadden Jr., “Cost Accounting,” 824–825.

67. Shaffer, “Research Budgeting,” 39; Shepard, “Industrial Research and the Accountant,” 955–966; Dicke, “Management Accounting for Research,” 40; Quinn, “Usefulness of Research and Development Budgets,” 79–90; Anthony, *Management Controls*; Anthony, “Some Key Questions.”

Traumatic Shock in Search of Solution

At the tail end of 1968, an economic downturn began that gradually worsened over the course of 1969. Having taken office in January, President Richard Nixon skimmed a layer off the top of a massive defense budget inherited from the Johnson administration, yet even this was enough to leave defense contractors reeling from their first reduction in sales in a decade. When government cutbacks introduced in 1969 were continued through 1970, defense contractors found themselves overstaffed, underfunded, and compelled to lay off hundreds of thousands of R&D personnel.

At Boeing, cuts were so large they became known around the country as “the Boeing Bust,” with more than twenty thousand laid off in 1969 and another thirty-six thousand dropped the next year. Electronics firms were hit, too. Along New England’s Route 128 corridor, high-tech firms like Avco and EG&G dropped 30 to 50 percent of their R&D payroll. At Ittek, a thousand R&D personnel lost their jobs; at Raytheon, tens of thousands of employees were shed from the firm’s missile and space divisions.⁶⁸

Even with these cuts, laid-off engineers and scientists were but a fraction of the country’s unemployed, and at the end of 1969, the economy fell into a recession that lasted through autumn 1970. Trading volume plummeted on the Amex and over the counter as glamour issues that surged in 1968 and resisted the market slide in 1969 finally collapsed in 1970. In early April 1970, Robard reported on the state of the market as it entered what proved to be the worst month of the year: “Just as Wall Street began believing that the bear market has finally ended, a wave of selling shifted into the so-called glamour stocks, those issues that somehow had been able to maintain super price-earnings ratios in the face of adversity elsewhere in the market.”⁶⁹

National Cash Register, Xerox, Polaroid, and Computer Sciences were among those taking hits, and more would follow. As Robard explained, “The rationale behind the high price-earnings multiples of the glamour stocks has been that these issues were bigger than trends in the economy.” Glamour stocks, therefore, “were not dependent for earnings growth on general economic growth but could rack up strong increases in profits no matter what happened to other companies.”⁷⁰ The events of April and early May 1970 made a mockery of this rationale. During that time, what *Businessweek* later described as a “washout of \$280-billion in stock market values” would come as “a traumatic shock for investors, business, and the economy.”⁷¹

During the peak of the 1970 crash, the McGraw-Hill Publishing Company completed its annual business survey, as it did every April, but this time the responses to the survey belied the events on Wall Street and the impact of ongoing defense cuts. In April 1970, respondents

68. Walsh, “Unemployed Scientists and Engineers”; Boffey, “Doing to Help Jobless Scientists”; Shapley, “Route 128”; “When the Brains Can’t Get Work,” *Businessweek*, February 13, 1971, 91–94; Berkeley Rice, “Down and Out Along Route 128,” *New York Times Magazine*, November 1, 1970, 28–29, 93–104; “Swords to Plowshares: Thorny Shifts in Priorities,” *Science News* 99, February 20, 1971, 128.

69. Terry Robard, “Weak Glamour Stocks,” *NYT*, April 7, 1970, 79.

70. Robard, “Weak Glamour Stocks.”

71. “New Market for Realists,” *Businessweek*, May 23, 1970, 136.

collectively forecasted a 7 percent increase in total R&D spending for all of 1970 over 1969, but the 1971 survey revealed no such increase had taken place. Figures compiled in April 1971 indicated that actual R&D spending for 1970 fell more than \$2 billion short of respondents' \$20.7 billion forecast. For the first time in decades, industry's year-by-year growth in R&D spending had come to a halt, and the outlook for 1971 was not much better. The anticipated 5.8 percent increase over 1970 "barely covers the rise in cost of R&D labor and materials," complained *Businessweek*.⁷² When McGraw-Hill completed its 1972 survey, the reality proved worse still: for all of 1971, industry's R&D spending had grown by a meager 1 percent.

With a reelection campaign on the horizon, the Nixon administration searched for ways to address the nation's diminished R&D position. One possibility was to secure from Congress the funds needed to bring to fruition the long-awaited civilian supersonic transport (SST), but in late March 1971, a final vote by Congress to defund the program had taken this option off the table.⁷³ Three months later, the nation learned that the United States had become a net importer for the first time since 1893, showing a historic trade deficit that the US Commerce Department blamed on the country's declining technology exports. With added urgency, Nixon's next attempt at an answer took shape as the New Technological Opportunities Program (NTO), an initiative that some described as "a high-powered W.P.A. for engineers."⁷⁴ After failing to turn up politically attractive candidates for civilian R&D funding, the administration quietly dropped the program altogether.

Another possibility was to revive a Kennedy administration proposal for R&D tax incentives, but this too was abandoned in early 1972. With too little known about the innovation process, Nixon adopted a plan that eventually evolved into the National Science Foundation's (NSF's) Experimental R&D Incentives Program and the National Bureau of Standards' (NBS) Experimental Technology Incentives Program.⁷⁵ Echoing his Council of Economic Advisers (CEA), Nixon now claimed that the market for R&D was failing. "In general," he said in his special message to Congress on science and technology, "I believe it is appropriate for the Federal Government to encourage private research and development to the extent that the market mechanism is not effective in bringing the needed innovations into use."⁷⁶

Nixon, however, proved less than eager to correct what his CEA called the market's R&D "underinvestment" problem.⁷⁷ Like the SST and NTO before it, the NSF-NBS program was left to flounder.⁷⁸ Before leaving office in the wake of Watergate revelations, Nixon's impact on the nation's R&D effort took the usual Cold War form: emphasizing the need to "negotiate from strength" with the Soviet Union by accelerating development of US strategic weapons systems.⁷⁹

72. "A Squeeze Hurts Lab Spending," *Businessweek*, May 5, 1971, 94.

73. Shapley, "Thinking Big."

74. Nancy Hicks, "Engineers Look at Life," *NYT*, January 9, 1972, NES40.

75. See Gillette, Shapley, and Wade, "Administration Bets on Science"; Walsh, "Boost for Relevance."

76. *Importance of Our Investment in Science and Technology*, 8690–8693.

77. *Annual Report of the Council of Economic Advisers*.

78. See Daniel S. Greenberg, "David and Indifference," *Saturday Review of Science*, September 30, 1972, 43; "Swords to Plowshares," 128; Shapley, "Technology Incentives," 1107.

79. "Increased Pentagon Spending a Boost for Defense Industry," *WSJ*, January 25, 1972, 4.

According to the *Wall Street Journal*, defense stocks battered by the 1969–70 market now “reaped the benefits of improved investor psychology stemming from favorable government pronouncements on research and development and high-technology spending, proposals for a higher defense budget and less risk for government contractors, and the widespread belief that the ‘worst is over’ for the group.” During the modest 1972 turnaround, however, some suspected those responsible for the recent “bevy of buy recommendations” were allowing the “increased flow of governmental funding” to overwhelm their judgment.⁸⁰

Taking the Big Bath

Throughout the space age, Wall Street kept busy forecasting tremendous growth for firms participating in what *Businessweek's* economics editor, Leonard Silk, had dubbed “The Research Revolution.”⁸¹ When the market went tumbling in the early 1970s, firms that once benefited from deferring R&D and other legal methods of earnings manipulation now felt the consequences. According to a report in *Forbes* from May 1970, such methods “amounted to nothing more than borrowing from future earnings.” Corporate financial disclosures had become “outright deceptive. Only a minority are truly frank and honest.”⁸²

With the economy wobbling between recession and stagnation, a growing number of corporate managers, who were already facing rapprochement, began writing off massive losses that shook the investment community to its core. In a move known as “taking the big bath,” deferred R&D and other questionable assets and acquisitions of the 1960s were purged from balance sheets in one fell swoop.⁸³ By taking the big bath at a time of depressed share prices, corporate officials expected to “clear the decks” of all their fruitless expenditures and make way for a banner year ahead, or what *Forbes* called “a hoped-for rebound” in earnings growth.⁸⁴

In many cases, write-offs of deferred R&D “assets” occurred so suddenly that not only investors but also securities analysts, lenders, exchange administrators, and the SEC were taken by surprise. William C. Foster, of the NYSE, counted himself among the critics. As assistant director of stock list, Foster was responsible for overseeing efforts to monitor speculative activity on the exchange. In a widely quoted speech, Foster cited write-offs at Ampex, Collins Radio,

80. Dan Dorfman, “Heard on the Street,” *WSJ* column, February 11, 1972.

81. See Silk, *Research Revolution*.

82. “How to Keep From Being Taken,” *Forbes* 105, May 15, 1970, 222–231.

83. At Computer Sciences, nearly \$62.8 million of deferred R&D was written off the books, while Computer Applications wrote off \$16 million; of deferred R&D. Recognition Equipment, wrote off \$9 million; Leasco Data Processing Equipment, \$8.6 million; Republic Corporation, \$11.6 million; National Cash Register, \$5.5 million; American Standard, \$122 million; Celanese, over \$83 million; Boise Cascade, \$78 million; I.T.T., \$70 million; McCullough Aircraft, \$6 million; California Computer Products, \$12 million; Ampex, \$90 million; Sanders Associates, \$30 million; Collins Radio, \$22 million; Memorex, \$17.5 million; University Computing, \$5 million in one year and \$6.8 million the next. At RCA and Lockheed, respectively, a whopping \$490 million and \$800 million were written off the books. See note 53 for citations.

84. See “The Big Bath,” *Newsweek*, July 27, 1970, 54–59; “The Year of the Big Bath,” *Forbes* 107, March 1, 1971, 42–43; Norby and Stone, “Objectives of Financial Accounting”; Jim Hyatt, “Clearing the Books: Write-Offs Abound, Reflecting Slump of '70 and Bid to Glorify '71,” *WSJ*, March 25, 1971, 1; “The Year of Big Bath,” *Fortune* 85, May 1971, 268; John H. Allan, “Decisions That Went Awry: RCA Led Concerns Incurring Charges,” *NYT*, July 2, 1972, F1.

Celanese, and Computer Sciences as egregious abuses of deferrals. “Unbiased observation of such deferrals suggests strongly that many are worthless,” decried Foster, “and hence income has been repeatedly overstated.”⁸⁵ William C. Norby and Frances G. Stone of the Financial Analysts Federation shared this view: “Writeoffs of \$90-million in a company the size of Ampex raise serious questions about the validity of audit certificates in the reports of some companies in the last several years.” Like Foster, they viewed such actions as a bellwether of decaying management and manipulative accounting. “We believe it would be desirable for accountants to lean more heavily against the natural optimism of management in areas of uncertainty.”⁸⁶

Gerald M. Loeb, of the brokerage firm EF Hutton & Co., was even more irate. In a scathing indictment of the business and financial community, Loeb held complicit not only managers and accountants but stockholders and the press as well. Reminded of the frauds perpetrated in the 1920s, Loeb declared: “Today we have our occasional outstanding fraud, but much more frightening is the general acceptance of what is politely called ‘managed earnings.’ Its effect on investors is nearly as bad as the case of outright fraud. This ‘management’ is simply false reporting.” The investor, he insisted, “should not be required to be his own auditor.”⁸⁷

With the list of big baths growing “almost daily,”⁸⁸ it seemed that the 1969–70 downturn had not gone far enough in wringing out all the water that soaked corporate balance sheets in the 1960s. In testimony before Congress, one securities analyst located the problem in the growing dominance of institutional investors and their creation in the early 1970s of what became known as the “Two-Tier” market. In this market, institutional investments converged on a relatively fixed list of big name firms, known variably as the “Favorite Fifty,” “Nifty Fifty,” “Vestal Virgins,” or “Top Tier.” These included the glamorously high-tech IBM, Texas Instruments, Xerox, and Polaroid, but also Avon, Disney, Coca-Cola, and other consumer-oriented stocks evidencing strong growth rates.

Having attracted large pools of liquid capital from corporate pension funds, college endowments, insurance companies, and elsewhere, institutional money managers were flush with sufficient cash to support Top Tier share prices in the face of selling pressure, or as Sobel once put it, “by interceding on the buy side.”⁸⁹ These traders, said a contributor to *Financial Analyst Journal*, “have remained largely aloof to the distress of the broad lower tier of equity securities by steadfastly channeling their new funds into a favored few.”⁹⁰ Shares of all other firms, including high-tech start-ups, were ignored. “How high,” one Wall Streeter asked anxiously, “can you bid up the Minnesota Minings and the Eastmans before the whole system self-destructs?”⁹¹ The answer came in 1973 in the form of a bear market not seen since the 1930s. Net redemptions of institutional funds had been exceeding sales since 1972, but in 1973, the incoming cash needed to prop up the “Favorite Fifty” finally started running out.

85. Quoted in Robert Metz, “Market Place: Investor’s Guide for Write-Offs,” *NYT*, November 23, 1972, 58.

86. Norby and Stone, “Objectives of Financial Accounting,” 80.

87. Gerald M. Loeb, “Now You See ‘Em, Now You Don’t,” *Forbes* 109, March 15, 1972, 280.

88. John H. Allan, “An ‘Extraordinary’ Fog Envelops Accounting: Public is Confused What Really is a Loss,” *NYT*, January 14, 1973, 155.

89. Sobel, *NYSE*, 366. Also see Henderson, “Ruminations on Performance,” 104.

90. Bostonian, “De-Institutionalization of the Stock Market,” 30.

91. “Getting Back to Basics,” *Businessweek*, August 12, 1972, 108.

From late 1973 through 1974, panicked institutional investors moved out of stocks and into commercial paper and Treasury bills, and with the retail market already dried up, the entire two-tier market collapsed. Throughout the space age, said Mendon W. Smith, vice president of the Long Island Trust Company, “analysts provided reassuring rationalizations as growth stocks became more and more overpriced: ‘The P/E ratio should be twice the growth rate’; ‘Don’t worry about timing—growth in earnings will bail you out’; ‘Ignore dividend yield, the company can put the money to work better than you can’; and on and on. Mea Culpa. I can hear my own earnest voice echoing those words, and I, also, BELIEVED.”⁹² By the time Smith penned this statement in 1974, the last remnants of space-age glamour were being flushed out, and a new R&D accounting standard finalized that October helped make it so.

Accounting Reform at Its Limits

Organized in a hurry in winter 1972–73, the independent Financial Accounting Standards Board (FASB) became fully operational at the start of July 1973 with the problem of R&D accounting already on the agenda. In oral testimonies and written statements prepared for a public hearing held March 1974, representatives of the Financial Analysts Federation (FAF) joined two major auditing houses and some of the nation’s oldest R&D firms in condemning the deferral option. Du Pont’s first assistant treasurer, E. M. Robinson, argued that “financial problems involving deferring expenses that have come to light in recent years have all been due to the need to write off substantial amounts of deferred research and development that turned out not to have the value originally thought.” To W. W. Brown, assistant comptroller at AT&T, there was no mistaking that “future benefits, if they exist, are both uncertain and unquantifiable.” R&D expenditures, urged Brown, “would not or could not represent hard assets which can be converted to liquid form.” George R. Catlett and Frances Stone each agreed. Representing the public accounting firm Arthur Andersen & Co., Catlett insisted that to defer R&D was “in effect, an attempt to anticipate future economic resources and to admit assets to the balance sheet that are incapable of satisfying any claims held by creditors and in which any viable equity on the part of the owner is highly questionable.” To Stone, chair of the FAF’s Financial Accounting Policy Committee and analyst at Merrill Lynch, the difficulties of interpreting R&D disclosures in the absence of uniform accounting rules meant that “not everyone, [not] even our professional analysts fully understand what they are reading.”⁹³

To meet these demands for reform, the FASB’s October 1974 standard required corporations to expense R&D as incurred for financial reporting purposes. Arriving at this decision was rather straightforward, according to the FASB, because uncertainty played such a defining role in R&D. Plus, most firms were already in the habit of writing off these expenses as incurred.⁹⁴ Outside of financial reporting, however, the lessons learned and embodied in

92. Smith, “New Rationalizations,” 16–19.

93. Archives of these and other statements presented to the FASB during its deliberations, as well as the discussion memorandum, exposure draft, and other official documents relevant to the R&D standard-setting process, can be requested from the Reference Library of the FASB, in Norwalk, CT.

94. “The New Rules for R&D Accounting,” *Businessweek*, June 15, 1974, 34–35; “The Heady Dreams at University Computing,” *Businessweek*, May 1, 1971, 34–35.

the new standard failed to penetrate sites of R&D valuation beyond the FASB's purview, including most prominently the formation of national economic policy.

As the 1980s neared, wide-ranging economic ills made policy makers desperate for quick technological fixes. Yet, while no one doubted R&D contributed to the economic growth of nations, whether that contribution could be reliably forecast and incentivized remained a focus of debate. Speaking to other economists, Bela Gold expressed "the gravest doubts" about statistical studies relating "R&D inputs and GNP or profitability." "In my judgment," said Gold, "most of this is nonsense. It won't even stand up in comparing different firms within the same industry, much less among industries."⁹⁵ Other economists working outside the mainstream, including Richard R. Nelson, Sidney G. Winter, and George C. Eads, agreed.

At his nomination hearing to join the CEA in 1979, Eads empathized with Senator William Proxmire's complaint: "We are constantly assured that all you have to do to increase productivity is pour more money into research, and that that is the key." Indeed, by explaining productivity growth in terms of R&D investment, a growing number of NSF-funded studies were pointing in this direction. Alluding to this body of work, Eads was straightforward in his answer to Proxmire. "We haven't learned a heck of a lot, in spite of a lot of money to do those studies," said Eads.⁹⁶ "There may be a connection between [R&D] and productivity, but it is a very tenuous connection."⁹⁷

Jimmy Carter's administration would be the last to doubt such a "connection"; by the end of 1981, President Ronald Reagan signed into law the nation's first R&D tax credit. Reauthorized more than a dozen times, such tax relief provisions enjoyed considerable bipartisan support through 2015. That year, Obama enacted legislation making the once-temporary loophole a permanent feature of the US Tax Code—beyond the reach of the SEC, the FASB, and their mutual rejection of capitalized R&D expenditures.

R&D and the Historian

Today, assetization has overflowed tax loopholes to include, for instance, the incorporation of an "R&D capital" account into the US Commerce Department's system for calculating gross domestic product. As evidenced by a 2016 *Forbes* article, the limits of R&D investment thinking have been perennially rediscovered, at best: "Strategy&, a business unit within PricewaterhouseCoopers, has issued an annual report of the top 1000 most innovative companies in the world for over 12 years now. In that time, it has found no statistically significant relationship between R&D spending and sustained financial performance." Whatever the impact of dollars spent on R&D, its effect could not be discerned in measures of growth: not in shareholder returns, market capitalization, sales, or profits.⁹⁸

95. Quoted in Logsdon, "Research, Innovation, and Economic Change," 329.

96. Senate Hearings, "Nomination of George C. Eads," 9. Also see Nelson and Winter, "Search of Useful Theory," 38.

97. Senate Hearings, "Nomination of George C. Eads," 9.

98. Tendayi Viki, "Why R&D Spending is Not a Measure of Innovation," *Forbes*, August 21, 2016, <https://www.forbes.com/sites/tendayiviki/2016/08/21/why-rd-spending-is-not-a-measure-of-innovation>.

The foregoing helps problematize the equation of R&D and income-producing capital; less obvious is that historians, too, have contributed to the assetization process in question.⁹⁹ In most cases, those who interpret R&D as capital or investment have performed a useful service in taking R&D seriously as a form of inquiry and valuing it as such. At the same time, they go too far in their logical leaps of faith: that R&D is valuable as a form of inquiry does not, ipso facto, make it valuable as a form of capital.

As Geoffrey Hodgson reminds us, in an everyday business sense, “*capital* is either money or the realisable money value of an asset [that] can be *used as collateral for securing a loan*.”¹⁰⁰ Needless to say, “human capital,” “knowledge capital,” “R&D capital,” and other examples of what Alison Dean and Martin Kretschmer call “hybrid capital,” cannot be liquidated or sold to repay debts.¹⁰¹ Exceptions include human capital in the context of slavery, as exemplified by Caitlin Rosenthal’s history of enslavers’ capital valuation practices. Such (important) studies notwithstanding, it is hard to see how human beings, knowledge, or R&D qualify as capital *apart from the dialectics of theory*.

With hybrid capital metaphors circulating widely, Dean and Kretschmer warn that “the phrase ‘analogous to’ tends to be forgotten, and hybrid capital is thought of as simply a form of capital.”¹⁰² As Daniel Wadhvani suggests, the problem of the forgotten analogy may be more common than we realize. In service of offering contributions to theory, scholars who deploy metaphors uncritically do so at the risk of mistaking a conceptual device for ontological reality.¹⁰³ Thus, in critiquing Louis Galambos and Franco Amatori’s “entrepreneurial multiplier” concept,¹⁰⁴ Wadhvani argues that “the aspect of the entrepreneurial process most at risk of being elided ... is its deep uncertainty.”¹⁰⁵ This same consequence results from circulating R&D investment metaphors, and building on Wadhvani’s point, I suggest it is not uncertainty at large that is being elided but specific, situational uncertainties that arise through the course of business.

When emptied of such uncertainties, R&D is made to appear governed by transcendental laws that define R&D spending in terms of economic growth. To this day, lawmakers continue to take comfort in the certainty of the macroeconomists’ “R&D capital model.” In 2017, two researchers reviewing the R&D economics literature warned of “a danger of publication bias” in which only those studies that validate the typical economist’s “prior belief that returns to R&D are positive and possibly large”¹⁰⁶ are published. Historians, however, need

99. Chesbrough, “Graceful Exits”; Hall, “Corporate Restructuring”; Dosi and Mazzucato, “Introduction”; Baldwin and Clark, “Capital-Budgeting Systems”; Mowery, “*Plus ça Change*”; Chandler, “Competitiveness and Capital Investment”; Chandler “Competitive Performance”; Nicholas, “Did R&D Firms Used to Patent?” Nevalainen and Yliaska, “State-Owned Smokestacks”; Boersma, “Managing Between Science and Industry”; Graham, “Corporation Almost Displaced the Entrepreneur”; Cortat, “Cartels Stimulate Innovation.”

100. Hodgson, “What Is Capital?,” 1075.

101. Dean and Kretschmer, “Can Ideas Be Capital?,” 574.

102. Dean and Kretschmer, “Can Ideas Be Capital?,” 580.

103. Wadhvani, “Gales, Streams, Multipliers,” 331. The mistaking of theory for reality plays out in Galambos and Amatori’s rejoinder: “The multiplier is ... no more a metaphor than are the multiplication tables we all learned in grade school.” Galambos and Amatori, “Reply to R. Daniel Wadhvani’s Comment,” 341.

104. See Galambos and Amatori, “Entrepreneurial Multiplier Effect.”

105. Wadhvani, “Gales, Streams, Multipliers,” 329.

106. Møen and Thorsen, “Publication Bias,” 988.

not follow suit. By leaving uncertainties intact, we may better understand the problems facing historical actors and the solutions they posed thereto. In this way, history's advantage over other forms of inquiry lays in its ability to help us examine our long-standing habits—including our own interpretive practices—so that we may see them as capable of transformation in service of new purposes in the future.¹⁰⁷

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