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From social control to financial economics: the linked ecologies of economics and business in twentieth century America

Marion Fourcade · Rakesh Khurana

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Abstract This article draws on historical material to examine the co-evolution of economic science and business education over the course of the twentieth century, showing that fields evolve not only through internal struggles but also through struggles taking place in adjacent fields. More specifically, we argue that the scientific strategies of business schools played an essential—if largely invisible and poorly understood—role in major transformations in the organization and substantive direction of social-scientific knowledge, and specifically economic knowledge, in twentieth century America. We use the Wharton School as an illustration of the earliest trends and dilemmas (ca. 1900–1930), when business schools found themselves caught between their business connections and their striving for moral legitimacy in higher education. Next, we look at the creation of the Carnegie Tech Graduate School of Industrial Administration after World War II. This episode illustrates the increasingly successful claims of social scientists, backed by philanthropic foundations, on business education and the growing appeal of “scientific” approaches to decision-making and management. Finally, we argue that the rise of the Graduate School of Business at the University of Chicago from the 1960s onwards (and its closely related cousin at the University of Rochester) marks the decisive ascendancy of economics, and particularly financial economics, in business education over the other behavioral

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disciplines. We document the key role of these institutions in diffusing “Chicago-style” economic approaches—offering support for deregulatory policies and popularizing narrowly financial understandings of the firm—that sociologists have described as characteristic of the modern neo liberal regime.

Keywords Professions · Disciplines · Foundations · Universities · Institutionalism · Management

With hindsight, no transformation looks as consequential for the history of American higher education as the extraordinary rise of business schools and business degrees in the twentieth century. From its origins, at the beginning of the century, in technical/vocational programs dominated by practitioners with claims to moral leadership and ethical progress, business education has turned into a large and highly organized field controlled by disciplines with scientific claims. The first notable change was quantitative: in 1920, 1,576 students graduated from American universities with a BA in business; by 1940, the number had climbed to 18,549; by 1950, it reached 72,137 (Silk 1960, p. 14); by 2001, no less than 266,000 students, or 21 % of all BAs, were exiting American higher education with a business degree—a far greater proportion than the 13 % who did so in the 1940s (US Department of Education, National Center for Education Statistics). Transformations at the graduate level were even more striking: The number of MBAs awarded in the United States went from 110 in 1919 to 5,205 in 1958. Between 1960 and 1980, MBA education grew at an average annual rate of 12 %. More than 55,000 MBAs were granted in 1981, surpassing the combined total of law and medical school degrees. In 2006, the number of MBAs awarded annually in the United States exceeded 120,000 (Association to Advance Collegiate Schools of Business [AACSB]). Once an almost exclusively American phenomenon, the MBA degree is now granted in more than 100 countries and is well on its way to becoming a globalized credential (Moon 2002).

The second significant change was qualitative. Business schools, which control the production of certified managers (MBAs), have evolved from practitioner-dominated programs struggling for academic legitimacy to become the largest employers of disciplinarily trained social scientists, sometimes rivaling traditional departments in the size and distinction of their faculty. In 2003–2004 for instance, there were 549 economics PhDs teaching in the top twenty US business schools, as compared to 637 in the top 20 economics departments (Blau 2005). This absorption of increasingly large contingents of economics PhDs has turned business schools into formidable players within economic science itself—a transformation that is attested by the remarkable string of Nobel Prizes in economic science awarded to business school scholars since 1990 (Fourcade 2009).

Broadly speaking, we can identify three historical (though partly overlapping) phases in the transformation of the American business school over the course of the twentieth century. In the early phase, which begins with the creation of the Wharton School at the end of the nineteenth century, the business school was seen primarily as a vocational institution with a moral dimension. The moral dimension it derived from its embeddedness within the institutional framework of the university, often coupled

with a liberal arts foundation. Practical problems in industry (for instance questions of scale, anti-trust, government regulation, and, most prominently, labor relations), however, occupied the most prominent place. These courses were practically oriented, and indeed often taught by practitioners without specialized degrees, such as engineers (e.g., Frederick Taylor, the father of scientific management, at the Tuck School of Administration and Finance at Dartmouth) or accountants (e.g., George O. May of Price Waterhouse, at the Harvard Business School).

A second phase begins in the 1950s and marks the advent of a new vision of the contribution of business to society with the rise of “management science”—a new formation that deliberately broke away from the existing disciplinary system and sought to legitimate itself through hard-core technical capabilities. As is often typical, this scientization of the business disciplines did not originate in the dominant schools (which remained faithful to more institutionalist approaches) but at a brand new institution striving for academic legitimacy, the Graduate School of Industrial Administration at the Carnegie Institute of Technology. It is there that institutional misfits with a background in operations research set out to import new decision-making techniques from military and government settings into corporate organizations.

The third phase, which we illustrate here by curricular transformations at the University of Chicago’s Graduate School of Business in the 1960s, but which cut across other institutions, focuses on the ascendancy of neoclassical economics in all business matters. It is associated not only with the widespread diffusion of a strong core of economists within the institution of the business school, but also with the transformation of the subject matter and analytical orientations of economics itself. We argue that this transformation helped produce and sustain new understandings of the nature of the firm, with far-reaching consequences for business practices and economic relations in society.

To be sure, economists were prominently involved in all three phases of this process: as we will see, they laid claims on business education from the very beginning. But the long-term trend is unmistakably one of increased, if contested, interpenetration, particularly noticeable in the most recent period. From representing one subject among others at the turn of the century, economics has become the largest discipline found in business schools (AACSB 1999); in addition, it has come to exert commanding influence on all other aspects of the business curriculum—including organization studies, accounting, marketing, operations research, strategy, and most important of all, finance (Ferraro et al. 2005). Conversely, the association with business education has transformed economics in important ways, both in terms of the discipline’s economic standing and in terms of its substantive orientations. It has also helped reorient prevailing views about the purpose of the corporation, as well as power relations within them, in ways that favor the interests of owners of economic capital.

The co-evolution of economic “science,” business education, and (as we will suggest) models of corporate control in the twentieth century may be analyzed as an instance of what Andrew Abbott (2005) calls “linked ecologies.” Drawing on the Chicago school of urban sociology, which made extensive use of this notion, Abbott suggests that an “ecology” is simply an intermediate social structure, like a profession or the higher education system, that weighs in on individual action. Ecologies are analytical constructs, of course. They are heuristic tools that serve to represent the

social world according to a topological metaphor (and from that point of view the concept of “ecology” is not unrelated to Pierre Bourdieu’s concept of field).¹ Furthermore, we must think of the boundaries of ecologies as being fluid and dynamic, shaped by other ecologies: “Instead of envisioning a particular ecology as having a set of fixed surrounds,” Abbott argues, “I reconceptualize the social world in terms of linked ecologies, each of which acts as a (flexible) surround for others.” (2005, p. 246) He then identifies two types of linkages between ecologies: 1) professional strategies or technical innovations that transform several different professions at once [*hinges*, in Abbott’s terminology]; 2) the expansion of an existing profession into a new ecology [*avatars*]. Medical licensing, which serves to develop both a medical jurisdiction within society and a licensing jurisdiction within the state, is an example of a hinge connecting the two ecologies of the state and professions. The technological artifacts of economics, such as the Black-Scholes formula (for pricing derivatives; see MacKenzie 2006) or the user cost of capital (for investment decisions by corporations), can be construed in a similar way: in both cases, these formulas opened up new “scientific” possibilities at the same time that they expanded practical jurisdictions in the financial markets and corporate accounting through the production of new vocabularies, technologies, and skills. The institutionalization of economics’ claims with respect to business-relevant knowledge and the training of businessmen may be thought of as an avatar (i.e., the migration of a discipline into a new jurisdictional setting). But, as we show in our empirical analysis, this process is much more than a straightforward diffusion, because the avatar also acts back on the ecology that originated it. In the case we study, economists did not colonize the weak institutional setting of the business school from an external position of power (as the avatar image would suggest); rather, it was people in a dominated and sometimes marginal position within economics who, with institutional backing from philanthropic foundations, build up the business school into an academic powerhouse—thereby transforming the disciplinary ecology of economics (and their own careers) in the process.

The emergence of hinges and avatars is never straightforward nor automatic. Rather, it is an eminently political process, resulting from the mobilization of individuals and institutions around particular projects, material assemblages and legitimation strategies. Ecological hinges and avatars are the product of human coalitions and positional movements by people seeking to establish their authority through the development or reorganization of institutions—in that sense, it is an “enrollment” process (Latour 1987) of sorts, whereby institutions are mobilized and transformed in an effort to assert one’s position vis-à-vis relevant audiences to and convince potential allies. This process, of course, is especially tricky to negotiate when the institutions themselves have multiple sources of allegiance (though such ambivalence may also be a source of strength).

American business schools typically faced three conflicting modes of acquiring what Paul Starr (1982) calls “cultural authority:” Practical relevance, academic authority, and doing good. The practice-oriented constituencies toward which business schools directed their knowledge brought to the fore the concerns and political

¹ But see Abbott’s discussion of the difference between his concept of ecology and Bourdieu’s concept of field at <http://home.uchicago.edu/~aabbott/Papers/BOURD.pdf> (accessed July 1, 2010).

designs of corporate actors. The academically-oriented constituencies within universities exerted a powerful pull in an opposite direction—often expressing a sharp disdain for anything practical (e.g., by preferring the “pure” sciences and liberal arts), and urging for much more scientific approaches to practical problems (e.g. the development of engineering and the applied sciences). Finally, philanthropies (on which the new schools were financially and symbolically dependent) had their own agenda, too: they saw themselves as agents of social progress, moral education, and institutional innovation.

There have thus been three main strategies of institutional legitimation for business schools—utilitarian, scientific, and moral—although in practice legitimacy claims have often mixed all three (Khurana 2007). Our focus in this article is on the *scientific strategies* of business schools, a largely invisible (and poorly understood) factor in major transformations in the organization and substantive direction of social-scientific knowledge, and specifically economic knowledge, in twentieth century America. Economics, indeed, has been a driving force in the scientific and technical upgrading of the business school since the 1950s. In social scientific fields, business-school based knowledge production has often converged intellectually with arts and sciences-based production; it has also fostered powerful academic enterprises of its own—in the form of professional journals and associations that claim distinct, but related, disciplinary identities (e.g., organizational behavior for sociology, finance for economics).² As a result, business schools are no longer disciplinary backwaters for the social sciences: they have, instead, become important sites of substantive and ideological struggle over the “soul” of various disciplines. (Yonay 1998)

In this article, we narrate this intellectual and institutional journey by looking selectively at three critical ways in which the sometimes “avatared,” sometimes “hinged” evolution of the fields of economics and business knowledge was articulated historically: personnel management in the 1920s-1930s; systems and decision analysis in the 1940s and 1950s; and the new “financial economics” in the 1960s and 1970s. As business schools have risen to material power and social prominence, their academic influence cannot be ignored anymore, which poses the question of the distinctiveness of the knowledge produced in their midst (knowing that we focus specifically on the elite institutions, which have the strongest scientific claims). In other words, did the shifting material base of economic knowledge production (in the form of the expansion of the “business school” ecology) matter for the scientific and political trajectory of economics? We suggest that it did, bringing new substantive and methodological concerns to the fore, in dialogue with the changing shape, operating procedures and culture of American corporations (Fligstein 1990; Haveman and Rao 1997). These linkages are certainly complex and many-sided, so the story we tell is a necessarily contingent one. But it is one that has significant implications for understanding changing ideological orientations within the field of economics and (given business schools’ key role in the training of managers) within society at large—a question that has been largely overlooked by both the history of economics and the scholarship on neoliberalism.

² Note that what is true of economics is also true of sociology and psychology. Witness, for instance, the development of network analysis, largely a by-product of the migration of sociology into schools of business.

The moral education of American businessmen

It is important to disentangle the vast expansion of business education at the undergraduate level, which mainly occurred in public universities, from the much more exclusive form, which became institutionalized in private universities around a graduate-level curriculum (Veysey 1965; Jencks and Riesman 1969; Engwall et al. 2010). In the first case, the development of undergraduate colleges of business seems to have been conceived largely as a response to public demands in a competitive environment, as well as a natural extension of the “practical” mission laid out in many of these universities’ public charters. Private universities, by contrast, pioneered the concept of the business school as the privileged training ground for what they defined as the emerging tasks of management, which was understood to apply very broadly—the corporation, indeed, was just one outlet for managerial training, along with public service and philanthropic work. Modeled after earlier professional schools,³ business schools at elite universities (e.g., Harvard, Chicago, Dartmouth) were to recruit educated liberal arts undergraduates and turn them into leaders with administrative competence. These schools saw themselves as gateways into the elite, and crafted their institutional projects accordingly. The creation of the first Master of Business Administration degree at Harvard Business School in 1908, the drive toward professionalization (with the establishment of doctoral programs in business, as well as academic journals and associations during the 1920s), and the conscious choice to confine business education to the graduate level at Dartmouth (1900) and Harvard (1908), then at Chicago (1946), Columbia (1952), and Carnegie Tech (1952), were all efforts to protect the selectivity and exclusivity of management training, to affirm its status and seriousness of purpose vis-à-vis the rest of the university, and to establish the scientific rigor of management as a discipline.

Within this very broad and very varied field, institutions differentiated themselves by mission and style, seeking to establish a niche and specific reputation for themselves. A few schools stood out by specifically emphasizing their academic ambitions over vocational ones, and it is this subset that interests us here, because how they did so was especially consequential to the development of economics—the discipline then assumed to be most relevant to business. It is, indeed, this ambition that gives potency to the ecological linkage between the two fields.

The newly created institutions’ most pressing goal in the earlier period was to define their place within the broader field of higher education. Some faced tensions with their parent universities over the seriousness of their curriculum; many also struggled to reconcile their search for business connections with their longing for moral legitimacy, which permeated the field. Certainly these tensions played out differently in different places. However, in a way broadly characteristic of the Progressive period, the solutions generally involved professionalization and the search for moral grounding. It is during the earlier part of the twentieth century, for instance, that business ethics emerged and flourished (Abend 2008), and that the ideology of professions as normative institutions (Parsons 1939) took root in American sociology. Still, different institutions took different paths. Privileged by

³ For instance, when the Harvard Business School was founded in 1908, the medical school had been around since 1782, the law school since 1817, and the divinity school since 1819.

its parent school's dominant reputation and socially exclusive recruitment, Harvard Business School embraced the managerial ideal most confidently, cultivating close relationships with corporate elites through the development of a practical, case-based curriculum (which involved them), and taking for granted the notion that its students were the future leaders of America's companies (Aronson 1992). Other schools, such as the School of Commerce and Administration (as it was originally named) at the more recently founded (1892) University of Chicago remained committed to the liberal arts as the normal foundation of business education—as of any form of education. The Wharton School, which we begin our narrative with, stood somewhere between these two extremes and emphasized the empirical social sciences, which seemed at the time to offer a path between practical relevance and moral education—but also, as we will see, exposed the institution to political criticism from unsympathetic constituencies.

The creation of the Carnegie Tech Graduate School of Industrial Administration after World War II illustrates the second phase in our historical account. It is through this example that we discuss the increasingly successful claims of social scientists, backed by philanthropic foundations, on business education and the growing appeal, in the 1950s, of “scientific” approaches to decision-making and management. Gone were the days when the liberal arts were seen as relevant to the education of American businessmen. Rationality was the new *modus operandi*, and what were now called the “behavioral sciences”⁴ seemed to offer the greatest promise for solving the problems of American society and economy. As we show in this article, these transformations were also homologically related to changes in the prevailing mode of governance in the American economy: in particular, business schools became essential sites for the emergence of tools and methods for the management of the new large, diversified conglomerates that had developed as a result of economic mobilization during World War II and increased federal prohibitions on vertical and horizontal mergers (which encouraged strategies of unrelated diversification by default—see Fligstein 1990; Chandler 1990). Input–output approaches, linear programming, and statistical forecasting methods, for example, were all developed in this context, foreshadowing the incorporation of new computational tools into mainstream economics.⁵

Finally, the rise of the University of Chicago's Graduate School of Business—which really begins in the late 1950s—marks the decisive ascendancy of economics, and particularly finance, over the other social-scientific disciplines laying claims on the business curriculum. Furthermore, the diffusion of “Chicago-style” economics into business schools became a powerful vehicle for the transformation of the field of economics itself. It helped produce both the microeconomic turn in modern economic analysis and the emergence of narrowly financial understandings of the firm, which would ultimately help reorient business practices toward what Fligstein (1990) has

⁴ The term “behavioral sciences” was explicitly employed by the Ford Foundation against the older notion of “social sciences,” which was deemed too political (Macdonald 1956).

⁵ Note that many studies have documented the growth of MBAs in American corporations. Mayo et al. (2007) show a significant increase in the education level of American business executives during the 20th century, with the MBA growing fastest among advanced degrees. Additionally, Zorn (2004) has shown that even beneath the CEO level, CFOs have become an important part of the senior executive team and that their backgrounds and training are less likely to come from accounting and more likely resemble the strategic finance and financial engineering taught in MBA programs.

termed the “financial” conception of the firm, or the idea that the sole purpose of management and the essential social mission of the corporation, is the maximization of shareholder value.⁶

Business education between vocationalism and progressivism

When the first colleges of administration, commerce, accounting, and finance were established at the turn of the twentieth century, they were “largely an outgrowth of the subject of economics,” in the assessment of the first meticulous survey of the field (Bossard and Dewhurst 1931, p. 325). Writing in 1913, Leon C. Marshall, dean of the University of Chicago’s College of Commerce and Administration (later the Graduate School of Business), wrote of the school’s beginnings: “[T]his college succeeded in little more than making provision for the grouping of existing courses in economics and closely related subjects” (1913, p. 98). Northwestern University’s dean described the business school as “a very ill-defined institution. It may begin with the freshman year; it may start only after graduation from college; or it may start anywhere in between. It may represent courses in economics regrouped and relabeled, or it may omit all so-called economic courses and center exclusively on practical courses in administration” (Hotchkiss 1920, p. 92). The fact is that when professors took charge of establishing business schools within the institutional framework of the university, they tended to approach the problem of business education from the point of view of the dominant academic perspective. In particular, they crafted the business curriculum around those disciplines that were then thought to embody the highest promise of social progress, namely the social sciences. Marshall, again, was particularly explicit about this: students at the University of Chicago’s College of Commerce and Administration had to start their studies with a “broad cultural foundation” in the liberal arts, followed by a “broad survey of the social sciences,” before receiving specialized instruction in one of three possible careers: business, civil service, or charitable and philanthropic service (Marshall 1913, p. 100). More often than not, early business school leaders were recruited from the social science faculty: “In the general stampede, every little college sets up, on paper, its department or school of business and the professor of economics, who maybe has not known the difference between an invoice and an inventory, becomes the dean” (Wolfe 1926, p. 231). In order to appeal to their primary audience, however, these “economists” had to carve a special niche for themselves—pragmatic, commercial, but still reliably legitimate for their discipline of origin.

⁶ The most conspicuous omission in this panorama is, of course, Harvard Business School, which we have excluded for substantive reasons that will become clearer in the remainder of the article. The fact is that in spite of its pioneering role in establishing business education in the United States, Harvard’s trajectory in this domain remained quite disconnected from evolutions at other major schools. Harvard’s relative autonomy is attributable largely to its size, financial autonomy from the larger university, preeminent status as one of the oldest business schools in the country, and, finally, to the distinctiveness and success of its clinical approach to business education and powerful connections with the business world, which partly buffered it from the competitive pressures that applied elsewhere.

“Applied economics”: labor problems, institutionalism, and philanthropy in the American business school

It is in this context that a number of so-called “new school economists”—broadly progressive in their political outlook, interested in social reform, rejecting the more abstract legacies of British Marshallianism in favor of a more hands-on and “private” approach to problems of business—found themselves closely associated with the construction of business schools: Edwin Gay, the founding dean of Harvard Business School, was an economic historian (Heaton 1952); Edmund James, the first director of the Wharton School (1883–1896), was a railway and public utilities specialist. James’s successor at Wharton, Simon Patten (1896–1912), embedded his economics in broader questions of social philosophy and was an early promoter of experimental economics. Roswell McCrea, who followed Patten at Wharton and later founded the Columbia Business School, worked on tax issues within different industries. These men were by and large “applied economists” and many had strong intellectual affiliations with the institutionalist movement.

What did this mean on the ground? The trajectory of the Wharton School before World War I offers a telling empirical illustration of the intellectual orientation of economics as it was practiced within the context of the American business school. So we begin this narrative with Wharton, focusing more specifically on the social trajectory of its founding dean, Edmund James, and the people he surrounded himself with.

James was trained in political economy in Germany during the heyday of the historical school. Like his friends Richard T. Ely and Simon Patten, whom he had met on the Continent, he was a Progressive, committed to social reform. And like them, James became an outspoken promoter of professionalization as a way to make policy advocacy publicly legitimate and acceptable (Furner 1975). He was militantly involved in the movement to separate administration from politics and was a founder, in 1894, of the National Municipal League, a progressive organization that sought to make government less “corrupt” and more “efficient.” Finally, his campaign for rationalization included business—partly because the boundaries between public and “industrial” administration were still not all that clearly drawn. Business, James argued, was as legitimate a subject of study as law and medicine, and as legitimate a starting point for rational social reform as any. This was a position that resonated well with the aspirations of new wealthy elites—someone like Joseph Wharton for instance.

In 1881, Wharton, a devout Quaker and successful Philadelphia industrialist, gave \$100,000 to the University of Pennsylvania to establish a school of finance and commerce.⁷ Part of Wharton’s motivation was his perception that technical innovations were radically shifting the context within which American businesses were operating. But of even greater importance was his feeling that American business elites needed to embrace new social roles to serve a nation that was undergoing tremendous social change. The proposed school was to train future leaders to “manage” competently while also working toward the welfare of society: “No

⁷ In its early years, the Wharton School was not a separate entity but a department within the university’s arts and sciences college.

country,” Wharton argued, “can afford to have this inherited wealth and capacity wasted for want of that fundamental knowledge which would enable the possessors to employ them with advantage to themselves and to the community” (Joseph Wharton, Vision for Wharton School, 1881, as quoted in Sass 1982, p. 23).

The Wharton School attracted the attention of the American Bankers Association as “the only institution of higher rank which was busying itself with the [problem of professional education for the business classes]” (James 1898, p. xv). In 1890, the association sent James to Europe for a year to study how business was being taught. Published as *The Education of Business Men in Europe* (1898), James’ study detailed the history and curricula of commercial schools in the leading industrialized countries of Austria, Germany, France, Belgium, Italy, and England.⁸ Upon returning from Europe, James traveled throughout the United States, repeating his call for the introduction of business studies into the higher education curriculum.

Like many other academics at the time, James was an opponent of laissez-faire dogmatism, of the deductive approach to economics, and of the application of mathematics to economics. In 1885, for instance, he wrote a scathing critique of Simon Newcomb’s *Principles of Political Economy* for the *Princeton Review*, igniting (together with Richard T. Ely, another prominent institutionalist economist) an American version of the German *Methodenstreit*. (Newcomb, then America’s foremost mathematician and astronomer, was an early convert to marginalism and the use of mathematics in economics.)⁹ Others at Wharton held similar positions. At stake was not only the proper approach to economics (the integrated and historical view of society as opposed to the search for universal laws) but also the relationship between economics and politics. Simon Patten, who succeeded James at the head of Wharton, was even more sanguine on the subject. According to him, there could be “no full discussion of economic problems without bringing political and moral principles into relation with the economic.” In fact, Patten defined the laws of economics not as explanations but, instead, as enumerations of “what qualities must be impressed upon men in the struggle for the higher civilization which the conditions of life permit” (Sass 1982, p. 100). Under his leadership the Wharton School embarked on an ambitious program to study the social problems of the day.

As Furner (1975) and Ross (1991) have shown, the institutionalization of social science in American universities was a generally contested process, and business colleges were no exception. Some of the initial enthusiasm in favor of the development of political economy at the University of Pennsylvania (certainly on Joseph Wharton’s part, for instance) had been fueled by the desire to promote the protectionist doctrines of the Philadelphia-born economist Henry C. Carey. The fact that Patten was a staunch defender of protectionism had made him eminently attractive to Wharton—and indeed there is evidence that Patten spread the protectionist gospel

⁸ See Locke 1984 for a comparative history of business school systems.

⁹ Marginal utility theory commonly refers to a set of conceptual and mathematical tools (specifically differential calculus) developed in continental European economics at the end of the nineteenth century to study economic behavior “at the margin” and thereby assess the efficiency of resource allocation. Methodologically, analytically, and sometimes politically as well, marginalist economists often found themselves at odds with economists advocating more institutional and historical approaches to the economy. The fiercest intellectual battles involved the German (historicist) and Austrian (marginalist) schools of economics, but similar struggles took place also in England, France, and the United States.

quite effectively among his students (Sass 1982). But the question of social reform was much more difficult to negotiate with the trustees, and on these matters Patten found himself, like many of his colleagues, much at odds with the interests of those who funded and controlled the university. In 1915 a conflict erupted at Wharton over the teachings and anti-war views of political economy professor Scott Nearing and the “trustees encouraged a general exodus of Progressive economists” from Wharton in the years that followed. Patten himself, now seen as an unpopular agitator and pacifist, was forced to resign in 1917 (Sass 1988, p. 139).¹⁰

The equivocal nature of Progressive ideology was revealed in these conflicts. For many active participants in the Progressive movement, the point of social and economic reforms was not to make American society more just (though socialist overtones were certainly not absent from some Progressive writings) but rather to moralize its functioning, make it more predictable and *thereby* improve the efficiency of the economy. It was hoped that experts-led rationalization by engineers and social scientists would rid society of all sorts of moral evils, from the spoils system in government to price fixing in industry, from wasteful spending to alcohol and prostitution. James and Patten were among many economists who embraced these crusades—recall, for instance, Thorstein Veblen’s rants against waste in *The Theory of the Leisure Class*, and against the manipulation of output by financial managers in *The Engineers and the Price System*. Other institutionalists (Leon Marshall (of the School of Commerce at the University of Chicago), Edwin Gay (of Harvard Business School), even Wesley Mitchell (Columbia University)) ardently supported scientific management as the best way to control fluctuations in the economy (source of all evils) and to lay business on a more secure ethical footing. It is in part on the strength of these associations that they found themselves closely associated with the effort to establish and develop schools of business in the United States.

This perspective also received vindication from philanthropic foundations and government agencies. By the 1920s, commissioned projects and the founding of new, empirically oriented research organizations started to advance the idea that social and economic knowledge contributed to the betterment of American capitalism, to the benefit of all. In Washington, Secretary of Commerce (1921–1927), then President (1929–1933), Herbert Hoover began enrolling social scientists into his new technocratic economic order (Barber 1985), and business school officials actively sought the connection. In 1921 the first research center devoted to the study of the “economic and social problems of business” was founded, with support from the Carnegie Corporation and the Laura Spelman Rockefeller Memorial Fund, at the Wharton School as the Industrial Research Department (IRD). The Department’s

¹⁰ A member of the Pennsylvania Child Labor Committee, Nearing had been convinced by his work there that local businessmen were responsible for keeping local youngsters in their factories and preventing the passage of laws regulating child labor. During the 1910s, Nearing published a series of works denouncing this practice, and more generally attacking workers’ low wages, industrial accidents, monopoly, urban congestion, and sanitation problems as major sources of inefficiency in the American economy (see, for example, Nearing 1911). This position, and later his antiwar views, had irritated members of the state legislature (which partly bankrolled the university), as well as prominent trustees, and Nearing was promptly fired—one of the many victims of the “academic freedom” persecutions so well chronicled by Furner (1975). Also see Nearing (1919). The firing of both Nearing and Patten was officially attributed to their antiwar views.

founding director was an economics PhD from the University of Pennsylvania, Joseph Willits, who used it as a platform to advocate for personnel management policies as a way to prevent social crises.¹¹ Less radical than Nearing and Patten, Willits worked mainly through cooperative studies with selected local industries to develop new labor relations techniques that, he hoped, would help improve the social environment of business.

The first two decades of the twentieth century had been marked by a sharp intensification of industrial unrest, culminating after World War I (Shenhav 1999). The rapid turnover of the workforce was also a major preoccupation of businessmen during the war and the 1920s. Not only was the need to stabilize populations of workers politically and physically seen as the central industrial problem of the day but solving this problem seemed to reconcile the Progressives' aspirations for social betterment with American corporate practices. It is in this context that American philanthropies became heavily involved in sponsoring studies of working conditions and financing the emergence of the social work profession. Beardsley Ruml, who headed the Laura Spelman Rockefeller Memorial Fund, explained the move: "[I]t was felt that through the social sciences might come more intelligent measures of social control that would reduce such irrationalities as are represented by poverty, class conflict and war between nations" (cited in Magat 1999, p. 56). Workplace organization and personnel management practices loomed large among the preoccupations of engineers and economists, particularly those working in business schools, who saw these issues as holding the key to the problems that seemed to plague the American economy: inefficiency, labor struggle, absenteeism and poor work effort.¹² At Wharton, for instance, the first studies by Willits' Industrial Research Department were concerned with workplace organization and personnel management, then described as issues of "social mobility"; it is also at the IRD that a young Australian psychologist named Elton Mayo did his first US-based work on the effect of employee reverie and fatigue on industrial turnover.

Other business school leaders played similar roles as power brokers in the institutional nexus that linked universities, foundations, and governments: like Willits, Edwin F. Gay of Harvard Business School was actively involved in the Social Science Research Council (SSRC) and the founding and activities of the National Bureau of Economic Research (NBER) and the Council on Foreign Relations, while also leading the development of methods and efforts to collect federal statistics about the economy and American society. Edmund E. Day, who became the founding dean of the business school at the University of Michigan after chairing the Harvard economics department, went on to head the social sciences division of the Laura Spelman Rockefeller Memorial Fund (later integrated into the Rockefeller Foundation) and "played a crucial role in tying together the SSRC to Rockefeller philanthropy" (Fisher 1993, p. 72).

¹¹ Willits was, in many ways, an example of the consummate academic insider of the interwar period—he worked on Hoover's Emergency Committee for Employment, helped found and presided over the National Bureau of Economic Research, became dean of Wharton during the 1930s and ended his career as a Rockefeller Foundation official.

¹² See, e.g., Bruce 2005, on the importance of personnel management concerns in American economics during the 1910s and early 1920s. Also Shenhav 1995.

Where did all this leave economics in the business curriculum during the interwar period? In most places there remained a general, though perfunctory, agreement that economics—particularly the empirical, institutional economic knowledge so prized by philanthropic foundations and public institutions—had an essential role to play in business education. The lack of specialized training for business school faculty meant that economics graduates still provided a natural pool of educated men to recruit from. Moreover, some administrators believed that strengthening the tie between economics and business would shield both fields from their natural flaws. Thus while business courses were criticized for their ad hoc character and failure to address broad social and economic questions, discipline-based economics was (already) criticized for being ignorant of the practical demands and concerns of American employers.¹³

The abysmal failure of American capitalism to deliver prosperity after 1929, the foundations' aggressive promotion of social scientific research as a means to improve governance, and the activist stance of the Roosevelt administration in social and economic matters were all in part responsible for the broad reevaluation of the place of business schools in American society and higher education that took place during the 1930s (Khurana 2007). Business schools throughout the entire field—not only at elite institutions—began to justify their mission in academic, rather than in practical, terms, attaching themselves more firmly to the institution and purpose of the university.¹⁴ Economics had a role to play in this new environment, both to help restore the legitimacy of the corporation as a moral institution and to assist government at all levels in crafting a path out of the economic malaise (the New Deal attracted a unprecedented number of university social science graduates into government employment). Hence during his deanship of the school from 1933 to 1939, Joseph Willits called for a return to Wharton's original mission of producing "applied" research on economic and social problems, which meant, at the time, labor economics

¹³ Roswell McCrea, who followed Patten as Dean of the Wharton School, argued: "Economics, where ever else it may or may not belong, does belong in the school of business. Both business and economics need to be saved from themselves. Without the presence of economics in some vital form, the work of a school of business is likely to degenerate into detail description of business organization and procedure, with no organizing principle other than the possible one of search for effective competitive devices, and with no clear vision of the social goal of business activity. And economics, divorced from business, is too likely to spend itself either in closet philosophizing by traditional modes, altogether too little affected with a present interest, or in fortifying predilections regarding public policy with broadly garnered data too remote from the intimate, work-a-day world of fresh experience to yield much more than a crop of articles, books, and book reviews. If schools of business realize their opportunities, the economic theory of the future will grow out of their researches and will be formulated by their teachers. The joining of socially motivated thinking with a knowledge of concrete, shifting reality, such as can be effected in a school of business, may well escape the puttering of the strict vocationalist on the one hand, and the futility of the closet philosopher on the other. The foundations of wise business policy can be laid in this as in no other way." (McCrea 1925, p. 222) The University of Pennsylvania is indeed one of the few elite universities in America whose economics department originated from within the business school: it was only in 1974, in fact, that Wharton economists decamped to the school of arts and sciences.

¹⁴ For example, the University of Mississippi's business school, whose pre-Depression mission statement emphasized narrow technical skills, revised it to include the advancement of knowledge on "fundamental questions of economics and philosophy which influence the course of a dynamic age." The University of Oklahoma's business school, whose mission statement, prior to 1930, stressed the economic value of its degree, shifted to wanting to "enable [students] to understand the public problems, particularly those having to do with the interrelationships between different businesses, between business and government, and between the employer and employee." Similar changes could be found at the University of Michigan, New York University, and the University of California.

broadly construed (Kaufman 2000). In the words of Columbia's Dean Woodbridge, who created a series of joint appointments between the economics faculty and the business school, the Depression served as "an appropriate occasion for welding these separate units [Business and Economics] at least as far as graduate work was concerned, into a closer integration" (Van Metre 1954, p. 78). But it is only after World War II that the ultimate effects of this scientific reorientation of business schools would be felt, with new forms of academic scientism becoming much more central to the institutions' rhetoric about themselves, to their curriculum, and to their understanding of their vocational mission.

This process, however, was tied to the scientific transformation of economics itself, following the logic of linked ecologies discussed earlier. Between the 1930s and 1940s, the institutional approaches that dominated "applied economics" started being challenged by younger generations of statistically oriented practitioners with new scientific ambitions. Within business schools, economists were losing their exclusive claims to the study of labor problems to psychologists, sociologists, and the new "industrial relations" specialists (Kaufman 2000). But just as economics' natural jurisdiction over the study of business seemed to be weakening, it was recaptured under a new form: through the provision of decision-making tools to preside over increasingly complex production processes. Characteristically, it took an outsider institution—a brand new school not beholden to traditional knowledge-making practices and existing constituencies—and a new set of philanthropic aspirations (dominated, this time, by the Ford Foundation), to effect the change. But before we discuss how Carnegie Tech changed business education, let us step back a little to consider the disciplinary and institutional environment that brought this small school to the center stage of business education in the 1950s.

From scientific management to management science

By the late 1950s, American economics had undergone a dramatic transformation. The dominant approach during the interwar period, institutionalism, was on its way out, gradually displaced by the rise of mathematical economics (Yonay 1998). The collection of large streams of data by federal agencies and the construction of national accounts (initiated by Kuznets, a Wharton school economist, in 1937 at the National Bureau of Economic Research), combined with the birth of macroeconomics, was spearheading a new, theoretically-oriented approach to empirical work. The shift to model-building as the alpha and omega of the economist's craft was most dramatically announced by the publication of Paul Samuelson's *Foundations of Economic Analysis* in 1947, in which Samuelson laid out the new approach to economics as an instance of mathematically-driven deduction, much like theoretical physics.

This change did not sit well with all audiences, however. Foundations officials were disheartened by the esoteric nature of the new economics. More importantly, segments of the business world were annoyed by the Keynesian orientations of the young generation. As Samuelson put it, "Keynesianism was a naughty word politically long after the war," frequently lumped together with communism in right-wing circles (in Colander and Landreth 1996, p. 170). Neoclassical economists, many business leaders felt, had replaced the celebration of the private enterprise system

and opposition to regulatory frameworks with a new fascination with macroeconomic aggregates and, as time progressed, a growing acceptance of government intervention in all business matters (Bornemann 1957, pp. 135–136). A survey of the teaching of economics carried out for the Sloan Foundation plainly expressed this dissatisfaction with what some perceived as a new form of radicalism (McKee and Moulton 1951).¹⁵

But macroeconomics and regulation were not the only features of the new economics in the postwar period. To a large extent, the most consequential developments for the future of business education came not from the consolidating neoclassical synthesis in universities but from a rather unlikely source: the nebulae of institutions and research centers sponsored by the growing social-scientific interests of defense-related agencies and think tanks. It is in this sector that we can identify the intellectual sources of a new “scientific”—meaning, in this case, quantitative and positivist—approach to management, to be taken up and systematized on a massive scale through the financial and moral involvement of American foundations in business education. Indeed the new era in the relationship between economics and business can be understood as the outcome of three joint developments: first, the general transformation of the social sciences under the influence of operations research and military funding during and after World War II (Simon 1991; Mirowski 2002); second, the scientization of the business curriculum, brought about by a new power configuration in business school education dominated by the Ford Foundation; and third, the emergence of the conglomerate model of corporate organization, which, as we will see, bore more than an “elective affinity” with the new techniques being developed in economic research circles. The dramatic success, barely a few years after its founding, of the Graduate School of Industrial Administration at the Carnegie Institute of Technology provides an exemplary illustration of all three trends, as well as of their interpenetrating logics.

The GSIA and administrative behaviorism

We have seen that the founding (and often subsequent) deans of the business schools at Wharton, Harvard, the University of Chicago, the University of Michigan, and many other schools were all economists. The new business school at the Carnegie Institute of Technology, which William Larimer Mellon, the founder of the Gulf Oil Company, helped establish in 1949, was no exception to this rule: its first dean, Lee Bach, was a University of Chicago economics graduate; at the time of his appointment, he was also the chairman of the Carnegie economics department.

The Graduate School of Industrial Administration (GSIA), as it came to be known, would go on to offer a new model for studying and teaching business. The approach would be decisively technical and methods-oriented, and quite scornful of traditional, practitioner-dominated forms of training as well as of disciplinary mainstreams. Indeed, it is perhaps the GSIA’s marginality vis-à-vis dominant business schools and academic departments that enabled it to cultivate a certain intellectual autonomy

¹⁵ One response from the business world and foundations was to sponsor new economic research institutions, the most important of which was the Committee for Economic Development, a think tank filled with economics faculty and graduates from the University of Chicago, some of them closely affiliated with the Graduate School of Business (Collins 1978).

and play a decisive role as an incubator of new approaches within economics in the 1950s and 1960s (including behavioral economics, modern finance theory, and—perhaps most significantly—the theory of rational expectations).

GSIA's original mandate says it all. Funded with a six million dollar grant from Mellon, the Graduate School of Industrial Administration was to "... help the growing need in American industry for potential executives trained in both engineering and management" (Fact Sheet: Official Dedication, Carnegie GSIA, 1952). But where did this new orientation come from? To some extent from the school's first dean, Lee Bach. A doctoral student in economics during the 1930s, Bach had been deeply affected by the Depression and frustrated at the impotence of the social sciences, especially his own, in solving social problems.¹⁶ After receiving his PhD from the University of Chicago in 1940, Bach obtained a US Navy commission and spent most of World War II working on postwar economic reconstruction planning. At the end of the war, he accepted an appointment as chairman of the economics department at Carnegie, where he became a close confidant of William Larimer Mellon. Mellon had a strong interest in business education, and Bach eventually succeeded in convincing him to underwrite a new type of business school.

As dean-elect of a school that was yet to be built, Bach spent a year visiting the classrooms of the country's leading business schools. With the exception of Harvard, "which was lively and [where he found himself] intrigued with the advantages of the new 'case method,'" Bach found that most of the business school programs consisted of either applied general economics or "how-to" approaches based on prevailing best practices among leading business firms. Little research was being done and doctoral programs, where they existed at all, were weak. Business schools tended to be at the bottom of the academic pecking order, often ranking below agriculture and education schools.¹⁷

Against the traditional model, Bach argued that business education ought to be an extension of the social sciences, rooted in quantitative analysis and the behavioral disciplines (Bach 1960a). As Herbert Simon put it in his autobiography, "Almost none of the founding fathers of GSIA had extensive backgrounds in management or business education. We were social scientists who had discovered in one way or another that organizational and business environments provide a fertile source of business ideas and who therefore did not regard basic and applied as antithetical terms" (Simon 1991, pp. 138–139).

Simon was, along with statistician William Cooper, the other original pillar of the GSIA. Cooper was born in poverty and owed his higher education to luck and the benevolence of a wealthy patron, who sponsored his studies in economics at the University of Chicago. (He then went on to do graduate work at Columbia.) Like many in his generation, Cooper found himself caught up in government service

¹⁶ Bach described an incident in his economics class where "the professor was explaining that theoretically there couldn't be a lasting depression in a competitive, capitalist-type economy. I looked out the window at a long line of unemployed men, waiting to apply for two WPA jobs the town government had managed to get." Bach thought there "must be a better way" for economics (Bach in Gleeson and Schlossman 1995).

¹⁷ Interviews carried out by Marion Fourcade with American economists confirmed that as late as the 1970s–1980s, business schools were not considered highly reputable places for young economics graduates to start a career. (The Chicago GSB changed all that.)

during the last years of the Great Depression, working at the Tennessee Valley Authority. He stayed in government during World War II, where his statistical skills drew him into operations research. As for Herbert Simon, Philip Mirowski describes him as the “consummate cold war intellectual . . . a master polymath” (2002, pp. 454–455). Trained as a political scientist specializing on bureaucracy, Simon was fascinated by mathematical formalization. (His mentor at the University of Chicago was the economist and mathematician Henry Schulz.) Later on, while on the faculty at the University of Illinois, Simon found himself (at Cooper’s instigation) working at the Cowles Commission for Economic Research, which “started [him] on a second education in economics” (Simon 1991). The same Cowles connections led Simon to forge contacts at the RAND Corporation and particularly one of its subsidiaries, the Systems Research Laboratory, where he worked on computer simulations and completed the first artificial intelligence program. Indeed, according to Mirowski, it was this context—much more than his behaviorist influences—that shaped Simon’s distinctive conception of administrative behavior, which later earned him the Nobel Prize in economics.

Bach, Cooper, and Simon were institutional and social mavericks of sorts. All three had a connection to the University of Chicago, yet none was a typical representative of what would later be called the “Chicago view”—the staunch preference for the free enterprise system. Indeed Simon, like many Cowles affiliates, was originally somewhat of a leftist (though resolutely anti-communist), and Reder writes of G. L. Bach that he “would not be thought of as [an example] of the Chicago genre” (1982, p. 6). Although they were all firmly committed to the application of mathematical and statistical methods to decision-making, their attachments to economic orthodoxy were weak—indeed they were mainly involved in applied projects (Bach 1960b). Finally, their orientation toward business school education and research was competitive and opportunistic: in Simon’s view, “American business education at that time [was] a wasteland of vocationalism that needed to be transformed into science-based professionalism” (1991, p. 139). The GSIA was to be the antithesis of all this and demonstrate the relevance of serious academic research to business education.¹⁸

Truth to tell, the institutional success of the GSIA was a necessary precondition to the academic legitimation of the founders’ distinctive scientific program. What was at stake in the GSIA experiment was nothing less than the redefinition of the dominant form of intellectual capital in the field of business education, which would soon imply the replacement of institutionalists and business practitioners by true scientists. This transition, in turn, was enabled first by the mobilization of technical capabilities and the rhetoric of science and, second, by the enrollment of powerful institutions into the school’s project, namely philanthropic foundations.

¹⁸ There was particular hostility toward Harvard Business School and the academic disciplines. Harvard, the GSIA faculty felt, impressed through expensive neo-Georgian architecture and elegant faculty offices, not intellectual rigor (Leavitt 1996, p. 290). The need to differentiate the GSIA from Harvard even manifested itself in the design of the school’s physical building, where a culture of austerity dictated that there not even be an elevator, although the institution was on sound financial footing. The GSIA faculty saw this as a badge of true seriousness.

In describing the qualifications for his school's faculty, Bach stated: "[W]e wanted a block of faculty members to provide the disciplinary foundations for the applied fields to business. For this group, we preferred people from the disciplines (economics, political science, the behavioral sciences, operations research) and the quantitative methods (mathematics, computers, statistics, accounting)."¹⁹ The GSIA also sought to recruit different students than did the more traditional business schools. Advanced training in quantitative analysis and a background in engineering were pre-requisites for admission—in sharp contrast with Harvard Business School, where most of the MBA students had a liberal arts background. The GSIA master's degree curriculum was built around four pillars: (1) organizational behavior; (2) economic analysis; (3) quantitative management science; and (4) business and society. Bach claimed legitimacy for economics in the curriculum by stating: "It is essential for the businessman, as citizen and as civic leader, to understand the broad mechanism of the economic system in which his firm operates and to be able to think intelligently and independently in arriving at positions on major public policy issues. Second, economics can provide some tools, but only a modest part of the necessary tools, for making managerial decisions about the conduct of the firm" (Bach et al. 1956, p. 563).

In many ways, the GSIA organized itself as an anti-Harvard—contrary to the logic of organizational isomorphism (DiMaggio and Powell 1983), which suggests that new organizations tend to mimic the most successful player in their field, but consistent with the more agonistic notion that dominated (or new) players in a field may engage, instead, in a "subversion strategy" in an effort to transform the rules of the game to their own benefit (see, e.g., Bourdieu 1975; Emirbayer and Johnson 2008, p. 11); Fligstein 2002; Fligstein and McAdam 2011). The institution's leaders not only challenged dominant strategies in the field, but they did so fiercely, sometimes harboring the self-righteousness of the underdog: "GSIA was hemmed in by mostly self-enacted enemies: Harvard and those other big, dumb old business-oriented business schools on one side and the nose-in-the-air traditional university disciplines on the other. Initially, both Harvard and the disciplines brushed us off, an upstart fly buzzing about in the Pittsburgh smog. Who had ever heard of Carnegie Tech? For our part, we rose to the challenge. We were proud, certain that we were the best and brightest. Our exhilaration and self-confidence were, as always, widely interpreted as insolent arrogance" (Leavitt 1996, p. 290). Bach and his colleagues indeed knew that their experiment would ruffle feathers in the business school world. While their school had been able to attract "human capital" and "financial capital," it lacked broader social recognition. Older, larger, and well established institutions still dominated American business education, and GSIA administrators were well aware that their school's success depended on their ability to influence the outside world's perception of what was happening within its walls. How they managed to do so, as we describe below, largely hinged on the providential backing of the richest and newest foundation in the world. It is, ultimately, the support of the Ford foundation that propelled the recently established and relatively small institution into the inner circle of American business schools, thus legitimating its pedagogical and research models and, correlatively, the disciplinary authority of its faculty.

¹⁹ Quoted at http://www.gsb.stanford.edu/history/timeline/faculty_bach.html, accessed June 6, 2006.

New corporations, new politics, new knowledge

Before analyzing the process by which the Ford Foundation became involved in supporting the new approach to business education promoted by the GSIA, we need to discuss the broader historical context in which this particular move occurred. Two points require special consideration here, one economic—the emergence of the large conglomerate (or firms operating in multiple industries) as the dominant economic institution—and the other political—the anti-communist obsession of the McCarthy era. Let us turn first to the economic transformation represented by the rise of the conglomerate.

By the end of World War II, the multidivisional, diversified conglomerate was well on its way to replacing the large, horizontally and vertically integrated corporations of the earlier twentieth century as the dominant organizational form in the American industrial landscape. The change this represented can be seen in the fact that, prior to the war, more than 85 % of all Fortune 500 companies operated in a single 2-digit SIC (Standard Industrial Classification) code, whereas, by 1960, more than half of all Fortune 500 firms operated in multiple industries (Nohria 2002). Instead of trying to increase market share through efficient work organization and price leadership, the many firms that followed the new model sought to ensure their survival by growing sales and spreading risk across industries and product lines (Fligstein 1990). In this changed environment, the management of supply chains and the forecasting of demand thus replaced labor productivity and labor process efficiency as the core problems faced by corporate decision-makers.

The management of the war effort had posed similar problems. Military and state demands during the conflict had enabled experimentation with resource-allocation techniques and the development of statistical methods to foster a massive increase in production. The war was a formative period for a number of economists and operations researchers, many of whom ended up at RAND (a think tank connected to the Department of Defense) as soon as the conflict was over, or in more traditional academic bases but with their work sponsored by military agencies. This was the case at the GSIA, where the U.S. Air Force Project SCOOP (Scientific Computation of Optimum Programs) established a research center devoted to the development of mathematical models for addressing various industrial problems. It was under the center's auspices, for instance, that GSIA economists Charles Holt, Franco Modigliani, John Muth, and Herbert Simon worked on linear decision rules to plan production, workforce, and inventory in industrial settings. Originally developed at the Springdale, Pennsylvania plant of the Pittsburgh Glass Corporation, their approach was later implemented more broadly and the methods they developed are still widely used in business forecasting. The same is true of the work of Abraham Charnes (from mathematics) and William Cooper on the planning and control of industrial operations. As Cooper later recalled: "I became the recipient of numerous inquiries as well as visits by personnel from industrial firms eager to learn more about these new methods. [...] These academic papers] started a trend in the development of new methods for managing refineries (and other oil company activities) which continues to this day" (Cooper 2002, p. 36). Finally, complementing their intellectual work with institutional activities, Cooper, Simon, and Charnes all became actively involved in the founding of management science organizations.

Others followed a different path and moved directly into the corporate world. Perhaps most emblematic was the trajectory of Robert McNamara, who had been hired from his teaching post at Harvard Business School to join an operating group in the Army Air Forces to plan for the wartime production of airplanes. Using the earliest computers being developed in government laboratories, McNamara relied on life expectancies of air crews, the application of stochastic simulation, queuing theory, and other new statistical techniques to formulate acceptable kill ratios and plan bombing and airplane production runs. After the war, he brought his scientific language and planning, organization, and management control techniques to the Ford Motor Company, as one of a small number of “Whiz Kids” hired to turn the corporation around.

The GSIA experiment was thus not at all an aberration—in fact it was part and parcel of a broader transformation of conceptions of control in corporations and government that had been ushered in by the move to a militarized economy and by the Celler-Kefauver act of 1950 (Fligstein 1990). In this new understanding, managers were increasingly described as “systems designers,” “information processors,” and “programmers” involved in regulating the interfaces between the organization and its competitive and regulatory environment and bringing rational analysis to bear on a firm’s problems, whatever they might be—a far cry from the focus on problems of labor control that had dominated the preoccupations of managers and scholars alike during the 1920s. A 1952 *Business Week* article describing the new managerial technologies proclaimed: “The day of the truly professional general management man isn’t here yet, but it is not far away. That man will be trained for management in general, rather than in any one phase of business. He’ll learn his technique in school, rather than on the job.”²⁰ Armed with these new tools, proponents suggested, managers could work in an organization without knowing the details of its operations because what mattered was the structure and process of management decision-making.

Besides the advances in analytical techniques that came out of the war effort and the rise of new types of business organizations to the management of which these techniques seemed particularly well-suited, the other reason why the reform of management seemed urgently needed in the 1950s was political. Since the 1930s, at least, there had been a strong sentiment among some government and business elites that capitalism had failed to deliver on its promises, with dramatic consequences for the world. In the context of the Cold War, this belief was recast in a more explicitly political form, as economics and business were enlisted to help suppress the growing influence of communist ideas. This, in the eyes of promoters, implied efforts to ensure the competent management not only of the macro-economy—as the creation of economic advice organizations and think tanks during the 1940s attests—but also of corporations themselves. In a 1948 speech to business executives, Harvard Business School dean Donald K. David (soon to become chairman of the Ford Foundation), described effective managers as essential to capitalism’s victory in the contest with communism: “We face a long continuing struggle throughout the world for men’s minds and indeed for men’s souls.... In this conflict of systems, the best way to preserve our system is to make it work. To me the

²⁰ “Can You Teach Management?” *Business Week*, April 19, 1952, p. 126.

brightest ray of hope in these troubled times is my firm belief that the business men can and will measure up to the task.”²¹ During the McCarthy era, political attacks on philanthropies for their alleged anti-American biases (which culminated in the 1952–53 congressional hearings into the foundations’ activities) only made these political motivations more salient. The Ford and Carnegie foundations, in particular, clearly understood that fighting the spread of radical ideas and working toward improving the performance of US corporations would help restore their legitimacy in the eyes of skeptics.²²

The Ford Foundation and the reform of business education: the GSIA as model

In this complicated landscape, the GSIA seemed to offer promise. James Howell, an economist and coauthor of the 1959 Ford Foundation report on business education, later revealed that as early as 1954, only one year into Ford’s initial foray into business school programs, the GSIA was immediately recognized as “the advanced projects laboratory, the research and development group that [Ford] had to find or create; fortunately, it already existed” (Howell 1987, p. 9). Perhaps the convergence was natural according to the Bourdieuan principle that those who occupy similar positions in distinct (but linked) social spaces tend to form alliances: in other words there was, in Pierre Bourdieu’s (e.g., 1993) terms, a “homology” between the GSIA’s unconventional strategy (and newcomer position) in the field of business education, and Ford’s unconventional support of GSIA in the field of philanthropic foundations (and its newcomer position, too). In both cases, the strategy helped each institution distinguish itself from its main competitors: from Harvard and Wharton on the one hand; and from established heavyweights like the Carnegie and Rockefeller foundations on the other. Finally, personal connections were essential in bringing the GSIA to the attention of Ford. The school’s dean, Lee Bach, was a protégé of Chicago professor Theodore Schultz, who had the ear of Ford Foundation officials (Van Overtveldt 2007). More importantly, perhaps, was the close collaborative relationship, which developed among Lee Bach, Herbert Simon, and Ford Foundation vice president Thomas Carroll. Simon closely assisted the Ford Foundation in the development of its core programs in the behavioral sciences throughout the 1950s, which sought to bridge the divide with economics and helped craft the distinctively interdisciplinary approach promoted by Ford. As for Bach, who was a member of the Ford Foundation’s external advisory committee, he was recruited by Carroll to work closely with him on a strategy to achieve reforms in business education.

The strategy Carroll and Bach evolved was relatively straightforward: pour extraordinary amounts of resources into “good or promising schools of business (five

²¹ Donald K. David, “Business Leadership and the War of Ideas.” Paper presented at the Magazine Forum, April 27, 1948. In a 1947 article, *The New York Times* applauded Harvard Business School’s brief pamphlet *Education for Business Responsibility* as an intellectual turning point for developing a free-market retort to those academics calling for greater governmental involvement in the economy. (Russell Porter, “Stress Social Responsibility as Factor in American Life,” *New York Times*, September 7, 1947, p. F1.)

²² See Lagemann 1987. Amadae (2003, p. 38) dates the sharp shift to the right of the Ford foundation policies and intellectual agenda from the replacement of Paul Hoffman by H. Rowan Gaither, Jr., as president of the Ford Foundation in 1953. Under the latter’s leadership, the Ford foundation decisively reoriented its activities toward national security and the arguably rather anti-democratic vision of a society managed by experts. Also see Tadajewski (2009).

were to be chosen) which would then be the instruments of change for the rest of the field.” Given the amount of money involved, it was felt that institutions would quickly fall in line with Ford’s recommendations.²³

In an important symbolic message about the future trajectory of business school research, Harvard Business School did not receive the first large grant issued by the Ford Foundation.²⁴ Instead, that honor went to Carnegie’s GSIA—a school that had been in operation for barely 5 years but whose character expressed, according to the foundation, the ideal-type of the “new” business administration: the training of doctoral students in the application of the behavioral sciences and mathematics to problems of administration (Carroll 1959, p. 156). As the dispositional logic of habitus (Bourdieu 1992) would predict, Ford officials—most of whom were academics, especially economists—were thus contributing to enhance the world they came from by positively sanctioning the scientific, research-oriented (as opposed to practical and vocational) orientation of the GSIA.

Bach and Simon also collaborated closely with the Ford and Carnegie foundations in the development of two widely published surveys about the state of business education in the United States. These reports aimed to do for business education what the Flexner report had done for medical education in 1910. Based on an extensive survey of business curricula, students, faculty, and research, the two reports presented the GSIA’s model of management education as the template for other business schools. MBA courses were to be taught by discipline-trained scholars steeped in the latest quantitative methods. Business school faculty should be drawn mostly from academic disciplines such as economics, engineering, mathematics, sociology, psychology, and statistics. Business schools were to restructure their own doctoral programs by grounding students in the basic social science disciplines and direct their research more toward developing fundamental theory than advancing or

²³ According to an internal review (Wheeler 1965) the Ford Foundation spent about \$19 million altogether on the business school program, or about \$138 million in 2011 dollars. Only five schools (Harvard, GSIA, Stanford, Chicago, Columbia) received major grants, totaling about \$15 million. To put these numbers in perspective, Carnegie’s GSIA was founded with a \$6 million grant in 1949: the Ford grant essentially doubled the amount available for funding the school. Again, to highlight the significance of these amounts, Harvard Business School’s main fund from alumni donations had totaled \$2.5 million from 1908 to 1959.

²⁴ The idea that Harvard would not be part of the Ford Foundation program would have threatened the legitimacy of all of Ford’s reform efforts. Though Ford ended up supporting HBS more heavily than any other school, our evidence suggests that foundation officials remained much more hands-off in their dealing with the institution, using the connection essentially as a way to legitimate their involvement in business education and treading carefully around the tight personal connections between HBS and the board of the Ford Foundation. As one member of the foundation’s program on business education described the situation: “[T]hat first year and a half or so was a continuing sort of running skirmish between Don [Donald David, Harvard Business School former dean who went on to become executive chair of the Ford Foundation] and the Program where Don was pushing the Program—where in effect, I think it’s fair to say that Don was saying: “Look we can easily make a deal here. Just deal us in and I’m your friend. If you deal us out, I’m going to oppose you at every turn.”” (FFA, Oral History Project, Berelson 1972) As a result, Ford support for Harvard Business School was directed largely toward increasing the school’s endowment and diffusing its case study method, whereas everywhere else the foundation was much more actively pushing schools to embrace a social science model. HBS was thereby essentially able to maintain its clinical focus and mute any attempt to change its program, while other schools rapidly moved toward professionalization along scientific-academic lines.

analyzing existing managerial practice. Finally, research was to be organized around interdisciplinary teams rather than individuals (Crowther-Heyck 2006a, b).

A 1965 examination of the impact of the 1959 Ford Foundation's Gordon-Howell report on business education noted several changes that signaled the foundation's success in building more research-oriented business faculties (Wheeler 1965). First, business schools significantly increased the number of faculty with doctoral degrees, and many moved toward adopting academic hiring and promotion processes similar to those found in disciplinary departments. Between 1954 and 1964, for instance, the proportion of fulltime faculty with doctoral degrees at the 25 largest business schools rose from about 69 % to 83 %. As a result, the percentage of the largest 25 schools that met AACSB accreditation standards²⁵ jumped from about 50 % in 1954 to 100 % by 1965 (Wheeler 1965). Second, the next generation of business school professors was now being educated in doctoral programs that emphasized disciplinary foundations and quantitative methods. Business schools began not only to hire faculty members from other business schools but also to actively recruit research-oriented, discipline-trained faculty from mathematics, economics, and statistics. Third, the greater emphasis on published research led to the flourishing of new academic outlets in business-related fields, which in turn helped promote research activity. For example, Stanford's Graduate School of Business in the early 1950s was a place, according to one observer, where "the amount of time devoted to research was left entirely to individual proclivities" while "[m]ost faculty members devoted their surplus time to consulting" (Wheeler 1965). Nor did the school consider an individual's research output in decisions about promotion and tenure. Between 1959 and 1969, however, Stanford began to implement the Ford Foundation reforms aggressively by recruiting faculty, not only from GSIA, but from the nation's top economics and psychology departments. By 1969, Stanford's business school enjoyed an academic reputation as one of the premier business school research institutions. Even the so-called "trickle-down" schools, such as Northwestern, Wharton, and MIT deliberately avoided hiring their own doctoral students for faculty positions: "[T]he filling of any new post is now viewed as a sacred opportunity and approached with the greatest of care," wrote Joseph Willits about Wharton's post-1959 reforms (Sass 1982, p. 259).

Rationality: economics vs. the behavioral sciences

It is in this context that the GSIA "became an economics nova," as James March later put it²⁶. No less than seven individuals who taught at the GSIA from the mid-1950s to the mid-1970s (Herbert Simon, Franco Modigliani, Merton Miller, Robert Lucas, and Edward Prescott) and two GSIA PhDs (Finn Kydland and Oliver Williamson) have since been awarded the Nobel prize in economics—an unusual feat for a small, young institution, and a business school to boot. Even more significant, perhaps, is the

²⁵ The AACSB was originally set up in 1917 by the founding deans of the leading business schools to help spearhead the professionalization of business education and management as a profession. In the 1950s, the organization shifted its focus to serve as an accrediting institution for business education. Still, it was relatively weak and increasingly perceived as irrelevant by the better business schools.

²⁶ See <http://www.tepper.cmu.edu/about-tepper/history/the-b-school-change-agents/carnegie-connections/index.aspx>.

distinctive style of research that took root at the GSIA. Aside from the original behaviorist group around Simon, much of the faculty roster from the 1950s through the 1970s reads like a *Who's Who* of free-market economics and, in particular, announces the monetarist and microeconomic foundations revolutions to come in macroeconomics: in this vein, let us just mention monetarist Allan Meltzer; John Muth, who—in a near complete reversal of Simon's bounded rationality conceptualization—originated the rational expectations hypothesis (Sent 2002); and Thomas Sargent, Robert Lucas, and Leonard Rapping, who developed the rational expectations hypothesis in the context of a critique of macroeconomics. Edward Prescott, who is also important in this line of analysis (his work uses the rational expectations hypothesis to make sense of the business cycle), was a student of Lucas at the GSIA, and Finn Kydland, a student of Prescott.²⁷

It is not surprising that these orientations would develop at the GSIA rather than elsewhere. In the first place, the GSIA economics faculty was low on symbolic and social capital due to the school's peripheral location (both geographic and institutional). Consequently, faculty members sought to boost their academic status by ruthlessly proclaiming their scientific purity; as Augier and Prietula wrote: "It was a business school, but they also thought of themselves as reforming economics" (2007, p.509). Moreover, Herbert Simon's attempts to "preach the heresies of bounded rationality" to the economists may have been instrumental in pushing some of them to articulate more explicitly their (contrary) views—the idea, known as the rational expectations hypothesis, that people are in fact so rational that their expectations about future states of the economy are correct on average.²⁸ As Simon described it retrospectively, "I heckled the GSIA economists about their ridiculous assumptions about human omniscience, and they increasingly viewed me as the main obstacle to building 'real' economics in the school" (1991, p. 144).²⁹ By 1965 the school's economists were united enough in their views to cause Simon to quit in disgust and find refuge in the psychology department.

Also instrumental in developing intellectual character of GSIA was the fact that a large proportion of GSIA recruits in economics came either from the center of free-market economics—the University of Chicago—or from close affiliates. (Allan Meltzer, for instance, who was a pillar of the GSIA from 1957 onwards, is a "second generation" Chicagoan—his mentor at UCLA and longtime collaborator, Karl Brunner, was a disciple of Milton Friedman; all three, in turn, are key figures of academic monetarism.) There were not very many top departments hiring Chicago graduates during the heyday of Keynesian economics: hence their relegation to a business school, however important in retrospect. As we describe in the next section, the hinged ecology of business schools became, over time and through the massive

²⁷ Kydland was Prescott's student in the early 1970s, and also earned the Nobel Prize in economics with his mentor in 2004.

²⁸ Robert Lucas, for instance, said that "one can see the extent to which Muth was influenced by and reacting to Herbert Simon's work on behavioral economics, and how this led him to such a radically non-behavioral hypothesis as rational expectations. (I once tried to discuss this with Herb, thinking of it as an instance of the enormous, productive influence he had on all of us, but he took offense at the suggestion)" (McCallum 1999).

²⁹ A similar story would play out later at the Chicago GSB, where behaviorism faced the strong opposition of economists (Van Overtveldt 2007).

expansion of business education in the following decades, an important vehicle for the broader diffusion of Chicago approaches.

Markets triumphant

While University of Chicago-trained faculty had shaped the disciplinary trajectory of Carnegie's GSIA, it was not until the late 1950s that Chicago's own business school took a disciplinary turn. Allen Wallis, the dean of the University of Chicago's Graduate School of Business (GSB) from 1956 to 1962,³⁰ noted that an earlier attempt to realize this goal had been thwarted by the institution's chancellor, Robert Maynard Hutchins, who questioned the place of business education at the university and consequently starved the school for resources. Under the new chancellor, Lawrence Klimpton, the effort to restore business school education and research on sounder academic footing was now a priority, Wallis asserted in Chicago's grant application to the Ford Foundation in 1957 (Wallis 1957)

W. Allen Wallis was a Columbia-trained statistician but had spent time in the Chicago economics department during the 1930s. It is there that he forged a life-long friendship with two fellow students, Milton Friedman and George Stigler; the three men were reunited again during the war when they worked at the U.S. Navy-sponsored Statistical Research Group at Columbia University. Partly thanks to Friedman's influence, the University of Chicago recruited Wallis shortly after the war to found what became the Department of Statistics, which soon successfully enlisted the support of the Rockefeller Foundation to serve as an engine for the dissemination of statistical methods to other fields (Olkin 1991).

Together with associate dean James Lorie (another Chicago-trained economist and free market enthusiast), Wallis defended the idea that a business school should not be very different from the rest of the university: it should be oriented toward further learning, as opposed to vocational training, and should do first-rate research. The reformed GSB would draw upon disciplinary faculty who were working in areas most closely related to business—statistics, accounting, law, and, especially, economics—a far cry from the liberal arts foundation that Leon Marshall, the school's first dean, had called for in the early years of the school. Wallis had extensive control over hiring and leveraged his own academic reputation to recruit like-minded economists and statisticians. He was described as “shrewd and indeed almost ruthless in carrying out his program” (Gordon 1957).

An important “coup” that would turn out to be very consequential for the business school was the hiring, in 1958, of Wallis' friend George Stigler—partly against Ford Foundation wishes. Following the GSIA experience, Ford had earmarked its business school grants for the development of “behavioral science,” and at least one foundation staff member saw early on that interdisciplinarity was not a route that Chicago was likely to take: “Emphasis on the economic ingredient of the curriculum (and probably of a traditional Chicago mold particularly if George Stigler accepts the Walgreen professorship) might override the other social science elements” (Gordon

³⁰ The Chicago GSB was renamed the Booth School of Business in 2008. However to avoid anachronism, we use its old name throughout this article.

1957, p.43). Only a decade later, two other Ford Foundation officials noted with some disappointment that this prediction about the dominance of economics at the GSB had been realized and reaffirmed their position that “business is too important an institution to be studied by only the economists” (Carroll 1958 p.45; Howell 1966). In the meantime, though, the uniting of Friedman (who had been teaching at Chicago since 1946), Stigler, and Wallis in a major academic institution had begun to transform American economics; indeed it was to become “the key to the development and eventual dominance of the Chicago view” (Reder 1982, p. 10), which articulates the need to limit government economic power. To this trio we might add Aaron Director, Friedman’s brother in law, who, with support from other conservative foundations (the Volker Fund, the Olin Foundation) helped transform the University of Chicago Law School into an economists’ powerhouse (Coase 1993; Peck 2008; Van Horn 2009). Importantly, all four—and many others in the economics department and the GSB—shared a firm belief in the power of free markets and a strong distaste for government action. All were early members of the Mont Pèlerin Society, a select club set up by, among others, their Chicago colleague Friedrich von Hayek³¹ in the 1940s that many regard as the original vehicle for the elaboration and diffusion of neo-liberal thought (see, for example, Cockett 1994; Mirowski and Plehwe 2009).³²

The embedding of economics at the Chicago GSB: the role of philanthropies

Although they drew upon the same rhetoric of scientific rigor as Carnegie, the leaders of the Chicago GSB to some extent regarded their institution as an anti-GSIA, rejecting the behavioral sciences model in favor of economics, eschewing the connection with engineering, and promoting an explicitly pro-market view. Unlike the GSIA, however, they were embedded in one of America’s best universities, which gave them considerably more authority. This rationale (as well as Wallis’ connections to the foundation world) ultimately convinced Ford that the GSB would offer a solid base for business education: the school soon received the second (after GSIA) largest grant as one of Ford’s centers of excellence, a great advantage in its dealing with the university administration. As one foundation official wrote, the GSB now “offers a program in business education that is more nearly professional than is characteristic of much business education in that it offers a training which cannot readily be acquired simply by doing and which might genuinely distinguish the business school educated businessman from those who have not had the advantage of such training” (1958, Ford Foundation Archives, Box 410, “The Files”).

The transformation was swift. Between 1957 and 1963, the number of PhD candidates in the school’s doctoral programs increased from 18 to 70. Faculty ranks swelled to 70 members, with only 11 holdovers from when Wallis became dean. Of the new faculty, “about 20 % came from faculties of other schools of business, about 40 % from faculties of other departments (principally economics), about 25 % from

³¹ Hayek, however, taught in the Committee on Social Thought, having failed to secure an appointment in the economics department.

³² Over the years, the Chicago economics “nebulae” would end up providing a host of Mont Pèlerin recruits, such as Gary Becker, Ronald Coase, James Buchanan, Gordon Tullock, Harold Demsetz, Armen Alchian, and Richard Posner, to cite only some of the most well-known. The first three of these men also won the Nobel Prize in economics.

business and government, and about 15 % came to the School directly from their completion of graduate work.” Of the 51 faculty in 1959, 22 had a PhD in economics (Whitley 1986, p. 162). The trend continued into the 1960s with the next dean, MIT-trained industrial economist George Schultz. Pursuing Wallis’s institutional work, Schultz launched a three-year study of the impact of economic conditions and technological change on labor relations and used the program to create within the business school an economics department that rivaled the top arts and sciences-based economics departments in the United States.

Important interests in the business community also supported this organizational revamping. The school created an Associates Program, which enlisted the financial commitment of 100 corporations to support the new strategy. Additional backing came from private, often conservative foundations, which George Stigler, in particular, pursued assiduously. One such foundation was the Walgreen Fund, whose history has been recently revealed by Edward Nik-Khah (2011). The story begins in 1937, when Charles Walgreen, founder of the American chain of drugstores, made a gift of \$550,000 to the University of Chicago to establish a new academic foundation. Earlier Walgreen had removed his niece from the university on the grounds that she was being taught communistic theories; the Walgreen Fund was meant to counterbalance these views by fostering “greater appreciation of American life and values among University of Chicago students.” It originally served to sponsor public lectures series by high-profile political theorists—it was under its auspices, for instance, that political philosopher Leo Strauss gave his famous lectures on “Natural Right and History” in the 1940s or that Hannah Arendt first presented (in 1958) what was to become *The Human Condition*.

According to Nik-Khah, it was Wallis who persuaded [University of Chicago] President Kimpton to remove the Walgreen Fund from political science and place it under the care of the GSB (2011, n. 21, p. 128). Once at the GSB, the Walgreen Fund came under the control of George Stigler, who used it to support his own as well as other economists’ research, sponsor his famous industrial economics workshop, and generally build up an economics team to his liking by luring faculty away from other universities—toward both the business school and the economics department. (Gary Becker and Robert Lucas, for instance, came back to Chicago under very favorable conditions.) Personally distrustful of large, established foundations and even more of public money, Stigler later on succeeded in securing further support from a host of smaller private donors for a Center for the Study of the Economy and the State, which lives on today as the Stigler center.

These institutional resources helped Stigler, together with Milton Friedman (in the economics department) and Aaron Director (at the law school, also a recipient of Ford Foundation largesse) to advance an intellectual program that sought to transform prevailing views about government, markets, and corporations. With ferocious verve, Stigler’s writings attacked any analysis of the American economy or American corporations that strayed away from the competitive model, whether it came from institutionalism (Berle and Means, Galbraith) or neoclassicism (Chamberlin). His empirical studies, many of which were produced under contract, showed the disutility of government regulation³³ and the efficient character of private monopolies; they did

³³ On this topic, also see the work of Stigler’s colleagues at the GSB, Sam Peltzman, and Merton Miller.

much, indeed, to provide a rationale for the movement of deregulation that took place in the 1980s and to support the benign view of antitrust defended by much of the Chicago-originated law and economics scholarship.³⁴

The merging of finance with economics

Perhaps the most direct consequence of the institutionalization of a powerful core of neoclassical economists within American business schools, and at the Chicago GSB in particular, however, was the transformation of finance into “financial economics”—a shift that, as MacKenzie (2006) has suggested, had considerable consequences for the development of financial practices themselves. Finance was an old topic in American business schools, but up until the mid-1960s the subject’s orientation was mainly descriptive and institutional. Financial knowledge was deemed relevant primarily to managers within corporations; consequently, practitioners played an important role in the teaching of financial subjects. As Whitley (1986) and Jovanovic (2008) have shown, however, this was no longer true by the 1980s. The American Finance Association had become dominated by academics; financial research was based on high-level mathematics and statistics and set in a neoclassical microeconomics framework. The central questions in the discipline now had to do with financial markets—not with firms.

Importantly, the GSIA had been an important locus for this transformation—it is there that Franco Modigliani and Merton Miller produced the theorem about capital market structure that earned them the economics Nobel Prize. But Modigliani promptly went on to MIT, while Miller moved to the Chicago GSB, which arguably became from then on the main intellectual center for the development of financial economics. The key asset that spurred Chicago’s ascendancy in the field, however, was not its scholars but the existence of a unique financial database housed—thanks to a gift from Merrill Lynch—on the university premises.³⁵ As MacKenzie points out, the “CRSP’s [Center for Research in Security Prices] tapes gave U.S. finance academics from the mid-1960s an advantage over their predecessors: easy access to massive volumes of data in a format that facilitated analysis. Even at the start of the 1960s, researchers such as the Chicago PhD student Arnold B. Moore were still having to construct stock-price series by hand from runs of the *Wall Street Journal*.” (2006, p. 69)

The approach to finance developed at the GSB was quintessential Chicago economics: free-market-oriented and interested only in the predictive power of theory, irrespective of the realism of assumptions (MacKenzie 2006, pp. 55, 71). Since the technical abilities involved were not trivial, however, “these databases and their associated skills enabled the leaders of MFT [Modern Finance Theory] to claim ‘positive’ scientific status for their program and to control the production of a massive amount of research (...) regardless of the difficulties involved in relating economic

³⁴ See, for example, Nelson (1987), Noll (1985) on the deregulation movement, and Mercurio and Medema (1997) on law and economics in the United States.

³⁵ Starting in 1959, the investment bank Merrill Lynch, whose officials had developed an interest in modern financial theory, supplied the GSB with a series of grants to set up the Center for Research in Security Prices (CRSP). Over a period of 22 years, the center would receive a total of \$1 million. The CRSP was devoted mainly to gathering the prices, dividends, and rates of return of all stocks listed and trading on the New York Stock Exchange since 1926.

models of perfect markets in equilibrium to stock market price changes and similar phenomena” (Whitley 1986, p. 173). Thus Chicago finance’s perhaps best known product, the efficient market hypothesis (Fama 1970), asserted in its strong form that the prices of securities always perfectly reflect all known information. Consequently, it is impossible to game the market and predict what the future value of a stock may be—rather, the movement of stock prices is a “random walk” (Fama 1965). Hence a firm’s stock price is the best reflector of that firm’s fundamental economic value.

This view did not sit very well, at least initially, with practitioners and old finance types, who were used to thinking of themselves as clever analysts with a lot of intuition.³⁶ But these were not the primary audiences the new financial economists sought to appeal to. They cared first about establishing themselves in mainstream economic journals and conferences, which they did with remarkable swiftness—due, in part, to impressive displays of probabilistic and mathematical skill (Jovanovic 2008). Yet because the business school was in the process of being reorganized as a thoroughly scientific institution, and because the efficient markets model performed increasingly well in empirical tests (thanks, possibly, to what MacKenzie (2006), following Callon (1998), calls their “performativity” in shaping how market actors priced assets), the mastery of the language and techniques of financial economics soon became an indispensable credentialing device not only for finance professors but also for practitioners in the financial markets. This evolution also led many business schools to move beyond training general managers to training professional investors, especially in the areas of private equity, leveraged buy-out firms, and hedge funds.

More importantly, perhaps, efficient markets theory had important consequences for the way corporations were viewed and run. At bottom, the theory was rooted in Milton Friedman’s belief that the purpose of the corporation was to maximize financial value (“Business,” Friedman (1970) famously said, has “no other social responsibility than to increase profits”). Financial economists saw the large diversified conglomerates that dominated the American economic landscape as examples of managerial behavior that decreased the market value of firms and were therefore harmful to shareholders (Jensen and Meckling 1976; Jensen and Ruback 1983). They took from efficient markets theory the notion that the total market value of a firm’s shares accurately predicts the firm’s future expected cash flows. The theory thus provided a rationale for subjecting corporate strategy and managerial action to the discipline of shareholders, which led its proponents to endorse the vast expansion in the market for corporate control that took place in the 1980s (Dobbin and Zorn 2005). Second, the theory also offered an argument for compensating managers on the basis of stock performance in the form of stock options—a quite revolutionary idea at the time. Finally, since a basic assumption was that stock price reflects the fundamental value of the firm, then raising stock price should be the exclusive focus of managers’ actions. Together, these propositions came to be known as “agency theory.”

³⁶ See MacKenzie 2006; Whitley 1986. Other achievements of financial economics—all based on the view of efficient financial markets—did not fare much better: the capital asset pricing model (Sharpe 1964), for instance, held that the only optimal portfolio was the entire market—which analysts found unhelpful at first.

Agency theory and the managerial revolution in reverse

Agency theory was the brainchild of two University of Chicago graduates, William Meckling and Michael Jensen. The strength of the Chicago GSB was (and still is) its scientific legitimacy, which the school drew from its close connection to the university's economics department (in fact it was not so much a connection as a deep interpenetration, since a large proportion of the faculty had appointments at both institutions).³⁷ As a result, Chicago economists' standard line—that competitive pressures would keep firms on their feet—made Chicago-originated theories somewhat irrelevant to corporate governance. They were unhelpful both to corporations looking for practical solutions and to governments interested in developing regulatory rules.

But agency theory was different. It showed an eagerness to change the world, using practical prescriptions derived from economic theory. In that sense, its objectives were well-aligned with the missionary spirit evinced by some Chicago luminaries (Milton Friedman and Friedrich Hayek most prominently), though its direction—toward corporate governance—was unusual. To understand how this new orientation came about, we need to back up a bit and consider the social and academic trajectory of agency theory's promoters.

In 1963, shortly after launching the first phase of the curricular reforms at the Chicago GSB, Allen Wallis assumed the presidency of the University of Rochester—a job he would hold for 20 years. Once there, he immediately established a business school and staffed it with graduates from his alma mater and former employer; and thus Rochester became a sort of eastern outpost of Chicago economics in the process. Of course, like the Carnegie faculty before them, Rochester's recruits were acutely aware of their marginality. They were young and the school was brand new. Many had gotten their PhDs from the Chicago business school, an oddity at the time. Their scientific papers were going nowhere—even the Chicago-dominated *Journal of Political Economy* would not publish their work, perhaps because of the implicit challenge they presented to the Chicago dogma that competition solves all economic problems.

Pierre Bourdieu has suggested that newcomers in a field who are “outside the beaten tracks cannot “beat the dominant at their own game” unless they make additional, strictly scientific investments from which they cannot expect high profits, at least in the short run, since the whole logic of the system is against them” (1975, p. 30). In Carnegie's case, these investments included drawing in the interests of foundations, notably but not exclusively the Ford foundation, and developing formalized approaches to business problems. Rochester was in a similar structural position. On the financial front, it did not have the backing of the Ford Foundation but the University of Rochester “was flush with capital” throughout much of the 1960s and had an endowment behind only Harvard's and Yale's, thanks to the support of local patrons (Amadae and Bueno de Mesquita 1999, p. 279). It was also one of the

³⁷ This was an explicit policy (See Emmett 2007). As Wallis said: “If a person wasn't good enough in his field to be welcome in the appropriate department, we did not want him either” (Olkin 1991, 136). In 2008, economics or finance PhDs represented 62 % of the faculty at the Chicago Booth School (the GSB's new name). In other top US business schools, these figures hovered around 45 %, with the notable exception of Harvard (30 %). (authors' calculations)

first business schools to establish a lucrative executives' program (at a time when the region around Rochester was a flourishing industrial park, dominated by Eastman Kodak and Xerox).

On the symbolic front, Rochester scholars mobilized scientific institutions and language in a highly effective manner. They founded new scholarly reviews in economics, finance, and accounting, whose contributors, they claimed, practiced "positive science."³⁸ *The Journal of Accounting and Economics*, *The Journal of Financial Economics*, *the Journal of Monetary Economics*, and *the Carnegie-Rochester conferences series in public policy* (which famously published Robert Lucas's critique of econometrics (1976) in its first issue) were all edited there. And they cultivated the connection with Chicago: this is most evident when we look at the list of the affiliations of all authors who have published in the *Journal of Financial Economics*. Among all the papers published in the journal from 1974 (date of its founding) to 2004, Chicago authors have published the most papers (123) followed by the University of Rochester faculty (114) (this together accounts for close to 50 % of the top 40 publishing authors).

It is in this atmosphere of militant scientism with strong practical claims that agency theory created a unified approach to organizations that would have repercussions in corporate finance, organizational behavior, accounting, and corporate governance. Unlike much of the earlier scholarship in business schools, the core ideas of agency theory were derived not from inductive observation and practical experience but, instead, from the theoretical musings of a newly revitalized neoclassical economic theory. In the early 1970s, economists thus brought a theoretical, deductive approach to business school research, the lack of which had concerned academics at the Ford and Carnegie foundations and haunted business education from the start. Drawing on the legitimacy of economics, agency theory in the business school had the authority to redefine managerial action and the nature of the corporation, setting in motion a "managerial revolution in reverse," whereby managers were transformed, both symbolically and materially, into major corporate owners (Hall and Leibman 1998; Bebchuk and Fried 2006).

What gave particular visibility and influence to agency theorists like Jensen and his colleagues was that—unlike many of their disciplinary brethren—they made considerable efforts to disseminate their ideas and findings not only through traditional academic channels, such as journals and professional meetings, but into the classroom and the wider world of practice. This practical *habitus* of Michael Jensen, in particular, was revealed in a rather dramatic fashion when he accepted a position at Harvard Business School, a relocation that made the achievement of a wider influence possible (but cut him off from many scientifically "pure" colleagues who saw the move as a sellout). Through practitioner-oriented publications such as the *Harvard Business Review* and regular commentary and editorials in international newspapers such as the *New York Times* and the *Wall Street Journal*, Jensen and colleagues marshaled their ideas to explain the changing corporate environment and offer a prescriptive set of approaches to improve corporate profitability. A new

³⁸ The accountants were perhaps the most creative. They borrowed from Friedman's appeal to Popper in his "methodology of positive economics," as well as from their Rochester colleagues' ventures into "positive political theory," to craft a new science they dubbed "positive accounting."

generation of consulting firms, some of them originating from within academia, arrived on the scene that mobilized principal-agent ideas to urge the reform of executive compensation practices, to encourage shareholder activism, and to promote new firm performance measures (Kay 1992; Stern et al. 2003). Some academics served as consultants and expert witnesses, advocating for stock-based compensation in congressional hearings and defending such plans from shareholder lawsuits. In some cases they went as far as running as alternate directors on behalf of takeover firms trying to change the composition of their boards of directors (Jensen himself as well as Kevin Murphy, a Rochester-trained economist and Jensen co-author, were both involved in such actions).³⁹

Through these channels, the “liminal space” between economic “science” and “practice” (Eyal 2002) began to fill up with experts and consultants, and agency theory’s rhetorical apparatus underpinned the diffusion of a variety of new corporate strategies. For example, Michael Jensen’s media interventions helped legitimate the takeover movement, encouraged the proliferation of executive stock options to align incentives between executives and shareholders, and argued that leveraging corporations with debt was the best way to discipline supposedly wasteful managers. *Institutional Investor* in 1985 remarked on the economic sense-making that Jensen provided for the hostile takeover movement, writing that Jensen “has come out in favor of corporate raiders and greenmailers to the point of developing an economic rationale for takeovers.”⁴⁰ Jensen argued that the deregulation that enabled hostile takeovers had resulted in a more efficient market within the US economy for the right to control corporate assets. He stated that managers, who are unable to keep their companies efficient, as primarily measured by the firm’s stock price, will suffer the consequences in the form of a takeover. Jensen framed the market for corporate control as one in which alternative managerial teams compete for the rights to manage corporate resources, and he stated that takeover entrepreneurs and imaginative investment bankers will continue to prosper: he talked about takeover “artists” like T. Boone Pickens not as financial speculators but as “inventors.”⁴¹ Frank Dobbin and Dirk Zorn have suggested that Jensen’s published articles on the takeover movement helped legitimize takeover activity by presenting it as a type of societal service, thus “convinc[ing] the world that what [takeover artists] did for a living, far from threatening the corporation, was efficient: that it was in the interest of the shareholder and the broader public interest” (2005, p. 187). It was only later that corporate

³⁹ When an activist investor group or corporate raider seeks to purchase a firm through a hostile takeover they typically need to remove the old board members in order to vote in favor of the takeover. One often used tactic is the nomination of an alternate slate of directors who are presented to shareholders. Since most shareholders are interested in receiving the higher price being offered by the hostile takeover firm, shareholders will often vote in favor of the new slate of directors. Directors on this new slate are chosen on being favorable to the takeover event and are usually selected and paid by the hostile takeover firm. See Baker and Smith 1998.

⁴⁰ Michael Ver Meulen, “The Iconoclast of M&A,” *Institutional Investor*, vol. 19, issue 8, August 1985, p. 71. Jensen focuses on three benefits of takeovers, stating that they do not harm shareholders and are an efficient use of a company’s resources. Golden parachutes, which guarantee multi-million dollar payouts to CEOs in the event of a takeover, are defensible, in Jensen’s view, since shareholders still benefit when a firm is taken over.

⁴¹ Michael Jensen, “A Helping Hand for Entrenched Managers” *Wall Street Journal*. (Eastern edition). November 4, 1987, p. 1.

scandals showed that options, strike prices, and preferred stock could be mere covers for facilitating fraud (Dobbin and Jung 2010). In the meantime, however, these devices took on a fetishistic character, making the stock price of a company appear as an end in itself. Prominent business organizations switched from advocating a “stakeholder view” in corporate decision-making to embracing the “shareholder” maximization imperative. In 1990, for instance, the Business Roundtable, a group of chief executives of the largest US companies, still emphasized in its mission statement “the directors’ responsibility to carefully weigh the interests of all stakeholders as part of their responsibility to the corporation or to the long-term interests of its shareholders.” By 1997, the same organization argued that in its view, “the paramount duty of management and of boards of directors is to the corporation’s stockholders; the interests of other stakeholders are relevant as a derivative of the duty to the stockholders.” (Business Roundtable mission statements)

The linked ecologies of economics and business

Over a century ago, a vanguard of (in many cases) European-educated economists founded business schools with the aim of promoting a better integration of business with American society, sometimes pressing for an explicitly reformist social agenda in the process. From then on, business schools became one of the key organizational vehicles for the design, transmission, reproduction, and change of conceptions regarding the place of corporations and their managers in the American cultural landscape.⁴² By constructing management as a profession, business schools infused large organizations and their managers with legitimacy in shaping the new social order. This professionalization of managerial authority was, in a sense, America’s cultural revolution: as increasingly large proportions of “managers” went through business schools over time (Mayo et al. 2007). The skills, outlooks, and habits forged in the business school environment became ever more closely integrated into corporate practices and understandings (Davis 2009).

Paradoxically, however, the evolution of American business schools over the long run also displays a move in the other direction—toward increasingly abstract and technical knowledge rooted in the social scientific disciplines, most specifically economics, even *financial* economics. As we have seen, philanthropic foundations, whose boards were generally filled with people with strong academic connections, were instrumental in spearheading this “scientific” transformation, which achieved its most spectacular results at the GSIA and at the Chicago GSB. The corporate world was closely involved, too, serving as a financial backer of intellectual enterprises seen as politically supportive (Stigler’s Walgreen Fund) or materially useful (the Center for Research on Security Prices at the Chicago GSB, or the Wharton Forecasting Unit). Consequently, business schools became increasingly intertwined with the long-term evolution of economic thought and technique over the course of the twentieth century, as both recipients and agents of scientific and intellectual change. We can see evidence of this in the growing academic prominence of business school faculty

⁴² Industrial settings were another place where these ideas evolved (see Shapin 2008).

within the economics mainstream, in the significant growth of economics PhDs in business school appointments (particularly striking at the schools we have studied), and in the sharply asymmetric patterns of citation between the economics and business literatures (Pieters and Baumgartner 2002; Ferraro et al. 2005).⁴³

It is useful to remember that things used to be different. First, the postwar behavioral science model in business schools allowed many business disciplines to flourish and to assert their autonomy, and encroached on the jurisdiction secured by economists in the early days of business education. Second, well into the 1970s, business school appointments were less prestigious than departmental appointments for economists. Hence the entrenchment of certain fields (finance), and certain approaches (monetarism, rational expectations, agency theory) in business schools as opposed to economics departments denoted their (initially) somewhat marginal status relative to the substantive and ideological mainstream of the discipline. The GSIA (in the 1950s and 1960s mainly) and the University of Rochester business school (in the 1970s and 1980s) served as laboratories of sorts for people who, to some extent, operated on the paradigmatic edges of the economics profession and sought, consciously or unconsciously, to bridge their distance from the center of the field by engaging in forms of scientific overcompensation—whether that involved complex modeling techniques, the link to other behavioral sciences, or institution-building through scientific journals. The frequent commentaries on the tough seminar culture at Carnegie and Rochester might serve as an illustration of this particular form of scientific purity. As one member of the Carnegie GSIA during the late 1950s put it: “the search for the truth was a core value. The intellectual atmosphere was more than just lively, open, and confrontational. I had found plenty of all those at Chicago, but there the debate was carried on in House of Commons style. There the purpose, I always felt, was more to be clever than to be right. Who had the sharpest wit? The most biting retort?” (Leavitt 1996, p. 290).

Part of the self-confidence displayed in this quote may be explained, on the one hand, by the embattled position of these methodological and theoretical approaches in a generally unfriendly profession and, on the other, by a craving for institutional and personal status. In a field that rewards scientific prowess above all else, the voluntaristic strategy of the GSIA and Rochester upstarts paid off in the end, both intellectually and professionally. The institutional study of labor in industrial settings practiced at Wharton during the interwar period gave way to more technical approaches to management based on decision theory and the early use of computers, for which Herbert Simon was later rewarded by a Nobel prize in economics. Traditional macroeconomics was demoted because rational expectations theorists groomed at the GSIA argued that its microeconomic foundations were scientifically weak; the claim revolutionized the discipline and shaped the practice of economic science for many decades to come. Traditional finance was overpowered by financial economics at Chicago and Rochester business schools on the grounds that it was unscientific and led to inefficient management; as we have suggested, that particular intellectual shift had a transformative effect well beyond the boundaries of academia.

⁴³ These citations studies show that marketing, management, operations research, and especially accounting and finance cite economics heavily, but that the reverse is not true.

In each period, the knowledge-making practices of American business schools were especially successful when they were perceived by powerful constituencies (for instance in the philanthropic world) to address the new “problems” faced by corporations in a way that appeared not only substantively valuable but also much more technical and “scientific.” The new theories provided a new language, and new categories of understanding and action, that came to make sense of and sustain—until the next series of tools, concepts, and business recipes came along—important changes in the nature of and “conceptions of control” within American corporations. Finally, these transformations in the foundations of business knowledge, as well as the rise in prominence of business schools within universities also had powerful consequences for the linked discipline of economics, reorienting it away from its “public purpose” missions (Bernstein 2001) and increasingly toward the needs and concerns of private firms and markets (Fourcade 2009). This linkage may have been one of the most important drivers of the so-called neoliberal revolution—and its continued strength may be one of the reasons why a rollback on that revolution has not happened yet.

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