



**From Social Control to
Financial Economics:
The Linked Ecologies of
Economics and Business in
Twentieth Century America**

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IN TWENTIETH CENTURY AMERICA**

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ABSTRACT

As the main producers of managerial elites, business schools represent strategic research sites for understanding the formation of economic practices and representations. This article draws on historical material to analyze the changing place of economics in American business education over the course of the twentieth century. We use the Wharton School as an illustration of the earliest trends and dilemmas (c. 1900–1930), when business schools found themselves caught between their business connections and their striving for moral legitimacy in higher education. We show how several of the school’s leaders were closely involved in progressive reforms and presided over the development of the empirical social sciences to address questions of labor regulation and control within manufacturing industries. 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. We also show that these transformations were homologically related to changes in the prevailing mode of governance in the American economy: business schools became essential sites for the development of tools and methods (e.g., input-output approaches, linear programming, forecasting) for the management of the new large, diversified conglomerates. Finally, we argue that the rise of the Graduate School of Business at the University of Chicago from the 1960s onwards marks the decisive ascendancy of economics, and particularly financial economics, in business education over the other behavioral disciplines, as well as the decisive ascendancy of business schools as producers of economic knowledge. By following teacher-student networks, we also document the key role of business schools in diffusing “Chicago-style” economic approaches—offering support for anti-regulatory approaches and popularizing narrowly financial understandings of the firm (Fligstein 1990, 2002)—that sociologists have described as characteristic of the modern neo-liberal regime.

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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 percent of all BAs, were exiting American higher education with a business degree—a far greater proportion than the 13 percent 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 percent. 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 practitioners-dominated programs struggling for academic legitimacy to become the largest employers of disciplinary 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 20 US business schools, as compared to 637 in the top 20 economics departments (American Economic Association 2004). 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, in turn, 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 its 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 mavericks with a background in operations research transplanted the decision-making techniques they had crafted for government and the military during World War II to the corporate organizations of the postwar era.

The third phase, which we illustrate here by the curricular transformations at rise of the University of Chicago's Graduate School of Business, but really cuts across many other institutions, focuses on the ascendancy of neoclassical economics in all business matters. It is associated not only with the widespread institutionalization of a strong core of economists within business schools, 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; 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, Pfeffer and Sutton, 2003). 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 and the power relations among various participants in determining the direction and performance of corporations in ways that favor the interests of owners of economic capital. In this paper, we suggest that the co-evolution of economics and business studies in the twentieth century must be analyzed as an instance of "linked professional ecologies." Abbott (2005).

Drawing on the Chicago school of urban sociology, which made extensive use of this notion, Andrew 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 constructions, of course. They are heuristic tools that serve to represent the social world according to a topological metaphor (and in this 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, 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. Many economic formulas, such as the Taylor rule (for conducting monetary policy) or the user cost of capital (for investment decisions by corporations), can be construed in a similar way: in both cases, these concepts helped develop a huge scientific literature within the discipline of economics, at the same time that they expanded the practical jurisdiction of economists in policy and consulting. The institutionalization of economics' claims with respect to business-relevant knowledge and the training of businessmen may be understood as an avatar (i.e., the migration of a discipline into a new jurisdictional setting), but, as we show below, it also created a hinge situation by acting back on the discipline that originated it.

It is important to note that the production 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, financial assemblages and legitimation strategies. Hinges and avatars are the result of human coalitions and positional movements. In the case we study, the central struggles for business schools faculty revolved around three seemingly conflicting modes of acquiring what Starr (1982) calls "cultural authority:" Practice, academic authority, and doing good. The practice-oriented constituencies of business schools brought to the fore the practical concerns and political designs of corporate actors. The academically-oriented constituencies in other parts of the university exerted a powerful pull in an opposite direction –sometimes expressing a sharp disdain for anything practical (e.g. the liberal arts), sometimes urging for much more scientific approaches to practical problems (e.g. 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.

The political struggles at the boundary between the "economics" and "business" ecologies help us explain three major transformations in the organization of social-scientific knowledge in twentieth century America. The first transformation has to do with the remarkable scientific and technical upgrading of the business curriculum, which has occurred across the board (including in traditional business disciplines, such as marketing or management), but in which economics was a driving force. Second, a consequence of this upgrading is that business schools are no longer disciplinary backwaters for economics (or, indeed, sociology): in many cases, they are where some of the technically most complex social-scientific research is being done today.² The third development is that business subjects have acquired an unprecedented centrality in disciplinary struggles in economics and, indeed, in defining the field's main orientations. Witness, for instance, the swelling prominence of questions relevant to corporate governance in the disciplinary core: hence the explosion of such fields as game theory, contract theory, agency theory, and, of course, financial economics. In this chapter, we narrate this intellectual and institutional journey by looking selectively at three critical moments in the sometimes "avatared," sometimes "hinged" evolution of the fields of economics and business: personnel management in the 1920s-1930s; systems and decision analysis in the 1940s and 1950s; and finance in the 1960s and 1970s. Finally, drawing inspiration from the literature on the co-evolution of organizations and institutions (Haveman and Rao 1997, Haveman, Rao and Paruchuri 2007), we argue that each moment in this institutionalization of formal knowledge-making for business was associated with a particular set of taken-for-granted assumptions regarding the nature and

operating procedures of American corporations—what Haveman and Rao (1997) call “theories of moral sentiments” and Neil Fligstein (1990) labels “conceptions of control”.

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 & Riesman 1969). In the first case, the development of 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 new 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, Penn, Chicago, Dartmouth) were to recruit educated liberal arts undergraduates and turn them into moral 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 by Harvard in 1908, the drive toward professionalization (with the establishment of doctoral programs in business, 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.

While we are well aware of the pervasive influence of business schools on undergraduate education throughout the country, we want to focus our attention on those graduate institutions that have dominated this field over the course of its history and provided the institutional and intellectual models others have tried to emulate. Because the topic of the transformation of business education over time is vast and complex, we have chosen to limit our analysis to a small number of institutions that we see as characteristic of the broader patterns within each period. Partly because of its status as the world’s oldest such institution, we begin this history with the Wharton School. We use this example to illustrate early trends in American business education, when the newly created institutions were still trying to define their place within the broader field of higher education and often facing profound tensions between their business connections and their striving for moral legitimacy. Certainly these tensions played out differently in different places. However, in a way broadly characteristic of the Progressive period, their solution always 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. Different institutions took different paths. Harvard Business School, for instance, embraced a vocational model confidently, developing a practical case-based curriculum and directing faculty output toward influencing practicing managers; perhaps the school

benefited from a confidence that the reputation of Harvard University would shield it from criticism and undergird its efforts to develop along its own preferred path. Other schools, such as the School of Commerce and Administration (as it was originally named) at the more recently founded (1892) University of Chicago, were more conservative and remained committed to the liberal arts as the normal foundation of business education—as of any form of education. The Wharton School 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 narrative. 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 chapter, 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, tools that had developed as a result of economic mobilization during World War II. Input-output approaches, linear programming, and statistical forecasting methods, for example, were all developed in this context.

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. Conversely, the diffusion of “Chicago-style” economics into business schools also 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 termed the “financial” conception of the firm, or the idea that the sole purpose of management and the essential social mission of the corporation are the maximization of shareholder value.⁵

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 the professors in charge of establishing business schools within the institutional framework of the university 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 and moral 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, civic 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 –pragmatic, commercial, but still reliably legitimate within their discipline of origin.

“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? To clarify this point and offer an empirical illustration of the intellectual orientation of economics as it was practiced within the context of the American business school, we will briefly discuss the trajectory of the Wharton School before World War II.

We may begin this narrative with Edmund James, who was the school’s founding dean. Trained in political economy in Germany during the heyday of the historical school, James was initially somewhat of a radical interested in social reform. Like his friends Richard T. Ely and Simon Patten, whom he had met on the Continent, he was also a critic of the deductive approach to economics. 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 one of the

original organizers of the American Economic Association in 1885.⁶ 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 like Joseph Wharton.

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 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: 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. 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 and also of the application of mathematics to economics. In 1885, for instance, he wrote a scathing critique of Simon Newcomb’s *Principles of Economics* for the *Princeton Review*, igniting (together with Richard T. Ely, another prominent institutionalist economist) an American version of the German *Methodenstreit*. (Newcomb was then America’s foremost mathematician and astronomer.) 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 straightforward 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 schools 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 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 of political economy professor Scott Nearing⁸ and the “trustees encouraged a general exodus of Progressive economists” from Wharton in the years that followed. Patten himself, now seen as an unwanted agitator, was forced to resign in 1917 (Sass 1988, p. 139).

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 conscientious 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 schools 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 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.⁹ Much less radical than Nearing and Patten, Willits worked mainly through cooperative studies with selected local industries to develop new labor relations techniques that would help improve business conditions.

The first two decades of the twentieth century were 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 industrial workers politically and physically seen as the central industrial problem of the day but solving this problem seemed to offer a way 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.¹⁰ At Wharton, for instance, the first studies by Willits' Industrial Research Department were concerned with workplace organization and personnel management, which were described as issues of "social mobility"; it is also at the IRD that a young Australian psychologist named Elton Mayo did his first U.S.-based work on the effect of employee reverie and fatigue on industrial turnover.

Other business school leaders played similar roles as institutional power brokers among universities, foundations, and government: 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 Review (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).

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 criticized for being ignorant of the practical demands and concerns of American employers.¹¹

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 practical, terms.¹² 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 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 tools for decision-making in a complex production process. 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, displaced by the rise of mathematical economics in the wake of the Keynesian revolution (Yonay 1998). The collection of large streams of data by federal agencies and the construction of national accounts (accomplished 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 of neoclassical economists. 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 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).¹³

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 interest of the U.S. military and defense-related departments of the federal government. It is in this sector that we can identify the intellectual sources of a new “scientific”—that is, quantitative and highly technological—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 driven largely 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 a powerful 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 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 Lee Bach himself. A graduate of the University of Chicago's economics department, Bach had been deeply affected by the Depression and frustrated at the impotence of the social sciences, especially economics, in solving social problems.¹⁴ After receiving his PhD in 1940, Bach received a U.S. 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 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. There was little in the way of participative learning. 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.¹⁵

Bach's vision for the GSIA represented a radical departure from existing practices. He 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 [sic?] and who therefore did not regard basic and applied as antithetical terms" (Simon 1991, pp. 138–39).

Along with Lee Bach, the other two original pillars of GSIA were Herbert Simon and William Cooper. Cooper 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 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, Mirowski describes him as the "consummate cold war intellectual . . . a master polymath" (2002, pp. 454–455). Trained as a political scientist specializing in 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 is 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 all institutional and social mavericks. 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). Though 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 all sorts of 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.¹⁶

Truth to tell, transforming GSIA into a social-scientific research powerhouse was a necessary precondition to making the distinctive scientific program these people envisioned academically legitimate. 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, secondly, by the backing of other institutions dominated by academics, namely powerful philanthropic foundations.

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)."¹⁷ 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 1956, p. 563).

In many ways, the GSIA organized itself as an anti-Harvard—in sharp contradiction with the logic of organizational isomorphism, which suggests that new organizations tend to mimic the most successful player in their field. Instead, the GSIA challenged the status quo on multiple fronts, sometimes with 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, 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 will 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, its faculty.

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 percent 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). Complementing their intellectual work with institutional activities, Cooper, Simon, and Charnes all became actively involved in the founding of management science organizations.

Others who had done pioneering work during the war 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 used 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. 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 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."¹⁸ 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 in what was seen as a necessary effort to suppress the growing influence of communist ideas. This implied that efforts had to be made to insure 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 be 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 brightest ray of hope in these troubled times is my firm belief that the business men can and will measure up to the task."¹⁹ 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 U.S. corporations would help restore their legitimacy in the eyes of skeptics (Lagemann 1987).²⁰

THE FORD FOUNDATION AND THE REFORM OF BUSINESS EDUCATION: THE GSIA AS MODEL

In this radically altered 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, *The Ford Foundation*, p. 9; in *New Look*, p. 19). Still, 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 developed was relatively straightforward: pour extraordinary amounts of resources into "good or promising schools of business (five 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 the institutions would quickly fall in line with Ford's recommendations.

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.²¹ Instead, that honor went to Carnegie's GSIA—a school that had been in operation for barely five years but whose character expressed, according to the foundation, the ideal-type of what other business schools should aspire to: 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 education 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 for studying various business phenomena. 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 toward more toward developing fundamental theory than advancing or analyzing existing managerial practice. Finally, research was to be organized around interdisciplinary teams rather than individuals (Crowther-Heyck 2006a, 2006b).

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 had significantly increased the number of faculty with doctoral degrees, and many had 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 percent to 83 percent. As a result, the percentage of the largest 25 schools that met AACSB accreditation standards jumped from about 50 percent in 1954 to 100 percent 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 departments. Third, the greater emphasis on published research by schools had led to an increased number of academic outlets for publishing business school research, 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 aggressively implement the Ford Foundation reforms 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 what the Ford Foundation called the "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 it (March on Tepper school—the new name for the GSIA—website). 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—a remarkable feat for a small, recently founded institution, and a business school at that. Even more significant, perhaps, is the distinctive style of research that took root at the GSIA. Aside from the original behaviorist group built around Simon, much of the faculty roster from the 1950s thru 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.²²

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.²³ 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).²⁴ 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 the 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 at a time when the domination of Keynesian economics was overwhelming: hence their relegation to a business school, however important in retrospect. However, as we describe in the next section, this hiring pattern became, over time and through the massive expansion of business schools in the following decades, an important key to 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 1962,²⁵ 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 of resources. Under a 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 19TK.

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 were then united 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 into 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 to Chamberlain, November 1957, FFA 58–140).

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. Stigler’s hiring was not welcomed at the Ford Foundation. 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 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 touts the desirability of limiting 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 2007, Van Horn 2008). 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 their Chicago colleague Friedrich von Hayek²⁶ in the 1940s and that many regard as the original vehicle for the elaboration and diffusion of neo-liberal thought (see, for example, Cockett 1994; Mirowski and Plehwe forthcoming).²⁷

Wallis’ role is particularly important. As a Columbia University trained statistician, Wallis had been part of the Chicago economics department in the 1930s, witnessing up close the methodonstreit within the discipline. It was also in Chicago that he forged his relations with Milton Friedman and George Stigler, who would lead the neo-classical revolution at Chicago and train many of the students who would later teach and lead inside many of the business schools that would integrate business school functions more closely to the economics field. Wallis would also forge the close relationship between the Walgreen Fund that would ensure a continual provision of financial resources to what would become the quintessential “Chicago-style” of neo-liberal politics linked to the economic discipline. Kimpton authorized a \$32 million capital fund drive for the business school in 1956, contingent on the understanding that Wallis would push the school to a full social science orientation. Even before the fund drive, Chicago’s business school had significantly strengthened its relationship with many of the university’s social science departments: by the early 1950s it was not uncommon, for example, for MBA and doctoral students in business to take courses in both the sociology and economics departments. The significant flow of Chicago-trained faculty into GSIA during the 1950s also reflected a kinship between the two schools’ discipline-oriented approaches to business education. Chicago’s commitment to equipping business school students with the theories and methods of the social sciences was reflected in the description of goals for its MBA program provided in its Ford grant application:

The optimum function of a graduate school of business is to equip the student to add to the stock of our total knowledge or to give new meaning to individual business experience when it is achieved. Graduate education in business cannot be a substitute for liberal education and can only be an inefficient substitute for on-

the-job training...Graduate education for business can most usefully build upon a liberal education by providing specialized training in the social sciences as well as in the more traditional subject matter of business education such as accounting, statistics, law, finance, marketing, production, and personnel administration.

THE EMBEDDING OF ECONOMICS AT THE CHICAGO GSB: THE ROLE OF PHILANTHROPIES

Though 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 great 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]

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 seventy members, with only 11 holdovers from when Wallis became dean. Of the new faculty, "about 20 per cent came from faculties of other schools of business, about 40 percent from faculties of other departments (principally economics), about 25 per cent from business and government, and about 15 per cent 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. Continuing Wallis' 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. James McCaffrey, chairman of International Harvester, and Fairfax Cone of Foote, Cone, and Belding (a university trustee) promised to raise \$200,000 to \$400,000 to support the GSB's curriculum and faculty recruitment efforts. Finally, significant support for the GSB 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 (2008). 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” (2008, n.6, p. 445). 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.

These considerable 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) 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, uniformly showed the complete disutility of government regulation²⁸ and the non-threatening character of private monopolies; they did 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.²⁹

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 McKenzie (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 both 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 intellectual center for the development of financial economics. The main asset that spurred Chicago’s ascendancy in the field, however, was not its scholars but the existence of a unique financial database on the university premises.³⁰ 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 data bases 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 models of perfect markets in equilibrium to stock market price changes and similar phenomena” (Whitley 1986, p. 173). Thus Chicago finance’s perhaps most well-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 think of themselves as clever analysts with a lot of intuition.³¹ 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—thanks, in part to impressive displays of probabilistic and mathematical skill in their work (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 (due, possibly, to what MacKenzie, following Callon, 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, leverage 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.”

AGENCY THEORY AND THE MANAGERIAL REVOLUTION IN REVERSE

The strength of the Chicago GSB was its close connection to the university's economics department—in fact there was not so much a connection as a deep interpenetration, since a large proportion of the faculty ended up with appointments in both entities³². The famous Chicago workshop system helped reinforce these relations. Starting in the mid 1960s, the two institutions jointly set up a Center for Mathematical Studies in Business and Economics (Emmett 2007). The Chicago economics department, one of the world's best, trained large numbers of graduate students. As we have seen, many of them would end up in business schools—besides GSIA, where Robert Lucas got his first job, the other business school that would prove a particularly important home for Chicago-trained economists was the University of Rochester.

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 established a business school and recruited a critical mass of University of Chicago-trained economists. Rochester became the eastern outpost of the Chicago school in the process. Rochester scholars edited a series of new scholarly reviews (*The Journal of Accounting and Economics*, *The Journal of Financial Economics*, and *the Journal of Monetary Economics*) and actively sponsored the next generation through conferences, seminars, and special publications.³³ The connection between the two institutions is most evident in looking 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 its founding in 1974 to 2004, Chicago authors have accounted for the most papers (123), followed by the University of Rochester faculty (114). Four of the five most cited authors in the *Journal* were trained at Chicago (the fifth was trained at Rochester).

Of particular importance within this group is the work of Michael Jensen and William Meckling. Their approach took inspiration from what economists call the principal-agent problem: since managers have self-interested motives that differ from those of stockholders, monitoring these managers under conditions of wide stock dispersal is a major practical challenge.³⁴ Because their efforts are not easily observable, Jensen and Meckling argued, managers will fail to work towards stockholder goals. The challenge, they concluded, is thus to create an “alignment of incentives” in which managers' personal financial interests will come into close correspondence with those of owners. Much of the discussions in these early papers focus

on the means by which owners (shareholders) can effectively align these interests. Agency theorists emphasized three mechanisms: monitoring managerial performance, providing comprehensive economic incentives, and promoting an active market for corporate control. Monitoring managerial behavior involves the deployment of complex accounting practices and the appointment of a professional board of directors whose members operate in the stockholders' interest by virtue of their need to maintain their personal reputations. The alignment of incentives involves remunerating management in the form of company stock and stock options, so that managers and owners face exactly the same incentives and self-interested managers will maximize shareholder value as a byproduct of maximizing their own material gain. The market for corporate control leads to stock prices reflecting firm fundamentals values of the future cash flows of a firm and, therefore, ensures that poorly performing "insiders" will be threatened and ultimately replaced by efficiency- and profit-oriented "outsiders."

Agency theory quickly created a unified approach to organizations and corporate governance in American business schools, catalyzing academic revolutions 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 the 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 real "managerial revolution in reverse," whereby managers were transformed, both symbolically and materially, into major corporate owners.

What gave particular visibility and influence to agency theorists like Jensen and his colleagues was that—unlike many of their disciplinary brethren but certainly very much in line with a certain Chicago taste (promoted, for instance, by Friedman, Stigler, and Hayek) for political activism—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. 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*, they skillfully marshaled their ideas to explain the changing corporate environment and offered a prescriptive set of approaches to improve corporate profitability. Moreover, a number of these individuals began to run as alternate directors for takeover firms trying to remove boards of directors, as well as to serve as expert witnesses in shareholder lawsuits. Given the dramatic expansion of the consulting market in finance, accounting, and management over the same period, the financial spillovers of these activities were also not negligible.

Agency theory's rhetorical apparatus served to legitimate a variety of new corporate practices. For example, Michael Jensen's articles and editorials 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.”³⁵ 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. Jensen described takeover “artists” like T. Boone Pickens not as financial speculators but as “inventors.”³⁶ 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 scandals showed that options, strike prices, and preferred stock could be mere covers for facilitating fraud. 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 U.S. 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.”

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 crafting, transmission, reproduction, and alteration of conceptions regarding the place of corporations and their managers in the American cultural landscape.³⁷ 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, the skills, outlooks, and habits forged in the business school environment became ever more closely integrated into corporate practices and understandings.

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, especially *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 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 within the economics mainstream, in the domination of economics PhDs in business school appointments (particularly striking at elite schools), and in the asymmetric patterns of citation between the economics and business literatures.³⁸

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 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 much 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 department denoted their (initially) somewhat marginal status relative to the 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. 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 strategy of the GSIA upstarts paid off in the end. The institutional study of labor in industrial settings gave way to more technical approaches to management based on decision theory and the early use of computers. Traditional macroeconomics was demoted because rational expectations theorists groomed at the GSIA argued that its microeconomic foundations were scientifically weak. Traditional finance was killed by financial economics for essentially the same reason. And so it is that, in each of the three periods we examine here, the knowledge-making practices of American business schools were especially successful when they were perceived by powerful constituencies, particularly 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.” By the end of the process, the foundations of business knowledge had been deeply transformed, with powerful consequences both for the discipline of economics and for how American corporations were run. In each period, the new theories provided a new language, and new categories of understanding and action, that not only became naturalized in the teachings of American business schools but also came to sustain and even instigate—at least until the next series of tools, concepts, and business recipes came along—profound alterations in the nature of American corporations and markets.

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Endnotes

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).

² Also witness the development of network analysis, largely a by-product of the migration of sociology into schools of business.

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.

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 1955).

⁵ The most conspicuous omission in this panorama is, of course, Harvard Business School, which we have excluded for substantive reasons that will become clear in the remainder of the paper. 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, including, most prominently, from the reforms pursued by the Ford Foundation after World War II and embraced widely throughout the field. Harvard's relative impermeability to these changes 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 powerful connections with the business world, which partly buffered it from the competitive pressures that applied elsewhere. Wharton also shared some of these characteristics, but because of its strong relationship with the accounting profession was more closely linked to changes happening in that field than in the larger business context (Sass 1982).

⁶ That was after the failure of an earlier—and more openly "political"—venture, the Society for the Study of National Economy, which James and Patten had modeled after the German *Verein für Sozialpolitik*.

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

⁸ 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 Mary Furner (1975). Also see Nearing (1919). Nearing's firing was officially attributed to his antiwar views, as was Patten's.

⁹ 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.

¹⁰ See, e.g., Bruce 2005, on the importance of personnel management concerns in American economics during the 1910s and early 1920s. Also Shenhav 1995.

¹¹ 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 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 graduate school.

¹² 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.

¹³ 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).

¹⁴ 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 Schlosser 1965).

¹⁵ Interviews carried out by Marion Fourcade with American economists confirmed that as late as the 1970s–80s, business schools were not considered respectable places for young economics graduates to start a career. (The Chicago GSB changed all that.)

¹⁶ There was particular hostility toward Harvard Business School and the academic disciplines. As one of the GSIA faculty described the GSIA’s view of the world as: “Harvard and those other big, dumb old business-oriented business schools on one side and the nose-in-the-air traditional 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” (Leavitt 1996, p. 290). The need for distinction from Harvard and the traditional academic disciplines even manifested itself in the design of GSIA’s physical building, where austerity dictated that there not even be an elevator, even though the school was on sound financial footing. GSIA faculty saw this as a badge of true seriousness.

¹⁷ Quoted at http://www.gsb.stanford.edu/history/timeline/faculty_bach.html, accessed June 6, 2006.

¹⁸ “Can You Teach Management?” *Business Week*, April 19, 1952, p. 126.

¹⁹ 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.)

²⁰ 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, Ford foundation decisively reoriented its activities toward national security and the arguably rather anti-democratic vision of a society managed by experts. Also see Tadajweski (2009).

²¹ Though Ford ended up supporting HBS more heavily than any other school, our evidence suggests that foundation officials remained much more hands-off in its dealing with the institution, using the connection essentially as a way to legitimate its 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 1973) 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.

²² Kydland was Prescott’s student in the early 1970s, and also earned the Nobel Prize in economics with his mentor in 2004.

²³ 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)

²⁴ A similar story would play out later at the Chicago GSB, where behaviorism faced the strong opposition of economists. (Van Overtveldt 2007).

²⁵ The Chicago GSB was renamed the Booth School of Business in 2008. However to avoid anachronism, we use its old name throughout the paper.

²⁶ Hayek, however, taught in the Committee on Social Thought, having failed to secure an appointment in the economics department.

²⁷ 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.

²⁸ On this topic, also see the work of Stigler’s colleagues at the GSB, Sam Peltzman and Merton Miller.

²⁹ See, for example, Nelson (1987), Noll (1985) on the deregulation movement, and Mercurio and Medema (1997) on law and economics in the United States.

³⁰ 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 a Center for Research in Security Prices (CRSP). Over a period of twenty-two 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.

³¹ 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.

³² This was an explicit policy. As Wallis said: “[No capitalization?] 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)

³³ For example, the Carnegie-Rochester series on public policy, jointly edited by Rochester monetarist guru Karl Brunner and his student at the GSIA, Allan Meltzer. This is, for instance, where Lucas published his famous critique of econometrics, which earned him the Nobel Prize (Lucas 1976). According to Jensen, he and Meckling started working on their theory of the firm at one of the Interlaken seminars on analysis and ideology, also organized by Karl Brunner. (Source: Michael Jensen, interview with Rakesh Khurana, September 2004.)

³⁴ The earlier developers of principal-agent theory (though not in the financial context) were Armen Alchian and Harold Demsetz, two close affiliates of the University of Chicago economics department and also Mont Pèlerin Society members.

³⁵ Michael Ver Meulen, “The Iconoclast of M&A,” *Institutional Investor*, vol. 19, iss. 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.

³⁶ Michael Jensen, “A Helping Hand for Entrenched Managers” *Wall Street Journal*. (Eastern edition). November 4, 1987, p. 1.

³⁷ Industrial settings were another place where these ideas evolved (see Shapin, forthcoming [This entry is not in the bibliography. (I have not checked for this *passim*.)].

³⁸ Citations studies, for instance, show that marketing, management, operations research, and especially accounting and finance cite economics heavily, but that the reverse is not true (Pieters and Baumgartner 2002).