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“Instruments of National Purpose”
World War II and Southern Higher Education: Four Texas Universities as a Case Study

by

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ABSTRACT

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World War II and Southern Higher Education: Four Texas Universities as a Case Study

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Matthew Tyler Penney

This dissertation considers the significance of the relationship between the federal government and U.S. higher education during World War II and the immediate postwar years, using four Texas universities (the University of Texas, Texas A&M, Baylor University, and the Rice Institute) as case studies. World War II and Cold War contexts of emergency and moral purpose were manifest in America's institutions of higher learning, which channeled their resources to assist a national agenda. Reciprocally, the federal government provided support to universities on unprecedented scales. This partnership was especially relevant to universities in the South, which had historically lagged behind their non-southern peers in research capability, had been more wary of outside influence, and had tended to stress regionalism over—if not at the expense of—nationalism. Yet despite the changes depicted in this study, a preexisting role of the southern university as serving one or more constituencies made the cooperation with the federal government less of a shift in the uses of the university than might otherwise be apparent. Among the topics that this study looks at in some depth are wartime financing of university research, curricular change, campus trainee programs, postwar veteran enrollments, the southern university as a trainer in so-called American values, and the
impetus to assert these values. Of special note is the rise of defense-oriented research agendas and securing the revenues to sustain them. The partnership between the university and the federal government institutionalized a new way of conducting university business that became so normative in just a few years after World War II as to seem irreversible. This dissertation shows the importance of this partnership at a group of universities outside the few high-profile institutions typically invoked as iconic or indicative of war-era federal cooperation. With its regional perspective that considers the southern university's role in advancing defense research, commerce, and technology, such investigation also highlights another basis on which to recognize World War II and the immediate postwar era as transformative in the history of the U.S. South.
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CHAPTER ONE

Introduction

Professional scholarship and popular culture have generally appreciated that U.S. higher education made important contributions to the national World War II effort. Iconic and sensational forms such as atom bomb research often come to mind, but more regular manifestations occurred in the form of smaller research projects, campus military trainee programs, professors leaving regular duties to work on projects related to national security, and the fostering of cornerstone values considered to be American. Scholarly considerations of this cooperation have typically centered on a few high-profile ventures at a small number of prominent universities, leaving insufficiently explored the question of how the story played out more generally at higher educational institutions across the country. This dissertation will consider the significance of the wartime and postwar relationship between the federal government and higher learning from 1940 to 1955, using four universities in Texas—two private, two state-supported—as case studies. The focus will be within the context of higher education in the South, invoking parallels and contrasts with other southern institutions and documenting this experience as transformative for both the universities and the region.

During the height of World War II it seemed reasonable to marshal virtually all national resources to prosecute the war effort. What was thought to be finite support from the academy during a state of declared war did not necessarily demand that the universities ponder their identities or grapple with any inherent intellectual compromise expended by such support. But to continue this service into peacetime afterward did
require that such questions be addressed. Even with the Korean-era boom in federal research after 1950, it was not clear to all involved how lasting the university-government relationship would be—as late as 1954 the Texas Legislative Council judged that the surge in federally funded research in the Texas A&M system was a short-term “phenomenon” of the era. That same year, however, Charles V. Kidd of the National Institutes for Health (NIH) assessed that government sponsorship was permanently altering the content, conduct, and the academy’s philosophy of research.\(^1\) It would have indeed been difficult to imagine that the government and military would have willingly cut off their interaction with the educational entities that had served them so well or that the professorate would have easily forsaken a flow of subsidization that was underwriting its activities, publications, and reputations. Those involved on a daily basis surely saw the writing on the wall for a continued federal role, that just a few short years after it began, was institutionalized.

An array of public media and science-fiction outlets leveraged the advent of technology and played on national fears, featuring the dangers of experiments gone awry, weapons capable of destroying the world, battles between superheroes and villains, and an American way of life threatened by sinister outside forces. While many of these accounts bordered on the fantastic, some real-life projects and proposals barely superseded the fiction. For example, there was a proposal early in the war for a block of ice over two thousand feet long and three hundred feet wide to be culled from an ice floe in the arctic and fitted with propulsion engines and anti-aircraft weaponry, to serve as an

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\(^1\) Texas Legislative Council, “Organized Research and Public Service Programs: Parts V–VII of the Report on Texas Higher Education,” Capitol Station, Austin, Texas, 15 March 1954, 1–9; quote on 1; Charles V. Kidd, prospectus for a Rockefeller Public Service Award for a proposed study entitled “A Study of the Setting and Effectiveness of Post-War Research in this Country and in Western Europe,” February 1954, typed, copy in Texas A&M President’s Office Papers.
aircraft carrier in the northern Atlantic. Proponents lauded such a craft as unsinkable, arguing that if submarines knocked pieces of it off, they could be frozen back on; detractors countered that a normal aircraft carrier could be built for less and would not melt. The proposal actually reached the desk of U.S. President Franklin Delano Roosevelt, whom Office of Scientific Research and Development (OSRD) director Vannevar Bush told that the scheme was “bunk.”

In retrospect, other realities that we now take for granted, such as a bomb capable of destroying an entire city or less theatrical methods of wireless communication, might have been dismissed as fantasy. As for the fear of outside forces, a level of national paranoia indeed led many in the government, military, and even the academy to cast their activities as part of a schema for saving the world from foreign enemies.

The four universities in this study, though geographically close to one another and drawing from similar enough segments of the population, possessed different capabilities, characters, and educational missions. The University of Texas, founded in 1883 and located in Austin, was the main state university and received the lion’s share of the state funds for higher education. Trustees and alumni protected its position as “The University” in Texas, insisting on strength in virtually all fields. The university was atypically strong among southern peers, one of the few in the South to consistently rank well in national indexes and to grant doctoral degrees on par with other major national universities. The University of Texas was a source of state pride, and from which its constituents expected great things. University of Texas President Theophilus S. Painter

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2 As recorded in Bush’s autobiography, Pieces of the Action (New York: William Morrow, 1970), 125. For more on this project, see Wilfred Egleston, Scientists at War (London, Toronto, and New York: Oxford University Press, 1950), 153–59. One plan was for the craft to be constructed from ice blocks, while the other was for a portion of a natural ice sheet in the northern Atlantic to be broken off. For a photograph of a scale model of the first method, 150.
(president, 1946–1952) compared the university to a corporation with the citizens of Texas as its stockholders—an apt statement that reflected the mindset of the board and alumni and community interest.\(^3\) Also included in this study to an extent are the University of Texas Medical Branch at Galveston and the M. D. Anderson Hospital for Cancer Research in the Texas Medical Center in Houston.

The all-male Agricultural and Mechanical College of Texas (Texas A&M) was the agricultural and mechanical arm of the state higher-education system, carrying out research on over twenty thousand acres of land and operating ambitious extension programs, experiment stations, and a Research Foundation, advancing the state’s agricultural and mechanical capabilities and educating Texans about efficiency in the same. In the early 1940s the college’s formal objectives stated that the college served “the recognized needs of the people of Texas” and that it provided “an environment for student bodies comparable to that which usually prevails in the substantial Texas homes from which these students come.” The university’s School of Engineering was among the first in the South to implement specialized engineering programs such as chemical (1909), petroleum (1929), geological (1934) and aeronautical (1940). The fact that it was both a land-grant college and yet strove to function as a well-rounded university created a sort of identity crisis, and it was a much-debated question as to whether the university could retain its agricultural and mechanical heritage and yet keep pace with the expanding capabilities of other universities. Texas A&M also had a military character, as

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prescribed in national land grant legislation, but with an intensity and centrality to university affairs uncommon at other land-grant institutions.  

This study also considers the other colleges the Texas A&M system. Prairie View State Normal and Industrial College, which had existed in some form since 1878 as an agricultural and mechanical college for African Americans, seems to have benefited more than many of its national peer African-American colleges because of its association with the A&M system. It enjoyed the advocacy of an influential principal, Willette R. Banks (principal, 1926–1946), who lobbied rather successfully for funding from the Texas legislature and outside sources and created a number of graduate programs at Prairie View. Still, education at Prairie View was relegated to the more rudimentary agricultural and mechanical disciplines, and the college was not on the forefront of the legislature’s or the majority public’s agenda. Tarleton State College was founded in 1899 as John Tarleton Agricultural College; its purpose was to offer low-cost education to the citizens of Erath County, approximately one hundred miles southwest of Dallas-Ft. Worth. In 1917 it was incorporated into the A&M system and for the most part retained its regional agricultural heritage. North Texas Junior Agricultural College, re-named Arlington State College in 1949 (now the University of Texas at Arlington under the University of Texas system), had its roots in a series of private and public junior colleges in operation since the 1890s. It was vocational and agricultural in nature and remained such until the late

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1950s, when the population of Dallas-Ft. Worth and the Arlington area grew to such an extent that the school was reconceived as a four-year college. The first of the two private universities in this study is the William Marsh Rice Institute, which began classes in 1912. On the eve of World War II it was a mere twenty-five years past graduating its first class. President Edgar Odell Lovett (president, 1907–1946), a former Princeton mathematician, was imbued with the notion that the sciences were the most appropriate emphasis of the university during its formative years. The early faculty at Rice was more indicative of a northeastern university faculty, with the majority of the professors holding degrees from institutions in that region, and a disproportionate number having received their degrees in Europe. Undergraduate students at Rice typically earned a degree in either engineering or arts (also called academic), with arts being the more common in the first decade or so, but slowly giving way to engineering through about 1940. Setting Rice apart from its peers was its financial wealth, the legacy of William Marsh Rice's mercantile fortune in the form of an endowment that provided operating funds and a tuition-free education to all students. Already at about $15 million during the Depression, the endowment doubled to $30 million by the end of World War II, partially due to the 1942 acquisition of a stake in the Rincon oil field in the Rio Grande Valley. The institute cultivated relationships with local industry, especially Gulf Coast petrol-chemical companies, and the business-minded board invested heavily in construction and local loans. With its financial resources, strong academics, and free tuition, Rice was an attractive option for professors and students and stood out among southern colleges.\(^5\)

\(^5\) For accounts of the early history of the Rice Institute, see Fredericka Meiners, *A History of Rice University, the Institute Years, 1907–1963* (Houston, Texas: Rice University Studies, 1982); John B. Boles,
Baylor University, founded in 1845 when Texas was an independent republic, was affiliated with the Baptist General Convention of Texas (BGCT) and traditionally prepared students for teaching and the ministry, with increasing emphasis on pre-professional disciplines in the early twentieth century. Baylor was distinguished from the other universities in this study by its emphasis on Christianity and moral purpose as integral to its educational program. By the eve of World War II, though not of the rigid disciplinary character it had once been, Baylor continued to embrace an en loco parentis approach to its students. Baylor’s character was somewhat related to the eccentricities of its president, Pat M. Neff (president, 1932–1947), a former Texas governor who micromanaged many of the university’s affairs and believed in education’s role as a trainer in Christian civilization. He was unwelcoming of what he considered vice and was known to personally dismiss students for relatively minor behavioral infractions, sometimes calling out the name of the student in daily chapel and expelling him on the spot—often accompanied by a Bible verse such as “Whatever a man soweth that shall he reap.” By the eve of World War II Baylor was known as a Baptist college with reasonable preparation in basic academic disciplines, and though it offered masters degrees in most major fields, the university did not possess anything like the advanced capabilities of the other three institutions in this study.⁶

⁶ Neff, as quoted in William “Bill” Patterson, Oral Memoirs of William “Bill” Patterson, interviewed by Thomas E. Turner, Sr., on 17 September 1981, transcript, Baylor University Institute for Oral History, Texas Collection, Baylor University, Waco, Texas, 18. During the early twentieth century, Baylor abandoned many of its most austere regulations of student behavior, some of which may have been attributable to the personality of Baylor President Rufus C. Burleson, who once penned an essay that equated saloons with “open mouths to hell” and who claimed that he could tell when a student had been drinking just as a farmer knows when a horse has become pregnant. Undated speech, transcript, with
This dissertation is divided into five main chapters arranged topically. Chapter Two considers some of the regional and commercial interests and their arrangements with the universities in the period covered by this study. The purpose of a chapter that deals so centrally with the universities’ relations with state and commercial entities, perhaps seemingly out of place in a study on the relationship between the university and the federal government, is to demonstrate that there was an existing procedure for reciprocal partnerships between the university and outside agencies. Of interest is academia’s part in advancing the state economy, the nature of corporate sponsorship of university research, and the debates surrounding the reconciliation of how constituents could at once demand that the university relegate its activities to strictly educational matters and yet also demand that the university serve a broader array of interests. The chapter is intended to set the stage for the notion that eventual collaboration with the federal government during and after World War II was less of a radical shift in the practices of the universities than might be apparent if considerations of the universities’ other constituent interests are not fully considered.

Chapter Three explores the southern university as a trainer in the values of American civilization, broadly defined for these purposes as a belief in individualism, Christianity, the importance of democracy and a corresponding disdain for centralized authority, and a mission to advocate these principles in world affairs. With American involvement in World War II, southerners displayed a profound sense of national patriotism. To much of mainstream America, World War II was a vindication of a way of life, which in the popular mind had proved secular, anti-democratic centralized

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extensive revisions likely in the hand of Rufus C. Burleson, The Papers of Rufus Columbus Burleson, Texas Collection, Baylor University.
authority to be inferior and freedom and democracy to be desirable. The university leadership’s belief that this was a critical juncture in history was reflected in the southern universities’ operations and programs. The universities offered ideological training for a postwar peace that would require the continuation of the values that the constituency considered triumphant. Despite this nationalistic emphasis, southern universities were wary of federal subsidization due to fears of dependence on the government for continued funds and on any influence that such receipt might give the national government over university affairs. This was a special source of caution among private and Christian universities, which feared federal control and a secular agenda.

Chapter Four looks at the more tangible experiences of the universities during the war: logistics of the support; curricular changes; the general structure of wartime federal financing of university research and operations; professors redirecting their work to defense projects; and the training of students, local residents, and military personnel. Such activity created new standards for the acceptance of outside influence and publicly showcased the universities’ pragmatic function. Chapter Five continues the preceding chapter chronologically, demonstrating that it is indeed appropriate to use the term “postwar” in assessing the university, not just rhetorically, but substantively. This period was marked by expanded academic capabilities and research agendas and on securing the revenues necessary to sustain them. Student enrollments burgeoned in a widening system that served a growing segment of the population eager to partake of the fruits of postwar prosperity. In much of the curriculum relevant to regional industry, southern universities maintained a regional distinctiveness while simultaneously moving more in line with national standards and economic trends, especially with regard to service sector jobs and
a shift from the rural to the urban/suburban setting. Though the ideals propagated by the university were the subject of a previous chapter, it is important to consider the values and operations as intertwined. Accordingly, as this chapter draws to a close, the southern university was an active, confident, nationalistic entity poised and planning for further growth.

Chapter Six deals with federal patronage in the national university research agenda during the war and postwar years. During the war the university-government partnership yielded advances in military technology such as atomic energy, the proximity fuse, small arms, and new technologies related to the science of navigation and communication. The nature of the projects was often different from what had prevailed up to that point, as this was more fully the era of “big science,” a term generally applied to large undertakings wherein individual researchers and technicians work toward some particular product often with little sense of intellectual innovation or academic inquiry. Indeed, until the early twentieth century, the most important scientific innovations had been made with minimal or moderate equipment, and the emphasis that postwar science placed on ultra-expensive devices of grand scale was the basis for derision from some who valued the more intellectual pursuits of an earlier era. This line of critique had previously invoked a statement attributed to the father of nuclear physics, Ernest Rutherford, that when one has no money, one has to think.\textsuperscript{7} Evident is the notion that U.S. government was loathe to cease its productive relationship with the university; and

\textsuperscript{7} For the line attributed to Rutherford, see Lord Bowden, “Effects of World War II on Education in Science,” Proceedings of the Royal Society of London, Series A, Mathematical and Physical Sciences 342, no. 1631, A Discussion on the Effects of the Two World Wars on the Organization and Development of Science in the United Kingdom (15 April 1975): 499–503; quote on 499. Lord Bowden recalled that some of the most innovative work in physics at the Cavendish Laboratory had been done with crude apparatus, and noted humorously that he himself used to generate a static charge for his electroscope by running his fountain pen through his hair.
likewise, the university was disinclined to cut off revenue streams that had funded the advancement of important fields. It will also be argued that resistance to the creation of a peacetime organization like the OSRD meant that national defense research would not be compartmentalized into a dedicated military program but rather it would allow the university to participate more broadly with military sponsors across the disciplines. Attention will be given to the fact that southern universities were as a rule less capable and initially less willing than universities outside the South to produce first-class "big science," but that they eventually joined the national mainstream.

The intimacy and ubiquity of the federal-university partnership during the period of this study raises questions as to the extent to which this partnership changed or revealed anything about the university's posture toward scholarly impartiality or freedom from outside influence. This dissertation argues that federal involvement in the universities during World War II and the postwar era was less of an exogenous intrusion than it might otherwise seem. The southern university had long been an instrument serving constituent interests, manifest in its relationship with outside sponsors from state, federal, and private entities, not to mention its function as a trainer in civilization. Regarding scholarly considerations of free thought at the university, the highest profile scholarship has dealt with specific incidents or periods in a given institution's history such as loyalty oaths, communist purges, or banning of literature. Less studied is the more subtle extent to which the multiplicity of interests that governed the institutions had valued academic freedom in its purest sense in the first place. To be sure, few if anyone in the university was outright opposed to free thought. A more nuanced interpretation would be that at many universities, the institution's conception of service to the state,
industry, or religious denomination gave little sense that the main business of the university was a mandate to inquire disinterestedly. An oft-forgotten 1955 work by Richard Hofstadter and Walter P. Metzger argued as such, that there was actually little tradition of academic freedom in the U.S. university. Their study was intended to serve as a warning during the McCarthy era that defending academic freedom in institutions of higher learning would require not an appeal to tradition but an appeal to vigilance.⁸

Still, statements in support of pure academic freedom as an enshrined right were common in the first half of the twentieth century, as they were afterward. In assessing the nuances and complexities of the issue, such statements benefit from being looked at in context. One, these statements were often made without due consideration of the nature of the university’s relationship with outside entities. Two, academic freedom existed among the pantheon of other freedoms that the popular conception of the American past recognized, without proper critical examination. Three, these expressions in the South can often be taken in the context of asserting the freedom of a state, its citizens, and its educational institutions to advance the interests of their state in spite of the federal government. Four, in the period covered by this study, the rhetoric of academic freedom was often in juxtaposition to the restrictions of the same found under fascist and Communist governments—the irony was that so-called foreign ideas must be suppressed in order that intellectual freedom may flourish. When there were movements afoot in academia to purge unwanted ideas—the most extreme of which they feared would destroy individual freedom—they did so under the rubric of protecting the freedom of thought that they had always known.

In the early twentieth century, as the professorate was increasing its engagement with the social ramifications of its endeavors, the American academy further secularized, competing (i.e., not capitalist) economic theories became more common, and, especially as scholarship began to question so-called bedrock American values, the professorate was brought into conflicts with the groups that governed the institution, namely conservative and business-minded boards. In the face of pressure from boards and financial sponsors of university endeavors, there began a search for codification of the professors’ rights with respect to the relationship with outside influences. The earliest statement considered to be a creed of this sort was the American Association of University Professors (AAUP)’s 1915 “Declaration of Principles,” which defined the university as a public trust to advance knowledge, instruct students, and to prepare persons qualified for public service. The statement was adamant that those in the trust not be influenced by any outside entity, even boards and administrations. Whatever its merits, it is doubtful as to whether many southern colleges cared for, or perceived enfranchisement in, the AAUP’s statement. Of the thirteen professors on the committee that produced it, only one represented a southern school, Johns Hopkins—only marginally southern—and the Hopkins representative had been born in Germany and educated in California. In 1940 the AAUP and the Association of American Colleges issued the “1940 Statement of Principles on Academic Freedom and Tenure,” generally considered as supplanting the 1915 declaration. The 1940 statement demonstrated the importance of research more than did the 1915 declaration. Now, accepting a sponsored research project was a permissible choice despite restrictions from the sponsor-beneficiary, whereas before, stipulations imposed by outside entities had been depicted as inherently corrupting. The
1940 document was also much more specific regarding the nature of tenure and the privileges therein. In all, it was a more pragmatic statement than its 1915 counterpart, reflective of new realities in university conduct that brought the academician into contractual arrangements unlike those of an earlier era.\(^9\)

Because of the focus on the university-government relationship and the larger university operations and not necessarily on developments internal to the academic fields, this study pays only perfunctory attention to those advancements and innovations except where they were part of the basis for a change in the field's utility to outside agencies, such as the applications of particle physics to defense research in nuclear technology. By the same token this study pays less attention to the humanities and social sciences; however, less focus on these does not imply that they were static or unrelated to the changes of the postwar environment. Study of the relationship of academic social science to vested national and commercial interests merits further scholarly attention.

Given the scope of this topic, an array of scholarly literature is relevant, covering fields in education, intellectual history, World War II, the Cold War, twentieth-century U.S. history, and the U.S. South. This dissertation has sought foremost to weigh in on the literature of the twentieth-century South and works of history that bear on higher learning as it related to the war and postwar experience. It is informed by, but does not seek to develop, the vast literature from the field of education studies, much of which is model-driven and/or policy-prescriptive and which does not necessarily consider the same trends and contexts as works in the field of history. Given the centrality of higher education as

an experience undergone by such a large percentage of the world’s population involved in political, professional, and academic discourse, it is somewhat surprising that in the field of history, works on higher education comprise a relatively minor field of study. One might expect that there would be a robust body of literature by professional historians on the government’s role in American higher education in the mid-twentieth century, but there is comparatively little. Included at the end of this study is a brief bibliographical essay that discusses such literature more in depth and comments on the nature of the primary sources for the specific universities included in this dissertation. Some of the main works that provided significant scholarly context on which this study attempts to build are discussed below.

Historians of the U.S. South have often cited the region’s resistance to change as one of its defining characteristics. A frequent launching point for considering change in the twentieth-century South is The Mind of the South (1941) by W. J. Cash, who depicted the southern consciousness as being defensive and unwelcome of innovation. But Cash noted that a nascent stirring of intellectual inquiry in higher education was one of the South’s more promising points: while careful not to overstate it, he proffered that southern universities were coming to be a force of modernization, especially in the sciences and social sciences. Cash was writing on the eve of great changes discussed in this study—his material on higher education would have had to be completely re-written only eight or nine years later. On that same note, a number of southern historians have argued that the decade and a half or so from the middle of the Depression to the early postwar period was the most important period of change in the South’s history. The major scholarly treatments that have considered this period have generally done so in
terms of a diversifying economy and its role in the early development of what we now call the Sunbelt South; however, very few have discussed the university's role in this process. Themes of change in works on the twentieth-century South that bear on this study include economic modernization and a shift from agricultural to the service sector and urban/suburban setting. Especially relevant are the technology of agriculture, extraction of natural resources, the diversification of the southern economy, and the breakdown of the low-wage and tenant-based agricultural economy. This dissertation connects university work to such trends, documenting southern universities developing germane research capabilities and increasingly preparing students for commercial, scientific, and professional careers.  

Regarding the effect of World War II on the South, the predominant theme of the literature is that of industrialization and job creation, with the residual effects of attracting employment opportunities and an influx of capital. But save for a few volumes, even scholarship on southern education has not explored the importance of the World War II-era university. More familiar topics have been curricular expansion, changing student demographics, desegregation, radical protest, and student life. At the national level, scholars who have addressed the federal government's role in World War II-era higher education have generally been policy historians and/or educational historians, and their geographic focus has centered on the Northeast or a small number of institutions on the coasts. One work that directly addressed graduate education in the South during the first

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half of the twentieth century was Mary Bynum Homes Pierson’s “Graduate Work in the South,” a Ph.D. dissertation at the University of North Carolina at Chapel Hill, written under the direction of Edward W. Knight. The research seems to have been largely performed in 1942 and 1943, like Cash’s book, tantalizingly on the precipice of a boom in southern graduate education. Some of Pierson’s findings were as follows: though the conduct of southern graduate study was similar to that in the North, the facilities, resources, and quality in the South was severely lacking; southern educators had long been highly self-critical of the state of graduate education but had received little support from the populace or elected officials in advancing it; and the University of Texas, the University of North Carolina, and the University of Virginia had been the most productive doctoral-level graduate universities, in that order.\footnote{Mary Bynum Holmes [Pierson], “Abstract of Graduate Work in the South,” typed, (1947?), Lovett Presidential Papers. Louisiana State University and the George Peabody College in Nashville were also named among southern graduate universities that were notable for their number of masters’ degrees awarded.}

One of the most important books on World War II and the early postwar era in the South, and one which contains a chapter on higher education, is Neil McMillen, ed., *Remaking Dixie: The Impact of World War II on the South*, a collection of papers originally presented at a 1995 conference at the University of Mississippi on the war’s impact on the American South. Arguing that World War II was the “War that Drove Old Dixie Down,” the papers covered intellectual history, higher education, women, African Americans, civil rights, literature, and politics. The essay by James C. Cobb, “World War II and the Mind of the Modern South,” is a cogent case for the Second World War as a watershed in the South equal to that of the American Civil War. Cobb considers a spectrum of topics similar to that offered by the book as a whole: the power structure,
race relations, labor, family, intellectual life, politics, migration, even music. In this
eSSay Cobb argues that World War II functioned much like another New Deal, pouring
federal dollars into the South and expanding the manufacturing sector. The essay most
worthy of mention for this study is Clarence Mohr's "World War II and the
Transformation of Southern Higher Education," which looked at the war and postwar
forces on the university as beginning trends that affected modern university business in
terms of contractual relations with outside entities and ventures undertaken by the
university that challenged its role as a center purely for higher learning by bringing
certain market and commercial pressures to bear. Because the essays in Remaking Dixie
address several academic fields and appeared at a time when scholars were beginning to
take World War II into better account when assessing the twentieth-century South, it has
gained recognition as an important contribution to southern history.\footnote {12}

Though more works on university science are discussed in the bibliographical
essay at the end of this dissertation, several are worth mentioning here. One is Don K.
Price, Government and Science: Their Dynamic Relation in American Democracy (1954),
in which Price professed much faith in the power of science. It is one of the few studies
to consider not just the top few research universities but to maintain an awareness of the
dynamics across region and type of institution. Another is Charles V. Kidd, American
Universities and Federal Research (1959), which argued that federal subsidization of
university research had irrevocably changed the nature of university finances, research,
teaching, and political interaction. Also noteworthy is Noam Chomsky, et al., The Cold

War & the University: Toward an Intellectual History (1997). Two essays in that
collection are R. C. Lewontin, "The Cold War and the Transformation of the Academy," and Raymond Siever's "Doing Earth Science Research during the Cold War." Lewontin, a biologist at Harvard, makes the case that contract research at the university, while admittedly not without pitfalls and exogenous influences, had an ultimately positive effect for the researcher's working conditions, regard, and empowerment. Siever, a geologist, also at Harvard, addresses the massive scale on which federally funded science grew between World War II and Vietnam. While favoring the decision-making authority of science funding as coming from the academic community as opposed to the military and business world, Siever notes that it was the military that began the concept of large-scale funding of science that was responsible for major advancements in virtually every scientific field.13

Between 1951 and 1954, Columbia University led the Academic Freedom Project, which studied the history of academic freedom at American universities and also considered the ramifications of sponsored research. Largely rooted in its contemporary context of McCarthyism, the project commissioned several studies, one of which was the volume mentioned earlier in this introduction, The Development of Academic Freedom in the United States by Richard Hofstadter and Walter P. Metzger. Hofstadter's portion covers through the American Civil War, and Metzger's continues the study through the early twentieth century. Their message was that there was actually not a deeply rooted

tradition of academic freedom in American higher learning, a thesis relevant to the second and third chapters of this dissertation, which explore the nature of the constituent influences on the university and the extent to which free thought was a cherished value.\textsuperscript{14}

To look at an important analogy, in 1954 Don K. Price called the relationship between government and science an "unhappy shotgun marriage," a common depiction of the cooperation ever since.\textsuperscript{15} There was indeed an uneasiness regarding the relationship, ranging from practical and logistical considerations and ideological concerns of government influence at what were ostensibly zones of free inquiry. Nevertheless, widespread adoption of this sponsorship burgeoned, often becoming a determining factor in university strength and prestige. If the shotgun-marriage analogy is to be retained, then the word "unhappy" should probably be dropped in favor of "uneasy" or "respectfully cautious." This dissertation will challenge the notion that the university's partnership with the government to advance national power was a process of general reluctance and forced compromise. As will be shown, these developments at the nation's universities were not without critics—federal involvement in the American university spurred trends that many have found unappealing: widening the gaps between educational institutions of differing abilities, creating a disparity between university science and humanistic and non-technical disciplines, championing the ostensibly benevolent results of warfare, and seemingly quelling opportunities for true academic innovation in favor of contract research.

\textsuperscript{14} Hofstadter and Metzger. \textit{The Development of Academic Freedom in the United States.}
\textsuperscript{15} Price. \textit{Government and Science}, 2.
The American university, for whatever compromises and fallibilities may have existed, was indeed a venue for the exploration of ideas, and it served as a liberalizing force on society. Much of how scholars have judged the cooperation with other entities is related to the beholder’s conception of what the university should be, for saying that a certain development is unwelcome implies the existence of a recognized or desired standard. If one is to assert that the university is supposed to be purely an arena of free inquiry, then even seemingly benevolent purposes—managing social ills, promoting security from threats real or conjured, or furthering the economy—could be called inherently corrupting. On the other extreme is the conception of the university as a pragmatic instrument to serve society, whether to advance the regional economy or to act as a trainer in civilization according to presupposed assumptions. Institutions have tended to operate at points in this spectrum—the degree often differing by college, department, individual professor, or time—but in the South the latter conception of serving various societal interests was especially strong. The following chapters explore the aforementioned facets of the federal-education partnership in the context of World War II and the early postwar years as relevant to the history of the region.
CHAPTER TWO
Higher Education and the Commercial Constituency

As part of a mid-century review, the 1 January 1950 edition of the *Houston Chronicle* ran a section celebrating the commercial and economic growth in Texas during the first half of the century, wherein the petrochemical industry especially had come to rival farming and ranching as pillars of the state’s wealth.¹ This shift was underway to some degree across the region of the American South but was more pronounced in Texas given the oil boom and the industrial growth on the gulf coast. During the early twentieth century, corporate involvement in the educational community had increased, whether as a utilitarian means to increase public regard of the corporation, a pragmatic function of funding the universities to gain skilled employees, a genuinely perceived duty to give back to the community, or as part of an effort to re-make society in a manner consistent with the businesspersons’ own assumptions about what society should be. By mid-century the universities were operating as entities asserting the state’s economic interest in and of themselves, as opposed to simply preparing graduates to do so.

As the state economy and industry grew larger and more complex, the universities undertook new areas of research and entered into new partnerships with outside interests. This process combined a concept of service and also self-interest in the universities’ acquisition of financial resources, broadening scope, and competition with peer institutions for resources and prestige. This chapter considers the universities’ experience in this process, characterized by the research agenda being directed more fully by outside sponsorship and a further distancing from the conception of the university as a venue for

¹The *Houston Chronicle*, 1 January 1950, A 15.
disinterested research or a general education. The chapter contributes to the larger study by establishing a preexisting concept, and continuation of, reciprocally beneficial partnerships between the university and outside agencies other than directly from the federal government, making the universities’ eventual acceptance of the federal government’s wartime and postwar agenda a more understandable event in the uses of the university than might otherwise be apparent. During and after World War II, the myriad forms of nonfederal funding increased concurrently with federal funding, with both forms growing and becoming further entrenched.

Texas A&M and the University of Texas had been founded in 1876 and 1881, respectively, to serve the state of Texas, dedicating considerable resources to promote the state economy. Texas A&M had an explicit mandate of practical service, with the “Objectives of the A. and M. College of Texas” including the following purpose: to be “[a] state-wide system in accord with the recognized needs of the people of Texas and dedicated primarily to the broad fields of agriculture, engineering, and military science.” Baylor University had been chartered in 1845 for the purpose of educating students for teaching and the ministry, and during the early twentieth century Baylor increasingly added to that the training of the business and professional class. The Rice Institute can perhaps make a better claim for a disinterested education, having begun operations in 1912 as a center for arts, science, and letters. Nevertheless, a conscious effort to stress practical science and engineering led to an informal alliance between the institute with regional industry.²

The relationship between the university and business was perpetuated by the governing bodies, which reflected local and state commercial interests. At the University of Texas, the Board consisted of wealthy ranchers, bankers, and oilmen, including notables such as Dan Harrison, who while a Regent sold $27 million worth of land to Magnolia Petroleum. During the 1940s Governors W. Lee “Pappy” O’Daniel and Coke Stevenson both appointed wealthy businesspersons and anti-New Deal Texas Regulars, in one case a lawyer who served as the general council for the state’s telephone monopoly. In the late war period, five of the nine A&M board members were ranchers or bankers, and the other four were a merchant, a publisher, a Marine Corps officer, and an oil company executive.  

Baylor’s Board of Trustees had a different composition in that half of its members were Baptist Clergymen appointed by the Baptist General Convention of Texas (BGCT); the remainder were mostly businessmen from Dallas and Houston. Even Baylor President Pat M. Neff, though a staunch advocate of general education, had made his legal career representing corporations, railroads, and insurance companies; and among his high-profile actions as Governor of Texas were the 1922 declarations of martial law during the oil strike in Mexia and the Federated Railroad Shopmen’s Union strike in Denison. A well-known Texan who was both a regent of Texas A&M and a Baylor trustee was Herbert L. Kokernot, a Hereford rancher who grazed about 15,000 cattle on a quarter of a million acres in the Trans-Pecos region.

Rice’s Board of Trustees was made up of influential Houston businessmen, and in 1943

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1946, no.3., College Station, Texas, 3. Of the four universities, Baylor is largely absent from the more substantive discussions in this chapter, as it did not have the resources to accept or pursue serious industrial research. During this time, however, Baylor significantly added to its traditional role of educating teachers and preachers that of educating a business and professional class.

added Brown and Root (forerunner of Halliburton subsidiary Kellogg, Brown, and Root) partner George R. Brown, and in the following year added the president of the largest oil company in Texas (the Humble Oil and Refining Company), Harry C. Wiess. Wiess had assumed the presidency of Reliance Oil Company in 1912, before becoming a founding partner of Humble, along with Houston notables Walter Fondren, Jesse Jones, and William Farish. In 1937 Wiess became president of Humble and passed away in 1948, bequeathing to Rice a sizeable block of shares in Humble.

University leaders commonly heralded the role of the university in the state’s commercial affairs and were often the most enthusiastic advocates of the cooperation. As early as 1921, Rice Institute President Edgar Odell Lovett had professed the importance of the relationship between the university and the business community, pointing to Rice’s financial investments in, and the training of graduates for, Houston business and industry. Lovett stressed the importance of business, law, medicine, engineering, agriculture, railroads, and oil as sectors in which Rice students received training and in which they could market their skills.\(^4\) President T. S. Painter of the University of Texas told the *Dallas News* in 1949 that increasing industrialization in Texas and new demands from business and industry had given research at the University of Texas an increased importance, and in 1951 he said that by then, many of the key advances in business, industry, and medicine had generally been the product of university research.\(^5\) Harry C. Wiess encouraged the University of Texas to train specialists to deal with the growing and complex state industries. Of Rice, Wiess announced in 1945 that it “has reached a

\(^4\) For Lovett’s comments, see “Rice Brings Culture and Wealth Here,” *Houston Chronicle*, 2 February 1921.

\(^5\) T. S. Painter, Untitled typed response to a *Dallas News* written questionnaire, 1949, President’s Office Records. 3; T. S. Painter, draft of Speech to the Rotary Club, Marlin, Texas, 29 August 1951, President’s Office Records, 4.
point where it must expand...to serve the needs of this area. Southwest Texas has
witnessed a tremendous growth in population in the last thirty years, together with a great
expansion in industrial, commercial, and cultural activities. The need for a school such
as Rice Institute, therefore, is greater than ever before.” In the same speech Wiess said
that Rice should emphasize science and research, which he said was “required to meet
changing circumstances.” Interviewing candidates to succeed Lovett as president of
Rice, and during talks with front-runner Philip M. Morse, an MIT physicist, Wiess used
the growth of the petrochemical industries in Houston and their ramifications for
opportunities at Rice as a selling point for the position.\(^7\) The Rice Institute catalog for
1948–49 assessed the continuing importance of local industry:

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\text{[M]ore than half of the Rice Institute graduates in engineering are identified with some phase of the petroleum industry and allied industrial enterprises....Such successful application of these courses was to have been anticipated because the petroleum industry's call for physics and electrical engineering, those of production and manufacture for mechanical engineering, those of transportation and storage for civil engineering, while chemist and chemical engineer man the research laboratories of the industry from which issue its processes of refining and the manufacture of its manifold by-products.}^{8}
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General Dwight Eisenhower lauded Texas A&M as an institution devoted to
exploiting natural resources for the national good, citing the importance of the mastery of
the physical world—whether it be “new hybrid plant or fowl”—in winning what he
called the problem of “freedom versus regimentation.”\(^9\) In his November 1950 inaugural

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\(^6\) For encouraging the University of Texas, Dugger, _Our Invaded Universities_, 41. For the quotes from Wiess, Harry C. Wiess, “Rice Looks Forward,” Address delivered to the Association of Rice Alumni, Houston, Texas, 9 November 1945, transcript, typed, Edgar O. Lovett Presidential Papers, first quote on 3; second quote on 5.

\(^7\) Harry C. Wiess, untitled report containing notes from his interviews with candidates for the Rice Institute presidency, June 1945, Lovett Presidential Papers.

\(^8\) Rice Institute _Announcements Bulletin_, 1948–49, 130.

address as incoming president of Texas A&M, Marion Thomas Harrington (president, 1950–1953; chancellor, 1953–1965), whose professional experience included being a chemist at the Texas Company’s Port Arthur refinery and at the Lone Star Gas Company in Petrolia, said, “The young man well trained in the fundamental principles of sciences or technology, capable of reading intelligently, and trained to think individually is prepared to assume his responsibilities as a citizen and also to advance to a position of leadership in the management of our great industries.” The advances in science and industry in the twentieth century, Harrington said, were of the magnitude to “make us quake in our boots,” and he emphasized that A&M graduates were making contributions by “taking their places as leaders in the growth of Texas in farming, cattle raising, petroleum and other industry.”

Another Texas A&M president, David Hitchens Morgan (president, 1953–1956), said that “[o]ur technical curricula, which include most of our majors, must remain sensitive to the modern needs of business and industry.” Eventually Morgan left A&M to become Director of College Relations for the Dow Chemical Company. Morgan, in accepting the position, commented that the future of education depended greatly on industry. When Governor Coke Stevenson courted businesses to Texas via the Texas Industrial Development Program and the Postwar Economic Planning Commission, he consulted the Texas A&M School of Engineering for assistance and had one of its professors, Dr. Hall Logan (mechanical engineering)

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10 Marion Thomas Harrington, “Inaugural Address of Marion Thomas Harrington,” Inauguration of Marion Thomas Harrington as Twelfth President The Agricultural and Mechanical College of Texas, 9 November 1950, College Station, Texas; first quote, 30; second quote, 3; third quote, 31–32.

work half of his hours in the Capitol building in Austin supporting Stevenson's commissions.  

Southern universities facilitated the attainment of professional and technical skills to assuage the need for southern companies to import know-how and services from outside the South. W. R. Woolrich, the University of Texas Dean of Engineering, had long been imbued with the desire to make the South more economically competitive with the North, citing the paucity of locally owned and financed businesses in the region and the fact that firms in the Northeast were too often the suppliers of capital and technical skill. Southern universities consciously sought to increase the state's resources of trained professionals across different industries. The Texas A&M catalog said that agricultural and mechanical education went hand-in-hand with the industrialization of Texas and the Southwest, which it noted was occurring because Texas's economic advantages were luring industry away from more traditional centers of industry in the North and East. In 1951 the Board of Control for Southern Regional Education devised a program designed to strengthen the relationship of southern education and southern industry, among the recommendations being special arrangements by which small businesses could solicit help from universities, physical forums in which businesses could match needs with university programs, and the participation of southern universities in defense-related research.

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13 Austin American, 8 April 1948, from W. R. Woolrich vertical file, Center for American History, The University of Texas at Austin.
14 "Bulletin of the Agricultural and Mechanical College of Texas," 6th ser., vol. 1, 1 April 1954, no. 2., College Station, Texas, 181.
15 "Education and Industry Urged to Get Together," in Regional Action in Higher Education 2, no. 7 (July 1951), 1.
One constraint on the public universities that affected their participation in business was their subjection to state constitutional interpretations. This was especially relevant to Texas in the 1940s; as the composition of the state government grew more conservative, the university began to exist under a stricter interpretation of its mandate. Though explored more fully in the discussions below of the specific university projects, an early, telling test of the university’s role bears mention here: that of the University of Texas in the debate over the institution’s patent policy. Due to the increase in research in the 1940s, professors sought patents or university approval to pursue them individually. In formulating its patent policy, the board noted that, given Texas’s abundance of natural resources, both mineral and agricultural, among the goals of the University should be “the development of advanced methods for the exploitation of these resources for the benefit of all the people of the State of Texas,” and “to enable the development of them commercially.” But the state legislature advanced the opinion that it was beyond the University’s scope to help innovate equipment for commercial use with university dollars.\(^\text{16}\) The university ultimately decided not to help professors develop patents, neither barring nor helping professors from obtaining one, essentially granting shop rights to its faculty using state tax dollars. The following pages will reveal more about the seeming contradictions in which otherwise pro-business elements favored a stricter interpretation of the role of higher education in the state.

Part of the general relationship between the university and business included the derivation of much of Texas’s economic prosperity from the wealth of its natural resources. Texas had enjoyed a boom during the early twentieth century, having emerged

\(^{16}\) “Proposed Chapter VIII A (Rules and Regulations of Board of Regents): Patent Policy of the University of Texas,” typed, bound into the back of Texas University Board of Regents Minutes 1943.
as an important center for agriculture, especially cotton, as well as the timber business and a nascent oil industry. A ship channel connected the Gulf of Mexico to Houston, a major rail terminal that serviced the hinterlands and allowed the state’s resources to be part of a growing national, and in some cases, global economy. Of all of the natural resources, oil was the one that best positioned Texas universities to gain financially. In a common arrangement, the universities leased land at a low annual rate, perhaps one dollar per acre, receiving a one-time payment from the renter and a percentage of the revenues generated from the land thereafter. Between 1923 and 1939 the revenues from oil from these lands, mostly in West Texas, had totaled almost $30 million, two-thirds going to the University of Texas and one-third to Texas A&M.\(^{17}\)

Oil was certainly important to the Rice Institute, which in 1942 acquired its first major oil holding in the form of an interest in the Rincon oil field in the Rio Grande Valley. Following this purchase, which proved extremely lucrative, Rice purchased several other lands for this purpose. Even had the trustees not continued their oil speculation, they would have profited from it, since oil was soon discovered on timber land that Rice owned in Louisiana. In 1950 the Baylor University College of Medicine received a bequest of a partial ownership in an oil field, a portion which in some years yielded over $100,000 per year, significant to the small, growing institution. Many of the wealthiest benefactors to these universities donated shares of stock in oil companies as the primary means of giving. Apart from oil, the University of Texas, Texas A&M, and

\(^{17}\) For the common arrangement, Texas A&M Board of Regents Minutes, 9 March 1946, 2. For oil revenues, The University of Texas Catalog, “Part V: General Information, Main University, 1939–1940,” 66.
the Rice Institute owned land in Texas and Louisiana, lucrative in its timber and naval stores.\footnote{18 Wiess, “Rice Looks Forward.” See also John. T. Scott, “Remarks of J. T. Scott, Chairman of the Board of Trustees of Rice Institute at a Dinner Given by the Trustees to the Faculty of Rice at Cohen House Tuesday Evening, April 10, 1945,” Lovett Presidential Papers, 3. The Rincon Deal is more thoroughly discussed in the fifth chapter.}

Before looking at the manifestations of the general relationship between the academy and industry, it is appropriate to set another brief context, the impact that private industry had on the World War II effort, which demonstrated the importance of industry and resource exploitation to continued U.S. national interest in the postwar years. Early on in the war the government cited the importance of industry’s exploitation of resources such as oil, minerals, grain, and wood products and the development of the gamut of materiel necessary for modern warfare. A manufacturing explosion, common to many southern states, prompted \textit{Time Magazine} in February 1941 to feature an article entitled “The Defense Boom in Dixie.” Temporarily abandoning prior regulations imposed by the Texas Railroad Commission, Texas oil wells produced at maximum capacity during the war, meeting the demand for high-octane aviation fuel and gasoline for ground vehicles, with one armored division anecdotaly requiring up to 60,000 gallons per day.\footnote{19 \textit{Time Magazine}, 17 Feb 1941, 75–80. For the government citation, U.S. Office of Facts and Figures, “The Battle of Economics: The Silent War,” in \textit{Report to the Nation: The American Preparation for War}, 14 January 1942, Washington, DC, 21. Map entitled “The Arsenal of Democracy,” in \textit{Report to the Nation}, [25–267]. For oil production, Texas State Archives and Library Commission, “The Power Years,” in “Industry, Regulation, and the Texas Railroad Commission,” 2. http://www tsl.state.tx.us/exhibits/railroad/power/page2.html accessed 31 July 2005.} Toluene, comprised of petroleum hydrocarbons, was a blending agent and main ingredient in the high explosive trinitrotoluene (TNT). The war’s end left southern industry, especially that on the Gulf Coast, with facilities for reconversion to civilian commerce in addition to lingering government contracts, and the port of Houston gained importance due to wartime advances in the energy sector. Postwar demand for oil was
sustained by the proliferation of the personal automobile, reconstruction in Europe, globalizing industry, and later with the Korean War. While several advents of World War II-era research took longer than others to realize the industrial potential—rocket and nuclear technology, for example—advances in communications, solid state electronics (computers, radio, television), air travel, mineral extraction, artificial rubber, and agriculture were more commercially apparent.20

As for the specific forms of cooperation following the war, the most high-profile relationship in which an American university courted business participation was likely that at the University of Chicago, at which President Robert M. Hutchins created three institutes (nuclear studies, metals, and radiobiology and biophysics), which received annual funding from each of numerous U.S. companies for a share in the research results. The University of Chicago drew scientists from the best universities with offers of higher salaries and the prospect of being part of well-funded research with commercial applications.21 Other large ventures took place away from the college campuses and operated under federal government auspices, such as those at E.I duPont de Nemours and Company, the Atomic Energy Commission at the Clinton Engineer Works in Oak Ridge, Tennessee, and the other national laboratories run by universities and corporate sponsors. But the relationship did not have to be that major, expensive, or advanced in order to profoundly affect the manner in which universities changed via their experience with industry.

20 In 1947, oilman and rancher Thomas Baker Slick, Jr., endowed the Southwest Research Institute (SwRI) outside of San Antonio, Texas. The SwRI was a non-profit research center that Slick hoped would concentrate cutting-edge research projects in Texas, as opposed to the several such institutes in the Northeast and Midwest (Battelle Memorial Institute, Ohio; Armour Research Institute, Illinois; and Mellon Institute for Industrial Research, Pennsylvania). The SwRI received gifts from local industry, and also did defense research in fuels and oil applications such as lubricants for industrial and military use.

Given the importance of natural resources to the university, it was logical that a significant amount of the research energies involved their exploitation. The Texas A&M Department of Petroleum Engineering worked regularly with executives at oil companies in the region to maintain a program relevant to industrial needs. The department’s founder, Dr. Frederick B. Plummer, was a geologist who had been instrumental in solving a major problem of the East Texas oil industry, that of disposing of salt water from the oil wells so that it would not clog the wells or salinate rivers by pumping it deep underground. The University of Texas addressed the same problem, improving on an older system that filtered salt water in the oil wells through anthracite coal—which had to be imported from the Northeast—to a new process that filtered the saltwater through graphite mined in Texas’s Llano region.\(^\text{22}\) In 1947 the University of Texas and Texas A&M entered into an arrangement called the Texas Petroleum Research Committee, which sought to de-conflict the institutions’ petrochemical research. The stakes of oil research appeared higher as the potential for the use of natural gas in producing synthetic fuels continued to advance.\(^\text{23}\)

Agriculture was also the basis for a great deal of research. The University of Texas conducted research on parasites to kill the boll weevil, on increasing efficiency in the cotton industry, and on developing a process for making acetylene, a synthetic rubber base derived from natural gas. University of Texas researchers developed a way to

\(^{22}\) *Daily Texan*, n.d., newspaper clipping from Frederick B. Plummer vertical file, Center for American History, The University of Texas at Austin; *Austin American*, 18 February 1947, ibid. Plummer founded the University of Texas Department of Petroleum Engineering in 1927 and performed contract work for the Barzilian government on an oil exploratory project.

dehydrate and freeze dry foods for use by the armed forces, citing the commercial potential of such technology. One prominent Texas businessman wrote President Painter encouraging him to establish a Department of Ceramics at the University of Texas. Far from simply being an art facility or a producer of small-scale pieces, the businessman said, departments of ceramics at other state universities such as the Ohio State University and the University of Illinois were bringing literally millions of dollars to the schools in the form of industrial plumbing, flooring, and insulation. The writer asserted: “Until our State University establishes such a Ceramic Department, these great undeveloped clay resources will lie dormant, resulting in the enrichment of other states instead of our own.”

Poultry researchers at Texas A&M developed a broad-breasted turkey that was able to maximize its breast weight and still be able to walk upright, unlike some other scientific breeds of turkeys whose breast weight apparently rendered walking difficult or impossible. In the spring of 1946 Texas A&M established a soil analysis laboratory, which it estimated would be self-sustaining in two years, presumably from private contracts. Projects at Texas A&M in 1947 included research on the artificial insemination of cattle, mechanical dehydration in grass farming, and grain sorghum breeding work (the latter funded by a grant from the Corn Products Refining Company). In the summer of 1947 Texas A&M established a Department of Biochemistry and

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24 The University of Texas, *Education for Victory* (1944?), Center for American History, University of Texas at Austin, [5–6]. On food, David Botter, *A University Goes to War* (Austin, Texas, 1942), printed from a mimeographed report by David Botter and edited and published by the University of Texas Department of Public Relations, at which Botter was an editor, [3]. These were presumably a form of the Meal Ready to Eat, or MRE. On ceramics, J. E. Fonders, President of Acme Brick Co., Fort Worth, Texas, to T. S. Painter, 19 March 1945, President’s Office Records. Fonders estimated that such a department would cost the University of Texas $250,000 over two years before becoming self-sustaining.
Nutrition, which received grants from several private companies.\textsuperscript{25} One of the most high-profile experiments at A&M led to the first dedicated crop duster aircrafts, the Ag-1 and Ag-2. Designed and prototyped at A&M using a variety of state, federal, and private funds, these planes could spray seeds, fertilize, and distribute pesticides. They were the first planes designed specifically for agricultural use and were distinguished by special chemical coatings that protected the plane from the chemical payloads and by high cockpits for pilot visibility. The Ag-1 and Ag-2 influenced the later mass-market commercial designs of Piper and Cessna.\textsuperscript{26} Texas A&M also conducted research on the long-time bane of farmers: drought. Texas A&M researchers developed soils that better retained water, managed the spread of moisture-depleting brush and plants, and created engineering techniques to reduce the amount of water needed to irrigate rice crops. In 1953 several leaders in Texas industry proposed a special industrial development course at Texas A&M in which industrial leaders taught short courses in their respective fields to students and young professionals who had demonstrated managerial or business acumen.\textsuperscript{27} For a university at which as many as one in every ten white male high-school graduates per year entered, this context of the university-state partnership made the universities’ interest in constituent affairs seem normal to so many Texans.

Private firms valued university researchers and facilities and thus funded research in their respective fields. Small grants, in today’s dollars between $20,000 and $30,000, were commonplace, and as a percentage of departmental budgets had a much greater effect than the sum would have today. Small grants subsidized research on cattle feeding,

\textsuperscript{25} On poultry, Texas A&M, \textit{Annual Report for the Fiscal Year 1944–1945}, 37. On soil, Texas A&M Board of Regents Minutes, 30 May 1946, 8; also Texas A&M Board of Regents Minutes, 11 January 1947, 5.
eradicating and controlling brush, and testing fuels. Humble Oil was one of the most prolific sponsors, giving grants that numbered as much as $100,000, such as one to the Baylor University College of Medicine in 1954. In the early 1950s President William V. Houston (president, 1946–1960) at Rice corresponded with local companies on opportunities for sponsored research. Representative cases at Rice involved a tender from Texas Gulf Sulphur Company to fund research dealing with the desalinization of seawater; the Texas Company, involving petroleum research; and the Dow Chemical Company, for research in heat transfer studies.28 Rice’s official stance was that the Institute did not accept sponsored research; a Rice position statement said in the mid-1950s, “The Rice Institute is not a research institute and does not conduct contract research per se. However, the Institute will undertake those problems presented by governmental agencies or private industry that will be of benefit to the general research program at Rice...and may be carried out in the traditional manner of university research.”29 Rice created new academic departments in line with new areas of commercial and industrial application, such as the post war addition of a nuclear science program with specializations in radio-chemistry, nuclear power production, and application of radio isotopes.30

28 On small grants, Texas A&M Board of Regents Minutes, 25–26 November 1947, 13; fuel, Texas A&M Board of Regents Minutes, 11 February 1947, 4. On Humble, Baylor University Board of Trustees, Houston Executive Committee Minutes, 18 May 1954, Baylor University, Texas Collection, [3]. On the Rice cases, President’s Papers 1946–60: W. V. Houston Office Records (Houston Presidential Papers), correspondence between W. W. Dueker of the Texas Gulf Sulphur Company and several Rice professors, including President W.V. Houston, 2 December 1952 through 16 June 1953; W. V. Houston to G. Herzog of The Texas Company, 6 April 1954; W. V. Houston to E. E. Ludwig of Dow Chemical, 28 February 1956.


Research with commercial implications took on an increasingly larger scale over time. At Texas A&M, the Department of Petroleum Engineering received full-scale equipment including a 122-foot oil derrick, pumping units, and all equipment necessary to simulate operations on an oil lease.\textsuperscript{31} In 1946 the Rice Institute explored the possibility of building a testing machine for structural engineering, noting that there was not an available testing machine in or around Texas able to test over one hundred thousand pounds. Based on indications from local businesses, Rice surmised that commercial firms would fund the project in order to use it for their own purposes at a rate to make the project self-sustaining. In 1948 Rice completed a one-million pound engineering testing machine with funds from local donors, foremost among them J. S. Abercrombie, owner of drilling manufacturer Cameron Iron Works, and several Houston-area businesses, whose funding of the machine included the rights to use the machine for industrial research; the testing machine was housed in a new building named the Abercrombie Engineering Laboratory. In 1950 Humble Oil entered into an agreement with the Rice Institute wherein Rice agreed to purchase an EM-100 combination electron diffraction and electron microscope at an estimated cost of $24,000, of which Humble would pay $16,000 for the right to use it two-thirds of the time.\textsuperscript{32} It was also during the postwar years that the United States developed the national laboratories, a collaborative system in which the government paid for the labs but contracted their operations largely

\textsuperscript{31} Bulletin of the Agricultural and Mechanical College of Texas, 4th ser., vol. 2, 1 April 1940, no. 4, College Station, Texas, 56.

\textsuperscript{32} On the testing machine, William V. Houston, “Memorandum to Trustees,” 13 November 1946, Houston Presidential Papers, 2; “Formal Opening of the Abercrombie Laboratory for Instruction in and Research in Science and Engineering,” 20 November 1948, program for the opening ceremony, Houston Presidential Papers; H. D. Wilde, Manager of Research and Development, Humble Oil and Refining Company, to W. V. Houston, 15 August 1950, Houston Presidential Papers, 1–2.
to the private sector and universities in what historian Peter J. Westwick called a "hybrid of public and private institutions." 33

A trend that had been present in the 1920s and 1930s but which gained momentum in the late 1940s was the provision of university fellowships by private firms, which looked to the university as its training ground for graduates with specific skills. A myriad of regional and national companies granted fellowships in the years following the war, usually providing tuition and/or a stipend to upper classmen or graduate students in germane fields. Some of these fellowships paid for students to conduct summer research either at the university campus or at the business's location. Some stipulated that the company choose the professor whose student received the award, allowing the company to fund a project and/or prepare specific types of researchers for entry into the field; a significant number stipulated that the recipient be a male. Firms that frequently gave fellowships included Humble Oil, Dow Chemical Company, Socony-Vacuum, Proctor and Gamble, the Shell Company, and the American Smelting and Refining Company. Similar fellowship arrangements and research grants existed in medical schools as well, with firms such as the Abbott Laboratories, the Lilly Research Laboratories, and the Squib Institute. 34 In proposing methods by which the Rice Institute could fund graduate study, the trustees believed that Rice should consider conducting research projects for local industries and use the proceeds for graduate fellowships. 35

34 In the arrangement where the company chose the professor, it was often arranged so that the students applied directly to that professor, who adjudicated the applications; For the medical, The University of Texas Catalog, “Part IX: The University of Texas, Medical Branch, Galveston, 1947–1948,” 45.
35 The Rice Institute Board of Trustees, “Major Elements of a Long Range Program for Rice Institute,” preliminary draft, [Fall 1945?], 2.
Many professors in the sciences, especially in the engineering and petrochemical fields, had experience in the private sector, whether it had been in a laboratory doing war research or whether they had come to academia from the private sector. It was then more natural—a continuation of their professional experience rather than a departure—to accept contract work and continue to serve as liaisons between the university and commercial entities. In addition, it rendered the general university partnership with industry less of an oddity. R. N. Little, one of the University of Texas’s prominent nuclear physicists, had worked as a seismologist at Shell Oil, and Texas A&M President Marion Thomas Harrington had previously worked at an oil company as well.\(^{36}\) Baylor professors performed little of this sort of research, save some of its chemistry professors having testing alcohol levels of confiscated moonshine during Prohibition as side work for the police, and one or two others tested chemicals at the city water works due to the scarcity of private chemists in Waco.\(^ {37}\)

While it was common for professors to have significant commercial experience in their backgrounds—or conversely, to leave the academy for the private sector—a more controversial move was the professor who “moonlighted” by working for a private firm while employed full-time at a university, especially such work which was done during the school year. Texas A&M required such professors to ask permission to do so, and required permission from the Board, even for minor work such as weekend work at airfields repairing airplanes or work lasting several hours in the evening. More major projects included physics professor Donald F. Weeks taking a leave for much of 1947 to

\(^{36}\) Proposal to Air Materiel Command from Nuclear Physics Laboratory, The University of Texas, for Experimental Work on Scattering of Neutrons, 31 July 1950, University of Texas, President’s Office Records.

conduct research for the Petty Geophysical Engineering Company in a private laboratory and again in 1948 to work on an unnamed "device of possible value to the petroleum industry."

President Lovett of Rice sought the council of J. A. Stratton, Provost at MIT, who replied with the drawbacks of allowing professors to work on private contracts, citing the potential for the professor pursuing work of no academic benefit or work that would not advance the professor's professional development. However, Stratton's reference to the fact that most of the details of such MIT contracts were handled by the Institute's "Division of Industrial Cooperation" belied any ambiguity as to MIT's stance on sponsored research. Robert M. Hutchins of the University of Chicago had led an unpopular effort to forbid such moonlighting, though he offered the compensation of salaries well above the national average. But universities in the South were generally unable to compensate faculty as well as their non-southern counterparts, leaving the incentive for professors to engage in such work. Generally the universities were amenable as long as the commercial work did not interfere with the professors' commitment to the university.

As mentioned before, universities sometimes debated the extent to which their faculty were overstepping their bounds in doing work in which direct industrial application outweighed the educational benefits. The case of the University of Texas Professor of Chemistry E. P. Schoch bears special mention. His situation was a high-profile case in testing how the board conceived of the University's role in advancing

38 For the plans for taking the 1947 leave of absence, Texas A&M Board of Regents Minutes, 27 November 1946, 6.
39 J. A. Stratton to W. V. Houston, 27 February 1951, Houston Presidential Papers.
40 Mayer, Robert Maynard Hutchins, 332–35.
commercial interests. Schoch, a University of Texas alumnus, had earned a Ph.D. from the University of Chicago in 1902 and had returned to the University of Texas to teach theoretical chemistry. He allegedly had a turning-point moment when, in a period of poor crops in Texas in about 1910, some farmers appealed to Schoch for help, based on his expertise. His efforts resulted in the 1914 opening of the University of Texas Bureau of Industrial Chemistry (BIC). In the early 1930s Schoch founded what would eventually give him notoriety in Texas when he devised a method by which methane and other petroleum gasses, often burned off at refineries, could be harnessed for commercial and industrial potential. Schoch’s electric discharge methods caused electrons to strip hydrogen atoms from CH₄ to leave CH radicals, which then formed acetylene (C₂H₂), a gas used in industrial cutting, welding, and illumination.⁴¹

The Schoch process was resource-intensive to develop, both in money and physical space. Schoch asserted that his process could generate 100,000 pounds of acetylene per year and would be 50 percent cheaper than current methods and use 80 percent less natural gas. In 1945 Schoch requested $400,000 over two years from the university budget and was rejected. President of the Board D. K. Woodward explained to Schoch that, although the university welcomed the sharing of scientific innovations with industry, it was outside the university’s scope to develop industrial apparatus solely for introduction into the commercial market. Woodward also jabbed that it was easy for Schoch to request such a high sum when BIC “is not primarily concerned with taxes and economies.” Rebuffed by the board, Schoch appealed to the Texas state legislature,

⁴¹“Acetylene from Hydrocarbons by the Schoch Electric Discharge Process,” reported by the staff of the Bureau of Industrial Chemistry, Acetylene Division. The University of Texas Publication No. 5011, 1 June 1950.
which granted the BIC $85,000.\textsuperscript{42} Schoch continued his advocacy for sponsored research for industrial applications and in 1950 noted to President Painter that MIT received over $5 million per year from private industry and that Texas A&M received more grants from industry than the University of Texas did. The university’s unwillingness to fund Schoch left him to pursue funding from the Department of Defense as part of the wartime and postwar channels of government-university cooperation. The Dow Chemical Company was also in frequent correspondence with Schoch in 1953, inquiring about installing a Schoch plant, as was a firm in Tel Aviv, Israel.\textsuperscript{43}

The case of the Bureau of Economic Geology (BEG) also sheds light on the University of Texas’s conception of its role in the state business interest. The BEG had succeeded the Texas Geological Survey in 1909, becoming part of the university. The BEG carried out the traditional functions of a state geological survey, assessing the state’s mineral resources, often in coordination with federal entities such as the U.S. Army Corps of Engineers and the U.S. Geological Survey, as well as Texas oil companies. An example of a coordinated project was a 1945–1946 endeavor to survey the mineral resources of the Trinity River valley and to assess the potential for the canalization of the Trinity as it flowed through Fort Worth and Dallas. By bringing the

\textsuperscript{42} On Schoch’s assertions and the legislature, E. P. Schoch to T. S. Painter, 11 March 1945; E. P. Schoch to T. S. Painter, 20 April 1945. On the rejection, E. P. Schoch to The University of Texas Board of Trustees and T. S. Painter, 23 March 1945; D. K. Woodward to E. P. Schoch [March 1945]. See also E. P. Schoch, “Purpose and Details of the University’s Request for Appropriation for Research on Natural Gas,” memorandum for the record, 26 April 1945, University of Texas, President’s Office Records.

\textsuperscript{43} For the comparison to MIT and Texas A&M, see E. P. Schoch to T. S. Painter, cover letter for a document that listed federal grants by receiving university (document not included with cover letter), in “Bureau of Industrial Chemistry, 1950–1951” folder, University of Texas, President’s Office Records. The document may have included the funding for Texas A&M’s Experiment Stations. For examples of the correspondence with The Dow Chemical Company, see C. M. Shigley, Director of Research, Dow Chemical, to E. P. Schoch, 8 December 1953; E. P. Schoch to W. R. Woolrich, 17 December 1953; Leopold Schefflan, “Hadar” B. Schefflan, Ltd. to E. P. Schoch, 4 August 1953, E. P. Schoch to Leopold Schefflan, n.d. but in response to Schefflan’s letter of 4 August. University of Texas, President’s Office Records.
BEG into the university's orbit, the BEG became subject to the university's constraints of its mandate as an educational institution. The board of the 1940s and early 1950s, though pro-business and sympathetic to exploitation of state resources, strictly interpreted the university's scope. One example of this conflict regarding the BEG came in a 1945 response by President Painter to BEG director John T. Lonsdale, who had appealed to Painter for more funding. Painter told Lonsdale that funding the BEG was a legislative and constitutional question left up to the legislature, noting the increase in World War II veterans enrolling and the university's need to attend to them as a reason for not increasing BEG funding. Not all states imposed the same constraints on their geological surveys, with many being operated outside of the university system. One pattern was that non-southern states typically funded their state geological surveys better per anum (Indiana $200,000, Michigan $250,000, Illinois $700,000) than those in the South (Mississippi $47,000, Kentucky $38,000, Arkansas $84,000). 44

Though there was resistance to using the university to deliberately advance commercial interests without a clear academic angle, the mandate of the A. and M. system allowed it to do so. In 1944, Texas A&M Research Foundation, which was established in 1944, as technically a stand-alone, non-profit organization separate from the state higher education system, with its own budget and board of directors. However, the Foundation exclusively used the faculty of the A&M system, having no other personnel of its own. Under the leadership of professor Arne. A. Jakkula, the Foundation allowed Texas A&M to carry out research of purely commercial application. Now a familiar theme, much of the work at the Research Foundation pertained to the

44 T. S. Painter to J. T. Lonsdale, 12 December 1945, University of Texas, President's Office Records.
petrochemical industry, with generous grants from business. Projects included desalinizing crude oil, research on electric power and distribution systems, a hurricane projector laboratory, and a mass spectrometer. Some of the Research Foundation’s contracts also came from government agencies, with the primary contractors representing the armed forces, such as the Office of Naval Research, the Office of Ordinance Research, and the Air Research and Development Command.45

The Foundation’s most notable undertaking was Project No. 9, a study of offshore drilling on oyster mortality rates. The experiment was essentially a coordinated defense of the oil industry, prompted by lawsuits that several oyster companies had filed against oil companies drilling in the Gulf of Mexico. The goal of Project No. 9 was to demonstrate that the cause of the oyster deaths was something other than drilling. Sponsors included the Texas Electric Service Company, the California Company, United Gas Pipe Line Company, the Humble Oil, Phillips Petroleum, Shell Oil, and Magnolia Petroleum. Project No. 9 researchers conclusively demonstrated that drilling was not the agent of the oyster mortality, and that the culprit was the hitherto unknown parasite *dermocystidium marinum*. The vindication of the oil companies on that particular issue led to increased interest in what scientific research could do for them, and private sponsorship of Research Foundation projects strengthened in the late 1940s and early 1950s. Among these were one by the Texas Electric Services Company, which tested a new design for a heat pump to heat and cool building interiors, a Gulf Oil Corporation contract to measure and analyze the force of ocean waves on steel piles, and an Orchem

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Corporation contract to study chemical additives to drilling muds. In 1953 the foundation acquired a 150-foot schooner with over $100,000 worth of oceanographic equipment on board and utilized the facilities of a drilling platform off the coast of Morgan City, Louisiana.  

Another example of the blurred lines between academic and economic partnerships in Texas were the Texas A&M Agricultural Experiment Stations and Extension Services, traced to the Hatch Act (1887) and Smith-Lever Act (1914), respectively. Funding also came from the state government and in some cases private firms, for example the Texas Rice Improvement Association’s deeding Texas A&M land in 1946 for use at the Beaumont Rice Experiment Station and financial donations from the Dow Chemical Company, the National Livestock and Meat Board, and the American Meat Institute. The breakdown of the A. and M. Extension Service’s 1947–1948 budget was as follows: federal government $1,700,000; state government $500,000; and other funding (mostly from private firms but also apparently including some county funds) $800,000.  

The general aim of the Extension Services was to make farming and ranching in Texas more productive. The Texas A&M Extension Services operated similarly to others nationwide, demonstrating new farming methods to rural areas, increasing efficiency and output, and transforming the older, more traditional farming heritage. The models were the more modern corporate farms to the west, especially in California, which developed new acreage and often used state resources to begin large

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corporate farms afresh as opposed to working with inhabitants of older, smaller plots to change their methods.\textsuperscript{48}

The most common endeavors at the Experiment Stations dealt with testing new varieties of crops and breeds of cattle. Experiments with cattle included studies of heat tolerance, insect/parasite resistance, and foraging ability. One example of an important project during the 1940s and early 1950s was that of breeding cattle whose weight-gain rates were faster than average. At the Bluebonnet Farm substation in McGregor and the Pan-Tech farm in West Texas (the latter a cooperative venture with Texas Technical College), mating high-gaining bulls with high-gaining female cattle showed that it was possible to produce a strain that consistently gained about one-half pound of weight per day more than average. Reports announced that if all of Texas’s approximately eight million cattle gained weight at this rate, the state beef yield would increase by 20 percent.\textsuperscript{49} Tangential to grazing were experiments on brush control and soil erosion, the ultimate goals of which were to maximize acreage for grazing. Other projects included ones on proportions of nitrogen, phosphorous, and potassium in soil; control of the boll weevil and other worms and aphids that attacked the cotton crop; storage tests with frozen chickens; sorghum gluten meal and feed for fattening steer; mechanical and combine harvesting; and eradication of wheat rusts—to include Race 15-B, which at one time reportedly stood to wipe out 75 percent of the U.S. durum wheat crop. In the 1940s the acreage of Texas farming land under irrigation roughly tripled, with most of the


growth coming from pumping groundwater for cotton and grain sorghum in the Panhandle–High Plains area.50

The impetus behind the Experiment Station projects was ultimately the economic impact. For example, the estimated loss on the Texas cotton crops from the boll weevil averaged over $57 million per year between 1929 and 1949; sheep that could yield two coats of wool per year instead of one (an extra $3 million per year); control of the soremuzzle and bluetongue virus in common gnats that affect sheep and goats (a savings of $1 million per year); and development of the W-7 tomato hybrid (an alleged 100-percent increase in crop yield per acre). The experiment substation in Winter Haven produced a new “crystal wax type” onion that outproduced its peer onion varieties, resisted root rot, and whose appearance and flavor were deemed “desirable market qualities.”51

The Extension Service sent over five hundred agents around the state to give demonstrations and teach new agricultural methods and innovations. One specific mission of the extension agents was a campaign to ask farmers to plough their cotton stalks immediately after harvesting the cotton in order to deprive the boll weevil of food and thereby send it into winter hibernation less able to survive until the next growing season. Experiments in 1947 in the Blacklands and in the Lower Rio Grande Valley had hinted at the utility of this practice. In 1948 the Extension Service campaigned for cotton


farms to adopt this practice statewide, which the Extension Service credited with a $27 million increase in cotton yield in 1949. In another case, Texas farmers in coastal counties reported a new brown leaf worm that was eating the cotton crop. Within a few weeks the Experiment Station developed a pesticide to counter it, and extension agents traveled along the coast distributing the poison so that a month and a half after its discovery it was eradicated. By 1950 Texas A&M reported that almost a quarter of a million Texas farms had adopted new practices as a direct result of the Extension Service.

Texas A&M’s branch campuses were especially active in Experiment Stations and in cooperation with state business. Arlington State College partnered with the North Texas Milk Producers Association and the Texas Water and Sewage Association, among others, and took advantage of its location in the booming Dallas-Fort Worth metropolitan area to match the industry with graduates in mechanical and engineering fields. Tarleton State College was largely dedicated to agricultural training, offering degrees in general farming and emphasizing such in its research. Tarleton State students and researchers carried out projects for local industry at facilities such as the pullorum laboratory, which ran blood tests on turkeys for the turkey producing industry. Texas A&M boasted that Prairie View A&M was one of the best African-American land-grant colleges in the United States and lauded its provision of services “to the negro population of Texas.” Experiment Station projects at Prairie View A&M’s separate Negro Extension Service

emphasized trades and basic farming more so than those conducted by the main campus at College Station. The 1948–1949 chancellor's report lauded the work at Prairie View A&M, mentioning the four areas of sweet potatoes, fruit, chickens, and hogs. Home demonstrations in the Negro Extension Service dealt with soil improvement, food storage, and livestock feeding. Prairie View A&M was also the facilitator of the A&M college system's aid to West Africa, sending faculty and resources to the Booker T. Washington Institute in Kakata, Liberia.55

Texas A&M also operated Engineering Experiment Stations, an Engineering Extension Service, and a small Industrial Extension Service. The two engineering entities received a slight majority of their funding from the state and the remainder as gifts from private industry. Projects included those in aeronautical engineering, chemical engineering, geology, mechanical engineering, and structural research. One of the major Engineering Experiment Station projects, begun in 1953 in cooperation with the Texas State Highway Department, was co-directed by chancellor emeritus Gibb Gilchrist (president, 1944–1948; chancellor, 1948–1953), a former highway engineer; and Thomas H. McDonald, former head of the U.S. Bureau of Public Roads. The college said that the goal of maximizing efficiency for the Texas highway system and that "Industrial and business firms of the state are being questioned on their present and probable future transport needs…Checks are being made with virtually all sizeable Texas industries and businesses." Another project of the Engineering Experiment Station capitalized on the college's mechanical engineering and agricultural research to examine utility of cottonseed hulls as insulation material. Experiments in petroleum production and air

conditioning were also cited by Texas A&M as causing local industries to see the Engineering Experiment Station’s potential for furthering state business.\textsuperscript{56} Vocational classes were taught out of Texas A&M campuses, and traveling agents went across the state to offer on-the-job training at sewage disposal facilities, water treatment plants, and rural electricity plants.\textsuperscript{57}

The Texas Forest Service also fell under the auspices of the Extension Services, which directed fire control efforts in the East Texas timber industry. During World War II the Forest Service attempted to proliferate guayule, a rubber-producing shrub, the impetus for which, explained the Annual Report, was “when the Japs shut off rubber imports to this country.” Similar to the case of the BEG, however, the State of Texas was less willing to fund the services relative to those states outside the South. In the mid-1940s, as an extreme example, California was spending more than thirty times what Texas spent on the Forest Service ($12 million compared with Texas’s $370 thousand). Texas A&M used the economic prospects for Texas in forestry to expand its program offerings, citing the economic potential of the 22 million wooded acres of East Texas and noting the success that North Carolina State College in Raleigh, which was that state’s land-grand college, had enjoyed in its development of a forestry program.\textsuperscript{58}


Despite whatever nobility there was in the goal of increasing crop yields and in improved returns for the farmer, the vigor of the university system in further propagating these methods catalyzed the shift from the family farm to the corporate farm, as well as the population shift to urban areas. Increased mechanization and science replaced folk wisdom and traditional farming, replacing these local and family hand-me-down methods. At one time, however, supporters of such innovations lauded these efforts in terms of making the small producer able to farm more efficiently. The editor of the Kaufmann Herald credited the Extension Service with bringing a high standard of living and economic efficiency back to the rural farm. In 1954 he informed the Texas Editorial Association of a “new rural spirit” that would “alter the spirit of the entire state,” declaring the trend of farmers abandoning the countryside for urban areas as over now that the small farmer had better methods and the chance for higher yields. One can only hope that this spirit, if it was indeed genuine, was not crushed too badly as the advances in mechanization and efficiency all but rendered the old rural spirit a thing of the past and helped usher in an era of further industrialization; and as the Eisenhower administration scaled back federal farming assistance in favor of more market-oriented solutions, giving further advantage to the large-scale farmer and corporate agribusiness.

It may go without saying that the effects of the continued shift towards professionalization were directly relevant to the students. Inasmuch as this transformation was a function of the university seeking to expand its role, compete with peer institutions, pursue new avenues of research, make money for the state, and serve constituent interests, it was also a response to student demand. Students returning to the

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university from World War II—many funded by the GI Bill of Rights and otherwise not part of the traditional applicant pool—were especially likely to view their college educations as a pragmatic means of securing gainful employment thereafter. Course catalogs touted the benefits of the various majors often in terms of their utility to business, primarily in state resources such as farming, ranching, and oil and gas. It was a historian at the University of Texas, Walter Prescott Webb, who in his 1937 *Divided we Stand* had decried such a conception of higher education as a trainer for the private sector. Instead of students pursuing a broad education, Webb said, the students were competing for jobs upon graduation, often having accepted jobs before the completion of their studies. Webb asserted that the university had ceded its own agenda to that of the corporations, and that the university essentially freed up industry from training its own personnel. Webb said the companies went “hog wild” about college graduates because these graduates were employees that they did not have to expend company resources to train.61

President William V. Houston at Rice grappled with the Institute’s responsibility in generally educating the student versus training in engineering, finding merit in both together. He argued that during the twentieth century, human affairs were increasingly coming to be defined by industry and science, and that the university indeed had a role in training students in new areas of commercial application. But at the same time, he argued that the university was unique from the private sector in that the university should stress a humanitarian, civil, and well-rounded training that would allow the recipient to

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understand the social costs of his actions. President Neff at Baylor was uneasy with the curricular changes to accommodate the demands of the post-war students, especially in business and science. He defended a parochial and religious education, saying that "[l]ibraries and laboratories and buildings and bank accounts do not make a university and never will." Instead, he argued that it took tradition and sentiment. President William R. White, who succeeded Neff in 1948, championed the importance of programs in business and science, reasoning that Baylor graduates could represent Christianity in a climate of rapid advances in science, business, and industry.

It is somewhat of a paradox for Texas, so imbued with the idea of de-centralized political power, to have its two biggest universities supported by the state, one with the express purpose of exploiting natural resources for state betterment while states in regions such as the Northeast that were more supposedly more welcoming of so-called centralization generally had their premier universities supported privately. Part of the resolution of this apparent paradox may come from a tolerance among Texans of concentrated authority at the state level versus that national level. And to be sure, private universities outside the South, especially those in the Northeast and West Coast, were receiving federal research grants that dwarfed those in the South. Those in Texas guiding university operations were generally the middle- and upper-class businesspersons who,

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63 Pat Morris Neff, from a speech delivered to the Baylor University faculty on 30 January 1947, Papers of Pat Morris Neff, Texas Collection, Baylor University, Waco, Texas. William Richardson White, Oral Memoirs of William Richardson White, interviewed by Glenn O. Hilburn and Thomas L. Charlton on seven occasions from 1 June 1971 to 16 November 1973, transcript, Baylor University Institute for Oral History, Texas Collection, 157.
with regard to the higher education system, sought to perpetuate their own economic and social interests. And there was, of course, the notion that authority was more palatable when it was in their hands. Those who wished to could at once support a pro-business agenda and yet argue that it was against the state constitution to allot large and rapidly increasing sums of taxpayer money for university operations. It is also important to note that those who influenced university operations—whether public or private—did grapple with the state university’s role of carrying out operations outside the university’s traditional mandate as an educational institution. In the case of Texas A&M, the terms were more clearly defined beforehand by the fact that the stated purpose of the college was to exploit the state’s economic potential, but even then the university used the Research Foundation as a forum for privately sponsored projects outside of the usual boundaries of its departments. Baylor’s absence from this debate was due to its having been ill-positioned to undertake industrial research on a meaningful scale rather than from conscious rejection of such pursuits.

Private firms valued university researchers and facilities in their efforts to innovate and produce and for their role in training their future employees. Similarly, universities welcomed relationships with private firms as sources of increasing financial resources via gifts in kind or cash and as employers of the graduates. Universities, as employers of numerous scientists and professors who spent their professional energies teaching, researching, discovering, innovating, and guiding others, could to some degree do the same with sponsored projects as they did before without. Yet there was something fundamentally different about sponsored research: the lure of getting more of it. Sponsored research posed the prospect of furthering the bounds of the respective
subjects, renown in the academic fields, prestige among one's peers, and the continuation of the age-old competition among the nation's universities seeking to be the best. When the federal government came to provide research funding for a variety of national purposes during and after World War II, it found universities largely receptive to exogenous support because for a decade or more they had been seeking and accepting it. As the university grappled with the pitfalls and sought the nuance that justified their compliance, and as the institutionalized nature of the contracts grew dramatically over time, these relationships came not simply to bolster university operations but for many institutions to define them.
CHAPTER THREE

Higher Education, World War II, and the Ideological Constituency

This chapter considers the southern university in its self-claimed role as a trainer of Americanism during the war and the several years thereafter. It is significant that these values were billed as American, rather than distinctly southern. Such a national focus was a departure from assertions of southern education in past decades that had favored regional distinctiveness and reflects a larger pattern of change: the South joining—and in some sense shaping—the American mainstream in the mid-twentieth century. This Americanism, as the popular leaders of public opinion defined it, included in its concept of cultural supremacy a new national and international purpose for education, a belief in individualism and a corresponding disdain for centralized authority at home and abroad, and support for a Christian heritage that, because it now appeared threatened, had to be re-asserted. An important vehicle propagating this Americanism was the university. An irony and seeming contradiction that this study will attempt to resolve was that these assertions took place amid a climate of increasing centralization of authority and secular influence, a development in which to some extent the universities became eager participants, championing at once a defensive southern identity and a profound nationalism.

After the war, creators of U.S. domestic and foreign policy perceived a threat to U.S. national security in the form of the Soviet Union and the instability in Europe, Asia, and Latin America that seemingly made these regions vulnerable to communism. Faith in democracy, then, was both an ideal and a practical matter of U.S. interest. With the
onset of World War II and the Cold War that continued afterward, the public—especially in the South—had little tolerance for dissenting political thought and had little intention of allowing the university to serve as a forum for consideration of alternate views. Also, the secularization of American education often came to be seen as a challenge to religious heritage. As former Texas governor and then-present Baylor University president Pat M. Neff alluded to scripture in 1942, it was essential that America not render those things to Caesar that belonged to God.1 The defense of a political, social, and religious heritage fostered a new expression of state’s rights, Christian values, and an interpretation of the American experience according to the regnant public ideology.

The universities in this study were forthright about their desire to serve the national effort in the realm of ideas. Early in the war, University of Texas President Homer P. Rainey (president, 1939–1944) told University of Texas students and faculty that to counter fascism in Europe, the U.S. should use the university to assert the values of freedom and democracy. “Ours shall be the No. 1 nation,” Rainey said. “[O]urs shall be the task of leadership when the peace comes. This will require statesmanship of a high order, and we must look to American youth now in college to provide it.... Democracy must go on.” A University of Texas Department of Public Relations Bulletin stated in the fall of 1942 that the university was imparting to students the “theories which have brought on the war,” and that the school was giving students guidance on the

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1 Pat M. Neff, speech to the 1942 Texas Democratic Convention, Austin, Texas. Stenographically recorded in State Journal, 48th Legislature, Regular Session, Austin, Texas, 26 January 1943, 97–101; quote on 101.
principles of democracy to prepare them for leadership. 2 At the 1942 Texas State Democratic convention in Austin, Baylor University President Pat M. Neff said that the American concept of life was at stake in the war, and that the United States needed to reinforce the ideals and principles of democracy to the generation of American youth. This sentiment was government-sanctioned; in 1943 the U.S. Office of Education issued a report saying that one of the three main issues in higher education was providing "cultural and civic education on a full-time basis."3

Rice trustee Harry C. Wiess was largely responsible for selling to the Rice alumni and Houston community the Institute’s postwar plan. “We stand at a critical point in world history and in the tide of human affairs,” he said. “The combination of a system of free enterprise and a well educated population accounts, to my mind, for the unprecedented progress of this nation...”4 Baylor President Pat Neff said that “the sons and daughters of these brave boys who fought on a foreign soil to make the world safe for democracy...are fighting a greater battle—a battle not to make the world safe for democracy, but to make democracy safe for the world.”5 In September 1946 President William V. Houston of the Rice Institute addressed the incoming class and said that there

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2 H. P. Rainey, as quoted in David Botter, A University Goes to War (Austin, Texas, 1942), printed from a mimeographed report by David Botter and edited and published by the University of Texas Department of Public Relations. On countering fascism, 15; quote on No. 1 nation, 18–19; on theories that brought on the war, 18.
3 Pat M. Neff, speech to the 1942 Texas Democratic Convention, 97–101. U.S. Office of Education, “Some of the Issues Involved in Making Post-War Adjustments in Higher Education (Suggested by Fred J. Kelly, U.S. Office of Education),” 21 September 1943, Lovett Presidential Papers. In April 1942 the University of Texas issued a bulletin that said that “[l]iterature and history, government and economics, law and journalism, all have their aspects for a nation at war,” and “the University intensifies its teaching program in fields which are acquainting students with the domestic and international social and economic forces which are certain to arise from the war.” Botter, A University Goes to War, 7–17; quotes on 8 and 17.
4 Harry C. Wiess, “Rice Looks Forward,” Address delivered to the Association of Rice Alumni, Houston, Texas, 9 November 1945, transcript, typed, Lovett Presidential Papers, [1].
were two purposes of higher education. One was professional development; the other was to instill students with an understanding of a common cultural background. In 1951 Houston said that he was “greatly concerned that the young men and women of this country…. should fully understand the special position that the United States now occupies in the world and the implications involved.”

In a mid-1950s survey of Texas higher education, the Texas Legislative Council assessed that its function was to “serve the needs of society,” and went on to say that “it should help to supply to our society the informed electorate which is an essential ingredient of our democratic system of government.”

Incoming Texas A&M President Marion Thomas Harrington, in his 1950 inaugural address, said that a goal of Texas A&M was to contribute to a democratic, peaceful, and prosperous world, and that the U.S. had a political, industrial, financial, and religious responsibility to the welfare of the world. He cited the American college’s function in training the student as a “thinking and acting citizen of democracy” and argued that democracy was the ultimate expression of human welfare because it emphasized the relationship between human beings and social organizations.

At a speech at Texas A&M in the same year, General Dwight Eisenhower discussed the role of U.S. higher education in world affairs, stating that the universities’ role would be “momentous for all Western Civilization.”

In 1954 incoming Texas A&M president David Hitchens Morgan, who followed Harrington, said that

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8 Marion Thomas Harrington, “Inaugural Address of Marion Thomas Harrington,” Inauguration of Marion Thomas Harrington as Twelfth President The Agricultural and Mechanical College of Texas, 9 November 1950, College Station, Texas, 30-32; quote on 31.

higher learning must “put into practice the fundamental differences between democratic and autocratic leadership.” He said that the United States, in its land grant colleges, had a “secret” weapon which in time may prove the decisive factor in the struggle between communism and democracy.... A. and M. college has a definite role to play in this struggle.” Morgan alleged that “backward nations of the world” were looking to American land-grant universities to extend to the larger world the assistance they had given their states and country.\textsuperscript{10} An A. and M. catalog passage stated that “the infantry officer....is a bulwark of Americanism whose steadfastness is the true measure of our national security.”\textsuperscript{11}

To many Americans, the United States alone seemed the champion of freedom. University of Texas Dean of the College of Engineering W. R. Woolrich noted that the British did not share the same zeal for democracy, nor did it exhibit the fear of communism, war, or depression as did the United States. Woolrich applauded the British Labour Party’s funding of scientific and industrial research but criticized its heavy tax burden on businesses, observing that U.S. aid to Britain supplied an economic safety net for the British, as well as a national-security safety net in the form of U.S. military protection.\textsuperscript{12} In 1954 a Texas A&M study noted that, although the U.S. contained a small

\textsuperscript{10} David Hitchens Morgan, “Inaugural Address of David Hitchens Morgan: United in Spirit—Unite in Effort,” \textit{Inauguration of David Hitchens Morgan as Thirteenth President} The Agricultural and Mechanical College of Texas, 20 May 1954, College Station, Texas. For the quote on the fundamental differences between democratic and autocratic leadership, 21; for A&M’s role in the struggle, 14; for backward nations of the world, 15.

\textsuperscript{11} Bulletin of the Agricultural and Mechanical College of Texas, 6\textsuperscript{th} ser., vol. 1, 1 April 1954, no. 2., College Station, Texas, 226. The same catalog said that “The capability of instantaneous and devastating retaliatory action is necessary in the maintenance of peaceful relations with aggressive warlike powers.” 225.

\textsuperscript{12} \textit{Austin American Statesman}, 24 April 1949, from W. R. Woolrich vertical file. Center for American History, The University of Texas at Austin. Woolrich served a one-year stint in England in 1948 with the U.S. Department of State with the title of Chief Scientific Officer of the Scientific Section of the United States Embassy in London.
minority of the world’s population, the American higher educational system would be a training ground for world leaders.\textsuperscript{13}

Though it will be more fully developed below, it is worth pointing out here that the pro-American rhetoric of democracy did not go completely unchallenged. Public criticism of seemingly pro-American values, however, came at great risk. The UT student-run newspaper, \textit{The Daily Texan}, for example, was one publication that regularly questioned the unrestrained public patriotism and was often the target of the Board of Trustees because of what were considered its left-leaning editorials. In March 1943 a \textit{Houston Post} editorial accused the \textit{Daily Texan} of getting closer to Moscow than Hitler. Another stated that the \textit{Daily Texan} existed in “the pink-hued cloudlands where the embryonic fellow travelers love to soar and regurgitate their predigested pablum from the Marxian dietary.” In 1947 a Houston lawyer wrote to the \textit{Daily Texan} and accused the paper of being a cross between the \textit{Daily Worker} and the \textit{Houston Informer}, the former a Communist and the latter African-American newspaper.\textsuperscript{14} There were certainly liberal intellectuals on these campuses, many of whom were quietly and carefully critical of this crusade of Americanism, but the Board generally came down more squarely on the side of serving its broader constituency than fostering free inquiry.\textsuperscript{15}

\textsuperscript{13} “Role and Scope of A. and M. College in Higher Education System of Texas,” [16 June 1954] Texas A&M President’s Office Papers, 10.

\textsuperscript{14} Tara Copp and Robert L. Rogers, \textit{The Daily Texan: The First 100 Years} (Austin, Texas: Eakin Press, 1999). On the \textit{Houston Post} Editorial, 53; for the quote on the pink-hued cloudlands, 46; for the Houston lawyer, 50. Historian Paul Conkin, writing of Vanderbilt University, said that in the immediate post-World War II period, Vanderbilt had to balance national perspectives of educational benefactors and the sectional ideology of Vanderbilt students, alumni, and friends of the school. Paul Conkin, assisted by Henry Lee Swint and Patricia S. Miletich, \textit{Gone with the Ivy: A Biography of Vanderbilt University} (Knoxville: University of Tennessee Press, 1985), 446.

To the public, intellectuals had largely been those who had cautioned against unchecked patriotism during the war and who had occasionally flirted with socialism. The intellectuals in the United States before the war were often identified with collectivist Europeans; the very word “reformer” had taken on the connotation of anti-business and anti-capitalist. A popular assertion was that France and Germany had failed because they had allowed intellectual, rather than moral values, to dominate. The stakes were high; if the U.S. government was in danger of leaning toward such centralization, then its tax-supported schools were eventually bound to follow, or so the logic went.

In addition to the humanities and other classical elements of the curriculum, the arena of the sciences was of special importance in a postwar world that had seen the might of science harnessed to assert national power. The practical applications of science were ubiquitous. Obvious examples were the new weapons, communications systems, and signals produced during the war. President William V. Houston of the Rice Institute said in 1953 that the country was in a scientific age, citing “the material equipment in and with which we live, to the air-conditioning machines, to the radios, to the multifarious gadgets that surround us at every turn.” Vannevar Bush said that scientific research led to scientific capital, which he considered a currency of national welfare. In his introduction to Science: The Endless Frontier, Bush commented on the role of science

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and its use in national security and culture: “Scientific progress is one essential key to our security as a nation, to our better health, to more jobs, to a higher standard of living, and to our cultural progress.” Bush continued in the famous report that followed: “It has been basic United States Policy that Government should foster the opening of new frontiers. It opened the seas for clipper ships and furnished land for pioneers. Although these frontiers have more or less disappeared, the frontier of science remains. It is in keeping with the American tradition—one which has made the United States great—that new frontiers shall be made accessible for development by all American citizens…. without scientific progress, we could have not maintained our liberty against tyranny.”

Increasingly, in the postwar environment, the sciences were coming to define the economic, intellectual, and social climate of the country. President Houston of Rice predicted that the scientist would gain an even greater role in social responsibility as new power brokers and shapers of the culture. Compelling to Houston was the prospect that scientists and engineers would indeed influence not only trends but people as well. According to Houston, a function of the Rice Institute was to equip the students “with the

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science that is changing the world and with the ideas that will control the world." 19 The Texas A&M course catalogs in the early 1950s echoed this sentiment in their section on industrial engineering, saying that with powerful "technological forces" went the responsibility of "humane and human elements." 20 In the bulletin for the American Association for the Advancement of Science's 1948 Centennial Celebration, Association leaders predicted that by the planned 1949 World Congress of Social and Allied Sciences, "the philosophical, scientific, and technical structures of Western and Eastern ideologies about conflict and cooperation will have been sufficiently clarified by then to make possible their gradual displacement by an advanced social science which is systematic, useful, and universally accepted, as physical science already is today." 21

In the postwar years, the humanities constituted a virtual metasyllabus in Americanism, especially in the zeal for the spread of democracy. The role of humanities and social sciences had been an important component of education before the war but gained a new importance afterwards. In the literature of the humanistic fields, the national "togetherness" of the World War II years had replaced some of the prewar interpretations of America as internally conflicted. More relevant to this study, however, were popular assertions of Americanism and the ways in which this national unity was manifested in the university classrooms and discourse with the public. M. H. Tyytten, director of the Office of Scientific Personnel's National Research Council, said that the country would rely on college graduates for the preservation of American society and that

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20 Bulletin of the Agricultural and Mechanical College of Texas, 6th ser., vol. 1, 1 April 1954, no. 2., College Station, Texas, 180.
democracy was under attack and was in danger of being shaken. Universities’ service component included promotion of “American values” as much as providing technical assistance to industry.

Not only were contemporary political questions at stake, but there was also the ideological battle over America’s past. Texas’s own experience in radical politics and tensions between labor and capital left many in the working class or idealistic youth “vulnerable” to an interpretation of the state and country’s past that was sympathetic to socialism. President Houston addressed Rice alumni in 1951 and spoke of the importance of studying history, implying that such study would help avoid war and conflict by studying their antecedents. President T. S. Painter at the University of Texas stressed the role of the humanities and social sciences, which he contended were necessary foundations for the students’ participation in society. Tennessee Governor Gordon Browning said to southern educational leaders that, as powerful as science was, “missiles guided by radio and submarines powered by atomic energy cannot carry the foundations of democracy to nations within or without the iron curtain.”

In the postwar years at Baylor a movement was underway to imbue all students with an appreciation for democracy. The solution was to make a class on the history of the U.S. Constitution required of all students in all undergraduate degree programs. President William R. White said that, in the course, the Constitution would be

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22 W. V. Houston, “Objectives of the Rice Institute.”
23 T. S. Painter, Untitled typed response to a Dallas News written questionnaire, 1949, President’s Office Records, 2.
"interpreted according to the most obvious meaning by those who wrote it." In the fall of 1951 Baylor launched an American Civilization program, which pooled eight academic departments to offer something like a modern American Studies program but designed with a conscious motive of stressing American heritage as Baylor officials interpreted it. "We are seeking," wrote White, "to inculcate these Christian convictions and principles that constitute the free way of life. That way of life envisions freedom of speech, press, religion, franchise, and enterprise." In the summer of 1953 the Baylor Line alumni magazine offered an editorial entitled, "If Rosenberg had Gone to Baylor" that contended that if he had, he would not have gotten involved in espionage against the United States because he would have been imbued with a sense of American greatness.

A decade before, the 1932 national Democratic platform had received relatively broad support among Texas Democrats—perhaps an exception being some evangelicals who did not care for its call for repealing prohibition—who were amenable to a program of metered government initiatives aimed at restoring economic growth, which was billed as a way to minimize the threat of radicalism. But by World War II, many conservative Texans believed that Roosevelt had left them behind and that the New Deal had co-opted

25 W. R. White, Greater Baylor Campaign form letter to prospective donors, 26 May 1953. Presidential Papers of William R. White, Baylor University, Texas Collection. Baylor University indeed implemented this class in 1953. As of the drafting of this chapter in February 2006, the class was still required for all undergraduate degree programs. Texas A&M had implemented a similar course during the first World War, taught in the Department of History. Henry C. Dethloff, A Centennial History of Texas A&M University, 1876–1976. 2 vols. (College Station: Texas A&M University Press, 1975), vol. 1, 299.

the party. Many prominent Texas politicians had welcomed progressive policies to a degree, yet held more fundamental views that prevented their acceptance of a role for the federal government as large as the New Deal had become by the late 1930s. Pat Neff, for example could be considered a progressive governor, having lauded the “science of public service” in words and actions, significantly increasing funding for public education, and winning a controversially pushing a gasoline tax to fund state services. But he also warned against the temptation to believe that a growing and powerful government was the broker of American prosperity. “[G]overnment,” he said, “is not the panacea for all the evils that warp and dwarf the human race.” At the 1944 Texas State Democratic Convention in Austin, Neff declared the need to oust what he called the country’s over-centralized and too-powerful federal government.27 One perceived threat to Texas state independence was the alliance of politicians with national political power brokers, which appeared to lessen the influence of the Texas power structure in favor of the national. In 1947 Baylor Trustee D. K. Martin protested to Senator Tom Connally that the New Deal was “contrary to our form of government,” an “un-American conception of the equal rights declared in the Constitution of the United States,” and “prostituted democracy.” He told the senator that the federal government behaved as if it were above the voters of Texas, and that it behaved independently of states’ interests for the selfish benefit of its operators.28 Regionally and nationally, voters were growing uncomfortable with the continued expansion of New Deal–type policies, and during the first postwar Congressional election voted a New Deal–hostile majority into Congress.

27 Quotes from “Speech Made by Pat M. Neff on the Occasion of his Inauguration as Governor of Texas, January 18 1921.” Pat Neff Papers. Content of 1944 speech as recounted in a letter from Glenn H. McCarthy to Neff, 29 May 1944, Pat Neff Papers.
Several disputes between Texans and the federal government illustrated Martin's point. One issue was the appointment by Presidents Franklin Delano Roosevelt and Harry S. Truman of James V. Allred to the federal judiciary. Allred was a former Texas New Deal governor who had alienated the business interest and economically conservative Texans. Another was the state of Texas's battle with the federal government for the mineral rights to 2.4 million submerged acres of tidelands off the Texas Gulf Coast. Texas claimed rights to these lands by virtue of the specific conditions by which the Republic of Texas had entered the Union in 1845. During the 1948 presidential campaign, Truman had said that Texas had rights to the tidelands, agreeing with Texas that the 1836 boundaries set forth by President of the Republic of Texas Sam Houston had established this as fact. But after Truman won the presidency in 1948—carrying Texas—he sided against Texas and brought suit against the state; and the Supreme Court decision ruled against Texas. The issue of the tidelands was paramount in Texas during the 1952 presidential election, and the State Democratic Convention, while officially supporting Adelai Stevenson, passed a resolution asking Texas Democrats to vote for the Republican candidate, Dwight Eisenhower, who carried Texas in 1952.29

The perceived threat of federal control especially lurked in the academy. The sponsored research, military training programs, omnipresent federal circulars in faculty mailboxes, solicitations from federal academic rosters, and the other myriad manifestations of the government-education partnership, signaled a trend that years before would have been almost unimaginable. In 1942 Isaiah Bowman, president of The

Johns Hopkins University, said that in cooperating with the federal government, “we should not sell out to Washington, be we private or public universities and colleges. Self-reliance is a cardinal principle in pioneering America. It is part of our heritage and if we lose it we lose our souls.” 30 In 1940 Republican presidential candidate Wendell L. Willkie warned that federal influence and its inherent centralization was the antithesis of American education—that state-controlled universities were inferior to private, and that the only thing keeping public universities strong was competition with their private peers. The independent university, he and others of a similar mindset argued, did not have to ask what the state legislature would think of a certain program or ponder a faculty appointment’s impact on the next election. 31 Yet already universities were more beholden to outside influence than they recognized or were willing to admit.

Due to the public, or government-funded universities’ inherent conflict of interest, many private universities believed that it was up to them to combat the political philosophy of centralization. Speaking at the University of Texas, Rice Trustee Harry C. Wiess reportedly said that a lack of understanding of business and economics had led a generation of Americans to rely on the federal government for solving the state’s problems, and he urged students to use their college years to study the principles of business and economics in order not to be swayed by socialist ideas. 32 The Maginot Line, which Baylor’s Pat Neff used as an allegory, had been France’s $50 million big-


government solution and yet proved ineffective; it was thus the cessation of individual freedom that he said softened France for conquest by Germany. In 1950 General Eisenhower echoed this sentiment at Texas A&M, saying that “[d]espotism, whatever its guise,—clearly develops when men, losing faith in themselves, surrender bit by bit their own responsibilities to a central authority.”Ironically, fear of pressure from the central authority of government did not prevent universities from acquiescing to pressure to support what was called 100-percent Americanism, and neither did it deter state officials from applying pressure for conformity.

The ideology of independence played into the colleges’ consideration of federally funded research. The Board of Control for Southern Regional Education warned that southern universities should especially be wary of federal contracts because, since southern institutions were relatively economically disadvantaged, by accepting the federal dollar on a large scale, they were apt to become reliant on the government for continued funds. Language of the threat of dependence appears throughout the correspondence of the early 1950s Greater Baylor Campaign, which sought to raise money for Baylor’s endowment. A representative letter to President White, from a

33 Pat M. Neff, speech to the 1942 Texas Democratic Convention, 100. See also Mohr and Gordon, *Tulane: The Emergence of a Modern University*. “By the late 1940s cold war pressures had begun to impose a distinct moral framework upon American life,” 63.


35 Board of Control for Southern Regional Education, “Policy and Considerations in Contract Research,” in “Relationships to Governmental and Industrial Research Needs,” (1950?), typed draft copy in University of Texas President’s Office Records, 4. The ideal of individuality was manifest in numerous aspects outside the scope of this study, such as the southern schools’ defiance of national standards and controls on college athletics from groups such as the American Council on Education (ACE) and the National Collegiate Athletic Association (NCAA), which at various times proposed limits on grants for athletes, reasonable academic standards for students, ending recruitment abuses, and shortening the football season. Texas was certainly not a state to support those types of changes. For a brief scholarly consideration of southern college football regulation attempts, see Clarence L. Mohr, “World War II and the Transformation of Southern Higher Education,” in Neil R. McMillen, ed., *Remaking Dixie: The Impact of World War II on the American South* (Jackson: University Press of Mississippi, 1997), 33–55, esp. 51–52.
donor, reads, "our independent schools must be preserved.... to depend upon government assistance [would] be the end of such fine institutions as Baylor University." The Baylor Ex-Students Association in 1951 appealed for donations to "preserve the independence of the University and to demonstrate that Baylor is and will remain a stronghold of Christian freedom that is the achievement and the protection of our civilization."\(^{36}\)

In the postwar years it was common for Americans to conceive of the world as divided into the American and Soviet spheres of influence, with "freedom" and "communism" battling for the proverbial hearts and minds of the world. To let so-called alien forms of government creep into the American political mainstream was to jeopardize national security. The Soviet Union's seemingly broken promise to refrain from meddling in the creation of governments in Eastern Europe and the Middle East confirmed suspicions of insidious Soviet behavior and cast Moscow as the gravitational center of communism. American national security policy codified the concept of the Western sphere of influence requiring protection from the Eastern. Higher education consciously shouldered much of the responsibility for guiding the direction of the world into the Western camp.\(^{37}\) The institutions themselves thus were beneficiaries of growth and funding and developed curricula, that demonstrated an awareness of the international conflict between East and West. So while the schools could assert a regional and national identity, there was an international context as well. In the atmosphere of the Cold War, even universities that feared economic dependence (and hence loss of independence) on


the federal government fully accepted the idea that their faculty and curriculum should uncritically accept patriotic Americanism and prevent dissent.

For the United States and especially the South, the World War II era generated a desire for consensus, and it was the almost unexamined certainty of the mainstream that guided the operations of the colleges and universities. Whether attributable to a confluence of such concepts as security, morality, racism, and patriotism, or whether it is best summed up as some sort of cohesive civil religion, public opinion generally did not welcome caution against the advancement of Americanism. The assertion of these values contained both a defensiveness and offensiveness: defensive against so-called alien philosophies at home and abroad, and offensive in promoting the ideals of Americanism. These issues had a profound impact on the academy, since the academy was the ostensible forum in which they were to be debated and explored and was charged with the training of future generations. In testing the extent to which the academy served as a venue for exploring these ideas, and the extent to which intellectual freedom existed, much is revealed about the popular conception of the southern university as a zone of free inquiry and why the southern university emerged as a forum decidedly inhospitable to free expression. Why, for example, did a 1947 editorial in the University of Texas student newspaper have to ask: “Who can learn the truth which is to make him free if only one side of the debate is allowed? Are we afraid of ideas here?”

To the business interests, among the direct threats in the academy was the open forum for liberal economic thought—not only in terms of social advocacy among the

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38 Copp and Rogers, The Daily Texan, 54.
professorate in local politics but in teaching a generation of students.\textsuperscript{39} Academia had, during the interwar years, been popularly criticized as a hotbed of reform and radicalism, with the concept of reform taking on a pejorative connotation as a buzzword for leftist activism. Many subjects of the 1930s communist inquests had been university faculty, including the high-profile purges at the University of Washington and the University of Chicago. Diane Ravitch has written of a national trend in this sort of thinking, and has documented that in numerous state legislatures, legislators expressed concern about “domestic security and the danger of subversive persons in important places.”\textsuperscript{40} In Texas, President Harmon Lowman of Sam Houston State Teachers College warned that “[a] clever teacher can teach American government and at the same time be an ardent advocate of Communism. He might sell the ideas of Karl Marx and Joe Stalin if he calls them democratic ideas. We overlook the fact that it’s what’s in a teacher’s heart that counts.”\textsuperscript{41}

The campaign against unwanted ideas in the Texas state university system was manifest in the late 1930s and 1940s in a political struggle between the governor and state higher education. When W. Lee “Pappy” O’Daniel became governor in 1938, one of his goals was to rid the state-funded universities of supposedly far-left teachers. He allegedly told his advisors that he wanted to “take back” Texas higher education and asked his business-minded advisors to suggest names of potential regents. Chairman of the University of Texas Board of Regents J. R. Parten recalled that in 1940, a movement


\textsuperscript{41} Harmon Lowman, “What’s Wrong with Higher Education in Texas?” [7].
was afoot in Texas to purge radical teachers from Texas state universities. Allegedly, a group of Texas business leaders assembled that year in a Houston hotel and talked of ways to rid the state university system of professors deemed subversive. The trustees, in their efforts to dismiss leftists from the professorate, were brought into a power struggle with University of Texas president Homer P. Rainey, an issue which gained national recognition and has been much discussed since.\(^{42}\)

Parten, a New Deal Democrat who wanted a president for the University of Texas who appreciated academic freedom but at the same time would appeal to Texans' conservatism, had in 1939 strongly supported the appointment of Rainey, who held a Ph.D. in education from the University of Chicago and had been in college administration in Indiana (Franklin College) and Pennsylvania (Bucknell University) before directing the American Youth Commission in Washington, DC. When he returned to Texas in 1939, Rainey entered a state higher education system affected by growing opposition at home to New Deal economics and a reassertion of corporate interests in state politics. The story goes that, at a regent meeting in 1942, Regent D. F. Strickland pulled a piece of paper out of his pocket and handed it to Rainey and said, “We want you to fire these

\(^{42}\) This struggle between the governor and the university had precedent in the 1910s with Texas Governors Oscar Branch Colquitt and James E. Ferguson. The main issues involved the debates over the funding of the schools during a time of dramatically increasing budgets for higher education and the extent to which the legislative branch of the Texas state government should influence the operations of the universities, with Governors Colquitt and Ferguson especially pressing for expanded legislative control over the universities. See Dethloff, *A Centennial History of Texas A&M*, vol. 2, 288–91. For Parten’s recollection, see Dugger, *Our Invaded Universities*, 41. Perhaps the best single source of primary material on the Rainey affair is Henry Nash Smith, Horace Busby, and Rex D. Hopper, “The Controversy at the University of Texas, 1939–1946: A Documentary History.” *A Paper read at the request of the Student Committee for Academic Freedom, August 13, 1945, Dr. Henry Nash Smith, Professor of History and English, with a further summary of events to April 1946, by Horace Busby, 1945–46 editor of The Daily Texan, and June, 1946, by Dr. Rex D. Hopper, Associate Professor of Sociology.* Published by the University of Texas Student Committee for Academic Freedom, Students’ Association, 3d ed. Austin, Texas. The paper includes a bibliography of several unpublished, mimeographed documents written by some of the participants. The Rainey affair is also covered in Dugger, 41–49 and Copp and Rogers, *The Daily Texan*, 44–48. See also Alice Cox, “The Rainey Affair: A History of the Academic Freedom Controversy at the University of Texas, 1938-1946” (Ph.D. dissertation, University of Denver, 1970).
men.” When Rainey asked why, Strickland responded with, “We don’t like what they are teaching.” One of the targeted professors was economics professor Robert H. Montgomery. Montgomery championed the benefits of public ownership of utilities, and importantly, had been an advisor to former New Deal Governor James V. Allred.

Another was economics professor Dr. Clarence Ayres. Ayres was a conscientious objector to military service, and worse, in the eyes of the regents, it was discovered that Ayres had once run for public office on a socialist ticket in Kansas. In 1951, the Texas state legislature passed a resolution that denounced Professor Ayres as a socialist and demanded that the university investigate him for subversion.43

Historian Walter Prescott Webb seems to have drawn a bye, despite a sharp critique of industrial capitalism in his work, especially in his 1937 book *Divided We Stand*. In this book, Webb blamed corporations and marketing networks for reinstating an old-world feudalism and accused large corporations of superseding the government in authority and enjoying privileges more advanced than those enjoyed by the people.

Importantly, in the same book he offered a foreshadowing of what was to come in the postwar years: the corporatization of the university, a process underway in the North and East by then, but a process which he assessed had not yet compromised southern universities. Perhaps he enjoyed sanctuary from the state businessmen because he placed the bulk of the capitalist aggression on the North and because his popular works on Texas

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43 Strickland's quotes as quoted in Dugger, *Our Invaded Universities*, 43. The professors were Robert Montgomery, Clarence Ayres, E. E. Hale, and Clarence Wiley. Dugger attributes this account to Texas State Senate testimony of former Speaker of the Texas House of Representatives Robert Lee Bobbit. On the Ayers issue, see Dugger, *Our Invaded Universities*, 49–63; quote on page 50. Dugger covered some of the Ayers affair for the *Daily Texan*. For an account of the political purges and near purges of faculty at the University of Texas, see Copp and Rogers, *The Daily Texan*, 42–57. Historian Richard M. Fried lists Texas oilmen as a group especially prone to bandwagon with the McCarthy crusade. Fried, *Nightmare in Red*, 8. Charges against professors at schools in the South and in the rest of the country were common in the post-war era.
Rangers and longhorns had made many in the state revere him. Lastly, it is worth noting that during the wave of the wartime investigations at the University of Texas, Webb was away as a visiting professor at Oxford University in England. 44

In 1942 a group of Texas businessmen and influential citizens who were opposed to a federally mandated forty-hour work week held a meeting in Dallas to express their opposition to it, among them the aged former Baylor trustee and evangelist Reverend George W. Truett. Three University of Texas economics professors attended, and though not scheduled to speak, they asked for a rebuttal in which they could defend the forty-hour week. The meeting organizers refused to let them speak, and the professors afterward issued a statement charging that their views had been suppressed. A Dallas judge wrote to the University of Texas regents and demanded that it rid the economics faculty of this “socialist” influence. That same year the University of Texas Board of Regents rejected the re-appointment of economics professor John Fagg Foster on political grounds, despite support from the economics department and President Rainey. One University of Texas student protested that this firing would demonstrate that the University of Texas was not an institution dedicated to true academic learning but rather imitative of Governor Gene Talmadge’s intimidated University of Georgia. 45 In 1944 Rainey gained two opponents on the board when Governor Coke Stevenson appointed two prominent conservative businessmen, one a lawyer and the other a banker. In

44 Walter Prescott Webb, Divided we Stand: The Crisis of a Frontierless Democracy (New York: Farrar and Rineheart, 1937). Two other important books by Webb include The Great Plains (Boston: Ginn, 1931) and The Great Frontier (Boston: Houghton Mifflin, 1952); the former was a work of environmental determinism arguing for the western plains’ affect on the people and economy and the latter a work of broader scope with the thesis that the exploitation of land had precipitated much of the ills of the twentieth century.

45 Copp and Rogers, The Daily Texan. 45. Smith, Busby, and Hopper, “The Controversy at the University of Texas,” 5–6. The Dallas Morning News covered the episode in several issues from 17 March to late April 1942. The three professors were Wendell Gordon, W. N. Peach, and John Fagg Foster.
October 1944 Rainey issued a statement that called for a housecleaning wherein the entire Board of Regents would be replaced. It appears as though Rainey knew that he and the board were fundamentally incompatible and that either he or the board had to go. Rainey’s move won the general approval of the faculty, but the regents, unable to persuade Rainey to withdraw his statement, fired him.  

In the fall of 1942 Texas A&M, apparently concerned with professors making statements on state politics related to higher learning, amended its Rules and Regulations of the Board of Directors regarding the relationship between the intellectual expressions of the faculty with the university. It added the following clause: “[A] member of the staff ceases to be a private citizen when he becomes a public servant.” It followed with a statement that defined the appropriateness of a faculty member expressing an opinion that bordered on politics: it stated that a teacher is

free to express, inside or outside the classroom, his opinion on any matter that falls within the field of knowledge he is employed to teach and to study…. [but] on matters not within his special field of knowledge, a member of the staff should refrain from expressing personal opinions that might, because of the college connection, incorrectly be thought to be within his special field of knowledge.

It also prohibited faculty from exhibiting “undue partisanship” on any issue and ironically stipulated that faculty should “present fully and fairly all the arguments on all sides of a controversial or political question.” The Rules and Regulations also stated that staff members could openly offer criticisms of university policies only if they submitted the criticism to the board in writing beforehand. The same year the board ruled to have its

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46 Copp and Rogers, *The Daily Texan*, 44–48. Smith, Busby, and Hopper, “The Controversy at the University of Texas,” 6–7. In 1946 Rainey unsuccessfully ran for governor, adopting as a platform many of his economic positions that had brought him into contempt by the regents and state business leaders. His plan involved raising taxes on oil, gas, and sulfur to fund social programs.
minutes confidential.\textsuperscript{47} State officials, to include the governor, the legislature, and the broad of regents—assumed that they had the authority to control or at least police the voice of the professorate, thus rendering no university truly independent.

The World War II years at Texas A&M also witnessed a controversy between the trustees and the administration. College President (1925–1943) Thomas O. Walton wanted to re-shape the college into a better well-rounded university, with a more developed liberal arts program and less emphasis on the Corps of Cadets. Opponents of the idea suspected, perhaps correctly, that such a scenario would have taken place in a zero-sum manner, with increases in the arts being drawn from resources for agriculture and military. Change of any form was a tough sell at Texas A&M, but change at the expense of the military emphasis was heresy. When the trustees began to talk about replacing Walton—in one case in 1942 actually voting him out but then rescinding the vote—, he accused them of trying to run the school directly by circumventing the academic administrators. In the summer of 1943 the A. and M. trustees indeed voted Walton out of office, with both the trustees and Walton officially citing Walton’s health as the issue. But in March 1944, publicly revealing that health had been a guise, Walton threatened civil action against the college unless the entire board of trustees resigned. The ensuing battle between Walton and the university was very public, debated in the press and Texas state senate.\textsuperscript{48}

\textsuperscript{47} Texas A&M Board of Regents Minutes, 10 October 1942, 8. The restriction of Texas A&M faculty on publicly commenting on matters of university policy continued for several years after the war. See The Senior Class of 1948, "Open Letter," 12 March 1947, Gibb Gilchrist Biography Backfile. The issue of the board’s authority to govern the free speech of professors outside the university, and outside of the professors’ field, had been discussed in the American Association of University Professors (AAUP)’s 1915 Declaration, which had argued in favor of the professors’ freedom of expression on any subject. On the ruling to have the minutes confidential, Texas A&M Board of Regents Minutes, 14 May 1942, 1.

The controversies at the University of Texas and Texas A&M, both involving academic disputes between the board and president, caught the attention of the Southern Association of Colleges and Secondary Schools (SACSS), which in 1944 investigated the schools for political interference and placed each university on probation.\textsuperscript{49} Accreditation was a nationally recognized standard that stood to put a university at a disadvantage if withdrawn. In the eyes of many Texans, however, the probation was an example of an outside association seeking to interpret and judge Texas law. The SACSS put Baylor University on probation at about this time, though for reasons financial and not political. This national sanctioning certainly cast an atmosphere of outside critique and censoring that many Texans found distasteful. Both Texas A&M and the University of Texas publicly denied that politics was an issue between the governing boards and the administrations and faculties. Judge John H. Bickett, the Chairman of the Board of Regents at the University of Texas, argued that “[t]here certainly isn’t any such thing as political interference there, and we are getting along fine.” A. and M. College board member Neth L. Leachman argued that it was within the board’s right to counter “problems arising in the college” and denied that such constituted political interference.\textsuperscript{50}

At Baylor, some trustees considered an official protest against the SACSS. Trustee D. K. Martin wrote to Baylor President Pat M. Neff asking for a trustee vote. He said that the

\textsuperscript{49} The SACSS and AAUP had previously conducted meetings with the two universities early in the war involving the universities’ allowance of professors to speak freely. These investigations had not resulted in formal discipline but had included a 1942 AAUP warning to the University of Texas. In June 1945, SACSS placed The University of Texas on formal probation as a result of the regents’ action against Rainey. The AAUP also censured the university over the Rainey firing, saying that “what is happening in Texas...is a reappearance of an old phenomenon, namely, an effort on the part of certain special-interest groups to control education.” The text of the 1942 AAUP warning said that “we believe that the action of the Board of Regents of the University of Texas in terminating [the professors’] services constituted a violation of the principles of good academic practice concerning academic freedom generally observed in accredited institutions...” as quoted in Smith, Busby, and Hopper, “The Controversy at the University of Texas,” 7. For the SACSS comment on Rainey, see ibid., 21. See Copp and Rogers, The Daily Texan, 46–48.

\textsuperscript{50} In clipping from the Dallas Morning News, 1944, in Gibb Gilchrist Biography Backfile.
SACSS involvement in Texas higher education, and especially putting The University of Texas on probation for the board's action against Rainey, invoked the question of whether Texas colleges "ought to be operated under the laws of the Association or under the laws of Texas." He said that the University of Texas board was within its state constitutional rights to fire Rainey, and that Baylor's silence on the SACSS action would be tacit approval that a higher law existed than the law of Texas.\footnote{51 D. K. Martin to Pat Neff, 27 July 1945, Pat Neff Papers.}

Another high-profile example of political efforts to suppress disagreeable ideology came in January 1943, when the University of Texas Department of English made John Dos Passos's 1930 novel The Big Money, the third volume of U.S.A., required reading for a sophomore English class. The formal complaint against the novel was "lewdness," but as the product of a professedly socialist-leaning author whose themes criticized traditional American values, The Big Money's presence on the syllabus drew pressure from the regents to remove it. The English department on its own did so, as a result of soft pressure rather than formal mandate. The regents viewed the book as a symptom of a problem within the department and questioned the English department faculty. Regent Orville Bullington allegedly said, "No teacher who would put that book in for a sophomore to read is fit to teach in a penitentiary or reform school—let alone a university....As long as I'm a regent I'm going to repress that book and put out any teacher who teaches it." Regent Dudley Woodward said of a group of literary critics who had praised the book: "I have no patience with that degenerate group of sophisticates who found it necessary to follow the gutter into the sewer....It is not a question of freedom or research or teaching; it is nothing more or less than an exhibition of incredibly bad taste
and sheer worship of filth for filth’s sake.”52 The episode left the regents more attuned to the prospects of so-called subversive influence in the classroom. It did not occur to the regents that their heavy-handed “supervision” infringed upon the rights of university faculty. Later, in 1949, the House Un-American Activities Committee (HUAC) asked colleges and universities to identify books being assigned, a request met with coolness by many institutions, and on which the HUAC did not follow up.53

There were enough people on the board and in the community who believed that reading or assigning books critical of some components of society held sacred by the cultural mainstream—capitalism, religion, the military, to name a few—was prima facie evidence of anti-Americanism. In several cases, hostility to this perceived anti-Americanism was evident in the discussions of which research projects to fund. Ultimately, it was up to the University of Texas regents to approve or disapprove funding for its faculty or outside-funded research projects. In 1944 a faculty research project in the University of Texas Department of English asked for funds to study the Sacco-Vanzetti trial, but the regents rejected the request, calling Sacco and Vanzetti “communist murderers” and not worth state taxpayer dollars. A 1946 paper by University of Texas Professor Henry Nash Smith and students Horace Busby and Rex D. Hopper alleged that there were numerous other research grants that the board rejected on ideological reasons; the 1945 SACSS report when putting the university on probation had mentioned this fact as well. The prospect of non-academics deciding who should teach, and which materials

52 Bullington, as quoted in Dugger, Our Invaded Universities, 45. Woodward, as quoted in Smith, Busby, and Hopper, “The Controversy at the University of Texas,” 8.
should be assigned, constituted a imposition on the professor's craft, and, while the
majority of professors may not have sympathized with radical politics, per se, they
pointed out that it was the faculty who should decide what to teach and not the president
or state boards.\footnote{Smith, Busby, and Hopper, "The Controversy at the University of Texas," 7 and 21; Regents’
quote on quote on 7. Page 21 includes some cuttings from the SACSS report. The regents are also quoted in
Dugger, Our Invaded Universities, 44. See also Ravitch, The Troubled Crusade, 81–101, esp. 95–98.}

The prospect for "red" subversion was found in competing economic theories,
labor unions, and radical strains of political thought. Communism presented an
identifiable threat to the American mainstream, and the fact that Communist
organizations publicly sought help from labor unions and blacks gave the southern anti-
Communist further reason to believe that aspects of the civil rights movement were
influenced by Communist propaganda. At least one pamphlet that a Communist
organization distributed to Texas college campuses called for blacks of the South to "rise
up" against their oppressors, which resulted in an inquiry by the Federal Bureau of
Investigation.\footnote{"Communist Pamphlets Flood Texas Colleges," Edinburg Review, Edinburg, Texas, 3 April
1953. University of Texas President Logan Wilson said of the pamphlet that the Communists were
"wasting their paper and postage" and that University of Texas students would not be "gullible enough to
be susceptible to other literature." It is worth noting that ultimately the Communist movement in reality
did little to advance civil liberties for African Americans.} In August 1950 the U.S. Department of Higher Education began sending
confidential memoranda to presidents of colleges and universities, keeping them abreast
of national security issues relevant to higher learning. One memorandum predicted that
Russia and communism would be enemies against which the United States would be
engaged for a long time, and a fight in which colleges and universities would be integral.
Another warned U.S. college presidents off-the-record that the war against communism
would last for as much as a generation, and that the federal government would require substantial assistance from higher education.\textsuperscript{56}

In 1950 General Dwight Eisenhower, then president of Columbia University, identified communism as the antithesis of Americanism and encouraged the American educational system to play a role in combating it. Fear of communist infiltration in the United States was given a further degree of credibility by Communist victories in Eastern Europe, China, and Korea. At a speech at Texas A&M Eisenhower pointed out that fighting communists did not just mean overseas but within the United States as well. “Cells within our own social body generate falsehood, misunderstanding, fear and defeatist propaganda,” he said. “Our educational system, therefore, has a heavier and more immediate responsibility to the country than ever before.... Either the schools fit our people for the crises of our times or the freedom and opportunities of the schools will disappear in the ruin of all free institutions and their own reduction to propaganda mills.”\textsuperscript{57} Rainey at the University of Texas said that “The very foundation of our philosophy of life and faith is being tried.”\textsuperscript{58} President William V. Houston of Rice said in 1950 that “Here at the heart of things we can lose, because the insidious promises made by the curious philosophy of the Soviet state have infiltrated the hearts of many in places high and in low. A strong light of truth must be directed into the dark corners of present-day thinking, in order that men may see again in proper perspective which road


\textsuperscript{57} Dwight D. Eisenhower, “Notes for Address by General Dwight D. Eisenhower,” In November 1950s. Eisenhower was weeks away from beginning a leave of absence from the Columbia presidency to assume his duties as Supreme Commander of the North Atlantic Treaty Organization (NATO).

\textsuperscript{58} Botter. \textit{A University Goes to War}, 16.
leads to bondage [sic], and which to a sober and responsible freedom."⁵⁹ Rumors of Soviet infiltration of the American academy and policymaking elements of the U.S. government raised suspicion of these entities that had traditionally offered some degree of safe haven for left-of-center thought.

At Baylor, there was little nuance. Trustee D. K. Martin wrote to U. S. Senator Price Daniel, a Baylor alumnus and former Texas Governor: "Price, if you really want to expose and help get rid of Communists, their infiltration and corruption of this country, ask for and accept a place on Senator Joe McCarthy's committee."⁶⁰ President William R. White of Baylor remarked in 1949 that "anyone who can be a comfortable bedfellow with the enemies of the American way of life is a misfit at Baylor University." Three years later he said that "Baylor is a bitter foe of both Communism and Fascism because they are dangerous enemies of both Christianity and the individual. They are the antithesis of all freedom whether intellectual or social. Definite tendencies toward either will not be tolerated at Baylor."⁶¹ Baylor Ex-Students Association President Jack Dillard said that like Jesus cleansing the temple, Christians should cleanse the world of Communists, adding that bombs from Los Alamos would be helpful in this goal.⁶² Similarly to Baylor, one assumes that at Texas A&M, any strain of Communist sentiment would have been wisely withheld by the beholder, especially if that person were a student, and heaven forbid, an underclassmen.

⁵⁹ W. V. Houston, introduction of Dwight Eisenhower, Grecian House, Shamrock Hotel, typed on index cards, 10 November 1950, Houston Presidential Papers.
⁶² Jack Dillard, Baylor Line (May 1953), 3.
After President Truman's 1947 federal loyalty program ushered in an era of presidential legitimization of anti-communism in the university, students receiving federal support often had to make some version of a loyalty statement, which sometimes included the pledge that they were not a member of a subversive group.\textsuperscript{63} In March 1949 the Texas state senate by unanimous vote joined the Texas house in adopting House Concurrent Resolution 50, which, though not binding law, was a directive to the presidents of state-funded colleges and universities in Texas to dismiss persons deemed disloyal to the country. In the summer of 1950 Governor Alan A. Shivers signed a law requiring state university employees to sign a loyalty oath, after which one state representative added that the state should not spend taxpayer money on the teaching of communism, and that if "I had my way, I'd kick 'em all the way back to Mexico."\textsuperscript{64}

Religion was an especially important component of southern and American identity. Amid the varying denominations and distinctive religious practices in the region of the South, Protestant evangelicalism was the basis for a general cultural identity among southerners, involving some balance of genuine religious conviction and a perpetuation of civil religion. Secularism and scientific achievement in the early-twentieth-century educational system brought a further separation between faith and knowledge. As a capstone to this movement in the American academy, Harvard University in 1945 produced \textit{General Education in a Free Society}, an important and


\textsuperscript{64} Copp and Rogers, \textit{The Daily Texan}, 60.
widely read argument for a secular education. General acceptance of this curricular secularization among faculty at most of the country's top universities prompted church colleges and southern universities to reassert their Christian influence and assume a new purpose. Harry S. Gideonse argued that "[i]n the past we could take it for granted that agencies such as the church and the family would make an effective contribution toward the development of these objectives." He went on to imply that the university would have to assume that function, but that it was not doing so sufficiently.

Baylor President Pat M. Neff spoke at Rainey's inauguration as the president of the University of Texas in 1939, saying that the United States should separate educational systems, having one perpetuated by the state and the other by the church. In his 1942 speech to the Texas state Democratic convention, Neff said that in the war, the United States was fighting for "divine rights of men.... free assembly, free worship, free expression, and free gathering.... We are fighting for religious conviction and religious freedom." In 1942 he said that the reason that France was "whipped" so early in the war was that it had lost its morality. "When we lose our moral fiber as a people," he said, "we go on the rocks." He pointed to the French population's cession of power to a central authority as a result of their having lost an individual sense of purpose. During World War II, the Southern Baptist Convention (SBC) expressed concern about the ramifications for religion in a secular, war-torn Europe and Asia. Assuming an Allied

67 Pat M. Neff, "Remarks by Pat M. Neff on the Occasion of the Inauguration of Dr. Rainey as President of the University of Texas," Pat Neff Papers. For the quote about divine rights of men, Pat M. Neff, speech to the 1942 Texas Democratic Convention, Austin, Texas, 98; quote on moral fiber, 100.
victory, the SBC advocated that, whatever hand America had in defining the terms of postwar peace in Europe, it should press for religious freedom. In December 1943 in Nashville, Tennessee, the SBC announced its intention to launch the biggest missionary program in its history to the “godless” Soviet Union.68

Neff’s ultimate goal for Baylor seems to have been that of perpetuating Christianity, and part of the strategy of doing so was propagating an educated Christian contingent within the mainstream. He called religion and education the “two greatest forces on Earth” and asserted that the American founders had believed the same. Neff charged that the great civilizations of the past had failed because they had been based on human ideals: Pericles (culture), Alexander the Great (power), and Caesar (law). Religion and education, intertwined, were, Neff believed, the bedrocks of a successful civilization. He charged that Christian education had helped produce the American Republic, and that it had “carried the blessings of civilization from the Atlantic Seaboard to the Golden Gate.”69 Such an overt connection between religion and education, including a disregard for a secular perspective, did not find uncritical acceptance by those who advocated the advancement of scientific and medical fields. Though the controversy was less in the scientific departments on Baylor’s main campus in Waco, the Baylor University College of Medicine in Dallas witnessed its effects. In the early 1940s negotiations were underway between the Baylor trustees and Dallas city officials to

68 Minutes, Executive Committee, Southern Baptist Convention, Nashville, Tennessee, 15 December 1943, in Pat Neff Papers. The Baptist Church since the early 1900s had placed a high priority on overseas missions, and freedom of religion was a tenet of government the Baptist Church valued in countries across the world, as both a deeply held right of man and as a more fertile field for their mission efforts. See also Malcolm S. MacLean, “The Impact of World War II upon institutions for the Higher Education of the Negro,” The Journal of Negro Education 11, no. 3, Negro Higher Education in the War and Post-War Reconstruction (July 1942): 338–45, 341.

69 Pat M. Neff, “Christian Education,” from Program, Nineteen Forty-Two Series of The Baptist Hour, 6–13; quote on two greatest forces on Earth, 6; quote on carried the blessings, 7.
relocate and expand Baylor's medical school with financial incentives from the city. Such a merger would have involved Baylor ceding some degree of denominational influence, and conversely, Dallas city officials were not amenable to the prospect of the Baptist General Convention of Texas (BGCT)—known for favoring Christian tenets over scientific, if one of the two had to be dropped—having sway over the major medical school in that city. That same year, the M. D. Anderson Foundation offered twenty acres of land and $2 million for the Baylor medical school to move to the newly established Texas Medical Center in Houston, and the city added $500,000 to the offer. The Baylor University College of Medicine thus relocated to Houston, further details of which appear in the fourth chapter of this study.

The Baptist denomination was well-suited for the southern mind, given its decentralized chain of command, the members of the individual churches choosing their pastor and electing deacons from within their own memberships for finite terms, and the practice of putting general business matters before congregational vote. The Baptist denomination functioned with a great sense of egalitarianism, of which the denominational leaders were proud. At home, Baptists found an ideological opponent in hierarchical denominations and religions, which Baptists held as a perversion of religion with its concept of centralized direction and ceremony that seemed to supersede the power of the individual and the personal relationship with Jesus. One aspect of this debate that bears further scholarly attention was the inter-sectarian division regarding federal funding to education. Scholars have alluded to Protestant, Jewish, and agnostic intellectuals in the World War II era espousing an anti-Catholic bias, which indeed was a

70 The offer from the M. D. Anderson Foundation involved twenty acres, $1 million up front, and $100,000 per year for ten years. The City of Houston Chamber of Commerce pledged $50,000 per year for ten years. Neff, letter to the BGCT, 4 November 1942, 216–54, Trustee Minutes (General Board).
factor in Protestant discomfort with the federal funding of education, since so many Catholic schools stood to benefit.\textsuperscript{71} Texas Baptists certainly displayed an anti-Catholic stance, as revealed by frequent warnings in the BGCT’s newspaper, the \textit{Baptist Standard}.

President William R. White of Baylor championed the importance of programs in business and science and was the first Baylor president to be able to seriously push for doctoral programs. White reasoned that Baylor, instead of giving into secularism, could sponsor research in a spectrum of fields and represent Christianity in a climate of rapid advances in science, business, and industry. White said that Baylor was founded to “provide for all cultural life an integrating idealism rooted in the Christian faith.”\textsuperscript{72} Baylor Ex-Students Association President Jack Dillard said of White, that he “nourishes a conviction that church schools have a permanent responsibility in the protection and preservation of American democracy. He reminded that the world conflict of the present age is based on ideology, which pretty much resolves itself a Christian democracy against godless secularism.”\textsuperscript{73} Some skeptical Baylor trustees, especially those in the clerical faction, believed that Baylor was moving away from its mission by allowing the federal government to influence university operations. Neff attempted to allay their fears with this surprising statement: “In doing so we may be violating some of the fundamental principles of our denominational teachings, but the present war is a total war, and we are involved in it.” Neff also justified these emergency measures by calling the war an


\textsuperscript{73} Jack Dillard, \textit{Baylor Line} (July–August 1951), 3.
assault on Christianity. Baylor's most important contribution, he said, was to stress "spiritual forces which are the bulwark of national defense."  

The American public and mainstream media often portrayed the Cold War as a conflict between "godless" communism and Christian America, an oversimplified binary view that emboldened many in the United States to champion their values. Correspondingly, the Christian colleges assigned a great importance to their function of training Christian citizens. Most of the first private educational institutions in the United States were founded as denominational schools, a heritage that many of them had shed by the mid-twentieth century. Administrators at church colleges felt threatened by the fact that a large segment of the population was now receiving its education at secular or state-supported schools. Walter L. Lingle, president of Davidson College, declared that church-related colleges were not only important for training the next generation of church leaders but also for instilling in the next generation an understanding of the roots of civil liberty, a concept that he attributed to Christian origin. He said that separation of church and state jeopardized the secular college's ability to impart Christian—and thus true American—character to the students. He warned that in totalitarian states, the government had totally assumed the function of educating its citizens, and that invariably, religious freedom has disappeared. He said that private and Christian colleges were

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74 Quote on violating denominational teachings, Pat M. Neff, "Report of Baylor University to the Baptist General Convention of Texas," 2 July 1942, Trustee Minutes (Waco Executive Board). Baptists in Texas had long been opposed to government influence in denominational schools; the alleged "violations of denominational teachings" may have referred to the allowance of the government to directly influence what teachers taught in the classroom. For an example of a federal request to Baylor teachers to stress patriotism in class, see Guy B. Harrison, Oral Memoirs of Guy B. Harrison, interviewed by Thomas L. Charlton and Kent Keeth on five occasions from 28 June 1972 to 28 June 1974, transcript, Baylor University Institute for Oral History, Texas Collection, 267. For reference to war on Christianity, Pat M. Neff, "Report of Baylor University to the Baptist General Convention of Texas," 12 November 1941, Trustee Minutes. Quote on spiritual forces, Neff, letter to the BGCT, 4 November 1942, Trustee Minutes (General Board), 202.
necessary to prevent the "political strangulation" of education.\textsuperscript{75} Gould Wickey, general secretary of the National Conference of Church-Related Colleges, said, "The first line of both defense and offense for a Christian civilization is Christian education." He asserted that Christianity and democracy were what united America, and he made an analogy, appropriate to the South, to cotton fibers. He observed that at a textile mill in South Carolina, the raw cotton could be pulled apart easily, but when woven with other strands it was nearly impossible to break. The Christian colleges and universities were keenly conscious that, by most national indexes, their institutions were considered to be educationally inferior to most secular and state-funded universities, and it was difficult to deny the fact that the leading universities in the U.S. by the early twentieth century had abandoned any serious previous denominational affiliations. But the Christian college could always find solace in the fact that what it was teaching was "right," though neither cutting-edge, validated by secular intellectuals, nor financially lucrative. The Christian university could find comfort in the belief that it was doing the work of the Lord rather than of man.\textsuperscript{76}

One of the biggest controversies involving religion at a Texas university in this period came in 1943 when the UT student newspaper, The Daily Texan, published an editorial challenging Americans to consider the merits of some of Josef Stalin's reforms in Russia. Among the "seven deadly sins" with which Stalin had dealt, according to the editorial, was religion. Though the writer was recounting Stalin's words versus positing


\textsuperscript{76} Gould Wickey, "Coordination and Cooperation within the Group of Church-Related Colleges," paper presented at the Ninth Annual Conference of the Church-Related Colleges of the South, Asheville, North Carolina, 13–14 August 1940, 1. Typed copy in Pat Neff Papers.
religion as a sin, the university was inundated with protests. The *Houston Post*, importantly, asked what “the fathers and mothers of University students, as well as the taxpayers who foot the institution’s bills, would say of this implied suggestion of removing religion, the cornerstone of American civilization, from our way of life.” Two weeks later, the Texas House of Representatives passed a resolution condemning the editorial, invoking the University of Texas’s status as state-owned, and saying that the article “expresses and condones theories against religion which are definitely contrary to the principles upon which this State and Nation were founded.” The resolution continued, asking the university to devote a portion of its editorial page to American principles, “toward a complete understanding of the principles of Democracy and religion, in order that the youth of our State University might read more about God, America, and Democracy, and less about Russia and the destruction of religion in that country.” Texas Governor Coke Stevenson personally spoke with the writer of the editorial to resolve the matter and came away convinced that the writer meant only to challenge the reader intellectually and had committed only the sin of miswording. Nevertheless, this was a climate in which suspicion reigned.\(^ {77}\)

University of Texas President Rainey addressed students during the war, asking them to draw upon “spiritual resources and reserves” and to rely on faith as a means of surviving wartime “mentally and morally intact.”\(^ {78}\) Events at these schools regularly included prayers, scripture readings, and hymns. Speeches in the community and ceremonies at these schools were filled, in addition to the requisite classical allusions, with language that indicated a spiritual conviction beyond the trite. President Harrington

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\(^{77}\) 2 March 1943, *Houston Post*, as quoted in Copp and Rogers, *The Daily Texan*, 53; text of the resolution, 53; on Stevenson, 54.

\(^{78}\) Botter, *A University Goes to War*, 16.
at Texas A&M announced his intention to oversee a university that instructed students in
the “American way of life.” And God, he said, “will guide me and give me strength to
carry it out.” David Hitchens Morgan, in his 1954 inaugural address at A&M, said that
he was going to rely upon “divine help” and “God’s assistance,” to give him the
confidence and determination to lead the school. He listed several objectives as part of
his plan to ensure that Texas A&M offered the best education possible, including not
only enhancing the quality of laboratories, the faculty, and the students, but also
increasing the emphasis on spiritual values. He continued, saying of Texas A&M’s
mission, “The assignment is impossible unless we have ‘FAITH’—faith in God, in our
country, in the great state of Texas.” In addition to the sort of Christian-themed
language of “God our Father,” President Edgar Odell Lovett at Rice said to the 1943
graduating class, “[i]n memory, in prayer, in spirit we shall follow you…. We send you
forth to conquer for God, and country, and freedom for mankind.” University of Texas
President Painter in a 1951 speech to a Central Texas Rotary Club, asserted that the
church, the school, and the family were the pillars of democracy. He said that the church
and school were “bulwarks against alien philosophies of government” and that
totalitarians and Communists in their quest to co-opt the American way of life would
look to destroy these two institutions as necessary means to achieving their dominance.
The universities were in harness with the federal government and the churches to defend
the so-called American way of life.

79 Marion Thomas Harrington, “Inaugural Address of Marion Thomas Harrington,” 32.
80 David Hitchens Morgan, “Inaugural Address of David Hitchens Morgan; quote on divine help.
20; quote on faith, 21. Emphasis his.
81 Lovett, untitled 1943 commencement speech, Lovett Presidential Papers.
82 T. S. Painter, draft of Speech to the Rotary Club, Marlin, Texas, 29 August 1951, President’s
Office Records, 1–2; quote on 2.
By the postwar era, educational leaders in the South still maintained a sense of southern identity but did not share the same commitment to regional distinctiveness that their predecessors had in the 1910s and 1920s. They and their fellow southerners were seeking less to provide a regional alternative to the mainstream and more to re-shape and defend the national mainstream based on the ideals discussed above.\textsuperscript{83} The postwar boom allowed them to enjoy the fruits of a new economic and cultural success while at the same time retaining their old values. Southerners could find affirmation in their past—the Revolutionary-era challenge to the British monarchy; the Populist challenge to the presumed East-coast power conspiracy; and the assertion of Christianity against secular forms of government abroad, as embodiments of American, not just southern, values. Before, southernness had been a function of cleaving away; now, the southern way of life could be preserved not by forsaking, but by shaping. The South could now more fully join the envious position that non-southerners had enjoyed, outlined by Arthur Schlesinger, Jr., as proponents of the American conception of greatness and invincibility.\textsuperscript{84}

Evident in this chapter is that these schools viewed the role of the university as something quite different from—if not often antithetical to—a forum for the pursuit of totally free inquiry. The identity of the academy as a zone of free inquiry was largely


denied in Texas and the American South generally, as the universities were very much subject to external controls and public expectations, serving as an instrument to promulgate interests ranging from the economic, to the ideological, and the religious. Even nationally, the case for the academy as the safe forum for inquiry draws much of its evidence from an uneven definition of academic freedom. Richard Hofstadter and Walter Metzger had written as much in their aforementioned 1955 study on academic freedom, in which they found little basis in the argument that there was a rich tradition of academic freedom in American higher education. With the previous discussion of the university as an instrument to advance the state economy and serve state business and the discussion of the university as a trainer of Americanism, the charge of state “interference” was a tough sell. The modern scholar sees the distinctions, contradictions, and nuances of involvement in state support of education and the protection of academic inquiry therein. But to the average citizen in postwar Texas, and especially the farmer, rancher, or industrialist, the suggestion that the state of Texas should not interfere with the operations of the schools would have likely yielded reactions ranging from a blank stare, to confusion, to outright suspicion. World War II and the postwar era was a period in which the public and government’s demand for national security decided the early-twentieth-century debates on the appropriateness of academic research’s role in serving the state and nation. Perhaps the North and South had an unlikely common interest in the resistance of government control, when they did indeed resist. In the North, it was geared toward a desire to preserve intellectual freedom (even if the persons were unwitting agents of a particular worldview); in the South, it tended more toward an assertion of

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shared values. As the sixth chapter will later show, the manner in which federal
underwriting of scientific research took place during World War II and the postwar years
would develop in a manner indicative of southern regional distinctiveness—especially
corns about centralized government authority—yet also allow the South to further join
main currents of the nation as a whole, a now-familiar theme of the complex changes
inherent in the twentieth-century South.
CHAPTER FOUR

University Operations and National Service, Part One: 1940–1945

In 1949 the Dallas News asked President T. S. Painter of the University of Texas about the university’s development plans. Any answer, responded Painter, had its contextual roots in World War II. Painter told the News that “the impact of the changes which followed in the wake of World War II have been sharply felt and no institution of higher learning can wisely remain oblivious to desirable changes forced upon us....”¹ The words “sharply felt” would likely have found broad agreement among educators—the word “desirable” slightly less so—as the wartime experience of the American university caused institutions of higher learning to undergo a redefinition of their role and purpose in society. Patriotism and cultural associations have been discussed in previous chapters; this chapter covers the more tangible experiences of the universities, especially the coordination with the federal government in the prosecution of a national wartime and postwar agenda. In the immediate sense, this coordination included matters of logistics to aid the war, changes to the curriculum, acceptance of federal funds for a variety of university operations, using the faculty to train non-student civilians, directing university resources to train military personnel, and marshaling the professorial talent to assist in war research. In the long term this experience resulted in new fields of inquiry and created new standards for the acceptance of outside influence that shaped the pace and nature of the growth of postwar higher education in the United States.

¹ T. S. Painter, Untitled typed response to a Dallas News written questionnaire, 1949, President’s Office Records, [1].
In the 1910s and 1920s, American universities, including those in the South, continued at varying rates the shift toward specialization, the offering of electives, the recognition of national accreditation standards, the creation of departments based on academic disciplines, and an emphasis on research. As the federal government became even more active in promoting public infrastructure—developing transportation, issuing business regulation, enhancing the military, and facilitating civil administration—expenditures on education in the form of land-grant legislation to endow colleges and the various extension services and experiment stations brought the federal government into a more routine relationship with state higher education systems. In 1931 U.S. President Herbert H. Hoover commissioned a National Advisory Committee on Education that considered broad and formal federal involvement in higher learning, but Hoover himself and most American college and university presidents opposed any sort of large-scale federal funding of university research. The Great Depression curbed much of the physical growth and expansion of university operations that the 1920s had witnessed. Some colleges in the South, especially small classical institutions and ambiguous preparatory schools that claimed to be colleges as well, suspended operations altogether; these closings and other curtailments prompted educator Edgar W. Knight to declare the South as being “in grave danger of ballyhooing itself into further backwardness.”

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2 Edgar W. Knight, “Recent Problems and Progress in Education,” in *Culture in the South*, ed. W. T. Couch (Chapel Hill: University of North Carolina at Chapel Hill Press, 1935), 224. Among the four universities in this study, Baylor appears to have suffered the most during the Depression, as it required a much larger cash investment on the part of the student to attend than the others. Baylor President Pat Neff later recounted that in 1932 he had tried to borrow $100 dollars from the First National Bank of Waco for petty university expenses but was told that the bank “would not lend Baylor even one dollar, much less one hundred dollars.” Pat M. Neff, “Report of President Pat M. Neff to the Board of Trustees, Baylor University, October, 1947,” Pat Neff Papers. Neff considered various methods by which students could pay tuition, once permitting two students to keep cows at their boarding house so that they could provide milk to the school in lieu of tuition. Eugene W. Baker, *To Light the Ways of Time: An Illustrated History of Baylor University, 1845-1986* (Waco, Texas: Baylor University Press, 1987), 157.
During the Depression, federal programs provided financial support and another precedent of government involvement in higher education. The New Deal at the colleges and universities took the form of grants from programs such as the Works Progress Administration (WPA), the Federal Works Agency (FWA), and the National Youth Administration (NYA), the latter headed in Texas at one time by Lyndon B. Johnson. The NYA had the most direct affect on students, for its main function was to provide government checks to students for on-campus jobs. All four of the universities in this study had students working NYA jobs, and all but the Rice Institute hosted WPA projects on campus.

With American entry into World War II, the atmosphere and operations of the universities changed noticeably. The ramifications of the U.S. entry into World War II seemed to defy hyperbole, with the U.S. Office of Facts and Figures drolly declaring the "end of 'business as usual'." ³ "Between dawn and sundown on a single day," President Edgar Odell Lovett recalled to Rice students, "the perspective of your future went wildly askew." ⁴ A sense of national service was especially profound on college campuses, home to many young persons of military age. Though the director of the selective service system, General Lewis B. Hershey, warned college men after Pearl Harbor to resist "war hysteria" and to continue their normal course of activities until called into duty, many chose not to enroll for the spring 1942 semester.⁵ A number of these were indeed quick decisions, as spring 1942 registration generally occurred in December 1941 and at some

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⁴ E. O. Lovett, untitled transcript of a speech to the graduating class of 1943, Lovett Presidential Papers.
⁵ Hershey, as referenced in American Council on Education, Bulletin No. 19, 20 December 1941, Washington, DC, [2].
colleges on the Monday following Pearl Harbor. The 1942 Baylor *Round-Up* reported that on Monday, December 8, "To enroll or to enlist was the constant thought on every man's mind." The University of Texas proclaimed: "The 'fire eaters' from Texas will again be in the front ranks" and stated that the university would produce "defenders for America—men who fight and men who work that others may fight." Civilian enrollments decreased by more than one-half between 1940 and 1944. Most of the civilian students during the peak war years were women, and the male student population was comprised of those deemed physically unfit for military service (4-F status), a handful of ministry students, some students completing degrees relevant to wartime service, and military trainees.

There was no shortage of nationalistic rhetoric—which in many cases barely exceeded reality—on the campuses. A University of Texas publication said that "[w]hen a patriotic democracy goes to war, its civilians as well as its armed forces demand a place in that effort." Another pronounced that "large numbers of its students have dropped books for guns, and those who remain are concentrating every faculty on getting ready to answer their country's call." The director of the A&M extension service reported that during the war its efforts would be "continued all out...for the successful prosecution of the war effort," and Texas A&M President Gibb Gilchrist said that "the long-range program for education has been subordinated; the tempo and aims have been turned to the

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6 Baylor *Round-Up*, 1942, unnumbered photo leaf.
7 David Botter, *A University Goes to War* (Austin, Texas, 1942), printed from a mimeographed report by David Botter and edited and published by the University of Texas Department of Public Relations, 9. The University of Texas conceived of its war service as taking place in five categories: classroom instruction, supplying manpower, war-time research, civilian defense, and "winning the peace." Botter, 6.
8 On a patriotic democracy going to war, ibid., 13: The University of Texas, *Education for Victory* (1944?). Center for American History, University of Texas at Austin, [2-4]; quote on trading guns for books, [2].
needs of a nation at war.”\textsuperscript{9} The 1942 Baylor yearbook, the \textit{Round-Up}, reported that

“Baylor accepted the challenge of the on-slashing Axis, and is now all-out for victory. Many Baylorites enlisted, but those who remain on campus are doing their part to assure final mastery over the enemy.” Baylor President Pat Neff wrote to the Baptist General Convention of Texas (BGCT) in 1942 that “we have sought to coordinate our program with that of the government.”\textsuperscript{10} As absolute as these statements appear, they are not far from the literal truth.

The wartime role of colleges and universities, especially those in the South, is generally consistent with popular notions of unabashed service to the war, ideologically and physically. Though not without dissent and caution as discussed in previous chapters, higher education’s participation in the war effort touched virtually aspect of university operations. Texas A&M was perhaps the easiest of the four universities in question to make the transition to a wartime footing, given its infrastructure of training cadets and general military character. In fact, during World War I, Texas A&M had improbably offered its entire campus and resources to the military, via a formal resolution in March 1917, with the language to “tender to the federal government of all research and instructional facilities of this college, the same to be subject to the direction of the Secretaries of War and Navy....” The federal government had declined the offer. Testimony to the military preparation at Texas A&M was the fact that an estimated

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\textsuperscript{9} Report of the A. and M. College Extension Service in Texas A&M, \textit{Annual Report for the Fiscal Year 1944–1945}, Bulletin of the Agricultural and Mechanical College of Texas. 5\textsuperscript{th} ser., vol. 2, 1 March 1946, no. 3., College Station, Texas, 43.

\textsuperscript{10} \textit{Round-Up}, 1942, “Baylor Goes All-out for Victory.” insert; Pat M. Neff, letter to the BGCT, 4 November 1942, Trustee Minutes (General Board), 196.
17,500 Texas A&M alumni served in World War II, more they are wont to say, than West Point.\textsuperscript{11}

The role of women during World War II has been widely noted, especially with regard to wartime industry and military activity through the Women Accepted for Volunteer Emergency Service (WAVES) and the Women’s Army Corps (WAC). For women on college campuses, service typically adhered to traditional gender roles. Baylor created a nine-month course designed to prepare women for national defense service as stenographers, typists, and secretaries.\textsuperscript{12} The University of Texas established “first-aid classes and knitting rooms” for female students and also maintained a women’s volunteer service office for women to give their time typing, filing, and serving as telephone operators. The University of Texas also informed women of the increased demand for work in fields like nursing, teaching, stenography, and pharmacy, and remarked that university preparation in these disciplines would both serve the war effort and prove valuable professionally. While the University of Texas made women aware of the opportunity to study engineering and science, the focus was on clerical and other support roles in those disciplines. The university’s appeal closed with the statement, “Well, of course, nothing is quite normal these days, but girls can find an almost normal college life at the University of Texas.”\textsuperscript{13}

Many professors left campus for war service—some younger faculty for active duty and others for professional roles including three A&M geology professors working


\textsuperscript{12} Baylor Bulletin, vol. 47 (May 1944), bound insert.

\textsuperscript{13} On the services and new demands, see Botter, A University Goes to War; quote on 14; for the quote about nothing being quite normal, see “Shall I go to College in War Time?” Information for Prospective Students. The University of Texas Publication No. 4415, 15 April 1944, 3.
with the U.S. Geological Survey in exploration for “strategic minerals,” three math professors performing “research of military significance in northern laboratories,” and a physics professor conducting research at the University of Chicago on uranium fission.\textsuperscript{14} Texas A&M had so many professors request to take jobs in the private sector that depletion of the faculty ranks was threatened, causing the board to state that it would “look very scrutinizingly” at such requests unless the work was urgent for national defense.\textsuperscript{15} In the spring of 1942 a U.S. Navy officer pleaded with Rice President Edgar Odell Lovett to allow professors and graduate students with electrical engineering experience to leave campus and teach classes of Navy trainees.\textsuperscript{16} The University of Texas reported that several of its professors had taken confidential assignments, and that others had been offered defense-industry jobs at higher salaries.\textsuperscript{17}

Because the military favored the climate of the southern latitudes for year-round training and because southern politicians were keen on courting new revenue, Texas and other southern states were beneficiaries of numerous new training facilities and military bases. The largest constructed during the war was Bergstrom Air Force Base near Austin, Texas (1942). Land-rich state universities also leased property for military use at below-market costs. The University of Texas leased lands in Schleicher and Crockett Counties to the U.S. Army at nominal rates for use as bombing ranges, and in 1944 Texas A&M leased land in Burleson County to the federal government for a prisoner of war camp. In the summer of 1945 A&M hired the labor of thirty German prisoners of war,

\textsuperscript{14} Report of the Dean of the School of Arts and Sciences in Texas A&M, \textit{Annual Report for the Fiscal Year 1944–1945}, 18. Though unstated, the work at Chicago was likely part of the Manhattan Project.

\textsuperscript{15} Texas A&M Board of Regents Minutes, 10 January 1942.

\textsuperscript{16} U.S. Navy Lt. Commander W. J. Harrison, to E. O. Lovett, 10 February 1942, Lovett Presidential Papers. Harrison also referred to “radar” as a subject in need of instructors. It is unclear as to the specific conditions under which Lovett would have released these professors.

\textsuperscript{17} Botter, \textit{A University Goes to War}, 10.
presumably held at this camp, paying each man $2.50 to $3.50 per ten-hour day depending on his skill, for an unspecified project.18

Universities had a number of motives for restructuring their curricular offerings during the war. Patriotism was certainly compelling, as discussed in previous chapters, but there were also pragmatic considerations. Given a student’s eligibility for a draft deferment if studying a curriculum relevant to the defense industry (generally meaning a scientific, medical, or engineering discipline), universities had an incentive to strengthen their course offerings accordingly. An excerpt from the 1942–1943 Rice course catalog said that the study of physics was “important in war problems” and advised honors and graduate students in physics that they were eligible for deferments.19 Private industry had an increased demand for college graduates trained in these areas as well. A University of Texas publication in 1942 announced that the university had bolstered its curriculum with courses relevant to war, seeing such a need on the horizon for wartime training “whether economic or shooting.”20 The university also claimed to have begun forty-one new “war courses” in the spring of 1942 and thirty-seven in the following September, and to have added courses in the “preferred” fields of physics, chemistry, engineering, and medicine.21 In the spring of 1944 the university appealed to high school graduates to enroll in college instead of immediately enlisting in military service. It touted the

18 University of Texas Board of Regents Minutes, “Recommended Actions,” 21 September 1943, which served as an agenda sheet for the 1 October 1943 meeting, 30. Texas A&M Board of Regents Minutes, 25–26 May 1945. There were also three internment camps in Texas for the detention of foreign nationals from Axis countries, generally whom Latin American countries had deported to the United States.
20 Botter, A University Goes to War, 5.
21 The university said that it was “preparing boys and girls, men and women to serve their country for victory.” The University of Texas, Education for Victory, [2–4]; quote on preparing students for victory, [4]. For the early degrees and new war courses, [3]; for the quote about the named courses and fields, Botter, A University Goes to War, 7–8. For a national commentary, largely critical, of the wartime curricular emphasis on the “skills and tools” of the scientific disciplines, see C. S. Yoakum, “Higher Education in War,” The Journal of Higher Education 15, no. 1 (January 1944): 35–38; quote on 36.
advantages of studying basic sciences, charging that men so educated would be better suited for national service and more competitive than their counterparts enlisting directly into the military from high school, and at the very least they would learn self-reliance in an atmosphere perhaps less threatening and intense than that thrust upon them in the service.\textsuperscript{22} Baylor added new courses in chemistry, math, and physics for civilian students and increased the scope of its science offerings. Other new classes for civilians at universities during this time included those on the principles of democracy, radio communications, and military-related courses for civilian students such as military psychology, the economics of war, cryptanalysis, and German language with a stress on military subject matter.\textsuperscript{23} Not only had the percentage of male students on campus grown significantly, but the cumulative effect of these curriculum changes produced a striking masculinization of the curriculum. Also of note, the presence of German courses is testimony to a move toward practical service that had not been present in World War I, when in 1917 and 1918 many universities had eliminated German from the curriculum.

Baylor University was the only one of these four institutions that offered significant studies in religion and the ministry, long among the most popular programs at that university. Preparing for the ministry had traditionally entailed denominational support from the Baptist General Convention of Texas (BGCT) and/or the student's local church; now, in addition to this incentive, the federal government provided deferments from the draft to ministerial students. Of the 388 men enrolled at Baylor in 1944, 154 participated in the ministry program.\textsuperscript{24} Perhaps naturally, this deferment invited

\textsuperscript{22} University of Texas, “Shall I go to College in War Time?”
\textsuperscript{23} \textit{Baylor Bulletin}, vol. 47 (May 1944), bound insert.
\textsuperscript{24} Pat M. Neff, “Report of Baylor University to the Baptist General Convention of Texas,” November 1940 and 8 November 1943, Trustee Minutes.
pejorative charges of avoiding the draft, and Margaret Amsler, assistant dean of the law school, later remembered such resentment aimed at those studying for the ministry for that reason.\textsuperscript{25} President Neff, in a report to the BGCT, argued on behalf of the ministerial students—it was, after all, the BGCT that was subsidizing their tuitions—citing their extracurricular work in the ministry as evidence of a genuine commitment. Although Baylor had always had a large contingent of students planning to enter the ministry and the number doing so in 1944 did not statistically imply a notable effort to avoid the war, still in the wartime atmosphere of the early 1940s it is unsurprising that these students would be targets of some derision.\textsuperscript{26}

In addition to adjusting the curriculum in line with war needs, universities also accelerated the pace of their academic programs to move students through the system with greater efficiency, freeing space for military trainees and meeting the military’s demand to put persons in active service more quickly. By 1944 and 1945 an expeditious academic program also freed campus space for the returning veterans, a logistical concern of many college administrations.\textsuperscript{27} Methods of expediency included lengthening each class time, allowing students to enroll in more classes per semester, changing the summer sessions to full terms, and implementing a lenient transfer policy (i.e. allowing credit for courses taken at other institutions that otherwise might not have counted, to include credits from vocational schools). All four universities in this study adopted some version of a year-round schedule, offering full summer terms and/or allowing students to

\textsuperscript{25} Margaret Amsler, \textit{Oral Memoirs of Margaret Amsler}, interviewed by Lista Kay Beazley, 26 October, 9 November, and 7 December 1972, transcript, Baylor University Institute for Oral History, Texas Collection, 91.

\textsuperscript{26} Pat M. Neff, “Report of Baylor University to the Baptist General Convention of Texas,” 8 November 1943. Trustee Minutes. Neff reported that in 1943 the ministry students preached a combined 12,794 sermons, won 2,865 conversions, and raised $117,164.

\textsuperscript{27} Texas A&M Board of Regents Minutes, 21 May 1943.
take additional hours. Under that plan it was possible to earn the bachelor's degree in thirty-two months. The Baylor University College of Medicine dropped its requirement for applicants from ninety undergraduate hours to seventy-two, conferring B.S. degrees on these students at the conclusion of their first year in the medical program. Most universities expedited their programs to some extent, especially by hosting more students during the summer and allowing students to take more hours, whether part of a formal administrative action or not. Some administrators at Texas A&M proposed letting students graduate one semester early with the full degree, but the proposal was defeated. The University of Texas did agree to grant degrees a semester early for those directly entering the armed forces.28

Given the national effort at resource conservation, universities had to put many of their building programs on hiatus. The University of Texas managed to complete some prewar building plans just in time, in 1942 finishing a chemical engineering building, a music building, and a petroleum engineering building. Some projects were even halted in mid-construction, such as the Student Union Building at Baylor, a large building in the center of campus that sat for three years as a concrete and steel shell until construction resumed after the war. Other material resource losses were seen in the academic publishing industry, the suspension or curtailment of library orders, and the cancellation of academic and educational conferences not dealing with wartime issues. The U.S. Office of Defense Transportation (ODT) mandated the latter, asking universities not to send delegations to academic conferences unrelated to direct wartime research, as the delegations would consume precious fuel and other transportation resources. This was to

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28 Texas A&M Board of Regents Minutes, 21 May 1943; The University of Texas, Education for Victory, [3].
the chagrin of many organizations, including the Southern University Conference, which
"deplored" these regulations and made their dissatisfaction with the regulations known.29

By 1943–1944 graduate school ranks had declined markedly, due to both low
student demand and a need among the universities to allocate resources to wartime
programs. In 1943 the Rice Institute granted only eleven graduate degrees—two masters
of science in chemical engineering and nine masters of arts.30 The University of Texas
also witnessed a decline in the number of its graduate students, but with a well-rounded
and robust graduate program to begin with, the university managed to grant 149 and 121
graduate degrees in 1943 and 1944, respectively. Most of these were masters of arts and
masters of education, with a few masters in science degrees in engineering fields.31 The
Texas A&M handbook for 1944 said that the college would be able to accommodate
graduate study "except when the responsibilities of the College to the nation's war effort
prevent." The graduate enrollment at Texas A&M the following year was relegated to a
few students completing engineering degrees and a few others studying "advanced
radar."32 The Baylor law school closed after its enrollment fell from fifty-eight students
to just one between 1942 and 1944. A few female students at these universities pursued
graduate study in education and English in response to the growing standard of advanced

29 Charles E. Diehl, President of Southwestern College in Memphis, Tennessee, and secretary-
treasurer of the SUC, to the members of the SUC, 6 August 1942; Diehl, to the members of the SUC, 21
September 1943; Diehl, letter to the members of the SUC, 1 December 1943. All in Lovett Presidential
Papers; quote on "deplored" from the 6 August 1942 letter.
30 Survey of Rice Institute, Table 3: "Rice Institute Degrees Awarded." Lovett Presidential Papers.
31 The University of Texas, "Report of the Registrar 1943–1944," University of Texas Publication
No. 4439, 15 October 1944. "Table 2: Degrees Conferred by the University of Texas during the Fiscal
Years of 1943–1944 and 1942–1943, and Total to Date," 5. The gender breakdown of these degrees was
more or less even in terms of the total number, with men representing the extreme majority in the sciences,
men having a slight majority of the arts, and being a majority of those in education. The cited figures did
not include graduate degrees in law or pharmacy.
32 Bulletin of the Agricultural and Mechanical College of Texas, 4th ser., vol. 15, 1 March 1946,
no. 3., College Station, Texas, 64. For the statistic on radar, Report on the graduate school in Texas A&M,
Annual Report for the Fiscal Year 1944–1945. Bulletin of the Agricultural and Mechanical College of
Texas, 5th ser., vol. 2, 1 March 1946. no. 3., College Station, Texas, 29.
teacher preparation for secondary schools that required prospective teachers to take an extra year of graduate work past the baccalaureate requirements. After the war, this program would witness enrollment growth almost parallel to the number of graduate students in the sciences and medicine.

Medical and nursing schools in the United States generally maintained full programs during the war due in part to the demand of the armed services for graduates trained in these specialties. Though the Baylor College of Medicine enrollment declined from 319 to 131 during the war, much of this decrease was due to the school’s rather sudden relocation from Dallas to Houston in 1943; many students near the end of their course work did not want to leave Dallas and thus finished at the new Southwestern Medical Foundation, established in that year. Despite the administrative tumult involving the near-merger in Dallas and the relocation to Houston, and despite the fact of the wartime ban on building new facilities—Baylor rented space in a Sears-Roebuck Company building in Houston—the Baylor College of Medicine conducted some successful research programs that gained national recognition dealing with field testing the Rh factor in blood. The Baylor College of Medicine trained 159 physicians for the army and navy, and Evacuation Hospital No. 56, comprised of Baylor-trained doctors and nurses, assisted in the invasions of Africa, Sicily, and Italy.\textsuperscript{33} The University of Texas also gained a presence in the Texas Medical Center via the University of Texas Dental Branch (1943) and from an arrangement wherein the university helped develop the M. D. Anderson Hospital for Cancer Research (1944). The University of Texas continued to

\textsuperscript{33} On the Rh factor, see \textit{The Baylor Century} (January 1944), 5. For the training, see Baylor University College of Medicine, “Report for the Session March 27 1944 to November 13 1944,” Trustee Minutes (Houston Board). For the information on the hospital, see Pat M. Neff, “Report of Baylor University to the Baptist General Convention of Texas,” 8 November 1945, Trustee Minutes.
operate its Medical Branch in Galveston, but as the twentieth-century urban growth and commercial influence in Texas had favored newer cities such as Dallas and Houston, the university in the postwar years shifted its attention to those cities for its new investments in medical ventures, to be covered later.  

Federal subsidization of higher education's relationship with private industry was another form of the government-academic partnership. In October 1940 the U.S. Office of Education, under the auspices of the Federal Security Agency, implemented the Engineering Defense Training Program (EDT), through which $9 million was budgeted for 1940–41 to fund American colleges and universities in offering tuition-free engineering classes and refresher courses to persons in the community. United States Commissioner of Education John W. Studebaker managed the program with the advice of a panel of university presidents chaired by the dean of the Purdue University School of Engineering, A. A. Potter. Studebaker was unstinting in his appeals to American institutions of higher learning with strong engineering programs to apply for EDT funds. Most of the qualified schools did, including a number of schools in Texas. By early 1941, 47,000 people had received training via the EDT at over 200 institutions.

As the war progressed and industry created yet further demand for skilled workers, the government called on universities to assist in broader training. In 1942 the EDT became the Engineering, Science, and Management War Training Program (ESMWT), more ambitious in scope than the EDT and funding classes in chemistry, physics, and other sciences. The federal government solicited ESMWT proposals from

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universities, which designed courses based on consultations with engineering educators and private industry. In 1942, 223 educational institutions participated in the program, offering over 12,000 courses to 596,000 trainees. George W. Case, the national director of the program, estimated that via the ESMWT the government employed the equivalent of 6,200 full-time instructors. In 1943 the government substituted “Defense” for “War,” and the organization became the ESMDT. The ESMDT in 1943 boasted a $30 million budget, up from the original $9 million allotted to the EDT for 1940–41.\(^{36}\)

It is no surprise that Texas A&M was heavily involved in these training endeavors. The dean of the Texas A&M School of Engineering, Gibb Gilchrist (who in 1944 became A&M president), served on the national advisory committee of the EDT and its variations. After the conclusion of the war Gilchrist estimated that the Texas A&M system had trained about 23,600 persons under the EDT and its predecessors.\(^{37}\) Prairie View A&M offered extra classes for “national defense welding,” presumably for African Americans, the provision of which was debated due to the need for extra financial resources and more electric power to be run to the classrooms, all at a campus known for operating on the thinnest of budgets. Prairie View was also the recipient of several NYA prefabricated buildings, which were used for civilian training classes in metallurgy.\(^{38}\) In 1941 the U.S. Commissioner of Education asked Texas A&M College dean Frank C. Bolton to become the national director of the EDT program. Bolton entertained this

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\(^{38}\) Texas A&M Board of Regents Minutes, 26 November 1941. For general matters of the School of Engineering’s role in the wartime training programs, see the report of the School of Engineering in Texas A&M, Annual Report for the Fiscal Year 1944–1945, 18.
offer, but the Texas A&M board of directors appealed to him to stay in College Station.\textsuperscript{39} Texas A&M offered courses under the EDT and its successor agencies, doing so at the branch campuses as well as College Station. The University of Texas operated ESMWT classes out of fourteen different academic departments using forty-six professors. Most of the courses were taught in engineering disciplines, but the School of Business Administration offered classes as well.\textsuperscript{40}

Notably absent among the universities offering EDT programs was the Rice Institute, conspicuously so due to its reputation in engineering and by the participation of in-state peers with less of an engineering focus. Studebaker's persistent correspondence with Rice President Lovett reveals that the Office of Education wanted to include Rice. An internal letter to Lovett from a Rice faculty member lists several objections on behalf of some Rice professors, asserting that the Houston area was saturated with persons sufficiently qualified to meet the defense industry demands; that many of the EDT students would be unemployed persons seeking a government handout; that any person who did not currently have a steady job would probably not meet Rice's standards; and that Rice should give its attention to the regular students who were there for the full degree. However, J. H. Pound, professor of mechanical engineering at Rice, advised Lovett that the Institute should consider implementing the EDT program, if only to obviate the negative criticism and charges of anti-patriotism that might ensue if the school refrained. In 1943 Rice indeed offered ESMDT courses in industrial drafting, elementary plane surveying, shop mathematics, and electronics and radio. The Institute

\textsuperscript{39} Texas A&M, "A Man and his College," a publication of the Bolton Dinner Committee, 27 May 1950, President's Office Papers, [9]. The document refers to the EDT program by its later name, the Engineering, Science, and Management Defense Training (ESMD) program.

\textsuperscript{40} University of Texas Board of Regents Minutes, "Recommended Actions," 21 September 1943, which served as an agenda sheet for the 1 October 1943 meeting, 6.
ran advertisements in several Houston newspapers announcing these courses and their tuition-free status. It is unclear what ultimately prompted Rice to participate in the civilian training programs, given its prior objections; for professors at Rice and elsewhere who were uncomfortable with government involvement in the Institute’s teaching agenda, the World War II era proved a trying time.

Whereas the civilian training programs described above were rather basic, the federal government also sought to utilize the advanced skills of the university faculty for more ambitious projects. In June 1940, largely acting on the advice of one of the country’s most respected scientists, Vannevar Bush, and a group of top educators including the Massachusetts Institute of Technology (MIT)’s Karl Compton and Harvard’s James B. Conant, U.S. President Franklin Delano Roosevelt commissioned the National Defense Research Committee (NDRC). Conant and a committee of educators, scientists, and a representative each from the Army and Navy directed the program, whose task was to marshal scientific and technical talent for war-related research, especially in weapons. It was under NDRC auspices that several of the national laboratories were created as well as the research that led to the Manhattan Project. Despite progress in these initiatives, the NDRC was primarily dedicated to the research phase, leaving the development to be carried out separately. Believing that the government should create an organization to oversee both research and development, Bush and other science advisors to the Roosevelt Administration pushed for such

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authority, resulting in the creation of the Office of Scientific Research and Development (OSRD).²²

The fact that the OSRD administered the development of projects as well as the research deepened the relationship between the government and the contracting partner, whether the latter was a purely commercial entity or a university. Also, a larger budget—$100 million by mid-1943—provided for more projects than the NDRC had been able to fund. The American Council on Education (ACE) encouraged university participation in this and other federally subsidized programs, calling for "cooperative planning on a national basis between institutions of higher learning and many agencies of the government."³³ About six thousand scientists worked on OSRD-funded projects at over three hundred institutions, about one hundred of which were universities. The authority of the OSRD was vast, made so by a series of executive orders in 1941 through 1943 that granted the OSRD the ability to pursue virtually any venture that it deemed necessary for winning the war. Many of the significant developments of World War II military technology were produced partly at universities under the OSRD, including

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³³ The quote on cooperative planning and the $100 million figure come from American Council on Education, Bulletin No. 19, 20 December 1941, Washington, DC.
breakthroughs in radar, torpedoes, sonar, certain rocket technologies, some chemical weapons, and a variety of land- and ocean-going craft. ⁴⁴

To assist the ability to mobilize talent from the academy, an assembly of national rosters was created. In October 1941 the National Resources Planning Board (NRPB), at the request of President Roosevelt, began the accumulation of a list of all persons in the United States capable of teaching advanced science. The NRPB used this list, entitled the National Roster of Scientific and Specialized Personnel (NRSSP), as a “who’s-who” in case the government needed to request the services of persons with certain skills. Administered by Tufts College president Leonard Carmichael, the NRSSP used a punch-card system in which the government attempted to catalog every professionally trained scientist according to his or her major professional field, including other skills such as languages and other accreditations. About 600,000 persons were included in the roster, their names stored in a business machine in which an administrator could punch buttons for criteria (i.e., selecting a Russian speaker also trained in mechanical engineering) and have the machine yield a number of cards for persons who matched the criteria. ⁴⁵

In the fall of 1942 the NRPB contacted President Lovett at Rice in regard to calling several Rice instructors into active duty in the U.S. Army. This group was primarily composed of chemical engineers but included a mathematician and a physicist. The NRPB asked Lovett to evaluate the extent to which each instructor was needed at Rice. In each case, Lovett was adamant that he did not favor their leaving the institution, saying on one reply form that, “[o]n graduation our students are being absorbed by the

⁴⁴ Karl T. Compton, “Organization of American Scientists for the War,” 95. Stewart, Organizing Scientific Research for War, 40–41. These included Executive Orders No. 8807 (28 June 1941); 9218 (11 August 1942); and 9219 (11 August 1942).
petroleum and manufacturing industries, thus contributing directly to national defense.” The Army did not accommodate Lovett in this matter, calling several instructors away from Rice into government service.\textsuperscript{46}

Government involvement in compiling faculty information was not limited to the professors but also included graduate students, who often taught introductory and survey classes and assisted professors in research. When the local draft board called the draft number of a graduate student, the government allowed the university to petition for his retention. Lovett requested that the draft boards allow the students to stay at Rice, arguing that most of the graduate students in the sciences taught campus military trainees and were thereby already involved in the war effort. A typical Lovett plea, stressing the graduate students’ importance, reads:

\textbf{How long will it take you to replace this employee?}

It is impossible to answer this question categorically because we have no man to train for the replacement. [Subject] is unusually well qualified, and has had special training for this particular work [electrical engineering]. . . . There is no other man with his training or qualifications.

\textbf{What specific steps have you taken to secure or train a replacement for this registrant?}

See answer immediately above. We have made numerous efforts to find qualified men and have had no success. All we can do is to train men that we know, and [subject] is the only one we have. We have no other suitable men coming along whom we can train now.\textsuperscript{47}

Incidentally, this particular petition was denied. As draft appeal decisions was a decentralized process made at the local level, it is difficult to ascertain the precise basis

\textsuperscript{46} Leonard Carmichael to E. O. Lovett, September 1942, Lovett Presidential Papers; NRSSP forms for ten Brink, Wischmeyer, Richards, Thron, Goddard, and Simpson, September 1942; Lovett’s desire for the persons to remain at Rice is evident in a series of forms entitled “Confidential Statement of Employer” that details Lovett’s evaluation of each professor the NSRB contacted. September 1942, Lovett Presidential Papers. Quote from the form for Dr. Carl Riehle Wischmeyer, a professor of electrical and chemical engineering.

\textsuperscript{47} Selective Service System. “Affidavit—Occupational Classification” for Walter Harold Chudleigh Jr., probably March 1944. Lovett Presidential Papers.
on which the appeals were granted or denied, but in this sample of Rice students the draft boards approved only about half.

In the fall of 1942 the National Research Council (NRC) undertook another form of calculating the ability of American colleges and universities to contribute to the war effort. This time, instead of assessing the professor or researcher’s suitability for government service, it inventoried the potential resources at the campuses. The NRC sent questionnaires to universities, requesting specific information on each department. Versions of this questionnaire had appeared earlier that year, inquiring into the availability of technical equipment as part of an evaluation of which schools and departments were suitable to host research projects or take on military trainees. The NRC probed more deeply, asking the professors and department heads to measure the square footage of space available for research in their given field and to estimate the number of hours per week that the faculty could expend “without seriously disrupting teaching schedule.”

Perhaps the most visible manifestations of the cooperation between higher education and the U.S. military effort were the wartime military training programs. This initiative consisted of both amplifying the pre-existing military training such as Reserve Officer Training Corps (ROTC) units and the creation of special wartime training programs. Direct federal subsidization of military training had existed on college campuses since the late 1800s in the form of the Morrill Act’s stipulation that land-grant colleges maintain a cadet program. Then in 1916, as part of an effort to standardize

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48 For example, see United States Department of War, “Survey of Machine Tools in Educational Institutions,” 7 April 1942. University of Texas, President’s Office Records. The University of Texas retained a copy of the survey it submitted, listing over 250 pieces of equipment, 18 of which were already in use for “national defense work.”
military training at civilian institutions, the National Defense Act had created the ROTC, joined ten years later by the Naval Reserve Officer Training Corps (NROTC) at a smaller and more selective group of universities. In 1940 and 1941 the University of Texas and the Rice Institute, respectively, became host to NROTC units, whose curriculum involved a liberal arts background with a major in Naval Science. The regular faculty administered the instruction, with the exception of several naval officers who were appointed by the Navy to teach the core curriculum of Naval Science. Texas A&M continued to host its ROTC program during the war as well.

When the United States formally entered World War II, the military turned to higher education to offer advanced study as part of officer training, with emphasis on speed and preparation for deployment rather than on a balanced undergraduate curriculum. In December 1942 the secretaries of War and the Navy announced the creation of such programs as the Army Specialized Training Program (ASTP) and the Navy V-programs. The Army and Navy used aptitude tests to determine which candidates were appropriate for these programs and sent military personnel to college campuses for a combination of undergraduate college and military training. The

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49 First established nationally in 1925, the NROTC’s purpose was “to provide by a permanent system of training and instruction in essential naval subjects at civil educational institutions a source from which qualified [reserve] officers may be obtained for the Navy and the Marine Corps.” The NROTC funded all educational expenses for the student, including uniforms, books, supplies, room and board, and a stipend. The ROTC programs were an added incentive for high school graduates to continue on to college, as participation entailed a monetary stipend and a military commission upon graduation. United States Navy Department Bureau of Naval Personnel, “Regulations for the Administration and Training of the Naval Reserve Officers Training Corps,” NAVPERS 15034C, 1947; Memorandum, “The Rice Institute NROTC Unit, Houston, Texas,” 10 September 1946. Lovett Presidential Papers.


51 “Joint Statement of the Secretary of War and the Secretary of the Navy on Utilization of College Facilities in Specialized Training for the Army and Navy,” [December 1942] The American Council of Education enclosed a cover letter for the joint statement, signed by ACE President George F. Zook, 4 December 1942. The main document was designated “highly confidential” and not to be shared with the press. Copy in University of Texas, President’s Office Records. Gibb Gilchrist of Texas A&M was also a member of the Navy Advisory Committee, which created the Navy campus training programs.
ubiquitous physical presence of the military students on these campuses was a testimony to the nature of the government-education partnership. A 1944 University of Texas publication said that “[t]he war continues to dominate almost all life and activities on the campus. The Navy and V-12 are conspicuous on the landscape.”52 In 1945 John T. Scott, Chair of the Rice Institute Board of Trustees, reported that “during the past three or four years Rice has been endeavoring to do its bit of war work and has, to a more or less degree, been in the hands of the Navy Department.”53 One Baylor teacher remembered, “The campus was turned over to the Navy, so to speak; and in all instances throughout, they had charge of what was going on.”54

One of the more developed programs was the Navy V-12 program, of which there were units at both the Rice Institute and the University of Texas. Upon graduation the V-12 trainee received a commission in the U.S. Navy as an engineering officer. These students were active-duty while in college and were assigned to their particular universities, unlike their counterparts in the NROTC who applied to their respective institutions and who were not active duty until after graduation. Navy V-12 students attended class in uniform, drilled on the school grounds six mornings a week, and went to bed to the sound of taps. The V-12 curriculum was year-round, so that three full

53 John T. Scott, “Remarks of J. T. Scott, Chairman of the Board of Trustees at Rice Institute at a Dinner Given by the Trustees to the Faculty of Rice at Cohen House, Tuesday Evening, April 10, 1945,” transcript, typed, Lovett Presidential Papers, [1]. Owing to the prominence of the Navy’s presence on campus, Rice published two Campaniles for 1943–44. The second one included the third semester, which mostly comprised Navy students, and the cover bore both the official seal for the Rice Institute and the official seal of the U.S. Navy. The Rice Institute. Campanile, 1944; Campanile 2nd edition, 1944.
54 Cornelia Marschall Smith, Oral Memoirs of Cornelia Marschall Smith, interviewed by Suzanne Durham and Kay Clifton on five occasions from 7 September to 22 March 1978, transcript, Baylor University Institute for Oral History, 96.
semesters were compressed into one year. Apart from introductory exposure to the arts and sciences, the V-12 curriculum focused on specialized sciences according to tracks in aviation, civil engineering, construction, engineering specialist (mechanical steam engine, mechanical combustion engine, electric power, and electric communication and pre-radar), supply, and pre-chaplain. V-12 students in pre-dentistry or pre-medicine replaced liberal arts with courses with subjects in their fields. The V-12 students usually attended classes without civilian students, but the Navy gave the universities the discretion to allow civilian students to take V-12 classes for credit, a right that the institutions often exercised. Since the Navy selected the students and assigned them to schools, it did not require the host institution to grant the V-12 students an official degree, but most universities chose to do so.

The V-5 program was focused on the training of aviation officers. A V-5 trainee completed the equivalent of two years of college study followed by eight months of off-campus flight training and received a commission as an officer. Baylor University and the University of Texas hosted V-5 programs. The universities’ professors taught the trainees classes in aeronautics and physical training in a narrow curriculum pragmatically focused on flight preparation as opposed to the comparatively well-rounded V-12 syllabus. Other Navy training programs, though not necessarily present at these four universities, were the V-1 program, which allowed enlistees already having some college

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experience to continue college enrollment; and the V-7 program, which trained reserve officers and consisted of less than one year of college study.

The U.S. Army also participated in campus military training in the form of the Army Specialized Training Program (ASTP) and on an ad-hoc basis of housing training groups on college campuses such as the 308th Air Corps College Training Detachment at Texas A&M. Created in 1943 and present at over two hundred universities (including Baylor, the University of Texas, and the Texas A&M system), the ASTP was designed to give soldiers of above-average intelligence—as determined by basic tests—a further edge in a variety of subjects. The Army provided guidelines for the teachers, reminding the professors that the ASTP students were being prepared for military service, which meant that practical application was more important than theory. Guy B. Harrison, a professor of history at Baylor, later recounted that the Army instructed him to stress American patriotism in his history class. The average tenure of an ASTP student lasted anywhere from two to six months, and the students did not receive degrees or official credit from the host university. Perhaps because the ASTP had no clear goal other than to offer a few months of general education, the program failed to gain recognition from the Army as worth the resources—not to mention the judgment from other soldiers who resented their ASTP colleague’s “breaks” on college campuses—and the Army phased out the program in 1944.

The training units were generally welcomed on campus with little significant controversy. However, perhaps counterintuitively, Baylor University did witness some

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controversy involving its World War II military training programs. Though the Baylor
community was generally among the more reflexively pro-military, there was a church-
state element to consider, especially from the trustees in the clerical faction of the board.
Some of these trustees believed that Baylor was jeopardizing its Christian mission by
allowing the government such an intimate financial and physical presence on campus,
and especially allowing the government to influence what professors taught in the
classroom. Federal money was not entirely new at Baylor, though perhaps now the
degree to which the military’s financial support was keeping the university’s income at
normal levels caused some unease about the future. The “slippery slope” argument had
long been one of the major objections to federal money at church-supported colleges,
with the ultimately feared consequence being that the government would impose a
secular academic agenda. As mentioned in the previous chapter, President Neff said that
even though such government such may have been counter to Southern Baptist
principles, “the present war is a total war, and we are involved in it,” and that drastic
measures were needed because the war was an assault on Christianity.\textsuperscript{59}

The universities enjoyed a substantial financial benefit by hosting wartime
training programs. The income from the contracts, which paid teacher salaries,
administrative costs, and room and board, generally met or exceeded costs, rewarding the
university with money for its general operating budget and supplanting lost income from
civilian student tuition. Colonel Ralph Durkee, the director of the ASTP at Baylor, later
reported that income from the military trainee programs was what enabled Baylor to meet

\textsuperscript{59} on violating fundamental principles, Pat M. Neff, “Report of Baylor University to the Baptist
General Convention of Texas,” 2 July 1942, Trustee Minutes (Waco Executive Board): The war as an
assault on Christianity, Pat M. Neff, “Report of Baylor University to the Baptist General Convention of
Texas,” 12 November 1941, Trustee Minutes.
its financial obligations, given the paucity of civilian tuition dollars. This financial benefit was also evident at public institutions. W. H. Holzmann, the business manager at Texas A&M, reported that the military trainee contracts were essential to the college's meeting financial obligations during the war. He also noted that the federal funds relieved the state from having to allocate money to keep the university operating.

The government requirements for the hosting of military training programs posed another example of the importance of national accreditation. As discussed previously, accrediting boards such as the SACSS were authoritative enough for the federal government to use when considering which institutions were qualified for certain programs. The government sometimes used other guidelines, such as those from professional organizations, causing universities to align their programs with nationally recognized standards. This adherence to national organizations in the administration of military training was an impetus for many southern schools to accept national standards. Such abidance also codified the authority of these professional organizations. An example of this trend at one of the four universities in this study occurred in 1943, when Texas A&M learned that it stood to be passed over for some military training programs because its chemical engineering program did not meet the criteria of the Engineers' Council for Professional Development (ECPD). In 1937 the ECPD had judged the Texas A&M chemical engineering program to be inadequate because it was run by the department of chemistry and not engineering; none of its faculty were members of the American Institute of Chemical Engineers (AIChE); and the department had insufficient

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technical equipment. Since the government used the ECPD list as the arbiter of which colleges were eligible for certain programs, Texas A&M risked exclusion from programs that administrators believed the university was equipped to handle. The A&M trustees petitioned the ECPD for immediate accreditation, which either the ECPD granted or otherwise provided some sort of waiver, for Texas A&M indeed offered chemical engineering instruction to its trainees.\textsuperscript{62}

At the end of the war the Navy phased out the V-programs and shifted many of the remaining students into the NROTC. In October 1945 the Navy selected several universities, the Rice Institute included, to “absorb” students who were halfway through NROTC programs at other schools. Rice complied, and under a similar arrangement accommodated a handful of V-5 students from other colleges and admitted about fifty new students whom the Navy had previously arranged to go elsewhere.\textsuperscript{63} Texas A&M discontinued its Navy trainee programs in 1945 and redirected funds earmarked for Navy training to buy laboratory and technical equipment.\textsuperscript{64} It is worth noting that, as hundreds of thousands of military personnel partook of the ASTP or V-program, and as the selection was generally based on a standardized test without regard for economic background or family precedent, many of these men likely got their first exposure to the possibility of college study as a result of the program and were more likely to view college as a viable option upon return from service. With the GI Bill, college for these veterans after the war became still more accessible.

\textsuperscript{62} Texas A&M Board of Regents Minutes, 7–8 August 1943.
\textsuperscript{64} Texas A&M Board of Regents Minutes, 28 November 1945.
At all four of the universities under consideration, the war years witnessed important changes in the presidential administrations that were part of, or at least concurrent with, some level of reevaluation of the university's mission. At Rice and Baylor, aging presidents served through the war's end with the assumption among the boards that the presidents would retire afterward; at the University of Texas and Texas A&M it was politics. Significantly, these presidential transitions came at a crucial time when the universities were undertaking a broader role in government and commercial service and entering into an era in which competition with peer institutions meant more rapid growth in scope and the pursuit of new resources. That all four of these universities changed administrative leadership, while extreme in the sense that not every university in the country underwent the replacement of its president then, was nonetheless consistent with a national trend in which the immediate postwar years were likely to witness a notable degree of administrative changeover. Most of the substantive discussion of how these changes were manifest at these schools falls under the orbit of the following chapter on postwar years, but some brief comments on the war-era administrative transition are in order.

In 1941, at the age of seventy, President Lovett at Rice had announced his resignation from office, ending a tenure that had begun in 1908. When the trustees saw that the pool of candidates—all scientists—were busy conducting research for national defense, Lovett agreed to remain as president until the trustees named a successor, which he had agreed to do when he announced his resignation. In the spring of 1945, with the war nearing an end and Lovett seventy-four years old, the Rice trustees reactivated their

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65 Harry C. Wiess, "Rice Looks Forward," Address delivered to the Association of Rice Alumni, Houston, Texas, 9 November 1945, transcript, typed, Lovett Presidential Papers.
search, again deciding to select a scientist, preferably with experience in chemical engineering or the petroleum industry. The initial searches produced a few leads, mostly scientists working at northeastern universities, but all expressed either an unwillingness to leave their participation in research or an aversion to administration. Many of the primary candidates had three things in common: they were scientists, had a connection to MIT, and during World War II left their university duties for war work. Among them were: Dr. J. A. Stratton, an MIT physicist then with the Office of the Secretary of War; Dr. George R. Harrison, an M.I.T physicist and Chief of the Optics Division of the OSRD; a Dr. Whitman, full name and position unclear; Dr. Philip M. Morse, an MIT physicist and director of the NDRC Committee on Sound Control; and Dr. Roger Adams, a chemist from the University of Illinois who served as chairman for the OSRD Division B, which oversaw the development of bombs, fuels, gasses, and chemical problems—an office previously held by James B. Conant. Trustee Harry C. Wiess said that the frontrunner was Morse, but Morse withdrew from the running due to his contract work with the government. Adams also withdrew from consideration due to his position with the government.66

In November 1945 the network of recommendations yielded the name of a physicist at the California Institute of Technology, William V. Houston. Houston held an M.S. from the University of Chicago and a Ph.D. from The Ohio State University and was the author of *Principles of Mathematical Physics* (1934). A 1927 Guggenheim

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66 Harry C. Wiess, untitled report containing notes from his interviews with candidates for the Rice Institute presidency, June 1945, Lovett Presidential Papers. The document lists five names as candidates for Lovett’s successor, listing first initials and last names only. Further research has identified them as listed in the text above. Though there were no other probable matches for the initials and names of persons in practice in higher education, the possibility exists that they referred to someone else. The Dr. Whitman, lacking a first or middle initial in the document, was possibly identifiable with Walter C. Whitman, head of the Chemical Engineering department at MIT.
Fellow, he had used his grant to study physics in Germany and was involved in some of the early work on quantum theory, working with German physicist Warner Heisenberg. 67 Since 1931 Houston had been a professor of physics and during World War II had conducted research for the Navy on a project that had produced the homing torpedo, for which he received the U.S. Navy Medal of Merit. Houston was at first disinclined to come to Rice, writing trustee Wiess in a brief response:

You have presented of course, a real opportunity to continue the building of a useful and distinguished institution. To one who would care to devote his entire time to administrative work, it should be very attractive. At the present time, I do not feel so inclined, and I think I would definitely prefer to remain here and take a more detailed part in scientific work. 68

After a series of talks and a campus visit, however, Houston agreed to accept the position of the presidency of the Rice Institute provided that he could continue to conduct research and still teach. 69 Houston continued his involvement in the Navy project after beginning at Rice, authoring a technical report on the torpedo and assisting the Navy in planning for future development of the same. Much of Houston's correspondence in the matter was directly with U.S. Secretary of the Navy James Forrestal, who in 1946 officially commended Houston for his contribution to the technological advances of naval

67 William Vermillion Houston Presidential Papers, 1925–1968, Biographical Sketch, Woodson Research Center. Houston, Principles of Mathematical Physics (New York and London: McGraw-Hill, 1934). Later, in 1951, while at Rice, Houston wrote Principles of Quantum Mechanics: Nonrelativistic Wave Mechanics with Illustrative Applications (New York: McGraw-Hill, 1951). Werner Heisenberg won a Nobel Prize for Physics in 1932 and was known for proposing the "uncertainty principle," which states that the position and velocity of an atomic particle cannot be accurately measured, and therefore the best that the scientist will be able to do is identify a matrix of possible outcomes but will not be able to predict with certainty. The uncertainty principle was controversial for its implication that science would not be able to yield a deterministic model of the universe and found dissent from several top physicists, including Erwin Schrödinger and Albert Einstein. Heisenberg remained in Germany during World War II and after an investigation by the SS was cleared and was appointed to work on nuclear fission in Leipzig and Berlin. He was captured by the allies near the end of the war and imprisoned in a manner near Cambridge, England, along with several of his colleagues, where they were debriefed in recorded sessions now well-known as the Farm Hall Transcripts.

68 W. V. Houston to Harry C. Wiess, 17 November 1945, typed, Lovett Presidential Papers.

warfare.\textsuperscript{70} It was Houston who presided over an initiative at Rice to launch a long-range program aimed at strengthening the sciences still further and bringing Rice’s research and financial structure in alignment with the handful of top U.S. universities.

By the time Houston took office in the spring of 1946, the composition of the board of trustees was remarkably different from what it had been at the beginning of the war, with only one of the seven still serving. Two of the elderly trustees, Captain James A. Baker, Sr., and William Marsh Rice, Jr., had passed away during the war years, and a conscious decision to reinvigorate the board resulted in four new trustees in 1946, replacing Benjamin Botts Rice (trustee since 1901), President Lovett (1910), John Thaddeus Scott (1913), and Alexander Sessums Cleveland (1922). In addition to the personnel changes, the board also reconceived the character of its management. Previously the board of trustees had relegated itself almost wholly to the financial management of the institute’s business affairs and had empowered the president to delegate directly to the department heads and individual professors with few intermediaries or standing committees. Now, with a more ambitious research agenda and more relationships with government and industry, the board appointed standing committees in finance, building, curriculum, and others. It also revised the composition of the board of trustees from members who served for life to a system which continually brought younger persons in and expanded the number in order to “maintain a vigorous and active governing group.”\textsuperscript{71} Later in 1949, the seven trustees would appoint eight additional “governors” to serve terms of generally one to four years, further refining the

\textsuperscript{70} Secretary of the Navy James Forrestal to W. V. Houston, 28 May 1946, typed, Houston Presidential Papers.

manner in which the university was run, from a homogeneous group of financiers to a larger group with more breadth and scope, able to serve more interests.

Baylor's president, Pat M. Neff, also a long-serving leader with substantial administrative authority, chose a much more intimate role in governing university affairs. Whereas Lovett delegated much decision-making to department heads and individual professors, Neff micromanaged an extraordinary amount of university business, often personally making hiring (and frequently, firing) decisions and having strong personal sway with the finance and registrar's office. In 1944 the trustees hired Baylor's first business manager, Roy J. McKnight, to be responsible for the financial affairs and registration, and for being Baylor's interlocutor with government agencies. The presence of McKnight lessened Neff's direct personal influence, which was one of the intended consequences, as even the board and faculty perceived Neff's anachronistic style of leadership to be inhibiting the university's development. A growing movement among the trustees and alumni to replace Neff with a more modern-minded president was only tempered by the general assumption that Neff would retire at the war's conclusion anyway. But in the postwar years, when it became clear that Neff had no intention of leaving despite his age (seventy-four years old by 1946), the movement to replace him began again. It was not until 1947 that the board voted him out of office, the causes and consequences of which will be covered in the following chapter.

At Texas A&M, the presidential controversy involved yet another blooming of the remontant debate over modernization, with the board again considering a major curriculum expansion away from the applied mechanical and agricultural courses toward one with more liberal arts and social sciences. There were some who believed that
preserving Texas A&M's heritage while broadening the curriculum was possible, but most adhered to a more traditional conception of the agricultural and mechanical institution. President Thomas O. Walton's advocacy of curricular modernization led him into conflict with the tradition-minded board, generating a great deal of negative press for the college. The board fired Walton in 1943, seemingly a victory for the university's old guard and staving off the modernization debate for a few more years.

Walton's replacement was Frank C. Bolton (acting president, 1943–1944; president, 1948–1950). Bolton's tenure as acting president was followed by the appointment of Gibb Gilchrist, a University of Texas graduate and highway engineer who had served as the dean of the Texas A&M School of Engineering. Gilchrist followed a middle course in his attempt to modernize the curriculum, adding a few new courses and strengthening the sciences but generally making the major expansions in engineering and agriculture. Perhaps the most plausible formula for change at Texas A&M was to have a president who had rapport with the alumni and board, and who could set a course of some modernizations without sacrificing the agricultural and mechanical heritage. However, Gilchrist's relations with the Corps and alumni were extremely poor, hampering his effectiveness. Much of what he did administratively was to re-organize the college at the school and departmental level, merging some departments and moving some to other schools, such as transferring the Department of Accounting and Statistics from the School of Agriculture (where it had curiously been) to Arts and Sciences and moving the Department of Geology from Arts and Sciences to the School of Engineering. Gilchrist's restructuring preserved agriculture and mechanics as the two major strengths but not necessarily the administrative loci for other programs, a meaningful structural
realignments in line with national norms. It was also Gilchrist who founded the Research Foundation, discussed in the second chapter.

The presidential change at the University of Texas, as with its counterpart in College Station, was political. It involved the faculty’s struggle with the board and alumni over the issue of academic freedom and the compatibility of professors whose ideas were considered inconsistent with the cultural mainstream and board. As discussed before, Texas politics in the early 1940s was characterized among other things by popular support for a more conservative and anti–New Deal element. This trend was evident in the election of Governor W. Lee “Pappy” O’Daniel, who was averse to perceived left-wing influence in the state university system. After the struggle between the board and President Homer P. Rainey had resulted in the latter’s firing in 1944, geneticist Theophilus S. Painter assumed the presidency. A Virginian by birth, Painter had sought his graduate education in the North (MA and Ph.D. at Yale, 1909 and 1913, respectively) because at the time, Painter later said, the South had not offered graduate education of sufficient quality. Regretful that southerners had to go north for a top-notch education, Painter said that he had resolved to return to the South and help establish educational opportunities equal to those elsewhere. Painter is often associated with the old guard, probably because he was indeed so in comparison with Rainey, by the fact that he was acceptable to the board, and later, because of his opposition to racial integration in what became Sweatt v Painter (1950), a high-profile Supreme Court case that involved the university’s opposition to desegregation at the University of Texas law school.

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72 Dethloff, *A Centennial History of Texas A&M*, vol. 2, 485–75. The presidency of Texas A&M for the year between Walton and Gilchrist was acting president and Dean of the School of Engineering Frank C. Bolton.

73 T. S. Painter, draft of Speech to the Rotary Club, Marlin, Texas, 29 August 1951, President’s Office Records, 3.
Even though his appointment to the presidency was a response to the board’s opposition to Rainey, Painter was by no means hostile to the academic independence of the faculty and student body, despite an era-typical hard line against communism and efforts to impose administrative oversight of the student publication The Daily Texan. Painter afforded some latitude to the students for facing challenges different than their prewar counterparts, acknowledging a “general world-mindedness” of the postwar student and that “the most controversial questions” were appropriate for campus discourse.74 As a scientist Painter was comfortable in guiding the university into an era where more ambitious research agendas and aggressive competition with national universities led many state universities away from an older conception of a broad humanistic education. Although the University of Texas lagged behind the most elite national universities in terms of the timetable on which it began to participate more broadly in federal research, it was during Painter’s tenure in the early 1950s the University of Texas eventually expanded its science and research programs into large-scale federal involvement.

The final subject covered in this chapter is the process of the U.S. military jettisoning its surplus war material and offering it where appropriate to colleges and universities. Baylor University and the University of Texas both acquired numerous temporary structures to accommodate their swelling enrollments in the postwar years. Baylor business manager Roy J. McKnight procured several dormant structures in Waco that had first been used as worker housing for New Deal programs and again as housing for workers on various wartime industrial endeavors in the region. Baylor obtained

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74 As quoted in Tara Copp and Robert L. Rogers, The Daily Texan: The First 100 Years (Austin, Texas: Eakin Press, 1999), 51.
buildings for journalism, chemistry, radio, and the rights to a warehouse. In 1945 the University of Texas leased a magnesium plant on four hundred acres in northwest Austin from the War Assets Administration and in 1949 purchased the property outright. The facility became a research center, continuing some projects begun during the war and taking on research and development initiatives in numerous fields. This facility, with several additions, is what much later became the J. J. Pickle Research Campus, a well-known interdisciplinary research center. In 1951 the university reported that its medical school had been using temporary facilities for plastic surgery and neurosurgery that were provided by “surplus military hospital buildings” near the medical school in Galveston. The university also made smaller arrangements such as relocating to Austin a group of apartments called the Brackenridge Apartments, which had been built during the war in Wichita, Kansas, to house workers at a B-24 Liberator factory. Baylor, the University of Texas, and Texas A&M all benefited from student living quarters called “homettes” or similar terms of affection, packed and shipped from ordnance plants or factories to house veterans attending college after the war.

In the spring of 1945 the Army allowed universities to request surplus or obsolete equipment under a program administered by Army’s Air Technical Services Command in Dayton, Ohio. The University of Texas requested various apparatus such as gyro instruments, audio amplifiers, and signal generators. The electrical engineering department at Rice acquired about five thousand items, generally pieces such as

75 The Baylor Line (December 1946), 20.
76 The University of Texas Catalog, “Part IX: The University of Texas, Medical Branch, Galveston, 1951–1952,” 41.
77 “Request for Donation of Army Property to Educational Institutions Engaged in Pre-industrial Training,” request by the University of Texas, 1 May 1945, University of Texas, President’s Office Records.
microphones, transformers, and control boxes, from military facilities in Texas such as Ellington Field in Houston and Fort Crockett in Galveston.\textsuperscript{78} Baylor obtained equipment for its cafeteria and campus medical clinic several pieces from decommissioned Central Texas airfields.\textsuperscript{79} Six Texas A&M professors, five of whom were in the electrical engineering department, traveled to Baltimore, Maryland, to bring to College Station unspecified “equipment mounted on trucks,” which the Army donated to the college.\textsuperscript{80} While it is unlikely that this war surplus equipment had a significant effect upon the universities’ long-term research trajectories, it was yet another example of the acceptability and mutual reinforcement of government and higher learning.

The American academy’s adoption of the national agenda during World War II was more than a temporary shift to a wartime footing. If one ended one’s analysis at 1945, it would be easier to examine how higher education impacted the war, which was over and could be assessed. It is more difficult to make sweeping statements about how the war impacted higher education, which was still ongoing and in flux. Many prewar norms, not just those at the universities, had been put aside because of the needs of the war, and it was not clear in 1945 which practices from the past would be recovered and persist. Still, several facets of the academy’s war service even in 1945 could be said to forecast significant changes in higher education in the coming years; a few preliminary observations follow.

\textsuperscript{78} “Electronic Equipment Received by the Electrical Engineering Department of the Rice Institute as Gift Items from War Surplus,” [1948?] Houston Presidential Papers.
\textsuperscript{79} The Baylor Line (December 1946), 20.
\textsuperscript{80} Texas A&M Board of Regents Minutes, 26 September 1947.
One of the important aspects of the academy's wartime service was that the highest-profile activities of the universities during the war showcased the university's pragmatic functions. The effectiveness of the university in its service to the war cause broadly defined constituted a compelling case for the university as the producer of utilitarian products; this preexisting trend in American education was now underscored with public celebration. A second major change was specific to the South; the war shifted southern public focus from the region to the nation. While maintaining a distinct southern identity, southerners and southern institutions were drawn into a national effort, a sense of unity made more so by an identification of a powerful enemy—to whatever extent real or perceived—the fight against whom would require an assertion of cultural, economic, and religious values especially cherished by southerners. A third major result was the infusion of federal dollars, which proved extremely useful to the university. For public universities during the war, pre-existing relationships with the government were deepened, and in terms vastly more intimate to the faculty, students, and administrators. At private universities, which prior to the war had experienced comparatively less federal involvement, the war years eroded barriers to the acceptability of such influence. With each form of federal support the universities became further desensitized to—if not more inviting of—federal subsidization, as the benefits appeared to accrue to both a national interest and, as importantly, to the ability of the professors and universities to advance their capabilities and reputations. Though there were still those in the academy who remained opposed to federal involvement, the view that federal dollars were inherently antithetical to the academy's sanctity found far fewer proponents. A fourth aspect of the changes of the war era was a bit more ambiguous: a general willingness to abandon prior
comfort zones and traditional programs in pursuit of new research endeavors previously outside the orbit of the university. This phenomenon was evident in ambitious postwar development plans, efforts at procuring further resources, and competition with peer institutions—all the while with federal support a key factor in the successful prosecution.

Finally, it is worth noting that government influence did not have to be of a nationally recognizable or multi-million dollar nature, such as that at the University of Chicago, Johns Hopkins, or MIT, in order to have a profound impact on a given university. Through more subtle and gradual cooperation, colleges and universities throughout the country were set on paths that a decade or two before would have been unimaginable. As President Painter at the University of Texas implied to the *Dallas News*, plans for higher education in the postwar years were new, ambitious, and best understood in the context of the university’s experience in World War II. Though he was speaking only for the University of Texas, Painter’s words were generally applicable to American colleges and universities of various sizes and characters. As will be shown, it is indeed appropriate to call the decade or so after the war the “postwar” years, not just in the rhetorical sense, but also in the substantive sense—with myriad ramifications for higher learning’s role in society. The following chapter carries the coverage of these trends through the second half of the period covered in this study.
CHAPTER FIVE

University Operations and National Service, Part Two: 1946–1955

Having just examined the forces exerted on universities during World War II, this chapter considers those that came in its wake. The present chapter continues the chronology by examining the substance of the adjective "postwar" in that the key operations of the universities were largely affected by the war’s legacy. Relevant to enrollment and curriculum were four major developments: a continued showcasing of the university’s function in promoting the national interest, especially by building on federal relationships forged during the war; a trend toward specialization with a focus on technology and the sciences; the lasting effects of the curricular demands of the postwar student body that included two-million-plus World War II veterans—almost all men—attending on federal readjustment legislation (the GI Bill); and permanent decisions to abandon prewar norms in other areas. Administrative initiatives that these universities and others in the South and nation at large undertook were made possible by a return to a noncrisis mode after a decade and a half of depression and war. Postwar development plans generally centered on bold, expanded academic capabilities and research agendas and on securing the revenues necessary to sustain them. It is also worth noting that many of these newly enrolled students returned to the South after wartime experiences that exposed them to procedures, technologies, and worldviews much different from those of their upbringings had afforded them. It was thus more possible for these veterans to partake of the intellectual, professional, and scientific endeavors that helped redefine the postwar South. This chapter finds the postwar southern university redefining itself in an
active, confident, nationalistic climate in which—amid the stability popularly attributed
to postwar domestic America—there was still much to be worked out about the nature of
and potential contribution of higher learning in this promising new era.

Following World War II, returning veterans, cultural and economic trends, and a
conscious national effort to increase the scope of higher learning all contributed to a
burgeoning national system of higher education. The federal government, having gained
a new appreciation for the contributions of the university during the war, took a new and
keen interest in developing this important resource, both in capitalizing on the talent of
the professorate and in developing a more educated and professionally able population.
One of the most important federal statements on higher education came in 1947 in the
form of the President’s Commission on Higher Education’s *Higher Education for
American Democracy*, which recommended a greater system of post-secondary schools,
including the growth of four-year colleges and universities, the expansion of junior
colleges and community colleges, and increased educational opportunities for minorities.\(^{1}\)
Enrollment growth in higher education was especially strong in Texas, which had

Printing Office, 1947). As with some of the wartime discussions on the GI Bill, there were forecasts of
mediocrity and anti-intellectualism, with Robert M. Hutchins at Chicago saying, “Its heart is in the right
place: its head does not work very well.” Robert M. Hutchins, “The Report of the President’s Commission
*Time*, 23 February 1948, 52–54. For some comments from University of Texas President T. S. Painter on
the expanded opportunities for post-high-school education in the United States, see unidentified typed
report, attributed in long-hand to President T. S. Painter in 1949, University of Texas, President’s Office
Records, 2.
averaged an increase of about 20 percent in its student population per decade during the first half of the century.²

The most popularly recognized association between World War II and higher education is likely the Servicemen’s Readjustment Act of 1944, better known as the GI Bill of Rights. The main roots of the GI Bill can be traced back to World War I and to the problems involved in the reintroduction of that war’s veterans into civilian life and the hardships of massive unemployment, after which veterans-advocacy groups pressed for veteran readjustment contingencies for the future. Early during World War II, it became obvious that there would be a great number of returning veterans, and President Franklin Delano Roosevelt and his advisors were interested in higher education’s role in assuaging a glut on the job market. Several government entities recommended separate but similar plans that entailed the federal government contracting with colleges and state education boards to admit veterans, which would have perhaps resulted in something like the wartime campus military training programs. Open for debate were the types of activities (job training, refresher courses, vocational schools, full-fledged degrees, etc.) that the government would fund; whether the government would pay for private school tuition; and whether tuition dollars would be in the form of loans, grants, or some combination. Common to all plans, however, was the dedication of massive federal financial resources to postwar higher learning.³

² Tracing the percentage of the U.S. population between the ages of 18 and 21 who were enrolled in some sort of higher educational institution, the statistics show that in 1900 it was 4 percent, 1910, 5 percent; 1920, 8 percent; 1930, 12 percent; 1940, 15 percent; and 1950, 30 percent. Texas Legislative Council, “Part I of the Educational Survey: General Historical and Legal Background of Public Higher Education in Texas,” 20–21.
Many educators were leery of an overarching readjustment plan. Harvard President James B. Conant and University of Chicago President Robert M. Hutchins contended that each state should administer the proposed readjustment. They and other educators at prestigious universities projected that giving a college education to all veterans would flood colleges with often unprepared students and reduce the quality of education. Also, if the readjustment took the form of campus military training, there was a concern that the government would decide which veterans would attend which schools or otherwise have too-heavy a hand in the process. Other educators proposed that Congress place limits on the number of veterans who could participate. Senator Joel Bennett Clark (D-Missouri) and Congressman John Rankin (D-Mississippi) sponsored a plan that made veterans the contracting parties directly with the federal government, allowing the colleges to chose whomever they wanted to admit, without arbiters from entities such as state education boards, government committees, or other parties that might restrict the terms of student or university participation. This plan resonated with southern educational leaders, and especially with the Southern University Conference.

_and the Making of Modern America_ (Washington, DC: Brassey's, 1996); See also Keith W. Olson, “The Astonishing Story: Veterans Make Good on the Nation’s Promise,” _Educational Record_ 75 (Fall 1994): 16–26. This issue of the _Educational Record_ commemorated the fiftieth anniversary of the GI Bill and offers several articles that consider the legislation and its effects from a variety of perspectives; “Some of the Issues Involved in Meeting Post-war Adjustments in Higher Education (Suggested by Fred J. Kelly, U.S. Office of Education),” typed, 21 September 1943, Lovett Presidential Papers. Groups that presented or made recommendations for plans were the President’s Committee on Postwar Education Opportunities for Service Personnel (PCPEOSP), the Postwar Manpower Conference (PMC), and the American Council on Education (ACE).

(SUC), which in 1943 drafted its own suggestions for educational readjustment, similar to that proposed by the two southern senators. It was such a bill that eventually passed. 5

A matter that bears more attention in the scholarly literature is the extent to which state legislatures grappled with their own state-level veteran readjustment plans prior to the passage of the GI Bill. There is a need to add nuance to the traditional and generally true story that southern states favored a large federal plan. There were in fact state-level debates on the topic that never reached full-scale proceedings and votes, and which showcased both the reservations toward a federal plan and some possible state-level alternatives. These state debates, however, never amounted to much. The reasons for their lack of fruition seem to have been that, first, early on the federal government indicated its intention to provide a thorough readjustment plan; second, the matter of veteran readjustment had little precedence at the state level; three, developed debates on this topic would have required a remarkable degree of foresight and future planning among the other issues before the states during the war; and four, federal assistance for the veterans appealed to southern notions of patriotism and general support for the war, making federal involvement in this arena more acceptable than, say, labor regulations or some other seemingly intrusive prospect. Nevertheless, many southern states discussed the issue of state readjustment to some extent. In Texas’s case, the state legislature debated a plan wherein returning veterans would have been exempted from tuition at state colleges and universities and possibly would have received funding for supplies and living expenses as well. In 1943 the legislature passed the Hazlewood Bill, which

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exempted returning veterans from tuition, but there were few veterans as of that year, and it was not clear if or how the state would handle a much larger number when the war was over. Even after it became likely that the federal government would indeed provide an overarching veteran readjustment plan, the Texas legislature continued to consider some form of tuition waiver. Part of the motivation for continued discussion of this even after the federal government had signaled its intention to implement a readjustment plan was the prospect that the federal plan might allow the veteran to receive in cash the federal money for higher education in addition to the state-funded tuition. But the national GI Bill as passed in June 1944 did not include such a provision.

The bill that the U.S. Congress passed, just days after the Allied landing at Normandy, dealt with numerous forms of readjustment in addition to formal education such as house loans, business loans, farm loans, and job training. The educational provisions of the bill paid for tuition, supplies, and a monthly subsistence allotment. The final tally of veterans attending college on the GI Bill far surpassed Congressional estimates of about 600,000 to 1 million persons: the actual number was about 2.3 million, with 5.7 million more using the educational provisions of the bill at trade schools or other courses not leading to a baccalaureate degree. The government spent $3.5 billion on tuition and disbursed almost $10 billion in subsistence allotments—all amid a political climate rife with Congressional opposition to a too-strong federal government.6

As with the veterans of World War I three decades before (whom Texas A&M president of that era, William Bennett Bizzell, had described as “unwilling to be nose-led

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or milk-fed"), the World War II veterans generally returned with a sense of maturity and purpose, and in great numbers. The boom in undergraduate enrollment after the war caused the universities to reassess their prior enrollment ceilings, and most institutions agreed to admit as many students as campus resources could be stretched to accommodate, and often more. The University of Texas and Baylor University codified their preference for Texans, increasing standards for admission to out-of-state applicants. At the University of Texas, this policy extended to service personnel training at nearby military facilities. In the summer of 1946, the U.S. Army Air Force Deputy Chief of Air Staff asked University of Texas President T. S. Painter about sending a group of active-duty Air Force officers from nearby Bergstrom Field to the university to train in "scientific and professional fields." Painter responded that the Texans among them were welcome, but that the normal out-of-state restrictions would apply to any of the non-Texan officers, saying that "it is our duty first to care for Texas citizens and Texas veterans," who were "crowding our facilities to the limit." In Baylor’s case, fall 1946 applications were so numerous that the trustees had to reverse a decision to limit the enrollment to 2,300 students, for such a ceiling would have required the university to turn

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7 Bizzell, as quoted in Henry C. Dethloff, A Centennial History of Texas A&M University, 1876–1976, 2 vols. (College Station: Texas A&M University Press, 1975), vol. 1, 286. The consensus is that the veterans pursued their studies more seriously, were better-disciplined, and focused more on their studies and getting a job than their civilian counterparts. They were also older and more likely to be married, and often had working spouses. At Texas A&M, it was evident to both the non-veteran undergraduate and the veteran that certain traditions were incompatible with the new character of the undergraduate population; it was unlikely, for example, that a twenty-nine-year-old veteran would allow a college junior to make him perform a cleaning chore. Further, the returning veterans seemed to have generally shunned the Corps as an amateur organization. For a discussion of some of these student dynamics, see Dethloff, A Centennial History of Texas A&M, vol. 2, 491–95. For an assessment of the veterans’ behavior on the national level, see Helen Lefkowitz Horowitz, Campus Life: Undergraduate Cultures from the End of the Eighteenth Century to the Present (New York: Alfred A. Knopf, 1987). See also the Fall 1994 issue of the Educational Record and Bennett, When Dreams Came True.

8 U.S. Army Air Force Major General C. C. Chauncey to T. S. Painter, 11 July 1946; Painter to Chauncey, 22 July 1946. University of Texas, President’s Office Records. Bergstrom Field was built in 1942 and called Del Valle Army Air Base but renamed in 1943 for Captain John A. E. Bergstrom, the first Austin, Texas, resident killed in World War II.
away some previous Baylor students whose educations had been interrupted by the war, children of alumni, or ministerial students. After much debate, the Baylor trustees agreed to admit all qualified applicants who fell into one or more of three categories: students in good standing who had attended Baylor during the previous spring or summer terms; family of Baylor alumni; veterans whose educations had been postponed by the war. President Pat M. Neff at Baylor said that “in the emergency we should take students to the limit of our capacity to give them services in keeping with their payments.” In 1945 he wrote an open letter to ex-Baylor servicemen, saying “I am making plans for your future here at Baylor…. The government has made special educational privileges and opportunities available to you through the GI Bill of Rights.” The university’s business manager later added that “We want it known throughout the Southwest that Baylor is now in a position to take additional students…as a patriotic duty to accept the application of every war veteran who desired to enter the university.” Applicants most likely to be turned down for admission were women and out-of-state males not in any of the aforementioned groups.

The University of Texas led the enrollment spike in absolute numbers, with 17,390 students in 1947–1948. Texas A&M peaked at about 8,000, some 20 percent higher than the pre-war statistic of about 6,700, the narrow gap being less a lack of postwar students and more a product of the late-1930s surge in student numbers. The

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9 Baylor University Trustee Minutes, 30 April 1946. See also Pat M. Neff, “Annual Report of the Baylor University Board of Trustees, by the President of Baylor for the Year 1945-46,” 26 October 1946, Trustee Minutes. Though officially referring only to GIs who were former Baylor students, the board expressed its desire to admit all qualified veterans

10 Neff, in the Baylor Line (January 1945), 6; McKnight, in The Baylor Line (January 1947), 5.

11 “Fall semester enrollments at the A. & M. College of Texas and Male, White High School Graduates of Texas for the Period 1933 to Date [1953],” President’s Office Papers. For Texas A&M’s duty to accommodate the veteran, see Gibb Gilchrist, “A Report to the Board of Directors,” 25 May 1945, President’s Office Papers, 13. Unless otherwise noted, enrollment figures for a given year such as 1947–48
enrollment story at the Rice Institute differed somewhat from the one played out at other U.S. universities, for Rice consciously limited its postwar enrollment numbers to a pattern consistent with prewar growth levels, somewhat less than 1,500 students. Rice was in an enviable financial position among private universities of not having to rely on tuition for operating income, meaning that it did not need to increase numbers and/or raise tuition to the maximum amount that the government would pay. Along with this financial posture, the Rice faculty and trustees saw wisdom in keeping the student body at modest numbers, even at a time when peer institutions were adding students at rapid rates. The Rice trustees said that the institute planned to focus on quality rather than becoming “unusually large” and operating the university “on a mass production basis.”

To accommodate married veterans, universities sought additional housing units, an endeavor that quite appropriately involved the federal government. A common solution was to procure temporary housing units left over from New Deal work programs or World War II industrial facilities. Capable of being collapsed, transported, and reconstructed, and with walls composed of single-thickness plywood and typically measuring a mere 16 X 32 feet at the perimeter, the structures acquired the nickname “homettes.” Baylor obtained fifty homettes from the Bluebonnet Ordinance Plant in McGregor, Texas, (the land of which was now in the possession of Texas A&M’s Agricultural Experiment Station). Baylor also leased units on the Blackland Army Flying

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12 Survey of Rice Institute, a Report, Table 1: “Rice Institute Enrollment, by Classes, 1929–43,” 8 March 1945, Lovett Presidential Papers. This table shows the consistency of Rice’s prewar enrollment numbers, with the lowest annual enrollment in the decade preceding the war being 1,201 undergraduates and the highest year being 1,375. For the “mass production” comment, see The Rice Institute Board of Trustees, “Major Elements of a Long Range Program for Rice Institute,” preliminary draft, [Fall 1945?], [1].
Field, a mix of apartments and military barracks near campus. In 1946 Baylor leased five dormitories at below-market rates from the City of Waco previously belonging to the NYA.\textsuperscript{13} At Texas A&M, President Gibb Gilchrist said that the success of finding housing for students and faculty was largely dependent on "the speed with which the Federal Government makes excess housing under its control available."\textsuperscript{14} Texas A&M erected dormitories using Federal Public Housing Authority Funds, obtained other units from the Federal Works Agency, and leased the Bryan Air Force Base in 1946. Even these facilities were insufficient, and the college allowed students to purchase trailers and set them up on campus using college-supplied utilities.\textsuperscript{15} Educators at the time correctly predicted that the departure of the veterans would only bring about a temporary lull in enrollment numbers, and that the growing state population and the increasing rate at which young persons went to college would cause sustained increases in enrollment thereafter. Indeed, U.S. colleges and universities dipped briefly as the last veterans

\textsuperscript{13} The Baylor Lariat, 5 December 1945. Baylor arranged for these houses to be located on vacant lots near the campus and planned community atmospheres of sidewalks, landscaping, and driveways. Baylor charged $30 per month as rent for the homettes, constituting one-third of the $90 GI Bill subsistence allotment given to married veterans without children. See Rose Legenfeld, "Beginning on a Shoestring in a Homette at Baylor University," The Baylor Century (August 1946), 4. At the University of Texas, such structures were known as hutments and cottages. University of Texas, Board of Regents Minutes, 11 January 1946. For an article on the Blackland dormitory arrangements, see The Baylor Line (January 1947), 5. See also William R. White, "Report of Baylor University to the Baptist General Convention of Texas for 1947-1948," Trustee Minutes. In 1948 Baylor had some of these barrack moved adjacent to campus to function as female dormitories, which students referred to as the "Coed Courts." Neill Coker Morris, Oral Memoirs of Neill Coker Morris, interviewed by Rufus B. Spain on five occasions from 29 May to 19 June 1975, transcript, Baylor University Institute for Oral History, Baylor University, Texas Collection, Waco, Texas, 197. When in 1946 the local secondary school board wanted to purchase the property on which the NYA barracks sat to establish a technical high school and deemed the city's low-rent contract with Baylor unfair, Waco Mayor Richard C. Bush defended Baylor, saying that "With us, the veteran comes first." Irby B. Carruth, Superintendent of Waco Public Schools to Roy J. McKnight, June 1947, typed, Pat Neff Papers; The Baylor Lariat, 13 June 1946.

\textsuperscript{14} Gibb Gilchrist, in Texas A&M, Annual Report for the Fiscal Year 1944–1945. Bulletin of the Agricultural and Mechanical College of Texas, 5\textsuperscript{th} ser., vol. 2, 1 March 1946, no. 3., College Station, Texas, 6.

\textsuperscript{15} Dethloff, A Centennial History of Texas A&M, vol. 2, 491.
departed and regained the enrollment numbers of the GI Bill peak years by the mid- or late 1950s.\textsuperscript{16} In much of the applied and technical curricula, southern universities maintained a regional distinctiveness, stressing industries and natural resources important to the regional economy. Simultaneously, however, they moved more in line with national standards and economic trends, especially with regard to service sector jobs and a shift from the rural to the urban (or suburban) setting as the economic and cultural locus for the most significant postwar growth. A national effort at promoting the benefits of a scientific education also increased the general level of scientific and technical aptitude in this region known for a lack thereof. An important characteristic of the World War II veterans was their attitude toward their educations, which generally took the form of preparation for a profession. Higher educational institutions of almost every type now offered a wider slate of classes in order to meet student demand and diversifying economies. By doing so, they posed and fulfilled the image of a well-rounded university, even if the given school’s curriculum had traditionally been something more specific, such as a teacher’s college or a technical school. East Texas State Teachers College (now Texas A&M University–Commerce) was one example. Before World War II, teachers colleges had been just that, but after the war, Texas high school graduates were more likely to view Texas colleges indiscriminately and often went to the college closest to their town, curricular heritage notwithstanding. The same held for smaller regional institutions such as Stephen F. Austin State Teachers College (now Stephen F. Austin State University) in Nacogdoches, Texas, which implemented curricular expansions to

\textsuperscript{16} For such a prediction by T. S. Painter, see untitled, typed report by T. S. Painter, [1949], University of Texas, President’s Office Records.
diversify their professional training to reflect a shift from small farming and small businesses to a more complex professional and industrial environment.\textsuperscript{17}

Not all institutions underwent this broadening, however. Some smaller colleges such as Tarleton State College maintained their prewar focus, maintaining largely agricultural offerings to students from nearby areas. Prairie View A&M grew in size yet remained largely agricultural and vocational, integrating much of its curriculum with the activities of the Agricultural Experiment Station. In 1945 the board justified an increased allotment to Prairie View beyond what it had initially proposed for the upcoming year, saying that funding Prairie View during times of growth was important "if we are to do our duty by the Negro."\textsuperscript{18} Still, even several years after World War II, Prairie View was woefully understaffed from a faculty qualification perspective, with only about 10 percent of its faculty holding a Ph.D. degree—a statistic that Texas A&M boasted of as being progressive in African-American education.\textsuperscript{19} The heavy cooperation with the Agricultural Extension Service, while augmenting the college's capabilities, reinforced Prairie View A&M as an agricultural-vocational institute rather than a full range undergraduate college. In the South and nationwide, a body of increasingly mainstream universities distinguished themselves from colleges that retained a specific focus (agricultural or vocational, etc.), thereby attempting to serve a wider segment of the population and in doing so generally growing more similar to one another.


\textsuperscript{18} Gibb Gilchrist, "A Report to the Board of Directors," 25 May 1945, 3.

There had long been debates within the American academy over the proper role of higher learning; and much more so than before, this question gained a dynamic in the strength of postwar student demand. In addition to traditional studies in the liberal arts and humanities there was a pronounced demand for specialized study, often part of an informal credentialization for a particular business or industry. Specialization had come to mean more than simply advanced study in one area but was increasingly being defined by scientific, technical, and professional skills.20 One of the aims of the university scientists involved in the initial discussions of the National Science Foundation (NSF) had been to increase the overall scientific educational attainment of the country's undergraduate and graduate students via a comprehensive system of federal science scholarships and fellowships. These provisions were dropped from the planning of the NSF when the returning veterans enrolled in science curricula at sufficient numbers.21

At the four universities under consideration in this study, the reigning climate among the students seemed to have been that there was much to be gained from a course of study relevant to the job market and regional economy. To name one example of a field's utility and explicit connection to the advances of mid-century technology, chemical engineering was an area of increasing popularity and commercial relevance, integral to processes of fuel combustion, the creation of metals and alloys, petroleum

20 For a high-profile example of such a criticism, see Walter Lippman, "The State of Education in this Troubled Age: A Sweeping Indictment of Modern Schools and Colleges," Delivered under the auspices of Phi Beta Kappa at the Annual Meeting of the American Association of the Advancement of Science, University of Pennsylvania, Philadelphia, December 29, 1940.

refining, rubber and synthetics, food products, and home heating. In 1947 President Houston at Rice grappled with the university’s duty to offer a humanistic as well as a technical education, arguing that the college by definition had a responsibility to the community and that persons in technical fields should know the humanistic and social ramifications of their actions—indeed, Rice’s engineering curriculum was notably theoretical relative to other university engineering schools. In 1951 President Houston said that although Rice had a reputation in the technological sciences, a certain skill was not the object of a Rice education; rather, Rice sought to provide as general an education as possible while giving the students an opportunity to develop a base in his or her chosen discipline. T. S. Painter at the University of Texas said the “man on the street” believes that a university education should prepare students for a technical field or a profession. Painter said this was generally correct, if only lacking in the sense that most persons outside the academy did not appreciate the university’s role in contributing to society through research. Course catalogs at Texas A&M purported to stress the social ramifications of technology, as those with executive positions in technical fields would be required to weigh the humane elements of their decisions along with the technical.

A holdout for the general education was Robert M. Hutchins at the University of Chicago, who advocated a curriculum that even those sentimental for general education

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22 This particular list of the applications of chemical engineering was drawn from Texas A&M College course catalogs from 1952 to 1955.


24 T. S. Painter, draft of Speech to the Rotary Club, Marlin, Texas, 29 August 1951, University of Texas, President’s Office Records, 4.

25 Bulletin of the Agricultural and Mechanical College of Texas, 6th ser., vol. 1, 1 April 1954, no. 2., College Station, Texas, 180.
found anachronistic—though the Chicago faculty was far from being in lockstep with its president, and Hutchins's relationship with others at the university was tenuous as a result.  

Detractors to the growing pre-professionalism in the curriculum had been common in intellectual circles in the half century before the war, and some of these dissenters continued to speak out after the war. Though there were fewer such dissenters in the South, historian Walter Prescott Webb at the University of Texas was a notable one, as elaborated in the third chapter of this study. Other systematic opposition to the postwar modernizations at these four universities came from Baylor's president and the clerical faction of its board, though on different grounds than from secular intellectuals. Pat Neff and his supporters on the board argued against a shift toward training in business and technical skills on the grounds that such studies were the tools of a secular society. This argument rejected an actively "secular" trend and asserted that professionalism came at the expense of the American university's more traditional function of perpetuating a common heritage and embracing the tenets of a Christian civilization. In such an appeal, Neff had numerous allies in other Christian college administrations.

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26 See Mary Ann Dzuback, Robert M. Hutchins: Portrait of an Educator (Chicago and London: University of Chicago Press, 1991), esp. 154–55; Milton Mayer, Robert Maynard Hutchins: A Memoir, John H. Hicks, ed. (Berkeley, Los Angeles, and Oxford: University of California Press, 1993). See also Mary S. Estill, Visualization Realized: A History of Sam Houston State University (Huntsville, Texas: Sam Houston Press, Sam Houston State University, 1970), esp. chapter three: "The Coming of Vocational Education to Texas Normal Schools and Teachers Colleges," 34–47. The most notable treatise of this era arguing for a general education was Paul S. Buck, et al., General Education in a Free Society (Cambridge: Harvard University Press, 1945). See also Adam Ulam, The Fall of the American University (LaSalle, Illinois: Library Press, 1973), 43–49. The critique of specialization, in one variation or another, has remained in the academic discourse on higher education through the present. See Christopher J. Lucas, Crisis in the Academy: Rethinking Higher Education in America (New York: St. Martin's Press, 1996), esp. 39–88 and 123–68. In the introduction, Lucas says: "Though many people will deny it vehemently, near-universal access to what passes today for higher learning has contributed to a real and tangible decline in both academic expectations and scholastic attainment. Program offerings on most campuses have denigrated to the point where they amount to little more than vehicles for professional credentialing." Xiv–xv.
As mentioned above, one of the most significant shifts in postwar academic majors occurred in the study of business, which had increasingly been growing in popularity as a course of college study. In the decades prior to the war, the role of the local stand-alone business college was waning, and the university had come to assume its function. At many universities, disciplines such as English, political science, history, mathematics, and the sciences witnessed growth rates less than or equal to that of the student population—and/or remained core disciplines by mandate—while business courses sustained enrollment at much higher rates. President Marion Thomas Harrington at Texas A&M encouraged this, saying that “[t]he young man well trained in the fundamental principles of the sciences or technology…[can] advance to a position of leadership in the management of our great industries.” A Baylor chemistry professor later remembered that many students looked forward to a job market where “industries of all kinds spurted upward, expanded, and increased production.”

One of the most notable statistics was the spike in undergraduate engineering degrees. Like business, engineering had been integrated nationally into the undergraduate curriculum as a major instead of a degree from a technical or vocational school. Rice continued to attract students interested in engineering and maintained gainful relationships with Houston- and Gulf Coast-based engineering firms, adding

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27 Marion Thomas Harrington, “Inaugural Address of Marion Thomas Harrington,” *Inauguration of Marion Thomas Harrington as Twelfth President* The Agricultural and Mechanical College of Texas, 9 November 1950, College Station, Texas, 30. William Richmond Stephens, *Oral Memoirs of William Richmond Stephens*, interviewed by Thomas L. Charlton on four occasions from 2 September to 7 October 1975, transcript, Baylor University Institute for Oral History, Texas Collection, 153. An article in the *Waco Times-Herald* reported the trend of popularity in the study of business, stating that the heaviest undergraduate faculty demands at Baylor for the fall of 1948 were in the school of business. *Waco Times-Herald*, 12 September 1948.
geological engineering to its slate of offerings.\textsuperscript{28} The University of Texas, even with its well-rounded arts and sciences curriculum, had a significant portion of its students earning degrees in engineering as well. The University of Texas had been the first university in the country to build a dedicated petroleum engineering facility (1942), and near the end of World War II, Dean of the School of Engineering W. R. Woolrich reported that the university was preparing for further growth in that field.\textsuperscript{29} At Texas A&M, the percentage of students studying agriculture declined, a meaningful trend at a university that traditionally prided itself in advancing its role in state agriculture. However, this decline in agricultural enrollment did not necessarily reflect a de-emphasis in agriculture for the institution in general, as it was indicative of a national transformation wherein fewer people were involved in agriculture, and at levels more technical and efficient.

In the late 1940s and early 1950s, U.S. graduate enrollments, though large, did not keep pace with demand from students and the private sector. Graduate education in the South had historically lagged behind that in the North in terms of number of degrees awarded and the quality of the graduate resources. Much of the South’s awareness of and motivation to address this problem had come near the end of the 1920s, and efforts in the depression years of the 1930s were ill-timed and not in a context where most of the

\textsuperscript{28} The order of popularity of the engineering program at Rice, from the most students to the least, was chemical, mechanical, electrical, and civil. “Total Degrees in Four Branches of Engineering,” hand-drawn chart, Houston Presidential Papers; Rice Institute, Reports of the Registrar, 1947–48 through 1949–50. F. C. Lindvall, “General Observations on Engineering at Rice Institute,” May 1946, Houston Presidential Papers.

\textsuperscript{29} In 1950 the University of Texas reported that since its 1883 foundation, it had given out 8,300 arts and sciences degrees, 5,600 business administration degrees, and 5,000 engineering degrees. University of Texas Catalog, “Part XI: Statistical Summaries, Degrees Conferred, 1884–1951,” 105–07. The University of Texas, “Report of the Registrar, 1948–1949,” University of Texas Publication No. 5002, 15 January 1950, 5. Unidentified newspaper clip, [1945?], W. R. Woolrich vertical file, Center for American History, The University of Texas at Austin.
schools could afford significant growth programs. Now, after the war, resources were more available and the demand was up across most disciplines. In 1950 the Southern Regional Education Board reported that there was a shortage in 117 fields, and southern universities recognized a need to compete with the government and industry for faculty in disciplines in which shortages were especially acute: chemistry, physics, math, economics, and psychology. Disciplines in which the shortage was "least acute" included history, political science, Spanish, French, and oddly, engineering.\footnote{For statistics on shortages, "Report of the sub-committee on veteran enrollment," Southern University Conference, Fred H. Smith, committee chairman, 8-9; "Data Book III: Supply and Demand Factors in Southern Graduate Education," Board of Control of the Southern Regional Education Board, [1950], 5. Copies in University of Texas, President's Office Records. See also F. C. Lindvall, "General Observations on Engineering at Rice Institute." The 117 figure is perhaps high, as it included numerous specialized sub-fields in medical, scientific, and engineering disciplines. The report lists only eight fields as having supply of graduate students being less than the demand, which included most of the social sciences and many fields within business. The presence of business in this latter list likely results from the fact that there was not yet a developed schema for graduate study in business administration.} One explanation for engineering as being in the "least acute" list may not reflect a lack of need but rather that the national and regional systems of A&M colleges were keeping pace with demand, since the state legislatures had an economic interest in advancing that field. Southern colleges and universities, in looking to expand their graduate opportunities, met under the auspices of the Regional Education Program, which acted as a consulting body to various universities, and while not wielding formal authority, it identified as its first priority to the development "graduate programs...which have unique regional relevance."\footnote{Regional Action in Higher Education 2 no. 7 (July 1951): 1-2; quote on 2.} The late 1940s and 1950s witnessed a period in which universities further sought to provide local training for extractive industries in mining and the petrochemical sector to obviate the need for importing such know-how from outside the South.

As with the undergraduates, the most common course of study for Rice graduate students was engineering, mostly chemical and mechanical but also electrical and civil.
Other popular graduate programs were physics, chemistry, and mathematics. Before the war, the number of graduate students at the Rice Institute numbered about 50 at any given time, but by 1948–49 the number was 140. In 1953 it surpassed 200 and in 1958 surpassed 300. The Rice administrators projected that the increasing opportunities for research would be a boon to the graduate programs and noted the need to procure modern research facilities and tout those opportunities in order to compete with other schools nationally.\(^{32}\) In the early 1950s the Rice Institute began allowing students to undertake doctoral study in engineering, awarding the first degree in 1955. It was in 1949 that the steady trend of Ph.D.s began at Texas A&M, averaging about thirty doctorates per year in the 1950s, mostly in agriculture but with a few in engineering and the various science disciplines.\(^{33}\) Baylor President William R. White, seeking to strengthen Baylor’s graduate programs, began preparations for enabling several departments to eventually offer the Ph.D. degree. The University of Texas had long been a standout among southern universities, it was one of few schools in the South in the first half of the twentieth century that maintained a quantity and quality of doctoral programs commensurate with those of research universities outside the region. In the postwar years the University of Texas continued this momentum across the disciplines and especially pursued new fields in the nuclear sciences and petrochemicals.

Enrollments of the professional schools also swelled to new highs, far exceeding prewar attendance levels. Many professional schools enjoyed the rare opportunity to be


\(^{33}\) Texas A&M had granted its first doctorate in 1940, but from then to 1948 only awarded ten of the degrees, mostly in agriculture. Curtis Eric Schatte, Doctoral Degree Programs at Texas A&M University (An Appraisal of the Programs by Recipients of the Doctoral Degrees). A publication of the Graduate College, Texas A&M University, 1970, 13.
simultaneously more selective and admit larger classes. In the fall of 1947 medical schools in America could allegedly accommodate only 10 percent of the total applicants, and the Southern University Conference (SUC) hoped that something should be done to allow the medical schools to accept a much higher percentage. By 1948 the University of Texas had 352 students enrolled in its medical school and 110 in its nursing school. In 1946 Baylor instituted an enrollment ceiling of 200 for its College of Dentistry but raised the ceiling when the number and quality of applications rose more than expected, and by 1950 it enrolled over 350. The number of qualified applications to the Baylor law school was such that the university accepted two classes in one year; by 1948–1949 the Baylor School of Law boasted 501 students, 453 of them being veterans. By that year, enrollment in the University of Texas School of Law had already topped one thousand students.\footnote{For the statement about medical schools accepting only 10 percent of the applicants, see Pat M. Neff, "Annual Report of the Baylor University Board of Trustees, by the President of Baylor for the Year 1947," Pat Neff Papers. SUC, "Report of the sub-committee on veteran enrollment," 5. For the nursing school at the University of Texas, see The University of Texas Catalog, "Part IX: The University of Texas, Medical Branch, Galveston, 1947–1948," [106]. For the Baylor dental students, see Baylor University, 1948 Round-Up, 287. For the Baylor law school, see "Report of the Registrar, 1948–49." For the University of Texas Law School, see University of Texas, Catalog, "Part V: General Information, Main University, 1946–1947," 124.} In the immediate postwar years at many universities, male students outnumbered female students by a factor of two or three. Rice, which traditionally had more male students than female, witnessed the most extreme percentage of males, over 80 percent. This percentage only declined slightly as the veterans departed and was still 76 percent ten years later. Historian and Rice alumnus Fredericka Meiners called the Institute during that time "primarily a man's school, with women enrolled." Some at Baylor, referencing the high percentage of males, joked that Baylor was turning into
Texas A&M. 35 This gender disparity has been a common criticism in scholarship on higher education in the postwar years.

At Texas A&M specifically, the immediate postwar era was tense due to continued conflict over the university's identity and from uneasiness in the student body regarding the primacy of the Corps of the Cadets. The Corps dominated life at Texas A&M and was largely self-governing, overseeing discipline and punishment from within, defending its status and privileges with zeal. President Gilchrist sought to create a locus of authority for student life outside the Corps, and one of his solutions was the creation of the position of dean of men. He also desired to limit the privileges of the Corps members, the practice of hazing, and extreme vestiges of class distinction. Gilchrist said that "Every student, as a man, has certain inviolable rights, among which are the right of respect for the sensitiveness of a man ....No custom, rule, or regulation in conflict with these rights will be allowed to prevail." One of Gilchrist's resolutions proved so unpopular with the Corps and alumni that over two hundred Corps officers resigned their commissions, and the Corps and a vocal alumni representation called for his removal. The matter was not settled to either side's satisfaction, and several years later a board-appointed academic council concluded that the college "will never develop into an institution of the first class as long as students who are interested solely in our academic programs are compelled to live in our Corps of Cadets even though they do not want that training." 36

36 For Gilchrist's statement about inviolable rights, see the larger policy statement, "A Statement of Basic Policies and Principles Determining the Character of Student Life at the Agricultural and Mechanical College of Texas," Appendix B of "A Report to the Board of Directors," 25 May 1945. The policy statement, according to Director of Student Affairs J. W. Rollins, was not attributable to any one person but represented the sentiment of faculty and alumni. J. W. Rollins to President Gibb Gilchrist, 22
An official college report on the turmoil between Gilchrist and the Corps judged that "[t]he unrest at the A. & M. College is primarily a product of the times, born of post-war unsettlement, and an impatience in reversion to pre-war conditions." Among students, this low morale factored into the institution's high attrition rate, and many prospective and current students were unwilling to endure the brunt end of the hazing and class privileges in order to earn a degree in an academic discipline available elsewhere. A few examples from a 1954 Texas A&M student life survey included the following suggestion and criticism, representative of scores of others: "Turn out 20th century men whose social and economic outlooks are of the same level of a graduate from another university," and "Times are changing but A. & M. isn't." The Texas A&M administration wanted to remove barriers that prevented the college from becoming something like a normal university that could attract and hold a large number of students. Student expressions such as those in this survey reinforced the administration's belief that there were impediments to such an ambition.

May 1945, enclosure with the submission of the Report to the Board of Directors. Texas A&M, President’s Office Papers. See also Dethloff, A Centennial History of Texas A&M, vol. 2, 491–95. For further information on the rift between Gilchrist and the Corps, see "Gibb Gilchrist’s Failure at Texas A&M" undated [1947?] two-page photocopied article from a magazine; and "A. & M. College of Texas Open Letter" 12 March 1947 signed by The Senior Class of 1948, one-page typed photocopied article from a magazine. Both in Gilchrist Biography Backfile. For the later statement about the Corps' effect on enrollment, see enrollment statistics, Spring 1954, letter from President David Hitchens Morgan to Chancellor Marion Thomas Harrington, 1 July 1954, Texas A&M, President’s Office Papers.

Draft of the results of a state investigation into the conflict between Gilchrist and the Corps. (1946?), no title, 4. Gibb Gilchrist Biography Backfile. Also see “A Study of the Losses which Occur during and at the end of the Third Semester in College,” 23 September 1953, Texas A&M, President’s Office Papers.

“Student Attitudes Toward Aspects of the A. & M. College of Texas,” 10 June 1954, compiled by Melvin S. Brooks and John T. Bertrand, AM survey, 51–61. Two other quite representative responses included the statements that "I think that if first and second year men were treated as if they were human beings instead of scum, that it would improve conditions at A. & M." and "the scholastic end of it is greatly hampered by useless traditions and interference from the Corps." Texas A&M, President’s Office Papers.
Because enrollments were largely comprised of veteran males from in-state, an ultra-homogeneity in the student body ranks came at a time when the university was at its peak in championing national purpose; many of the university publications and even academic literature of the various disciplines reflected consensus and national togetherness. Though there were those in the faculties and student bodies who were critical of unquestioned patriotism, the postwar university was generally a forum for the propagation of—rather than for dissent against—America’s moral and democratic purpose. A further reduction in the already-low international population occurred despite a rising demand from tens of thousands of international students applying to study at American colleges and universities because of a temporary halt of operations of higher learning institutions in countries most affected by the war. But it is worth noting that, while there were few out-of-state students in the undergraduate student bodies, there began a trend of graduate student populations becoming slightly more geographically diverse. Before the war, most graduate students at these universities had received their undergraduate degrees from the same institution that they were attending for their graduate work, or from one close by. Among the universities in this study, this postwar change was most evident at Rice, where Ph.D. students were now likely to hold degrees from a truly national sample of undergraduate institutions.\(^{39}\)

Since these universities practiced racial discrimination, especially against African Americans, racial diversity was held to a minimum. Most “white” universities in the South and in Texas had traditionally been host to a small percentage of minorities, generally from Latin America and Asia. Baylor had hosted a few students from Asia

\(^{39}\) Rice Institute registrar S. G. McCann to W. V. Houston, 14 August 1946, Houston Presidential Papers. Report of the Registrar, 1946–47 through 1951–52. For a listing of universities from which Rice graduate students had obtained an undergraduate degree, see the Campanile. 1947–48, 43.
since the late nineteenth century through exchanges associated with Baptist mission work in that region. As far as African Americans, integration of higher education was a few years away, and the opportunity for blacks to use the provisions of the GI Bill for college were restricted to African-American colleges, already poorly funded and barely able to accommodate the postwar enrollment surge. Some scholars have assessed that educational quality at African-American colleges suffered during the postwar years, as the enrollment increases were not matched by adequate funding or other resources. 40

It is likely that the GI Bill legislation’s expansion of the college-bound constituency established a university education as a more mainstream and realistic expectation, setting part of the context for civil-rights challenges in the mid-1950s and thereafter. When the African-American applicant Herman Marion Sweatt sought entry to the University of Texas law school in 1946, one subterfuge to preserve segregation had been for the University of Texas to open a law school at Prairie View A&M, which would have been operated under the A&M system. Another scheme was for the University of Texas to open a black law school in several rented basement rooms in Houston ostensibly equal in caliber to the opulent law school for whites in Austin. In 1946 the boards of both Texas A&M and the University of Texas jointly approved a plan to have two main state universities for African Americans in Texas. Under this plan, Prairie View A&M would be the agricultural and mechanical university for blacks, offering both undergraduate and graduate study, and a new university for blacks in Houston—Texas Southern University—would be a diversified arts and sciences

university with undergraduate and graduate programs.\textsuperscript{41} Few if any believed that these universities would provide anything approaching equal facilities and educations. Public "white" institutions in Texas interpreted 1950's \textit{Sweatt v. Painter} strictly, admitting African Americans to graduate study only, maintaining racial segregation at the undergraduate level. The state of Texas officially desegregated its higher education system in 1954, but it was several years before African Americans were admitted to formerly all-white schools with any regularity.\textsuperscript{42}

Despite the homogeneity, there were some opportunities for these universities to gain exposure to international issues via exchange programs, curricula informally indicative of a globalizing economy, and participation in U.S. relief work overseas. The University of Texas regularly hosted educational delegations from foreign countries, especially from those seeking to develop their oil and gas sectors and seeking to send students to the United States to study in technical or commercial disciplines relevant to the petrochemical industry. At times, over 20 percent of the foreign students at the University of Texas were from Middle Eastern countries, primarily from Iraq and Turkey, with smaller numbers from Egypt, Syria, Iran, and Afghanistan.\textsuperscript{43} Texas A&M typically hosted a number of students from Mexico and other Latin American countries, offering instruction in farming and mechanical skills. Texas A&M also offered to foreign students a series of short courses in subjects such as farm machinery, conservation, and


\textsuperscript{43} The University of Texas, "Report of the Registrar, 1948–1949," 34.
irrigation; some of these students remained at the college for graduate study.\textsuperscript{44} In cooperation with the U.S. Foreign Operations Administration, Texas A&M provided technical equipment and manpower to East Pakistan and sent teachers to several universities there. This was part of a broader U.S. cooperation with India and Pakistan, where Indian Prime Minister Jawaharlal Nehru was advocating scientific development modeled on U.S. universities. Texas A&M Chancellor Marion Thomas Harrington reported that in the mid-1950s a similar program with Mexico was cancelled because the Mexican government refused a U.S. Department of State request that several outspoken communist professors in the Mexican university system be fired.\textsuperscript{45}

To the U.S. military, college students and faculty were a resource, and the military sought to cooperate with higher education institutions in order to maximize the utility of an educated pool of manpower. After the war the federal government greatly expanded its Reserve Officers Training Corps, from a more select group of universities to include many more. The Rice Institute and the University of Texas already had Navy ROTC units, which had been established at those institutions during the war, and the University of Texas in 1947 added both an Army and Air Force ROTC unit. The Air Force, by 1947 a separate entity from the Army, implemented ROTC units. Texas A&M and Baylor both added units within the year. ROTC graduates received a commission as a reserve officer but were eligible to apply for active duty. The World War II logistics of


\textsuperscript{45} For more on Indian and Asian science in the post-war era, see “World War II and the Impact of Big Science,” in The Oxford Companion to the History of Modern Science, J. L. Heilbron, editor in chief (Oxford, England: Oxford University Press, 2003), 54–55. Cancellation of the program in Mexico, as cited from an interview with Marion Thomas Harrington from 1971 in Dethloff, A Centennial History of Texas A&M, vol. 2, 553–54. In 1947 Texas A&M re-conceptualized the A&M system to one in which each campus was run by an executive officer, and of which there was a chancellor for the overall system. For the board’s discussion of the new chancellor system, see Texas A&M Board of Regents Minutes, 26 September 1947.
having drafted millions of men into the armed forces, only to redistribute many of them to campus training programs, made the government reconsider the manner in which it would administer such programs for the future. With a possible need for personnel in Korea or wherever the next theater might be, government officials favored a scheme wherein, instead of drafting virtually every available healthy young man, the government should allow deferrals for a wider group entering college in lieu of the military programs such as the ASTP and V-12. The Department of Defense consulted the U.S. Office of Education in considering this plan, prompting the Office of Education to report, "The long-range consequences of this development are of the greatest significance to education. Higher education...will benefit enormously, as will the national security."\(^{46}\)

President W. R. White at Baylor lobbied Senator Lyndon B. Johnson for the government to allow students to remain on campus, to which Johnson agreed with the sentiment that enough men should stay enrolled in college to maintain the "industrial and technical superiority of America."\(^{47}\)

Also, the prospect of another war prompted both the military and the executive branch of the government to consider a more aggressive form of universal military training beyond the Selective Service Act of 1948, which had set the draft age at nineteen. One option was to lower the draft age to eighteen, which would have yielded about 850,000 additional men, with about 10 percent of those continuing on to colleges after basic training to complete all or part of a college program. One high-profile

\(^{46}\) U.S. Department of Higher Education, National Education Association of the United States, "Confidential Memorandum No. 1," 1–7; quote about the long-range consequences, 5.

proposal that argued for a draft age of eighteen came from Secretary of Defense George C. Marshall and Assistant Secretary of Defense for Manpower and Personnel Anna M. Rosenberg. A consensus of American educators, as represented by delegates from seventy-three colleges and universities at a 1950 National Council on Education (NCE) conference, found the Marshall-Rosenberg proposal unsettling in its “extent and degree of military control of the young men and of the educational process of the nation.” The educators favored a draft age of nineteen or higher due to the fact that a significant percentage could thus finish the first half of a four-year degree or perhaps junior college, and the educators also cited the demoralizing effect that a draft age of eighteen would have on high school students.\textsuperscript{48} Conveying the tone of the conference, Baylor’s representative reported back to Baylor that “The consensus...was that we are now at war with no hope for peace in our time, and the best we can hope for, short of an all out shooting war, is to settle down to a cold war stalemate.”\textsuperscript{49}

The U.S. Senate and House of Representatives each offered bills to amend the Selective Service Act of 1948, differing from Marshall-Rosenberg in that the government would only call eighteen-year-olds if all men between nineteen and twenty-five had been called; the Senate and Congressional bills also called for civilian, not military control, over any long-term universal military training. The compromise was the 1951 Military Training and Service Act, which set the draft at eighteen and a half. The U.S. Department of Higher education forecast an integration of higher education in the

\textsuperscript{48} The conference operated under the name the National Conference for Mobilization of Education. The government’s communications with the universities on these issues came in the form of the series of confidential memoranda. See U.S. Department of Higher Education, National Education Association of the United States, “Confidential Memorandum No. 2,” 28 September 1950, 1–7. For the quote about extent and degree, see “Confidential Memorandum No. 4,” 19 January 1951, 4–5; quote on 5; on the demoralizing effect on high-school students on 3. See also “Confidential Memorandum No. 5,” 5 March 1951, 5.

planning of military manpower that would become a permanent fixture of American higher education, according to one government publication, "regardless of the outcome in Korea." The considerations of another war mobilization were not lost on the students, who remembered their seniors' experiences less than a decade before. In 1951 University of Texas Daily Texan editor Kelly Crozier commented: "Summer school will see hurrying males who want to get in a few hours before Uncle Sam puts their skills on a different level....Fear of the Korean situation and the services—no. There is more a feeling of waiting, of uncertainty. Why plan? Why work hard on school? Why seek job interviews? Why anything?"

In 1945, having emerged from a decade and a half of depression and war, American colleges and universities considered the postwar years a time to re-energize, creating plans for postwar growth and developments. Regarding finances, it was clear that the universities were going to require much greater amounts of money to continue fostering diversified research capabilities in rapidly growing scientific and technical fields. What was less clear was how to raise this money and, for the question of funding to publicly supported institutions, how to distribute funds among them. The University of Texas and Texas A&M (especially the former) were setting more ambitious growth goals and developing a keener sense of competition with national, not just Texas, peers. As hitherto more specialized institutions (agricultural, technical, teachers' colleges) were gaining undergraduate enrollments and seeking to diversify their curricula, there was

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pressure on the state to spread state higher educational funding more evenly. One reason to act quickly on future funding prospects, government-subsidized veteran tuitions stood to fall as the veterans graduated. In 1947 a public referendum approved an amendment to the state constitution to add an ad valorem tax of five cents per hundred dollars of land to fund the state’s public institutions other than the University of Texas and Texas A&M. A separate referendum passed, issuing $10 million and $5 million worth of bonds to those two universities, respectively. \(^{52}\)

In the face of continued efforts by other public institutions and some Texas politicians seeking to reduce the primacy of the University of Texas and Texas A&M in favor of funding all Texas public colleges and universities more evenly, the University of Texas and Texas A&M publicly advocated their flagship status. President Painter of the University of Texas argued in 1949 that the continued management of the lion’s share of state higher education resources was necessary in order for the university to “flourish as a University of the First Class.”\(^{53}\) In 1953 Texas Governor Allan Shivers reinvigorated the debate by launching an initiative to study the sixteen state-supported colleges and universities in Texas to identify the proper role of these institutions and to operate them according to the “realistic needs of the citizens.” Many alumni and constituents of the University of Texas and Texas A&M feared that such a move would cost those flagship institutions their primacy. Further funding increases to the other colleges and universities would likely have involved increased taxes as well, which would have been an uphill

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\(^{52}\) Texas Legislative Council, “Part I of the Educational Survey: General Historical and Legal Background of Public Higher Education in Texas,” 11–24. The budget for Texas A&M in fiscal 1947–1948 was $22.5 million, with $13 million for the main campus at College Station, $1.8 million for Prairie View A&M, $900,000 for North Texas Agricultural College, and $800,000 for John Tarleton Agricultural College. The remaining $6 million was divided almost evenly between the Extension Service and the Experiment Stations. Texas A&M Board of Regents Minutes, 25–26 June 1947.

\(^{53}\) Untitled, typed report by T. S. Painter, [1949], 5.
battle for Shivers in early 1953, having lost popularity with many of his supporters over
his break with the Democrat party during the 1952 presidential election and having
contributed, in the minds of many, to Dwight Eisenhower’s election to the presidency.
Robert Lee Bobbitt, a member of the executive council of the Ex-Students Association of
the University of Texas, wrote a representative letter to University of Texas President
Logan Wilson (president, 1953–1960) in the context of Shivers’ initiative, saying that the
University of Texas should remain vigilant in protecting its status as the “one,
constitutional University.”\footnote{Robert Lee Bobbitt to Logan Wilson, 4 March 1953; Wilson to Bobbitt, 5 March 1953,
University of Texas, President’s Office Records. See also clipping from The Dallas News, 3 March 1953,
n.p., University of Texas, President’s Office Records.} President Wilson was indeed a proponent of strong
university finances and competitive salaries for the professorate and would eventually
leave the University of Texas to serve as the president of the American Council on
Education. Citing the expanding role of higher education, Texas A&M judged that it
needed a permanent fund, as opposed to relying on the annual allotments from the state
and the revenues from its lands. In 1953 incoming president David Hitchens Morgan
said that Texas A&M had “stalled” due to inadequate financing. He asserted that the
state legislature needed to provide more funds to the institution. “Limited financing,” he
said, “strangles the growth of the college or university, saps its vitality—its teaching—its
scholarly output. Without funds, the university becomes static and inevitably slides down
hill.” One thing that Texas A&M did not lack was land; it held over 20,000 acres, much
of which generated annual revenue from the extraction of the natural resources, and some
of this revenue was used for experiment stations and other agricultural and environmental research.55

As for private colleges and universities, despite the wartime federal financial involvement in private higher education, the question of the acceptability of continued federal aid was still on the table. Some feared that lasting federal involvement would make the weaker private institutions suffer to the point of closing or even being assumed by government control. Neither Rice nor Baylor was in true financial danger, with Rice being comparatively wealthy and Baylor having modest means to carry out its operations. Rice and Baylor both consciously sought to maximize their revenues, in Rice’s case to continue competing with a rapidly growing cadre of top institutions, and Baylor, more defensively, to insulate itself from the prospect of depending on revenues from government or other outside sources that administrators feared might limit Baylor’s ability to function as a Baptist institution.

At the Rice Institute, the trustees commissioned an ambitious long-term program for the Institute designed to enhance Rice’s standing. In November 1945 Trustee Harry C. Wiess announced the program, alluding to the affects of the war and its ramifications for increased cooperation between higher learning and the state:

The war, so recently concluded, has brought about far-reaching changes in the world, changes which may either cause the downfall of our civilization or the dawn of a better world. Scientific research and technical ingenuity have unleashed forces that threaten to overwhelm us unless we soon learn to utilize them for the benefit of human welfare and progress.56

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56 Harry C. Wiess, “Rice Looks Forward,” Address delivered to the Association of Rice Alumni, Houston, Texas, 9 November 1945, transcript, typed, Lovett Presidential Papers, [1].
Wiess further indicated that the growth of Texas Gulf Coast industry and commerce and the Institute’s improving financial position allowed the university to expand its programs. The official postwar plan codified a trend that had existed at Rice since its doors opened. Rice’s charter had founded an institution dedicated to letters, science, and art, and President Edgar Odell Lovett and the early trustees had favored science among the three. Now, Rice planned to formally and permanently favor science due to “the emphasis on science and research that is required to meet changing circumstances.”

The Rice Institute decided that the best course of action was to keep its enrollment low (although some moderate expansion was planned) and carefully select where to grow in scope, with the new resources aimed at strengthening existing programs. Each department was to be “developed as far as possible,” with no department being “a service department to some other.” Consulting other leading research institutions in the United States and finding that an index that correlated strongly with academic strength was a low student: teacher ratio, Rice set the goal of lowering this ratio from about 17:1 to 10:1 within a decade. The Rice Trustees resisted the temptation to implement a tuition, which they had considered briefly in 1941, before the acquisition of the Rincon oil field. Without tuition, the Rice Institute had little incentive to accept more students than it could easily handle, or as the university called it, providing “especially good training to a limited number of students.”

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59 On the ratio, see “A Long Range Program for Rice Institute,” final draft; quote on [1]. Rice began charging tuition in 1965, though below the average rate of its peers.
Among the notable undertakings during the postwar years were the construction of a one-million-pound testing machine that could "test the ultimate strength of structures on a relatively large scale." At the time of the installation, no other machine of its kind existed in the South. Another important addition was a nuclear science program with specializations in radio-chemistry, nuclear power production, and application of radio isotopes. A key component of the nuclear science program at Rice was the High Voltage Laboratory with a 5.5 million volt Van der Graff Accelerator paid for by the U.S. Atomic Energy Commission. It was one of only two accelerators of that magnitude in the United States at the time of installation, and the only one in the South.\textsuperscript{60} During the 1950–1951 school year, Rice became more aggressive in seeking new opportunities for growth in scientific fields, as that year the federal government intensified its efforts in soliciting university contributions to a national effort vis-à-vis Korea and the Soviet Union's arms capability. That year, President Houston consciously changed the institute's posture on contract research to a more liberal one, the specifics of which will be covered in the sixth chapter.

The biggest development at the Rice Institute during the period covered in this study was a financial one alluded to previously, the 1942 investment in the Rincon oil field that generated about $300,000 annually—growing yet as oil prices rose—and annually producing over 60 percent of the university's annual budget. Three years after the purchase, Humble Oil President Harry C. Wiess called the deal "[t]he most important

financial event in the recent history of Rice Institute.\textsuperscript{61} The purchase of the Rincon field's financial impact on the school is second only to the initial William Marsh Rice endowment. With Wiess a member of the Board, the group continued to purchase smaller leases in Texas and Louisiana. The money from the Rincon investment and subsequent oil leases returned the Institute to a position of financial strength that it had not enjoyed since before the Depression and separated Rice from many private-college peers whose finances remained relatively moderate.

During the war, William Marsh Rice Jr., the nephew of the founder, died after forty-five years as a Trustee, bequeathing most of his estate to the Rice Institute and adding about $2 million to the endowment. Other persons donated blocks of shares in oil companies, sometimes in amounts measured in hundreds of thousands of dollars. The endowment grew considerably during the war due to the money invested in oil, real estate, mortgages, and generous donations. Harry C. Wiess estimated that in November 1945 the amount of the permanent fund was $27 million, up from about $15 million at the beginning of the war.\textsuperscript{62} Rice's investment portfolio held several stocks that had performed well in the war years and continued to perform well afterwards. Companies in which Rice held stock at this time included Allied Chemical and Dye, DuPont de Nemours, Eastman Kodak, Humble Oil and Refining, Standard Oil of New Jersey, Aetna Insurance, General Electric, American Tobacco, Philip Morris, R. J. Reynolds, Lone Star Cement, J. C. Penney, Sears Roebuck, General Foods, Procter and Gamble, and Decca

\textsuperscript{61} Wiess, "Rice Looks Forward," 4. Wiess says 30 percent. See also John T. Scott, "Remarks of John T. Scott, Chairman of the Board of Trustees of Rice Institute at a Dinner Given by the Trustees to the Faculty of Rice at Cohen House Tuesday Evening, April 10, 1945," Lovett Presidential Papers, 3. Scott says 35 percent.

\textsuperscript{62} See, for example, "Gifts Received during the Period from October 1, 1944 to Date," 19 June 1945, Lovett Presidential Papers. On the endowment, Wiess, "Rice Looks Forward." As an example of correspondence from a donor of oil stock, see W. A. Padock to E. O Lovett, 12 December 1944, Lovett Presidential Papers.
Records. By 1946 the Institute’s stock portfolio gained almost $200,000 annually from dividends alone and received half as much each year in land rents in the City of Houston. Most of Rice’s investments, however, were in the bond market. Bond holdings comprised about eighty different issues, ranging from utilities in foreign countries to railroads to U.S. treasuries.63

At Baylor, the prospect of denominational and/or private colleges being put at further disadvantage as a result of increased tax support for public schools caused a new wave of paranoia. Business manager Roy J. McKnight noted as much in his 1950 report to White and the Baptist General Convention of Texas (BGCT), invoking a warning from U.S. Office of Education official John Dale Russell, who said that denominational colleges and universities would likely decline in relative strength to public counterparts.64 Baylor publications in the early 1950s appealed to alumni and those in the community for financial support on the grounds that Baylor was a holdout of Christian education, a defender of civilization, and could not continue to operate in a time of reduced tuition income (loss of GI Bill tuitions) and the expenses of maintaining its expanded facilities. Under W. R. White’s direction, the Greater Baylor Campaign was a ten-year effort to raise $50 million for Baylor’s permanent fund. One plea said that, of corporations that had already donated, “They believe that these schools must be efficient and strong along

63 On the stocks, see “Watching List, William Marsh Rice Institute,” typed, 1944, Lovett Presidential Papers. On the bonds, see “Discount Bonds,” typed, 1944, Lovett Presidential Papers. Also among the bond issues were local municipals, including county road districts, five independent school districts, The City of Houston, the City of San Antonio, the State of New Mexico, and the Houston Ship Channel. The only sector in which the Institute performed poorly was in interest-bearing discount bonds of republics in the Caribbean and Latin America. On the combined portfolio, see “Comparative Statements of General Revenue Accounts,” typed, 1944, Lovett Presidential Papers.

64 Roy J. McKnight, report to W. R. White and the BGCT, 4 April 1950, W. R. White Papers. McKnight referenced Thad Lewis Hungate, Financing the Future of Higher Education (New York: Bureau of Publications, Teachers College, Columbia University, 1946), which argued that without sufficient finances of their own, private colleges in the second half of the twentieth century would move toward federal assumption.
side tax supported schools if the priceless principles of the American way of life are to be preserved."\footnote{56} Businesses, churches, and individual donors comprised the majority of contributors in numbers, but corporate gifts of stock, mostly in oil companies, represented the majority in dollars.\footnote{66}

In January 1947, to compete with peer institutions and to satisfy the remaining accreditation agencies, the Baylor board adopted a plan to improve the graduate school, expand the library resources, reduce faculty teaching loads, increase teacher salaries, institute employee retirement plans, and adopt a tenure system for faculty. The plan proved a sore point between President Neff and the trustees, for Neff cared little about advancing Baylor's status as measured by national standards and competitive financial markets for personnel. Neff retorted that "libraries and laboratories and buildings and bank accounts do not make a university and never will. It takes men and women, it takes tradition, it takes sentiment, it takes curriculum to build a university."\footnote{67}

Due to a confluence of events resulting from a conflict between Neff's anachronism and stubbornness and a slightly more modern-minded board, the Baylor trustees voted him out of office in the fall of 1947.\footnote{68} His replacement, Dr. William

\footnote{56} For an example of such a plea, see The Baylor Line (May–June 1951), 1. White’s quote from W. R. White, Greater Baylor Campaign form letter to prospective donors, 26 May 1953, W. R. White Papers.

\footnote{66} In 1950 the Baylor University College of Medicine received its own oil windfall, in the form of a 50-percent ownership in the Simmons Estate, which in some years yielded an amount of money equal to the $100,000 per year that the M. D. Anderson Foundation gave to the Baylor College of Medicine. Like Rice’s acquisition of the Rincon field, Baylor’s interest in the Simmons Estate took some legal maneuvering and in this case involved a last-minute, apparently falsified holographic will that contested Baylor’s receipt of the property. Baylor hired the well-known attorney and Baylor alumnus Leon Jaworski to represent the school and oversee the successful transfer of interest in the property. Trustee Minutes (Houston Board), 29 May 1950, 3–4; Ibid., 30 May 1955, 2.

\footnote{67} On the plan, see The Baylor Lariat, 31 January 1947. Quote from Neff, from a speech delivered to the Baylor University faculty on 30 January 1947, Pat Neff Papers.

\footnote{68} There were also two specific incidents in 1947 that cost Neff support. Neff fired business manager McKnight over philosophical differences about the university’s business affairs, but the board overrode Neff. Secondly, an oddly important event jeopardized Neff’s support from the clerical faction of
Richardson White, a pastor who had formerly served as the president of Oklahoma Baptist University and Hardin-Simmons University, took office as Baylor president in early 1948 and initiated a series of changes favored by those who wanted the university to modernize. White envisioned Baylor as an institution stronger in the sciences, business, and graduate programs; and he also believed that in order to be relevant as an educational institution, it would have to develop a business infrastructure and remain financially strong. White did not consider Christian teachings and new educational opportunities as mutually exclusive and believed that Baylor was the only Baptist university in the country that was in a realistic position to undertake advanced study across the disciplines.⁶⁹

In 1952 Baylor’s endowment measured a meager $1,012 per student. As at many private universities, government underwriting of its tuition costs had prompted substantial tuition rate increases, often amidst controversy. In 1945 Baylor raised the

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tuition from $270 to $345 per year. Some asserted that Baylor was behaving unethically by maximizing its receipt of federal dollars, and some members of the BGCT and the pastoral community were especially upset. One alumnus penned a letter to the members of the board of trustees: “One reason the board raised the tuition this year was to get Uncle Sam’s ‘easy money’ which in the getting of this money, the Board was in its legitimate rights but was not in its moral right in continuing to ‘soak’ Uncle Sam who is in debt to such a serious degree that it will take generations to pay.” The trustees defended the increase, citing as their basis a small endowment, the need to raise faculty salaries, economic inflation, and comparative tuition increases of other Texas universities (Texas Christian University, 17 percent; the University of Houston, 20 percent; and Southern Methodist University, 25 percent).

An aspect of post-war finance that affected all of the universities in this study was faculty salaries. With competition from top universities, national laboratories, government positions, and the myriad opportunities in the private sector, the market for skills in some disciplines created disparities in salary levels at the expense of the humanities and some geographical locations such as the South, Southwest, and parts of the Midwest. Other considerations in faculty salaries were more comprehensive benefit packages such as retirement annuities. One of the major points of the aforementioned

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70 Considers a three-quarter year: fall, winter, and summer. A student attending Baylor in the summer session as well would pay $460 for the year.
71 E. G. Gregory to Baylor board member Ray Dudley, 4 October 1946, Pat Neff Papers.
72 Ray Dudley, to E. G. Gregory, 17 October 1946, Pat Neff Papers. George Irving, in a letter to E. G. Gregory, 23 October 1946, Pat Neff Papers. For the percentages at the other universities, see “Meeting of the General Board of Trustees,” 30 April 1946, Pat Neff Papers. Neff wrote to previous benefactors and friends pleading for donations. Writing to one trustee, he said, “I need your help, my good friend, in and around Baylor University. Baylor is growing. We are really having ‘growing pains.’” Pat Morris Neff, to trustee Marrs McLean, 26 February 1946, Pat Neff Papers. The university’s debts by 1947 had risen to almost $1 million, and with maintenance costs of an expanding physical plant, the amount would increase. Roy J. McKnight, “Financial Report,” 30 October 1947, Pat Neff Papers. Roy J. McKnight, “Financial Report for Fiscal Year 1946–47,” 30 October 1947, Pat Neff Papers.
long-range plan at Rice, for example, was to increase the salaries of faculty to compete 
with other top universities. Rice was generally able to implement salary raises, with the 
average raise being about 20 percent, with some over 50 percent.\textsuperscript{73} Hoping to retain and 
attract instructors amid a high turnover rate, Baylor increased wages for all faculty, with 
the average raise being about 15 percent. (Whereas Neff had proclaimed that “if there is 
any faculty member who would go somewhere else because you are offered six bits more 
salary, then you ought not to be here at all,” White considered teacher salaries a top 
priority.)\textsuperscript{74} Even as the University of Texas and Texas A&M appeared to be the two 
favored public institutions, many Texas A&M administrators and faculty saw a gap 
between the two. One of the complaints at A&M was that professors at the University of 
Texas received higher salaries, and A&M professors asked the state to make them 
equal.\textsuperscript{75} When recruiting faculty, Texas universities cited the low cost of living in Texas 
compared to the coasts and Northeast. To what extent this persuaded job candidates is 
unknown, nor is the extent to which the stigma of an academic appointment in Texas 
compared with traditionally more prestigious locales in New England and the Northeast 
complicated faculty recruitment.\textsuperscript{76}

\textsuperscript{73} Untitled table that contains a list of the faculty members along with each member’s pre-war pay 
and rank compared with the “present.” Though undated, the table was used to compose a report dated 1 
October 1945. Lovett Presidential Papers. 
\textsuperscript{74} On the turnover, see Pat M. Neff, “Report of Baylor University to the Baptist General 
Convention of Texas,” 10 March 1944, Trustee Minutes (Waco Executive Branch). This turnover rate was 
evident in a report that for the fall of 1948, of thirty-six new hires, fifteen replaced teachers who had 
resigned at the end of the previous year. \textit{Waco Times-Herald}, 12 September 1948. Quote from Pat M. 
Neff, from a speech given on 30 January 1947, transcript, Pat Neff Papers. On White, see Baylor 
University Board of Trustees, minutes of the meeting of 13 April 1948, Trustee Minutes. 
\textsuperscript{75} Texas A&M Board of Regents Minutes, 24 November 1943. 
\textsuperscript{76} “A Long Range Program for Rice Institute,” final draft. For a similar discussion of a southern 
university, Vanderbilt, which like Rice sought to become more competitive outside of the South and 
followed many of the same trends as did Rice, see Paul Conkin, assisted by Henry Lee Swint and Patricia 
S. Miletich, \textit{Gone with the Ivy: A Biography of Vanderbilt University} (Knoxville: University of Tennessee 
As noted above, the end of World War II witnessed a national trend of colleges and universities undertaking programs of growth. In addition to whatever philosophical or subjective matters these plans addressed, a large part of the change was the expansion of the physical plant. At Rice, as of 1945 the trustees were conservative in physical growth projections, with the first planned building project being a library, which Trustee Wiess said would be modern, costly, and attractive, proving prescient at least on the first two points.77 Additional Rice facilities included the Abercrombie Engineering Laboratory and the High Voltage Laboratory with its particle accelerator, M. D. Anderson Hall (classrooms and offices), Wiess Hall (men’s dormitory), a home for the president, and a seventy-thousand-seat football stadium built by Houston contractor Brown and Root.

In 1945 work began at Baylor on completing the Student Union Building, which had stood unfinished throughout the war. The other three main projects at the Waco campus during the postwar period were the Herbert Lee Kokernot Residence Hall, the Tidwell Bible Building (classrooms and offices), and the ornate Armstrong Browning Library (a building to house the collection of manuscripts and other materials owned by poets Robert and Elizabeth Browning plus offices of the English Department). Neff appeared to be comfortable with these moderate construction initiatives but resisted the call by some to grow much more, once signing a letter with, “yours for a better Baylor though not necessarily for a bigger Baylor.”78

The University of Texas was continuing its aggressive expansion, which President Painter said would “vastly increase its usefulness to the citizens of the State.” He argued

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78 Pat M. Neff to D. K. Martin, 24 August 1947, Pat Neff Papers.
that, in order to remain competitive with other institutions, the university would have to make itself attractive to both students and faculty, that present facility constraints hindered this, and that the university was going to go forward with expansion "even in the face of extremely high costs."\textsuperscript{79} Indeed, the postwar period witnessed substantial and expensive increases in campus facilities, including a group of apartments in 1947 (intended to be temporary but lasting until the 1980s), a student health center (1950), the $4.3 million Experimental Science Center (1951), a $1.2 million Pharmacy Building (1952), Batts Hall for modern languages (1952), Mezes Hall for psychology and philosophy (1952), Benedict Hall for math (1952), a journalism building (1952), and Townes Hall for the law school (1953). Other priorities for growth included additions to the Dental Branch and the M. D. Anderson Hospital in Houston.\textsuperscript{80} In 1948 the university founded the Postgraduate School of Medicine with M. D. Anderson as the teaching hospital. When the University of Texas decided to found a new hospital, the board of the independent Southwestern Medical College offered to donate its facilities if the university chose Dallas. The university accepted, and the resulting school was the Southwestern Medical School of the University of Texas, which in the mid-1950s moved to a new location in Dallas and was re-named as the University of Texas Southwestern Medical School.\textsuperscript{81}

In 1945 Texas A&M launched a program of campus upgrades, including renovations to virtually every building on campus. The primary construction projects and/or additions to the A&M campus during the post-war years were the Memorial

\textsuperscript{79} Untitled, typed report by T. S. Painter, [1949], 2–5; quote on usefulness to the State, 5; quote about cost on 3.

\textsuperscript{80} University of Texas, Board of Regents Minutes, 26 November 1943, 1–4.

Student Center (1950), the Agricultural Farm Facilities (1951), the G. Rollie White Coliseum (1954), the Veterinary Sciences Building (1954), and approximately $1.4 million worth of upgrades to campus utilities over 1951–1955. Little of the significant physical expansion in the A&M system carried over to the branch colleges of Arlington State, Tarleton State, and Prairie View A&M, with expenditures at those colleges generally limited to renovations and a few new dormitories. Arlington State College had the most aggressive building programs of the branch campuses, mostly to accommodate the dramatic increase in the applicant pool of the north Dallas suburbs. The city of Arlington was one of the country’s fastest growing areas, with the population almost tripling between 1950 and 1955. Prairie View A&M and Tarleton State, more rural and stressing agricultural and vocational work, witnessed more moderate enrollment and campus physical growth.

The immediate postwar years were indeed a time of pronounced change for the American university. The late-1940s peak in veteran enrollments was quickly regained and surpassed in the next few years by regular undergraduates in an expanding higher education system that served a growing—if still relatively privileged—segment of the population eager to partake in the postwar prosperity. Utilitarian trends that had been taking hold in the early-twentieth-century curriculum were now met with the approbation of the public and by many in the academy, as university credentialization equipped a growing class of businesspeople, professionals, and others in the burgeoning service

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sector. From within the university, the professorate, the administrators, and the board members found an opportunity to assert themselves and their institutions in an age wherein the university had staked out a new importance. Having contributed to the winning of a world war that was seen as not only a military victory but also proof of cultural supremacy, the university was poised and willing to continue its influence. Accordingly, the next and final chapter will look specifically at the debates surrounding the university participation in the federal research agenda. These programs were vehicles to serve a national purpose, and the operation of such programs was so rewarding—professionally, personally, financially, and for the university’s reputation in general—that they came to play a defining role in how the institutions developed. Federal funding reshaped American higher learning, and this development from World War II on necessarily helped make U.S. and southern higher education an integral component in America’s influence in a contested postwar world.
CHAPTER SIX

War, Peace, and the Research Agenda

In February 1952 Rice Institute President William V. Houston delivered an address on the nature of scientific research in the postwar university. Times were moving fast, he said—new methods were coming along and supplanting the old. Houston quipped that the old way was that if you wanted to conduct research, you first needed an idea. The new way was that if you wanted to conduct research, you first needed a contract. Better yet, he said, fuse the old with the new: have an idea where to get a contract.\(^1\) By that year the conduct of university research had changed quite noticeably from the prewar era. During World War II federal patronage emerged as a major, if not the primary, factor in the direction of the national university research agenda. Government-sponsored programs ranged from the creation of entire laboratories to small experiments. Most projects were rather moderate, usually providing work for a single professor and perhaps a graduate student for a period of a year or two. A 1955 case serves as an example of how much the research climate had changed from the prewar era.

When the National Science Foundation (NSF) and the Atomic Energy Commission

\(^1\) William V. Houston, "Research," Address delivered at the Sigma Xi Luncheon Meeting, Houston, Texas, 14 February 1952, typed notes on index cards, Houston Presidential Papers. In making these remarks, Houston was loosely paraphrasing from a paper he remembered hearing in the past. His statement of having an idea where to get a contract, Houston sketched out a humorous story about the kinds of issues that were confronting researchers who dealt with government contracts. He gave the hypothetical example of the Navy and Air Force both commissioning a study to examine the chemical constitution of the star Sirius. He said that the Navy might classify the research only "confidential" because surface naval vessels only navigated in two dimensions, but the Air Force might make its contract "secret" because airplanes navigated in three dimensions. Houston surmised that the line between confidential and secret might be set at an arbitrary five thousand angstroms, and those contracting with the Navy could use a filter that blocked out everything over five thousand, while those contracting with the Air Force could use a filter that blocked out everything under five thousand. But since this arrangement would create complications of coordinating the Navy’s and Air Force’s findings with one another, Houston joked that it was probably better to just pick one of the two contracts. "Research," 18–23.
(AEC) coordinated to fund multi-million-dollar accelerators at selected universities, the letter to the schools went out on 6 July; proposals were to be submitted back to the AEC by 22 July; and the AEC planned to make the first cut by 8 August and make final decisions on 1 October. Despite this pace, numerous universities submitted proposals.\(^2\)

This chapter will consider, given the context set in the previous chapters, how it came to pass that during World War II and the immediate postwar years the university became a regular contracting partner with the federal government and how the university, as then-General Dwight Eisenhower put it, became an “organic part of our military structure.”\(^3\)

The emphasis will be on federal versus commercial corporate funding, but as will be seen, the two were frequently intertwined. The chapter will also look at the participation of southern universities in this process as they, both less able and initially less willing than most of their nonsouthern counterparts, eventually joined the national mainstream in a government-university partnership.

It was not a forgone conclusion that the government would turn to the universities for this service. Private industry was involved in many of the same investigative pursuits and did not have to face the consideration of whether war research was incompatible with its character. Perhaps the most salient observation here is that the government did turn to both the university and the firm, but the issue was simply more problematic at the universities, in the sense that Dupont building a machine for the Navy or a piece of

\(^2\) T. H. Johnson, AEC Director of Research, to W. V. Houston, 6 July 1955; Houston to Johnson, 20 July 1955; Johnson to Houston, 4 August 1955, Houston Presidential Papers. Rice responded to the AEC that it was interested but could not produce a serious proposal in so little time. Enough universities apparently did submit some form of proposal—nine institutions made the first cut, including the University of Chicago, a joint Harvard-MIT proposal, and Princeton.

\(^3\) U.S. War Department, Office of the Chief of Staff, “Memorandum for Directors and Chiefs of War Department General and Special Staff Divisions and Bureaus and the Commanding Generals of the Major Commands,” [April 1946], typed; quote on 2, signed by Dwight Eisenhower, University of Texas, President’s Office Records.
ordnance for the Army, while important in the history of industry's contractual association with the government, raised no philosophical concern and created little spectacle, whereas a university doing such work inherently bore on issues of identity and purpose. It is also worth noting that the DuPonts of the world did not, like universities, employ reflective intellectuals in humanistic pursuits who bought their ink by the gallon and who wrote critically of the changes affecting their professional environs. Lastly, the most publicly recognized wartime programs, those concerning the development of the atomic bomb, were associated with universities. They generated keen public interest and for a time made the name of one certain university—Chicago—virtually synonymous with war research.

World War II was by no means the beginning of federal support for university activity. Prior to World War II the U.S. government underwrote university activities through agencies such as the Department of Agriculture, the Geological Survey, the National Academy of Sciences, and especially the system of land grant colleges such as Texas A&M. During World War I the Woodrow Wilson Administration established the National Research Council (NRC) to sponsor and delegate tasks to scientists and technicians working in fields relevant to war needs. In the 1930s proposals advocating overarching federal subsidization of higher learning gained little traction with the administrations of President Herbert C. Hoover and even President Franklin D. Roosevelt, despite appeals of top educators such as Massachusetts Institute of Technology (MIT) president Karl T. Compton and Johns Hopkins president Isaiah Bowman. Private support from foundations and businesses had increasingly come to play a role in higher education, whether as goodwill gifts or for specific research with
commercial or industrial applicability; all four institutions in this study benefited from such. It is worth noting that some of the Rockefeller Foundation grants in the 1920s and 1930s went to cyclotron and accelerator research, which enabled key wartime research later.\(^4\) The above support, however, paled in comparison to the magnitude and regularity of federal funding that began in World War II.

It is not surprising that defense research at such a scale required a tremendous commitment of financial resources. During the war, government money flowed into the university system, beginning with large amounts at a select few universities and then spreading out more evenly via smaller projects funded by the various wartime sponsoring agencies as the war progressed. Of the universities in this study, the University of Texas was by far the most prolific in performing sponsored research for the government. The Rice Institute and Texas A&M undertook a fair amount, but without the faculty size and dedicated defense research facilities such as those at the University of Texas, their war work was moderate. With the exception of its College of Medicine, Baylor University did virtually no war research. The contributions of these universities are covered below.

Between mid-1940 and the beginning of 1942 the U.S. defense budget increased tenfold, from about $2 billion to $20 billion. The U.S. Office of Facts and Figures said that this latter amount was “only a fraction of what we must do to survive as a free nation.”\(^5\) Even at universities with well-developed research programs already in place, the amount of government funding was now far greater than that from most other sources

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combined before the war. Historian Daniel J. Kevles gives the example of the young scientists at the MIT Radiation Laboratory thinking little of signing hasty orders for costly equipment that theretofore would have "deadlocked a faculty," and that of the contract at the University of Chicago for the operation of the plutonium works in Oak Ridge, Tennessee, which reportedly doubled the university's budget with a penstroke.⁶

This level of funding was enabled by a cycle wherein a reviving wartime economy bolstered the tax intake, as did a series of acts that restructured the tax system for the individual and the corporation, significantly increasing tax receipts during the war.⁷ A number of conditions, as discussed below, prompted the government to place a high priority on scientific research after the war was over. As Rear Admiral H. C. Bowen put it in 1946, unless the United States further increased spending on scientific pursuit immediately, we would be "opening ourselves to disaster."⁸ By 1950 the U.S. defense budget had increased to $50 billion, with a significant proportion of that allocated to research and development.

One problematic issue for the academy was classified research. During the war, pursuing lines of academic inquiry with secrecy and having restrictions on the dissemination of the results was justified as being on an emergency basis and in the national interest. Universities and individuals, however, were less willing to continue classified research after the war. Not only did doing so run counter to the historic

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openness of the academy, but also, the procedures one underwent to gain a security clearance involved statements of creed and of loyalty, not to mention paperwork and administrative hassles. The administrative documentation, proper storage, and destruction of written materials and other resources contributed to what some scientists have dubbed the “nuisance value” of military research. Harvard President Nathan Pusey later said that the logistics of military and government projects had the tendency to turn scientists into administrative officers.9 Making these compromises, though, was an important step in deepening the relationship between the university and the government. The University of Texas initially did not accept classified research due to both a general uneasiness about secrecy and the restrictions on professors being able to make their findings public. University of Texas President T. S. Painter told the U.S. War Department as much in 1946, which responded to Painter that it regretted the university’s restrictions, as it ironically called them. By about 1950 most of the major research universities were taking on classified projects, and others were beginning to follow. In 1951 President James B. Conant of Harvard told Rice president William V. Houston frankly that: “I don’t like linking secrecy with academic research,” yet he conceded that he had begun to accept it nonetheless. The board of the Texas A&M Research Foundation formalized its willingness to conduct classified research during a series of 1953 negotiations.10

10 T. S. Painter to Colonel E. D. Regad, War Department, St. Louis Ordnance District, 13 November 1946; Regad to Painter, 29 November 1946. University of Texas, President’s Office Records.
As for the South, even had southern universities been more willing, few had the personnel and material resources to participate in the more important work—perhaps fewer than a dozen were in any position to participate seriously. During the war the government pursued a pragmatic course with the universities, understandably showing little regard for any factor other than which ones were most capable and could act quickly. As the war progressed and the scope of federal patronage grew, more schools, including several in the South, were drawn into the fold. After the war, southern universities were slow to take on federal research, generally a function of scant resources and non-research-oriented faculty. But some of the larger state universities and leading private universities did participate at levels consistent with the rest of the country, and by the mid-1950s, federal funds were commonplace at most of the top universities in the South. William G. Pollard of the AEC said that the work performed at the University of Texas, the Rice Institute, and Duke University was of world-class caliber at its time.\footnote{William G. Pollard, \textit{Atomic Energy and Southern Science} (Oak Ridge, Tennessee: Oak Ridge Associated Universities, 1966), 23.}

The University of Texas was one of the few southern educational institutions with developed programs across the spectrum of academic fields, along with the University of North Carolina, and increasingly the Universities of Virginia and Maryland. Texas A&M struggled to maintain a research-level faculty and was a pragmatic teaching and applied-science university. Among the public universities in Texas, only the main campuses of the University of Texas and Texas A&M had experience with anything like an advanced research program, and during the war they were the only public campuses in Texas to perform significant contract research, some work at the Experiment Stations excepted.
By 1952–1953 the University of Texas and Texas A&M each had over $3.5 million in contract research, while the next highest was North Texas State College with under $13 thousand.\textsuperscript{12} Rice undertook significant war work but distinguished itself from other schools of its caliber by generally disengaging after the war. Rice’s moderate postwar plan was evident in both its selectivity in adding academic fields slowly and emphasizing quality. Despite some local benefactors and a few federal projects—including the acquisition of a van de Graaff accelerator from the AEC in 1946—most of Rice’s postwar expenditures were initially drawn from the interest on Rice own financial resources.

William T. Golden, the main consultant for a science advisement committee to the president in 1950–1951, found that virtually every major U.S. university’s science program was dependent on federal funding; Golden’s notes said that the lone exception was the Rice Institute.\textsuperscript{13} Most of Rice’s government-sponsored activity was done after 1950 and came from the standard sponsoring agencies: the military, the National Institutes for Health (NIH), and the AEC. It was after the period covered by this study, the post-Sputnik aerospace and defense boom in 1957–1958, that brought Rice more fully

\textsuperscript{12} About 70 percent of the University of Texas funding for contract research came from the federal government. At Texas A&M, state and private funding represented the majority of the funding, with most of the federal funding being for the Experiment Stations. Texas Legislative Council, “Table IV: Expenditures for Organized Research by the 18 State-Supported Colleges and Universities, Fiscal Year 1952–53,” in “Organized Research and Public Service Programs: Parts V–VII of the Report on Texas Higher Education,” 1954. 8. Texas Western College had a seemingly inexplicable contract research total of $9.25.

into the national research mainstream. Baylor University is largely absent from this chapter because it was a teaching institution with little capability for advanced research. Under Pat Neff’s tenure (1932–1947), Baylor was especially disinclined; in Neff’s 1947 fifty-six-page annual report on the university, research received just one passing mention. The only project of note associated with Baylor—but which was an important one nationally—was the Dallas-based Baylor Hospital’s development of a serum during World War II that enabled field tests of the Rh factor in blood, permitting reliable battlefield blood transfusions.¹⁴

By the time the United States formally entered the war in December 1941, there was a domestic defense industry in place, and universities were already engaged in a variety of wartime research. Spurred by wartime immediacy, some of these fields proceeded at a pace unprecedented in prewar times. Communications technology was such a field, with military units on the ground, air, and sea relying on radio and other forms of what a Texas A&M publication called the “modern ‘push-button’ era” of communications. Radar, sonar, and nuclear physics were other fields subject to rushed research activity. Military units operated with greater sophistication now and integrated technology into their operations. The Army Corps of Engineers, for example, had recently expanded its traditional functions of construction, flood control, and disaster

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¹⁴ Pat M. Neff, “Report of President Pat M. Neff to the Board of Trustees, Baylor University, October, 1947,” typed, Pat Neff Papers; quote on 50. Even when Baylor administrators wanted to expand Baylor’s capabilities into doctoral study, one of the telling inhibitors was the paucity of professors holding the Ph.D. degree. W. T. Gooch, Dean of the Baylor Graduate School, report to W. R. White and the board of trustees, 22 May 1951, Baylor University Trustee Minutes. On the blood test, see The Baylor Century (January 1944), 5.
relief, to include more advanced work on biological weapons, radiology, and toxicology.\textsuperscript{15}

In the context of World War II, the term “atomic physics” is practically synonymous with the Manhattan Project, which developed the first nuclear bomb under the scientific leadership of physicist J. Robert Oppenheimer. Between November 1942 and January 1944, the Army constructed a massive atomic energy facility in the foothills of the Smokey Mountains along the Clinch River near Oak Ridge, Tennessee. The actual construction of the facilities was performed by Du Pont and the management assumed by the University of Chicago. The main structures were two gaseous diffusion plants, an electromagnetic plant for the production of Uranium 235, the Clinton Laboratory, and a steam power plant that produced twice the kilowatts of the nearby TVA Norris Dam. The facility was home to the first major nuclear reactor, the X-10 Pile. The successful isolation of plutonium at Oak Ridge in 1944 was a breakthrough in nuclear physics and was integral to the development of the atomic bomb.\textsuperscript{16}

In June 1940 the Roosevelt Administration commissioned the National Defense Research Committee (NDRC) to coordinate research on mechanisms and instruments of warfare. Created with the advice and direction of university scientists, the NDRC facilitated several million dollars worth of contracts during its first year. Early on in the war, most of the research was conducted at a select few universities, and many of the


\textsuperscript{16} See AEC, “Basic Facts on Clinton Engineer Works: Its Operating and Research Units and the Community of Oak Ridge,” Oak Ridge Office of Public Information, [1947?], copy in University of Texas, President’s Office Records.
country's leading scientists were tapped for defense projects. A December 1941 study found that out of the persons listed in the current edition of *American Men of Science* who had stars by their names (meaning that their peers had elected them as being leaders in their field), about three-fourths were involved in military work.\(^{17}\) The NDRC sponsored a physics laboratory at the University of Texas that focused on aircraft gunnery, as discussed later.

The desire for an agency to be responsible not only for research but also for development led to the aptly named Office of Scientific Research and Development (OSRD). Engineer Vannevar Bush, the organization's director, announced the OSRD to the broader scientific community in December 1941: "I will now tell you of a new organization....Of the work itself I can not of course tell at this time, but it will be a striking story when it is finally revealed."\(^{18}\) Its advisory committee contained thirteen military officers and eight scientists, including National Academy of Sciences President Frank Baldwin Jewett and Harvard President James B. Conant. Important OSRD-supported projects included the development of the proximity fuse at Johns Hopkins's Applied Physics Laboratory, numerous explosives and small arms, and perhaps most importantly, the Manhattan Project (the University of Chicago) and other laboratories. The OSRD became the premier wartime funding agency of defense research and was lauded for its model of being so amenable to the parties involved and for its influence on the government-university partnership after the war. The OSRD gave the researcher significant freedom and used scientists to adjudicate project proposals in their fields. Its director Bush had regular access to President Roosevelt, who gave Bush a virtual *carte

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\(^{18}\) Ibid., 573.
blanche to circumvent some of the bureaucratic processes and red tape with agencies such as the General Accounting Office.¹⁹

Many critics charged that the nature of federal contract research was too elitist, at the expense of individuals outside of universities or major firms. This issue would become important in debating what form, if any, the peacetime sponsored research programs would take. For the time, partly as a salve to allegations of elitism, the National Inventor’s Council (NIC) was established in cooperation with the U.S. Patent Office to review relevant outside submissions—or as MIT President Karl Compton put it, “the interesting suggestions out of the great masses.” Upon identifying a project or invention that was appropriate for the OSRD or one of the other federal funding agencies, the NIC helped arrange the contract.²⁰ A lesser-known entity called the Joint Committee on New Weapons and Equipment (JNW) coordinated the results of the work of the OSRD and other entities and integrated it into the capabilities of the Army and Navy. In November 1944 President Roosevelt lauded the OSRD’s effectiveness and looked forward to the day that “the full story of its achievements can be told.”²¹

Of the nuclear physics research at Rice during the war, about two-thirds of it was under contract with the OSRD. Rice physics professor H. A. Wilson led a small team of professors on OSRD projects in that subject. Their work may have been part of the Manhattan Project, since several telegrams from U.S. Army General Leslie Groves to President Edgar Odell Lovett said to keep secret “the Project of the Manhattan Engineer

²⁰ Karl T. Compton, “Organization of American Scientists for the War II,” Science 98, no. 2535 (30 July 1943), 96. This was a print version of Compton’s Pilgrim Trust Lecture, which he delivered at the Royal Society of London, London, England, on 20 May 1943.
District," asking for "cooperation by your entire organization and by each of your subcontractors." Another telegram from Groves to Lovett on 17 August 1945, soon after Nagasaki, states that "Official declaration of hostilities with Japan does not in any way alter security limitations on the release of information on the atomic bomb project....Loose talk and idle speculation by persons now or formerly connected with the project jeopardize the security of the nation and must be controlled." Two other Rice professors involved in OSRD work were Dr. W. E. Bennett and Dr. H. T. Richards.

Not surprisingly, given its military emphasis, Texas A&M undertook a great deal of war work. Texas A&M leveraged its prewar programs in agriculture and food processing, which had applicability to the military's need for feeding its personnel overseas. It was during the war that Texas A&M Research Foundation was established (1944), and many of its contracts came from government agencies for defense research. University of Texas personnel also explored methods of food dehydration and freeze-drying foods for use by the armed forces, which expanded the military's ability to supply units in the field. Wartime investigation in materials and synthetics was driven by the scarcity of imported raw materials, including the loss of rubber imports from Southeast Asia. The federal government subsidized research in guayule, a rubber-producing shrub in West Texas, and which several departments at Texas A&M investigated. In 1942 the University of Texas reported that the university's geologists were "combing the State in the biggest mineral hunt that Texas has ever known," in connection with war work.23

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23 On food research at the University of Texas, David Botter, A University Goes to War (Austin, Texas, 1942), printed from a mimeographed report by David Botter and edited and published by the University of Texas Department of Public Relations, 3:1; on the mineral hunt, 12.
Of the universities in this study, the University of Texas did by far the most war research. Whereas informed Texans during World War II seemed to know plenty about supposed controversial activities in the University of Texas economics and English departments, very few knew what the physics department was up to. In 1942 the NDRC established the War Research Laboratory (WRL), also known as the War Physics Laboratory (WPL), at the University of Texas, which worked on improving aiming systems on aircraft gunnery. Some of this activity was performed in cooperation with the Applied Physics Laboratory at Johns Hopkins. The university allowed professors to work part-time at the WRL, reducing their regular teaching duties by one-third or one-half along with a corresponding pay cut, and the WRL provided them a stipend. Malcolm Y. Colby, executive director of the WRL, reported that the laboratory had been responsible for "a number of inventions." OSRD projects at the University of Texas main campus covered the gamut of scientific disciplines, and the Medical Branch at Galveston also performed OSRD work as well.

The World War II and postwar era was a boom time for American science in general. The commercial and military applications of wartime research stimulated work in many fields. Also, because it appeared as though war-torn Europe would no longer be, at least for a while, in the world's scientific vanguard, many European scientists emigrated to the United States. Projects Paperclip and Matchbox brought European scientists to the United States and England, respectively, and postwar recruitment brought more European scientists west, both to strengthen Western science and as a zero-sum attempt at keeping that talent away from the Soviet orbit. American science thus began

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24 For Colby's statement about a number of inventions, M. Y. Colby to T. S. Painter, 28 November 1944, University of Texas, President's Office Records.
the second half of the twentieth century more capable, better-funded, and with a popularly recognized importance. But with the war over, there was much disagreement over how, if at all, the government should remain a significant sponsor of university research. The NSF was eventually implemented for this purpose, but the void left by the absence of a single entity from 1945 to 1950 was filled by other funding agencies, most of which promoted defense research. General Dwight D. Eisenhower advocated the need for continued cooperation between the military and civilian researchers. In a four-page memorandum that could be called a short manifesto for the military-industrial complex, Eisenhower argued for civilian and university research to become an “organic” part of the military. “The association of military and civilians in educational institutions and industry,” he said, “will level barriers, engender mutual understanding, and lead to the cultivation of friendships invaluable for future cooperation.”

In the spring of 1946 Vannevar Bush called on those who had participated in wartime research to instill in the younger generation of scientists a sense of the importance of cooperation between the government and the university. Bush pointed out that the OSRD generation was an older one, largely trained before the war, and that there was a younger group of scientists being cultivated for leadership in the postwar era. “We should, therefore, discuss this matter particularly with the young men of great promise with whom we have contact....that they should utilize every occasion to remain

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25 U.S. War Department, Office of the Chief of Staff, “Memorandum for Directors and Chiefs of War Department General and Special Staff Divisions and Bureaus and the Commanding Generals of the Major Commands,” quote on the organic part of the military structure on 2; quote on the association leveling barriers, 4. The system of national laboratories was created during the postwar years. Peter J. Westwick, The National Labs: Science in an American System, 1947–1974 (Cambridge and London: Harvard University Press, 2003), 21–23, 311–14. During the post-war scope of this study the national laboratories were Argonne (Illinois), Brookhaven (New York), Oak Ridge (Tennessee), Berkley (California), Los Alamos (New Mexico), and Livermore (California). The AEC operated several other large laboratories such as the Savannah River Laboratory in Aiken, South Carolina.
acquainted with military matters and stand ready to respond to opportunities to be of service.” He said that just as the World War II generation had left its everyday affairs to serve a nation at war, so should a future generation be prepared do the same. The War Department considered university and civilian researchers to be essential to the continuation of national security, saying that national security would demand continued integration of military and educational resources.\(^{26}\)

By 1950 international events were causing heightened concerns for U.S. foreign policy makers. Communist revolutions in Czechoslovakia, Hungary, and China in 1948 and 1949 contributed to a perception of worldwide Communist expansion. In the summer of 1950, President Harry S. Truman declared that the Korean War represented communism’s shift to global military conquest. The prospect that the Soviet Union could capitalize on the U.S. attention in Korea to launch some form of offensive in Europe made the U.S. military’s planning and financial commitment consistent with the expectation of another world war. A $50 billion defense budget for 1951 helped put the universities at the forefront of another intense research endeavor. During the early 1950s there was more caution in the academy regarding cooperation with the government than there had been during World War II, and more reason to ponder the acceptable level of influence that the military should have in the university.\(^{27}\) But amid this caution the partnership grew significantly. In August 1950, Deletve Bronk, President of the National Academy of Sciences, told University of Texas President T. S. Painter that “The changed

\(^{26}\) [Vannevar Bush], “To Scientists and Engineers now or formerly associated with the Office of Scientific Research and Development.” [May 1946], typed, University of Texas, President’s Office Records. U.S. War Department, Office of the Chief of Staff. “Memorandum for Directors and Chiefs of War Department General and Special Staff Divisions and Bureaus and the Commanding Generals of the Major Commands.”

international situation and the present military preparation of our Government confront American scientists with new problems and new opportunities for science." In February 1951 Ralph McDonald of the National Conference on Higher Education told college presidents that international conditions were causing the need for "cooperative undertaking to gird education for the task ahead." 28 The parties involved agreed that keeping the United States strong in the face of global political trends justified higher education's support of a robust defense program.

In the postwar years, the lack of a peacetime OSRD or similar clearinghouse left the universities without an exact standard of how contracts were supposed to work. Much of the correspondence between the universities and the federal agencies involved the universities asking for more details, or responding that the government's inquiry was too vague to garner a definitive university response. And because each agency structured its contracts differently, conditions that applied to some sponsors were different from those that applied to others. If a university did not like the way one group presented its contracts, it could seek an arrangement with another. In 1946 University of Texas comptroller C. D. Simmons criticized U.S. Army contracts because they involved too many parameters, which Simmons and other university officials found troubling. Simmons wrote to President T. S. Painter that the Army's concept of a contract "seems to have been the type developed for manufacturing wheelbarrows rather than for the conduct of research work." He recommended that the University of Texas only negotiate contracts with the private sector or select government agencies, citing the Navy's Bureau

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28 Deletev Bronk to T. S. Painter, 4 August 1950. Ralph McDonald, Executive Secretary of the National Council on Higher Education, form letter to university presidents, 10 February 1951. Both in University of Texas, President's Office Records.
of Ordinance and the Office of Naval Research (ONR) as acceptable. Overall the universities and individual researchers favored contracts with as few restrictions as possible and ones that allowed researchers to pursue ideas of their own conception rather than simply respond to a government proposal. Because contracts of the former nature were common, participants did not have to feel like they were compromising academic integrity.

Also after the war, there was a sense among civilian scientists that the power of science, having proven itself so profoundly during the war, should be harnessed for the public good, and that basic scientific research should be especially encouraged. At Rice, Trustee Harry C. Wiess noted that "Scientific research and technical ingenuity have unleashed forces that threaten to overwhelm us unless we utilize them for the benefit of human welfare and progress." There had long been debate over the creation of some sort of national science funding body but to little result, and the merits of such a body were now more apparent. Proponents of differing views argued for how such an organization should be structured, generally regarding its size and how centralized its power would be. One model was for a civilian-controlled organization to oversee the distribution of funds on a competitive basis to persons in any setting. This model was considered to be elitist because the competition might naturally favor large institutions and big business. The other model was for a more democratic organization that consciously distributed funds among geographic areas and among institutions of all sizes and capabilities.

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29 University of Texas Comptroller C. D. Simmons to T S. Painter, 31 May 1946, University of Texas, President’s Office Records. The proposed U.S. Army project involved “ranged errors in pulsed radio systems from atmospheric propagation.”

30 Harry. C. Wiess, “Rice Looks Forward.” Address delivered to the Association of Rice Alumni, Houston, Texas, 9 November 1945, transcript, Lovett Presidential Papers, [1].
This latter view’s most notable proponent was Senator Harley Kilgore (D-WVa), and it also received support from former Vice President Henry A. Wallace and former President Roosevelt’s assistant attorney general, Thurman Arnold. Those in this camp argued against federally subsidized science being used to further profit-seekers and the military at the expense of social betterment. The more elitist model had important advocates in Vannevar Bush, several outspoken university presidents, and influential Roosevelt advisors. After the war, Bush gained an opportunity to lobby for his model in a high-profile forum, the result of some political maneuvering wherein Roosevelt administration officials Oscar Cox and Harry Hopkins wrote a rather public letter from the White House to Bush soliciting a statement on a peacetime national science agenda. Bush used that podium to write Science: The Endless Frontier (1945), a treatise arguing for the need of a generous national science funding organization. The chief tenets of Bush’s proposal were that it should afford the researcher free inquiry, that it avoid secrecy, and that it contain mechanisms to make public the results of as much work as possible. He also argued for a broad system of undergraduate and graduate scholarships for study in the sciences. On its face it was not necessarily elitist, per se, but it did not guarantee wide geographical distribution or attention to the financial posture of the recipients. It was at once a pessimistic and optimistic treatise—pessimistic in its

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31 Kelves, “The National Science Foundation and the Debate over Postwar Research Policy, 1942–1945.” Another in the Kilgore camp was Waldemar Kaempfert, science editor at the New York Times, who noted that Soviet science was geared toward social welfare. While taking the requisite care to disavow communism, he suggested a type of science program for the United States that would stress the public good and not be a servant to commercial or military interests.

argument for a tenuous national security climate; optimistic in its faith in science:

“Advances in science when put to practical use mean more jobs, higher wages, shorter hours, more abundant crops, more leisure for recreation, for study, for learning how to live without the deadening drudgery which has been the burden of the common man for ages past.”

Bush proposed a budget that would increase annually, ideally to surpass $120 million by 1950. The size frightened some; Bureau of the Budget Director Harold Smith said that “endless frontier” appeared to denote “endless expenditure.” It took five years before the NSF legislation was finally passed in 1950, allowing other funding entities during the interim to shape the terms of the federal-university partnership.

When the NSF was finally founded in 1950, it was ostensibly the preeminent sponsor of the national science agenda. But because the other funding agencies had been operating since World War II, and because the NSF came into being in the middle of a surge of defense research, the NSF had to stake out a claim among, instead of sitting atop the hierarchy of, the other organizations. Also, several factors prevented the NSF from focusing as much on basic research as its early proponents had idealized. First, amid the

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33 Vannevar Bush, *Science: The Endless Frontier*, 5. For an earlier appeal, see Bush, “The Engineer and His Relation to Government,” *Science*, n.s., vol. 86, no. 2222 (30 July 1937): 87–91. In this 1937 treatise Bush also drew the analogy as science being the last frontier for American expansion. Bush also roamed past his generally pragmatic approach when talking about organizing science: “The failure to be disciplined in other countries is the primary reason that the people have reverted to absolutism in the hope that it would prove benign. The immediate result, of course, has been to immediately impose discipline, often harshly and in the extreme, to curtail radically individual freedom, and thus to create a state in which efficiency is secured at the sacrifice of much that makes life worth living. The plunge into absolutism is abrupt. The winning of individual liberty is a slow and painful process. Must all democracies go through this cyclic process?...It depends upon whether those who would bring to the people the accumulated wisdom of the ages speak in words that are powerful...and then it depends only upon whether the people listen and are willing to be guided by the light of reason.” 91.


military buildup against a perceived expanding Soviet empire, it was sometimes difficult for the government to prioritize basic research. Second, many senior members of the NSF board had been veterans of defense-related funding agencies and had little inclination toward basic research for its own sake. Third, the NSF was still subject to the trends and interests of persons submitting proposals, most of which involved some form of applicability. In its first years the NSF coordinated many projects with the military and entered joint ventures with other agencies such as the AEC.\(^{36}\) It would be fair to say that general U.S. science policy during this time could be called a Cold War science policy.

In 1950 the Bureau of the Budget hired New York businessman and AEC consultant William T. Golden to help craft a policy for the role of science at the presidential level. Golden traveled around the country speaking to civilian scientists, government officials, and military officers discussing their opinions on the issue. The results of this project were a recommendation to President Truman that the United States have a permanent science advisory system to the president called the Scientific Advisory Committee (SAC). Golden’s preserved memoranda from these discussions are a remarkable insight into the thinking of the country’s top university and industry scientists in 1950–1951. The memoranda generally depict a scientific community imbued with a sense that the university work was vitally important to national security, yet they were averse to establishing any sort of reconstituted OSRD in peacetime. The

consensus of the interviewees was that America’s institutions of higher learning were already contributing to national security at an adequate level. One of the country’s most respected physicists, Columbia University’s I. I. Rabi, advised Golden, “Don’t disturb the good work being done in the universities.” 37 Importantly for the South, even though the NSF did not necessarily stipulate quotas for allocating funds by geography or state, many educators and some NSF officials favored broad distribution, making small colleges and professors at non-research-oriented institutions competitive for NSF grants. In 1951 NSF director A. A. Potter, formerly chairman of the panel of advisors for the wartime EDT program, advocated the position that the NSF’s $50 million budget should be spread across institutions of all types, rather than just a handful of the largest and best. Potter and others pointed out that scientific innovations in the previous decade had come from an array of sources. 38

In 1951 the Board of Control for Southern Regional Education held a pair of conferences in the South dubbed “Operation Information” during which representatives

37 Blanpied, “Conversation with Dr. I. I. Rabi,” 16 November 1950, Blanpied, ed., 19. The SAC during the Truman years actually did relatively little, and Truman himself did not make much of it. It would not be until 1957 and 1958, in the wake of Sputnik, that the SAC was treated more seriously. Blanpied, ed., xxx. This volume contains twenty-seven of the more substantive memoranda that Golden compiled during his project for the Bureau of the Budget. It was from an interview with Robert F. Bacher, California Institute of Technology Chairman of the Department of Mathematics, Physics, and Astronomy, told Golden, per Golden’s memorandum, that Golden recorded that virtually all major universities were dependent upon Government funds but that the Rice Institute was the lone exception. William T. Golden, “Conversation with Prof. Robert F. Bacher, formerly Member of Atomic Energy Commission, now Chairman, Department of Mathematics, Physics, and Astronomy, California Institute of Technology.” Scanned copy, on the website of the American Association for the Advancement of Science (AAAS). History & Archives, Memoranda of William T. Golden, Database of Memoranda, http://archives.aaas.org/golden/doc.php?gold_id=82, accessed on 22 July 2006. Interestingly, Vannevar Bush, known for his strong support for a centralized body to coordinate scientific research, told Golden that he was opposed to a science advisor to the president for the ironic reason that the current state of the various agencies doing federal research left no significant gaps. However, Golden reported that Bush was somewhat jealous at having been left out the consultation of much of the federal science agenda by 1950 and that Bush was critical of many of the scientists currently in such roles, and may have believed that a presidential science advisor would only be as successful as the individual. “Conversation with Dr. Vannevar Bush,” 24 October 1950, 9–14.

38 Roy J. McKnight, “Report of Meeting of College and University Business Officers,” held at Purdue University, 29 April–1 May 1951, [1951], W. R. White Papers.
from federal agencies advertised possibilities for defense research in the South. At separate conventions in Memphis, Tennessee, and Atlanta, Georgia, government officials discussed the logistics of federal contracts and called for southern institutions to be proactive in soliciting federal contracts. The officials said that many southern institutions did not believe themselves capable of the level of research that the military would require, and that the South’s potential was untapped compared with other regions.39 Indeed, the bulk of the government defense work at universities was concentrated on a small number of northern and west-coast campuses. One of the points of the conferences was that there were ways that smaller colleges and universities could participate, such as proposing basic research, having multiple colleges make a joint proposal, or by pairing college resources with those from commercial scientific or industrial facilities. Dean C. Clement French of Texas A&M lobbied for more southern participation, saying that “the colleges and universities of the South haven’t yet shown the initiative and get-up-an-git that they need to show…. We are the ones who can let this chance slip. If we do we’re not the men I think we are.”40 The Board of Control for Southern Regional Education held conferences again in 1952 but in 1953 abandoned much of its efforts to link southern universities with government agencies because it had done its part in getting the word out about federal contracts (indeed, this was a rather modest goal); however, one observer at the time suggested that such efforts had little chance in a region historically disinclined and dispositioned to advanced research.41

39 Regional Action in Higher Education 2, no. 6 (May 1951). This eight-page bulletin was devoted to the coverage of this conference.
40 C. Clement French, “Are We Mice or Men?” in Regional Action in Higher Education 2 no. 6 (May 1951), 3. Despite the tone and content of this statement, French was neither a Texan nor a southerner, but was from Pennsylvania and had received his Ph.D. from the University of Pennsylvania (chemistry). He was later the president of Washington State University from 1952–1966.
Importantly, delegates from Baptist colleges to the conference encouraged their fellow Baptist institutions to apply for such projects. The Southern Baptist Convention (SBC) said that the nature of many of the national funding agencies supporting basic research and seeking little or no control over the project meshed well with Baptist colleges’ resistance to a government entity influencing their academic pursuits. The SBC specifically named the ONR, AEC, and ARDC as acceptable sources of funding for this reason.\(^{42}\) This SBC pronouncement was quite a departure from the organization’s pacifism in the first half of the century. By the 1950s the SBC had identified communism as an enemy, and thus the SBC was generally supportive of U.S. Cold War military policy.\(^{43}\) But Baylor’s lack of ability in pursuing meaningful contract research for national defense did not bode well for other Baptist universities—if the premier Baptist university in the country was ill-poised for this level of research, the prospects were especially bleak at Baptist institutions of even lesser capability.

The three universities in this study that performed significant research reflected a national trend of increased federal contracts in the early 1950s. Whereas in 1949 the University of Texas had about $1.5 million in research contracts, the figures for the next several years demonstrate the growth: for fiscal 1950–51 the total was $2.2 million, and for 1952–53 it was $3.6 million. Texas A&M had actually been ahead of the University of Texas in sponsored research because of the contracts of the Research Foundation and Experiment Stations. It was not until the 1952–53 school year that the University of


Texas passed Texas A&M. The federal work at the University of Texas was most significant at the laboratories that comprised the Off-Campus Research Center (OCRC), discussed below. At Texas A&M, while there were numerous small grants throughout the university, most of the sponsored research at A&M was done through the Research Foundation. Rice still exhibited reluctance even when its peer institutions elsewhere in the country were rushing headlong into, or becoming quite dependent on, federal support. As mentioned in the chapter of this study on commercial research, the official position of Rice was that it generally did not accept contract research except in cases where the project, whether from the government or private interests, would "be of benefit to the general research program at Rice...and may be carried out in the traditional manner of university research." Though Rice did not participate more fully until the late 1950s, the aforementioned Korean-era push did cause the institute to be more open to the prospect of increased federal work. In 1951 Rice President Houston consulted administrators of several top universities that had thus far undertaken a great deal of federal research. In one instance, MIT Provost J. A. Stratton wrote back to Houston agreeing with the various compromises, stating that MIT had an obligation to the government and had thus undertaken "certain military projects which are foreign to our normal mission." Stratton also said that MIT was a leading university whose operations would be emulated by others, and that MIT weighed such responsibility before embarking on certain ventures. Harvard President James B. Conant told Houston that

44 For the $1.5 million figure, T. S. Painter, untitled, typed report by T. S. Painter, [1949], University of Texas, President’s Office Records, 2–3. Texas Legislative Council, Tables I, II, and III in “Organized Research and Public Service Programs: Parts V–VII of the Report on Texas Higher Education,” 1954, 3–5. The University of Texas figures are for the main campus. The tables show for all campuses of the University of Texas and for the main campus and experiment stations at Texas A&M. See also The University of Texas Catalog, “Part IX: The University of Texas, Medical Branch, Galveston, 1955–1956,” 31.

government financing was supporting about $1 million worth of contracts at Harvard, and that Harvard would continue to seek more. 46

In the spring of 1951, Rice announced a policy for professors doing contract research, largely based on Houston's discussions with Rice professors and administrators from other universities. The statement read that "During the period of the present national emergency, the Rice Institute will discharge part of its obligation to the national defense by undertaking a number of projects of value to various government departments." The tenets were that a professor could devote one-third of his time to government work and still retain his normal salary; that professors could work on military projects during the summer for a monthly salary from Rice equal to that which they received during the school year; and that professors could, on a case-by-case basis, work full-time on military research with no other teaching or faculty duties. 47 Grants from the NIH and NSF were fairly common at Rice in the postwar years. Three prolific Rice recipients of funds from both were chemist Richard B. Turner, who had been part of the first group of researchers to synthesize cortisone and was noted for his work in synthesis and hydrogenation; and biologists Asa C. Chandler and Edgar Altenburg. Other than the NIH and NSF, common sponsors of Rice were the AEC, especially providing funds to physicist Tom W. Bonner and biologist/endocrinologist Roy V. Talmage; the Office of Naval Research (ONR); and the Air Research and Development

46 J. A. Stratton to W. V. Houston, 27 February 1951; James B. Conant to William V. Houston, 26 February 1951, Houston Presidential Papers. In the same letter from Stratton to Houston referenced above, Stratton also said: "As you doubtless know, M.I.T. ...has been urgently requested to undertake certain major programs of research directly related to military problems. Most reluctantly we have acceded to several of these requests solely because of the gravity of the international situation....We consider this work as an emergency measure and hope that when the situation becomes more stabilized we may entrust the management of such projects to some other agency."

Command (ARDC). Though Rice was still not conducting research on the scale of large research universities in the northeast (indeed, the top several research universities dwarfed even moderate-sized research institutions), these professors were among those responsible for Rice's move from a well-regarded regional college to a nationally recognized research university, which by the late 1950s was an established reputation.

One field in which many southern scientists worked, and whose implications defied overstatement, was atomic energy. That such power could be used so destructively, or alternately to create energy for civilian purposes, established its importance in the postwar era. Federal restrictions on facilities, apparatus, and certain chemicals used in atomic energy work put that field largely in the hands of the government. Many scientists lobbied for civilian, versus military, management of postwar atomic energy on the grounds that civilian control would advance the commercial and public uses of atomic energy. Accordingly, the government founded the AEC, in the summer of 1946. The following year the AEC assumed control of operations at Ernest O. Lawrence's Radiation Laboratory in Berkeley, California, and the Brookhaven National Laboratory in Upton, New York. The government regulated the possession of some materials and allowed facilities to request them for nuclear research. In 1949 the University of Texas had to apply to the AEC for a license to obtain thorium chloride, thorium nitrate, uranium acetate, and uranium oxide.49

The Oak Ridge Institute for Nuclear Studies (ORINS), founded in 1946, was the product of a group of scientists and educators from the South who wanted southern

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48 See W. V. Houston to C. A. Dwyer, 22 June 1951 and “Federally Supported Research at the Rice Institute, 1954,” Houston Presidential Papers.
49 Thelma Lockwood, University of Texas administrative assistant, to the U.S. AEC, 8 January 1949; Lawrence C. Burman, AEC. to T. S. Painter, 17 January 1949. University of Texas, President's Office Records.
universities to capitalize on their proximity to the Oak Ridge laboratories.\textsuperscript{50} The purpose of ORINS was to cultivate capability in atomic energy at southern universities and to act as a national advisory board in matters of atomic energy. Of the four universities in this study, the only one in the founding group of ORINS universities was the University of Texas. The Rice Institute was invited to be among these but declined, which William V. Houston later attributed to inadequate time and context for consideration and the possible limitations that affiliation with the Oak Ridge laboratory might have on other opportunities for collaboration at other facilities, citing Los Alamos specifically. But after the less restrictive nature of ORINS was clear, and after several Rice professors (Tom W. Bonner, Roy V. Talmage, Henry O. Nicholas, Charles F. Squire, and Edgar A. Altenburg) had been fellows or beneficiaries of ORINS programs, Rice agreed in 1949 to join.\textsuperscript{51} Texas A&M joined in 1950. ORINS especially emphasized radioisotope and cancer research, hosted fellows at the gas diffusion plant and the electromagnetic plant, and invited graduate students and postdoctoral researchers for short interims.

In January 1947 the AEC assumed management of the Oak Ridge facilities from the Manhattan Engineering District. In that year the AEC controversially rescinded a previous decision to have a group of southern universities manage the Oak Ridge, instead assigning those rights to the University of Chicago on the grounds that the southern universities lacked the financial and professorial resources. Naturally this decision was ill-received by southern politicians, educators, and public. In return the AEC increased


\textsuperscript{51} William G. Pollard, Executive Director, ORINS, to W. V. Houston, 5 April 1949; Houston to Pollard, 9 June 1949. Houston Presidential Papers.
the scope and activities of ORINS. Part of the agreement to transfer management to the University of Chicago was that Chicago would administer only the managerial functions of the laboratory, but that the academic and educational functions would be administered to the extent possible by the southern universities.\textsuperscript{52}

Perhaps the most important research apparatus in the postwar era was the particle accelerator, known colloquially as an atom smasher. Accelerators were a particularly strong area of southern university science. These accelerators generated static electricity—appropriately for the region, often using cotton fibers—to shoot atomic particles at atoms and break them into protons and neutrons, whose arrangements and motion could be studied. The accelerators are sometimes called van de Graaff accelerators, after Princeton University physicist Robert J. van de Graaff, who pioneered the process. Rice was the first southern university to acquire such an accelerator when it received one from the AEC in 1946. The device, whose principal researcher was physicist Tom W. Bonner, could accelerate protons to over 2 MeV. In 1948 the University of Texas acquired one under the direction of physicist E. L. Hudspeth. Smaller AEC grants and fellowships not necessarily related to particle physics were commonplace at southern universities in the late 1940s. In 1949, Luolin S. Altenburg, a female geneticist at Rice on an AEC fellowship, developed a virus detection test for influenza that was described as historic and invaluable. The Baylor University College of Medicine undertook at least one project for the AEC.\textsuperscript{53}


\textsuperscript{53} See “Atom Smasher on Exhibit at Research Center Today,” The Daily Texan, 27 March 1952. On Altenburg, Houston Chronicle, 1 January 1950, 10. The Houston Chronicle noted that when the “comely lady scientist” received the AEC fellowship in 1948, that it named her husband. Dr. Edgar A.
With the successful Soviet testing of a nuclear device in 1949, the United States redoubled its efforts to stay the world’s foremost nuclear-capable country. The government allocated further funds toward scientific research and especially cultivated strength in nuclear science. Between 1950 and 1952 the University of Texas built a van de Graaff accelerator at the Nuclear Physics Research Center at the OCRC, using a combination of university and AEC funds. The university had to remove a portion of the second floor of the laboratory because of the height of the machine, which weighed twenty tons. The university then solicited contracts from government entities for studies on nuclear reactions among several isotopes, some of which reportedly had not been studied at that level.  

In 1952–1953 Rice constructed a High Voltage Laboratory to house a 5.5 million-volt accelerator it acquired from the AEC, in a tower and laboratory constructed by the Texas Gulf Construction Company. The facility had the luxury of being designed specifically for a particle accelerator of that magnitude, with a tower and a tracked crane to house the eighteen-ton tank that the generator was in, extra-thick concrete walls to minimize radiation leakage, and parts of the building frame made of steel. The two principal researchers were Tom W. Bonner and J. R. Risser. In the 1950s the University of Texas and the Rice Institute joined a cadre of southern universities with respectable nuclear physics capability. Others included Duke University, which obtained a 4 MeV accelerator from the AEC in 1952, and North Carolina State, which constructed

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Altenburg, as the supervisor of her research. See “Baylor University College of Medicine: Research Programs, 1948–49,” W. R. White Papers.

54 “Proposal to the Atomic Energy Commission for Assistance in Nuclear Physics at the University of Texas” 9 March 1950, typed, 1. See also Proposal to Air Materiel Command from Nuclear Physics Laboratory, The University of Texas, for Experimental Work on Scattering of Neutrons, 31 July 1950, University of Texas, President’s Office Records.

55 Rice Institute, Press Release, for release on 27 January 1952, Houston Presidential Papers.
a nuclear reactor in 1953. AEC contracts at the University of Texas included those for studying the effects of radiation on animals, the disposal of radioactive waste by algae, and the removal of uranium from seawater.

One of the areas on which Rice physicists concentrated was neutron thresholds, or measuring net energy changes in reactions to determine thresholds of various isotopes. Rice also developed a specialty in low-temperature physics, under C. F. Squire. Low-temperature physics had been pioneered at Duke University beginning in the 1940s under Polish-born physicist Fritz London, and was the basis for work in superconductivity. In December 1953 Rice hosted an international conference on low-temperature physics, the budget of which was split among Rice, the NSF, and local business. Physicists W. O. Milligan at Rice and S. H. Simonson at the University of Texas did important work in the early 1950s in neutron diffraction, joined by physicists at Auburn University and Tulane University. Southwide, many universities performed notable physics and chemistry projects during the 1950s, whether in partnership with Oak Ridge facilities or individually. Duke University was a leader in several fields, including neutron physics and optical spectroscopy. The flagship institute for theoretical chemistry in the South was the University of North Carolina at Chapel Hill, and three Florida Universities (the

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56 Other southern universities that acquired nuclear reactors in the postwar years included North Carolina State University, the University of Virginia, Louisiana State University, the University of Maryland, the Georgia Institute of Technology, the University of Oklahoma, and the University of West Virginia.

57 Forms for Wilson S. Stone (radiation on animals) and Jack Myers (algae), “Nomination Form: For regular members of the teaching staff appointed to positions in special research projects.” For removing uranium from seawater, “Research Contract Items Since OGSR List Dated 10 November 1953 – HJ,” typed, University of Texas, President’s Office Records.

58 Memorandum, “The Third International Conference, on Low Temperature Physics and Chemistry,” [1953], typed, 1 page; “Low Temperature Conference Financial Statement,” Houston Presidential Papers. The conference’s budget was divided as follows: 50 percent from Rice, 30 percent from the NSF, and 20 percent from local businesses. The issues discussed were the low-temperature liquid helium isotope three (Helium-3, or 3He), and the magnetic properties of matter at low temperatures.

59 Pollard, Atomic Energy and Southern Science, 71.
University of Florida, Florida State University, and the University of Miami) all had strong theoretical chemistry programs as well. The University of Kentucky did meritorious work on chemical activation analysis, which had been developed at Oak Ridge in 1946 and was called “one of the most powerful analytical tools in chemistry.” The University of Tennessee’s proximity and connections to the Oak Ridge facility was enabling to its physics and chemistry departments. In terms of significant contributions, the leaders in the sciences in the South appear to have been Duke University, the University of Texas, the University of North Carolina at Chapel Hill, and the Rice Institute, in no particular order.

After the war, some of the work of the University of Texas’ WRL was continued in the form of the Military Physics Research Laboratory (MPRL), which was moved to a magnesium plant the university purchased from the War Assets Administration and named the OCRC. In 1945 the University of Texas created the Defense Research Laboratory (DRL) under C. P. Boner, who had been on leave at the Harvard Underwater Sound Laboratory (HUSL) since 1942. The DRL conducted much of its work on surface-to-air guided missiles and radar. The DRL’s interest covered an array of related subjects such as microwave studies, antennae, and underwater acoustics. In 1949 Boner teamed up with several of his HUSL colleagues to participate in a series of underwater acoustics experiments at Lake Travis, a deep lake in the hills northwest of Austin. In 1953 the center became the Balcones Research Center (BRC). By the 1954–1955 school year, the University of Texas listed twenty-seven laboratories or project groups that were receiving federal funds, most of which were done at the BRC in areas such as genetics,

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60 Quote from ibid., 95.
psychology, and engineering.\footnote{The University of Texas, Austin: Government Sponsored Research Projects, Budget for 1954–1955,” University of Texas, President’s Office Records, i.} The BRC is presently known as the J. J. Pickle Research Campus. In the spring of 1946 the University of Texas sent a representative, Robert J. Hearon, to Washington, DC, to meet with military officials to market the facilities and willingness of the University of Texas to cooperate more on war research. Hearon met with the ONR, the Bureau of Ships, and the Chief of Naval Operations. Navy officials cited Columbia, Harvard, and MIT as universities with well-functioning military programs and recommended that Hearon also visit those universities as examples of successful models. Hearon met with Irvin Stewart, the wartime Deputy Director of the OSRD and fellow Texan, and Army officials at Evans Signal Laboratory in Belmar, New Jersey, a facility that studied signals and frequencies for navigation and communication.\footnote{Robert J. Hearon, “Report on Visit to Washington,” memorandum report to T. S. Painter, based on a visit to Washington, DC, in late April and early May, [May 1946]. Robert J. Hearon, “Report on Evans Laboratory Visit,” memorandum report to T. S. Painter, based on a visit to Evans Laboratory in late April, [May 1946], University of Texas, President’s Office Records.}

Of the branches of the armed forces, the U.S. Navy was the most significant sponsor of military research in the postwar years and was known for encouraging projects much more basic in nature, without specific connections to a military application. The Office of Naval Research (ONR) was one of the more successful federal entities that contracted with universities after the war. Begun somewhat modestly in May 1945 as a research office in the Department of the Navy, the ONR was formalized in 1946 to advance U.S. naval power and national security by supporting work in a variety of scientific fields such as communications, rocket technology, cryogenics, and nuclear physics. The Navy sought to foster as much basic work as possible in order to avoid a top-down command model thought to risk missing opportunities arising in quickly
advancing fields and to avoid alienating scientists leery of a too-hierarchical sponsor. The ONR accepted project proposals from any person or entity that could make a case for doing relevant work, resisted putting secrecy classifications on its research, and it encouraged publication of the results. The above characteristics made the ONR a favored funding entity of many universities. Probably the best-known early ONR project was the Whirlwind project at MIT, a room-sized digital computer with a visual monitor display, the technology of which led to business computers in common use by the 1960s and later, home computers. The years 1945 to 1950 have been called the golden age for the ONR, for in 1950 there began a fuller, more aggressive federal patronage in which the mission-oriented basic research of the ONR had an important competitor in the NSF.\textsuperscript{63}

After the war the ONR assumed authority for an OSRD electrical engineering project at the University of Texas that studied the atmosphere’s propensity to bend radar waves, which had been part of the WRL’s larger mission of increasing the accuracy of automatically sighted weaponry. T. S. Painter said that the university’s work with the Navy would help “keep our nation strong.”\textsuperscript{64} President William V. Houston at Rice continued to do some limited work with the Navy after becoming Rice president, related to his wartime involvement in developing the homing torpedo. He corresponded with Admiral James Forrestal regarding current and future research priorities based on his


\textsuperscript{64} Quote on keeping our nation strong, draft of untitled press release, T. S. Painter, 12 February 1946. University of Texas, President’s Office Records.
wartime work.\textsuperscript{65} In the fall of 1945, after the Rice Institute agreed to host a gage laboratory in cooperation with the Army, the Navy contacted Rice, presumptively stating that it had selected Rice to host a Navy gage laboratory alongside a group of other universities (Tufts, Northwestern, Purdue, Alabama Polytechnic, and Southern California). However, Rice declined the Navy’s offer, saying that one gage laboratory at Rice was sufficient.\textsuperscript{66} Similarly, in February 1946, the Navy announced that it had selected Rice to host unspecified Navy projects, and that a Navy captain would visit the campus on 18–19 February to survey the campus facilities. When the \textit{Houston Chronicle} contacted Rice to write a story on the topic, a Rice spokesman said that the university had heard “nothing whatsoever” of the Navy’s selection and was unaware of a visit by any Navy personnel. Nevertheless, a Captain J. Conrad visited Rice on 19 February and spoke with several professors, seeking Rice’s acceptance of a two-year contract for unspecified research. When Rice professors told Conrad that they would need to study the details of any specific contract before accepting it, Conrad countered that the fact that MIT, the University of Michigan, and the University of Texas had accepted were evidence enough that such an arrangement was desirable. Still, Rice remained noncommittal.\textsuperscript{67}

After 1950, Navy contracts at the University of Texas included those in electronics, high nitrogen compounds, and a study of rocks and minerals at high pressures and temperatures.\textsuperscript{68} E. P. Schoch, the head of the University of Texas Bureau of

\textsuperscript{65} James Forrestal to William V. Houston, 28 May 1946, Houston Presidential Papers.
\textsuperscript{66} Harry C. Hanszen to Vice Admiral G. F. Hussey, Jr., Chief Bureau of Ordnance, Navy Department, 8 January 1946, Lovett Presidential Papers.
\textsuperscript{67} \textit{Houston Chronicle}, 10 February 1946; Untitled memorandum to Dr. M. D. Wilder, 19 February 1946, Houston Presidential Papers.
\textsuperscript{68} “Research Contract Items Since OGSR List Dated 10 November 1953 – HJ.”
Industrial Chemistry (BIC), discussed in the second chapter, continued to work on his electric discharge process. Rebuffed by the university for his request for funding, and getting a more meager sum than he had sought from the state legislature, Schoch contracted with both the Navy and Air Force to explore the applicability of his process for the production of lubricating oils and hydraulic oils for military use. The BIC also carried out work for the Army Ordnance Research Project. Navy projects at the Texas A&M Research Foundation included those on wave forces on pileings in shallow water (oceanography), flux determination over the ocean surface (oceanography), and astrometric research (mathematics).

The U.S. Air Force was also a regular sponsor of university research, both on air flight itself and tangential subjects such as communications, radiation, basic materials, and computers. The Army Air Corps Air Materiel Command (AMC) directed and conducted much of its investigation at Wright Field in Dayton, Ohio. The AMC was the forerunner of the Air Force Air Research and Development Command (ARDC), located at the combined Wright-Patterson Air Force Base (AFB) in the 1950s. It was the AMC that ran the now-well-known Project Mogul, which tested the ability to detect sound wave signatures in the upper atmosphere caused by detonations of certain warheads. The official explanation of the famous 1947 Roswell, New Mexico, alien incident is that the mysterious object was part of such AMC testing. The AMC laboratories contracted with

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69 Contract with the Navy mentioned in “The University of Texas Electric Discharge Project. Report for the Biennium, 1948–50,” 26 June 1950; contract with the Air Force mentioned in C. P. Boner to T. S. Painter, 21 March 1951; contract with the Army, mentioned in K. A. Kobe, to UT President Logan Wilson, 31 August 1953. Both in University of Texas, President’s Office Records.

universities by soliciting them with statements of interest.\textsuperscript{71} Primary concerns were radar-assisted bombing, the electronic guidance of missiles, countermeasures to radar and infrared detection of aircraft, signals interception, the fatigue of metals at extreme temperatures, synthetic and ceramic materials, and the effects of flight on humans.\textsuperscript{72} Air Force–funded research in the late 1940s led to the B-47 Stratojet, which proved influential in the development of commercial jet aircraft thereafter.

The Air Force Office of Scientific Research (AOSR) was founded in 1952. Much of the AOSR's interest involved aerodynamics and weapons systems used by aircraft and was a pioneer in integrated circuitry and molecular electronics. It was with AOSR support that Charles Townes developed the Microwave Amplification by Stimulated Emission of Radiation (MASER) between 1951 and 1954, which led to the production of the laser.\textsuperscript{73} In the early 1950s the engineering and testing of experimental aircraft at Wright-Patterson AFB enjoyed significant university support. Projects at Wright-Patterson AFB during the 1950s yielded the B-52 Stratofortress and the C-130 Hercules, as well as the X-series experimental aircraft. The Air Force’s interest in fuels and fuel refining made the Texas colleges natural choices when it approached universities regarding contracts. In 1952 an ARDC official notified Rice that Rice’s strength in fluid mechanics would merit prompt consideration of any such proposal that Rice submitted. The Rice Institute had a project with the ARDC, with Dr. Gerald MacLane as the principal researcher. The Texas A&M Research Foundation did several projects for the

\textsuperscript{71} Colonel S. A. Mundell, Chief of the Electronic Subdivision of the Engineering Division of the Communication and Navigation Laboratory, Wright Field, Dayton, Ohio, to T. S. Painter, 29 March 1946, University of Texas, President’s Office Records.

\textsuperscript{72} Robert J. Hearn, "Report on Wright Field Visit."

\textsuperscript{73} AOSR projects in the 1960s led to the development of the computer mouse and Global Positioning System (GPS).
Air Force, including an ARDC project on the vibrational structures of molecules and two others on the effects of flight on the human heart and other physiological functions. Air Force projects at the University of Texas included those in neutron scattering at the Nuclear Physics Laboratory, photosynthetic gas at the Laboratory of Algal Physiology, radar at the DRL, and fire control methods at the MPRL.⁷⁴

The National Institutes of Health, already in existence since the 1930s (and a descendent of the U.S. Laboratory of Hygiene, which had been established in the 1880s), was the preeminent government sponsor of biological and medical research. The NIH sponsored projects at all four universities in this study, especially at the Baylor and University of Texas medical schools, and was a common benefactor at university hospitals in the South and nation. The U.S. Public Health Service also underwrote a great deal of research at university hospitals.⁷⁵ The University of Texas medical branches participated in contract research, and T. S. Painter said that when hiring faculty for the Medical Branch in Galveston and the M. D. Anderson Cancer Institute in Houston, the university was looking for persons who showed success and promise in research.⁷⁶ The Medical Branch in Galveston and M. D. Anderson in Houston generally carried several hundred thousand dollars worth of contracts per year, and the Dental Branch in Houston and the Southwestern Medical Foundation in Dallas participated somewhat more modestly. Other than NIH projects, contracts at the medical entities represented those from all branches of the armed forces, and many were part of classified research. Major

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⁷⁶ T. S. Painter, Untitled typed response to a Dallas News written questionnaire, 1949, University of Texas, President’s Office Records, 5.
medical schools and associated university hospitals in the postwar era continued to receive substantial federal support. Historian Linda R. Cohen reported in 1998 that, for universities reporting hospital revenues as part of overall university revenues, hospital revenues contributed about one-third of the universities’ overall annual intake.\textsuperscript{77}

During the early 1950s the Department of Defense Weapons Systems Evaluation Group (WSEG) undertook operational research with little academic context, but it drew persons out of academia permanently or for terms of several years and sometimes brought retired scientists back into the workforce. Personnel at this “highest echelon operations group” worked on classified weapons systems, and its directors in the early 1950s included MIT physicist Philip M. Morse (whom Rice had considered to be the frontrunner in its postwar presidential search committee in 1945), California Institute of Technology physicist Howard P. Robertson, and chairman of the Harvard chemistry department, E. Bright Wilson, Jr. By 1954 the WSEG aggressively sought to further lure scientists from academia, appealing to urgency, secrecy, and exciting nature of WSEG operational research.\textsuperscript{78}

Though just outside the temporal scope of this study, the University of Texas, Texas A&M, and the Rice Institute in 1956 joined with the Houston-based Robert A. Welch Foundation to propose a facility that would have essentially been another national laboratory in Houston, complete with a high-flux reactor, high-speed computer, and a cyclotron, asking for between $30–40 million from the AEC. The AEC rejected the


\textsuperscript{78} William Shockley, WSEG Director of Research to Dean G. H. Richter, Rice Institute, typed, [1954]. Houston Presidential Papers. Shockley held a Ph.D. in physics from MIT (1936) and was a semiconductor physicist with Bell Telephone Laboratories. He served a short stint at WSEG in 1954–1955 and won the Nobel Prize for Physics in 1956 for his work at Bell, before being named as a professor-at-large in engineering and applied sciences at Stanford University in 1963.
proposal on the grounds that the country did not need another national laboratory, especially not in the Southwest, where it pointed out was where Los Alamos was located. This proposal, though larger than most from other universities, was consistent with a wave of ambitious proposals in the mid- to late 1950s, and which was “outdone” by another unsuccessful proposal by Stanford University in 1957, to build a two-mile linear accelerator at a cost of almost $80 million, not including costs for operation and maintenance. 79 By the end of the 1950s, after a new escalation of funding in the wake of the Russian satellite Sputnik, the federal patronage of university research was further entrenched.

A decade or so later, it appeared that a consensus of leaders in higher education held that the government-university partnership was a net positive for the university. Money was flowing into the system at increasing rates, and a greater cross-section of the professorate enjoyed an influence in national affairs much more so than their counterparts had in prewar decades. In 1959, Charles V. Kidd of the NIH assessed that federal funding had altered the fundamental manner in which universities conducted research in a way that, though certainly with problems, gave great freedom and control to those in the respective disciplines. In 1962 Harvard University President Nathan M. Pusey spoke of a 1959–1960 Carnegie study that surveyed the heads of twenty-six universities on the nature of federal involvement, in which all twenty-six identified federal involvement as a “good thing.” Tulane University President Herbert E. Longenecker, speaking at the

79 Westwick, The National Labs, 182. The Robert A. Welch Foundation was bequeathed by Houston businessman Robert Alonzo Welch in 1952. As of the writing of this dissertation, the Foundation remains a major source of funding for professorships and chemical and other scientific research at virtually all universities in Texas.
same forum as Pusey, discussed the university's service to the nation, and though
cautious that the relationship was not without problems, he believed that overall it was
beneficial. 80 Academics otherwise unsupportive of many tenets of U.S. Cold War foreign
policy and military buildup have noted the positives that national-security funding has
had on the university. In 1997 Harvard geologist Raymond Siever said that Cold War
federal involvement in university research began a shift of the researcher's focus from the
small community within the particular university to the national field in which he or she
worked. Harvard biologist R. C. Lewontin assessed that the power of the researcher to
court outside grants for the university "transformed that balance of power" between the
professor and the institution in the professor's favor. 81

Currently, as annual classes of graduate students, especially those in the sciences,
begin their training in their respective disciplines, they enter into a system wherein
federal sponsorship is the norm. For advanced students and faculty in a great many
fields, applying to federal grant agencies is taken for granted as a necessary component of
academic life, and ability to secure grant money is often a determining factor in career
success. This system, while having roots in prewar professionalization of various
disciplines and in contractual arrangements with commercial sponsors and smaller
government granting agencies, gained its defining boost in the mid-century push to

Government: Programs and Problems Papers Presented at the Forty-fifth Annual Meeting, Chicago,
81 Raymond Siever, "Doing Earth Science Research during the Cold War," in Noam Chomsky, et
al., The Cold War and the University: Toward an Intellectual History of the Postwar Years (New York:
strengthen the hegemony of the United States against physical and ideological forces that threatened a way of life cherished by the majority. The fact that southern universities, while more hesitant and initially somewhat limited in resources, eventually embraced this schema of university sponsorship, is an important part of the Americanization of the South in the twentieth century. Southern universities, having served a variety of regional constituencies, were able to transfer their sense of service to the national stage. Considering the reciprocity therein, this process in which southern universities became instruments of national purpose is both indicative of, and important to, the larger development of the twentieth-century South.
CHAPTER SEVEN

Conclusion

Until World War II, federal involvement in higher education had been minimal, especially when contrasted with what it would be in just a few short years. When it came on a large scale, contexts of national and moral purpose made it acceptable to many who would have otherwise been opposed. For public universities, pre-existing relationships with the government were vastly deepened, and in terms more intimate to the faculty, students, and administrators. At private universities, which prior to the war had experienced comparatively less federal interaction, the war years eroded opposition to its encroachment. As the years passed the institutions became further desensitized to—if not more inviting of—federal subsidization, for the benefits appeared to accrue to both the national welfare and, as importantly, to the ability of the professors and universities to advance their capabilities and reputations. As the U.S. national security agenda and foreign policy moved more deeply into the set of assumptions and motivations known as the Cold War, the U.S. government had little intention of ceasing a productive relationship with a university system rich with specialized personnel and a record of service to national defense. The same holds for the life sciences and for application to business and industry. Not surprisingly, it was difficult for the university to cut off lucrative sources of subsidization for its growing endeavors. Prior to the period covered by this study, professionalization of the academic disciplines had broadened the orbit of the professor into a much larger scholarly community, from the local to the national and in some fields international. Premiums placed on the professor's ability to impact his or
her field, on name recognition for the professor and the institution, and on making his or her work benefit society in some way were preexisting conditions that made the prospect of a federal funding boom take such hold in the academy.

Political scientist Don K. Price described the relationship between government and science that emerged during World War II as an “unhappy shotgun marriage.” But as stated in the introduction of this dissertation, this cooperation in the university was no soul-selling Faustian compromise, and there are better terms than unhappy, such as respectfully cautious, even opportunistic or exciting, that more accurately describe the university’s part in the relationship. One characteristic that kept contract research acceptable, and which avoided some of the problems inherent with a sponsor, was that the impetus for most projects came from persons and issues internal to the academic fields as opposed to being mandated by funding agencies. Also, the most prolific sponsors had boards comprised of academics who adjudicated project proposals, resulting in a form of contractual arrangement empowering to the academic and less of an exogenous influence on the disciplines than the concept of contract research might otherwise indicate. Well-marketed contributions of the university to the regional economy and especially the record of wartime service—whether in teaching cartography to a Navy trainee, producing a more accurate aircraft gun, or developing breakthroughs in wireless communications—constituted a compelling case for the university as the producer of a utilitarian product, long a trend in American education but now underscored with public celebration.

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One of the most important factors determining the level of influence that the armed forces would have in university affairs occurred when the consensus of university scientists opposed the re-establishment of an equivalent of the Office of Scientific Research and Development (OSRD) in 1950–1951. Had there been a new 1950s OSRD-type entity, one wonders whether it might have created a more distinct division between military and nonmilitary research. But not creating an OSRD appears to have allowed the gamut of government agencies to continue underwriting the national defense research agenda. Likewise, the university was able to participate more broadly with military sponsors, since even much of the so-called basic research (wave communications, thresholds of various physical materials, and properties of chemical compounds, to name some examples) were undertaken by branches of the armed forces. Now, without an OSRD, defense research was indeed, as President Eisenhower and others in the military establishment had hoped, part of the more general structure of university business.

This new era of funding was one of the most important reasons for the continued and dramatic growth of research budgets at U.S. universities. In 1953, the first year that the National Science Foundation (NSF) compiled comprehensive data but even still a few years into a boom in funding, the federal government spent $138 million on research and development at universities. By 2004 the figure had grown to a staggering two hundred times more, to $27.4 billion. Texas universities received $1.6 billion of that amount, ranked fourth behind California, New York, and Maryland, in that order. Of the institutions covered in this study, the Baylor College of Medicine received the largest amount of federal research support in 2004, with $313 million out of the institution's
$476 million total research expenditures. This $313 million ranked the Baylor College of Medicine number 20 among U.S. universities. (The Johns Hopkins University was number 1 with $1.2 billion in federal research contracts out of $1.4 billion total research expenditures.) The University of Texas at Austin was number 33 with $235 million out of $344 million; The Texas A&M system was number 50 with $174 million out of $456 million; Rice University was number 128 with $61 million out of $71 million; and Baylor University was number 385 with $1.3 million out of $5.2 million. These numbers downplay the amount given to the University of Texas, since the various entities of the University of Texas are reported separately. Federal expenditures for components of the University Texas system for 2004, which were not included in the total for the University of Texas at Austin, were as follows: The University of Texas Southwest Medical Center in Dallas, $201 million, the University of Texas M. D. Anderson Cancer Center, $151 million, and the University of Texas Medical Branch, $102 million. The other universities in the University of Texas system, which were incorporated into the system later than the focus of this study, amounted to less than $20 million each.\footnote{The Baylor College of Medicine severed its ties with the Baptist General Convention of Texas (BGCT) in 1969, primarily to enable the receipt of federal funds without oversight or restriction imposed by the BGCT. The Baylor College of Medicine is now an independent entity from the Baylor University system.}

As the scientific applications for commerce, national security, and national welfare further increased, and especially as deep-pocketed benefactors poured more money into the system, the market for this research bid up the price for faculty. The university was compelled to incentivize employment in academia by greater compensatory benefits and by making the university a host of, and not just a trainer for, new directions in scientific research and development. To be sure, academia was

\footnote{Figures courtesy of the National Science Foundation.}
competitive in top appointments in the nonscientific fields, but across the country there was not the same sort of shift in professional climate in those disciplines. With the income from outside contracts, professors and principal researchers brought in the revenue to make their presence profitable for the university and to facilitate the hiring of large numbers of graduate students. A common model is now for a professor to have a research group, often incorporated in some formal and/or legal way, wherein contract revenues support the group in one or more projects. Most major universities now are home to dozens of research centers and have offices and staffs that oversee research coordination among schools and departments and facilitate the acquisition of new contracts.

For the southern university, national victory in World War II was an important catalyst in moving southern higher learning away from a commitment to regional distinctiveness that had characterized decades past. Though not forsaking regional identity, southerners now sought to re-shape the national mainstream ostensibly based on shared ideals of the majority. World War II allowed the South to cast aside an older identity and join a position of cultural supremacy represented by the nation as a whole. In World War II, the South and its institutions were drawn into a national effort and a fight against an enemy that they believed would require an assertion of values, the propagation of which the university could serve as an instrument. In retrospect, analyzing the move toward the national mainstream in southern higher education is, of course, difficult to separate from other trends in the postwar South such as technology, the growth of the service sector, and the civil rights movement, to name a few. Any shift in perspective from regional to national must be taken in the context of these other
developments that also challenged older notions of southern distinctiveness. Southern regional identity that had been tested at one level or another for almost a century still persisted but enjoyed a new opportunity to partake in the American experience and national identity.

As for ideals, the post–World War II college boom in the South funneled unprecedented numbers of students through the university system, precisely at a time when it was in vogue to herald the ideals of democracy, to celebrate the nation’s Christian heritage, to use scientific innovation to advance U.S. national security, and at a time when it was perhaps least acceptable to question. In considering the creedism and dogma of these four Texas universities in the wartime and postwar period, one of the distinctions that separates southern higher education is highlighted. Nationally, rhetorical pro-American sentiment was common enough, but the nation’s leading universities were home to more reflective intellectuals who offered complicating texture and who more realistically explored the fabric of American culture. The most influential American educators and thinkers, many of who were secular and whom had little connection to the South, were not inclined to use the university as a tool of religious or patriotic propaganda. The fact that the country’s leading universities were not necessarily asserting a pro-American and pro-Christian heritage was troubling to those who believed that it was the university’s role to do just that. This concern that the nation’s top universities had forsaken an important mandate led universities such as Baylor and even many state-supported universities as well to increase their efforts at using higher learning to impart a common heritage.
Raising the stakes of the above, the postwar period was a boom time for post-secondary education. "Higher Education for American Democracy: A Report" in 1947, a seminal government statement on the function of higher learning made at the behest of President Harry S. Truman, recommended among other things a larger system of higher education broader in curricular scope, with an eye toward pragmatism, and expanding vastly the traditional demographics that had attended college with respect to class and race. Even with sustained enrollment increases, the university remained an institution of the relatively privileged, though the notion of privilege was a term increasingly encompassing a larger percentage of the population as the mid-twentieth century progressed. As the university solidified its function as the standard national venue to provide professional accreditation and the skills and means to join the growing postwar middle- and upper-middle class, those on the outside of the system gained further comparisons for disparity between these new prosperous classes and themselves. The fact that a college education was coming to serve as a common gateway into this new prosperity also gave more impetus for critics of social injustice and inequality to pay attention to those whom the system was overlooking. Thus, the impact of federal readjustment legislation and postwar trends of college attendance on the coming of civil rights legislation is a subject that stands to gain from further scholarly study.

Federal readjustment legislation following World War II has been lauded in popular culture as having democratized higher education, and though there were other factors that accounted for sustained enrollment increases such as natural population growth, higher education becoming more necessary for employment, and increasing

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national wealth, the GI Bill had a lasting impact for a less obvious reason than for throwing open the proverbial doors. At many universities, the GI Bill brought in an influx of tuition dollars—often raised to the maximum that the government would pay—giving universities cash flows unlike those of the prewar period. In the South, where costs were lower than the national average, the federal maximum tuition rate was set at national standards higher than southern standards. Universities saw that it was possible to maintain these swelled enrollments, if not without creative means of accommodating so many people via solutions such as larger lecture classes, more labs taught by graduate students, evening classes, allowing more transfer credits, and more lenient housing policies that let students live off-campus. It was not long before these emergency-based measures became the norm for American colleges.

The World War II and postwar years institutionalized a new a way of conducting university business, a new role for the federal government, and a new importance of outside financial underwriting of university research that became so normative in a few short years after World War II as to appear irreversible. It is one of the intentions of this dissertation to show that government involvement did not have to produce an atomic bomb or be of a multi-million-dollar nature in order to have a profound impact on a given institution. Through more subtle and gradual cooperation, colleges and universities throughout the country could be set on paths that a decade or two before would have been unimaginable and which have carried them to the present. The postwar scholar who considers the nature and complexities of academic freedom must reconcile the role of business, government, and the demands of the funding constituency on the educational institution—all in a climate where a sponsor’s role in the academy can be taken as
predominantly assistance or interference, depending on the beholder's perspective. On the subject of perspective, readers could take this dissertation to vindicate one of two seemingly opposite and extreme conclusions. One, it could be seen as an indictment of external or corrupting influences on the academy and a call to fight vigorously against such influences. Two, it could be viewed as an expose of the academy as never having been an arena of perfectly free thought in the first place, and therefore being unable to claim entitlement to it. Neither is exclusively right, though there have been and likely will continue to be proponents of each extreme. It is fair to say that it is more important for the academician to do what he or she believes is right than to do what has precedence. As Hofstadter and Metzger said during the McCarthy era, whatever rights or standards are due to the professional academic are best claimed on grounds of the benefits to humanity rather than appeals to tradition or a romanticized past. Whatever the ultimate costs or benefits of the federal-education collaboration have been, or may yet prove to be, it is clear that World War II and postwar forces were significant enough to alter the trajectory of the operations of American institutes of higher learning. During this period, when the federal government looked to U.S. colleges and universities to supply the material resources and value systems deemed necessary to perpetuate the American way of life, the established role of the university's service to constituency made it easier to apply conceptions of local and regional service to that of the nation. In examining this experience, we showcase the legacy of World War II on the American South and highlight yet another basis on which to recognize the 1940s and 1950s as a transforming period in the region's history.
A vast literature is relevant to this topic, and because of its size and the diverse fields from which it is drawn, even an overview would have been burdensome in the introductory chapter of this study. This essay thus seeks to highlight several trends and scholarly works further to those mentioned in the text. Following that is a brief note on the primary sources available on the universities that this dissertation considered. There are several key works on the U.S. South that deal with changes in the twentieth-century South that provide a scholarly context for this study. Major ones include George Brown Tindall, *The Emergence of the New South, 1913–1945* (Baton Rouge, 1967), James C. Cobb, *Industrialization and Southern Society* (Chicago, 1984); Pete Daniel, *Breaking the Land: The Transformation of Cotton, Tobacco, and Rice Cultures since 1880* (Urbana, 1985); Daniel, *Lost Revolutions: The South in the 1950s* (Chapel Hill, 2000); Jack Temple Kirby, *Rural Worlds Lost: The American South, 1920–1960* (Baton Rouge, 1987); Gavin Wright, *Old South, New South* (New York, 1986); Charles P. Roland, *The Improbable Era: The South Since World War II* (Lexington, 1975); and Bruce J. Schulman, *From Cotton Belt to Sun Belt: Federal Policy, Economic Development, and the Transformation of the South, 1938–1980* (New York, 1991). The volume by Tindall, which contains a treatment of funding of southern higher education in the early part of the century, chronicles an agrarian economy being changed by modernizing forces. Kirby’s *Rural Worlds Lost* argues for the period between 1920 and 1960s as transformative, especially in the shift from agricultural to the service sector and urban/suburban setting. One of the main factors Kirby notes is the effect of agricultural
science on southern farming, which is relevant to the second chapter of this study’s
discussion of the role of university research in the technology of agriculture and
extraction of natural resources. Texas A&M was largely dedicated to these endeavors,
and the Rice Institute and the University of Texas made contributions as well. Wright’s
Old South, New South argues that the diversification of the southern economy and the
South’s closing the economic gap with the North was based on the breakdown of the low-
wage and tenant-based agricultural economy; he argues that not until change took place
was a more prosperous, modern southern society able to take root. Another work that
bears mention is David C. Perry and Alfred J. Watkins, The Rise of the Sunbelt Cities
(Beverly Hills, 1977), a collection of essays that contains a disproportionate number of
authors at Texas universities. An essay in the volume that discusses Houston specifically
is William D. Angel, Jr., “To Make a City: Entrepreneurship on the Sunbelt Frontier,”
showing the relationship between entrepreneurs, politics, and major (generally federally
subsidized) internal improvements.¹

There are several useful overviews of American higher education, though most
have the defendable but sometimes hindering tendency to center on a small number of
elite institutions. Two of the most important treatments of higher education in the United
States are Frederick Rudolph’s 1962 classic The American College and University: A
History (New York, 1962), which remains one of the standbys in American educational
history; and a more recent volume, John R. Thelin’s A History of American Higher

¹ In Gavin Wright, Old South, New South: Revolutions in the Southern Economy since the Civil
Entrepreneurship on the Sunbelt Frontier,” in David C. Perry and Alfred J. Watkins, eds.: The Rise of the
1977), 109–28; Houston material on 117–26. See also C. Vann Woodward, The Burden of Southern
*Education* (Baltimore, 2004), which dubs the 1945–1970 period as the “golden age” of American higher education. Others include Laurence R. Veysey, *The Emergence of the American University* (Chicago, 1965) and Christopher J. Lucas, *American Higher Education: A History* (New York, 1994). A seminal book on American education, and one attuned to the South due to its author’s employment at the University of North Carolina at Chapel Hill, was Edgar W. Knight, *Fifty Years of American Education, 1900–1950: A Historical Review and Critical Appraisal* (1952). In this book Knight explored the rapid advances in American education during the first half of the twentieth century and argued that education was intertwined with the country’s commercial, industrial, and political growth. Ending his analysis in 1950 it was difficult for him to assess the lasting impact of World War II, but he dubbed the war a “heavy jolt” to higher education and made much of the universities’ contributions under the rubric of patriotism.

In looking at more focused works on twentieth-century higher education that have served as background reading for this dissertation, it is appropriate to begin with an article written during the early period of World War II by Harry D. Gideonese, who asserted that higher education had hitherto been an enterprise that sought to preserve family, church, and politics but which underwent a transformation to perform national service. Gideonese is one of the earliest scholars to grapple with that theme. Other writings from the 1950s are Don K. Price, *Government and Science: Their Dynamic Relation in American Democracy* (New York, 1954) and Charles V. Kidd, *American Universities and Federal Research* (Cambridge, 1959). The American Assembly of Columbia University’s *The Federal Government and Higher Education* (Englewood Cliffs, 1960), written by James McCormack and Vincent A. Fulmer, administrators at the
Massachusetts Institute of Technology (MIT), noted that American universities had traditionally had a conception of serving the community, which set American universities apart from their overseas counterparts. “Great universities have always concerned themselves with the urgent problems of their time,” they wrote, “Sponsored research is a desirable aspect of university life, not because it is free of basic conflicts, but because the area of mutual interest between sponsors and universities far overshadows the area of conflict.” Also in 1960, Henry David, ed., Education and Manpower (New York, 1960), considered manpower to be the basis for a prosperous economy. David’s own essay argues that outside—especially corporate—sponsorship of higher education has both a philanthropic and obligatory angle, since the businesses benefit from the graduates and the advances in technology that come out of the university. One of the most important books on the modern university is Clark Kerr’s The Uses of the University (Cambridge, 1963). Kerr, the well-known University of California administrator (chancellor, 1952–1958; president, 1958–1967), based this book on a series of lectures at Harvard University. Kerr surveyed the “new centrality” that the American university had gained since World War II, citing the universities’ increased roles in civic and national purposes, and noting that these changes were coming at a time when “it seems that an entire generation is pounding at the gates and demanding admission.” It was Kerr’s work that supplied the title for this dissertation. Lord Bowden, writing from the University of Manchester Institute of Science and Technology in England, noted that, before World War II, Europe had been the foremost producer of basic or pure research, while the United States had taken the lead in applying research to business in industry. After World War II, however, the fallout of the war shifted the locus of basic research to the
United States. Bowden credited U.S. universities with shouldering a greatly increased portion of scientific responsibility in the postwar era. He ended with the observation that, although it was difficult to precisely state the effect of World War II on the scientist, at the very least it was the case that “it changed our lives and those of all our fellow scientists; it changed our attitude to science and it changed our attitude to authority.”

Adam Ulam in *The Fall of the American University* (LaSalle, Illinois, 1973) argued that higher education should have never moved beyond teacher-to-student instruction and never tried to change the world or solve its problems, especially when the latter involved an alliance with the political powerbrokers of Washington, branches of military service, and corporations. Diane Ravitch, in two well-known works, *The Revisionists Revised: A Critique of the Radical Attack on the Schools* (New York, 1978) and *The Troubled Crusade: American Education, 1945–1980* (New York, 1983), offers a bracing analysis of public schooling, and the first of these books draws a distinction between those who saw the school as a means of indoctrination (radicals) and those who saw the school as a liberalizing force (liberals). John T. Wilson, *Academic Science, Higher Education, and the Federal Government, 1950–1983* (Chicago, 1983), and Margaret W. Rossiter’s 1985 article in *Osiris*, “Science and Public Policy since World War II” explore the relationship between science and national policy and the

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necessary cooperation between the scientific and political community. Roger L. Geiger's 1992 article, "Science, Universities, and National Defense, 1945–1970," is a pertinent overview of the relationship between the federal government and science during the aforementioned years. Geiger's work, like most others of the kind, emphasizes the Soviet Union's launching of the Sputnik satellites in 1957 as the major turning point. Such focus on the Sputnik era as a watershed period is justified, as long as it does not neglect the decade and a half before, which brought higher education into an intimate role with the federal government's national security agenda. Also in 1992 sociologist Sigmund Diamond offered *Compromised Campus: The Collaboration of the University with the Intelligence Community, 1945–1955* (New York, 1992), which generally focused on a few cases at Harvard and Yale of university officials cooperating with McCarthyist elements to inform on perceived subversives. Christopher J. Lucas, in *Crisis in the Academy: Rethinking Higher Education in America* (New York, 1996), argues against the conservative mainstream's attacks on the university system as a bastion of liberalism, asserting that in fact higher education had lost its primacy as a liberalizing force by transforming itself into a system of job training somewhat consistent with what the critics would presumably have wanted. In 1999 the New Press issued a companion volume to the 1997 Noam Chomsky collection mentioned in the introduction to this dissertation, edited by Christopher Simpson, and entitled *Universities and Empires: Money and Politics in the Social Sciences during the Cold War* (New York, 1999). It is worthy of mention here as an addition to the field but somewhat outside the scope of this study for its concentration of the social sciences.  

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In the opening essay of the important book he edited, *Challenges to Research Universities* (Washington, DC, 1998), Roger G. Knoll provides a basic background of the American research university. He documents that its rise to prominence in the twentieth century through the 1930s made it an important institution in the country, but that it was the federal involvement beginning in World War II that was responsible for its most important growth. Knoll cites many of the trends covered in the sixth chapter of this study: namely the government’s national-security agenda being largely responsible for the funding and the decentralized method of using several sponsoring entities independent of one another without oversight from any one organization. Also in the Knoll book is an essay by Linda R. Cohen and Knoll, in which the authors discuss the notion of constituency, also explored in this dissertation, especially in the second and third chapters. 4

As far as the primary sources for the universities considered in this study, each university maintains thorough collections on the university’s history, including minutes of the board of trustees, the papers of the office of the president, bulletins and catalogs, vertical files on major university figures, and other holdings. The papers of the office of the president are generally the most thorough, containing records of correspondence and vast ephemera. The president’s office papers at all four institutions are voluminous and well-catalogued. Fortuitous for this study, the proliferation of materials that agencies of the U.S. government sent to the universities often went to the office of the president to be

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farmed out to whomever appropriate. Given this trend, and a seeming awareness of the presidents of the magnitude of government interaction, these federal materials in the presidents' office records have been well preserved and are abundant. The minutes of the trustees vary in substance and use to the researcher. The most thorough minutes, at least from the time period covered by this study, belong to Texas A&M and Baylor. These two universities' trustee minutes tend to be fleshed out and annotated, and sometimes include attachments and copies of accompanying documents. The fact that Baylor was somewhat accountable to another private entity, the Baptist General Convention of Texas, created extra impetus to document the proceedings and status of the administrative and academic affairs, leading to a copiousness perhaps only burdened by a motive to stress the positive and downplay the negative. The trustee minutes from Rice are well-detailed and mainly showcase the board's business-management function; they are as indicative of a financial institution as they are an educational institution. Indeed, because the Rice trustees delegated so much to the university president (who in turn delegated a great deal to the departments and professors), the Rice trustee minutes are a reflection of the locus of authority and management of the Institute. The trustee minutes from the University of Texas are the most skeletal and often require a keen degree of reading between the lines in order to glean the goings on of the most engaging university affairs. It is possible that an awareness at the time that there would be partisan efforts to examine the meeting proceedings led those making the written records to favor minimalist recording practices. The Texas A&M trustee minutes exhibit this same phenomenon but to a lesser extent, and generally include more detail and accompanying material. For all four universities, numerous bulletins, catalogs, and materials intended for public
consumption are valuable, if somewhat biased toward presenting a positive image. These are balanced by the records of correspondence of university officials, which reveal behind-the-scenes debates, self-criticism, controversy, and downright bitterness over respective aspects of university administration. Media such as newspapers, open letters, and even books also represent a vehicle of third-party commentary; a scan through the footnotes of the third chapter of this study provides several examples. Overall, such a volume of primary materials generated from inside and outside the universities from a variety of vantage points has yielded a robust body of sources on the universities for the scholar’s use. Not unique to this particular subject, the primary documentary evidence is but one basis for inquiry. Just as the persons and institutions in the postwar university had to make sense of their surroundings and the new challenges facing them, so must the modern scholar when peering at them from a different point in time.
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