

An Abstract Thing We Call “Intellectual Atmosphere”: Science, Urban Development, and Business/Government Relations in Dallas, 1956–1969

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This article explores the efforts of Dallas businessmen, especially the leadership of Texas Instruments (TI), to build a science and research sector to facilitate new types of capital accumulation for Dallas and North Texas in the 1960s. The creation of the Graduate Center of the Southwest (GRCSW), and its subsequent transformation into the public University of Texas at Dallas in 1969, offers new perspectives on science and research, urban growth strategies, and the relationship between business and government in the postwar Sunbelt. TI leaders envisioned the center as a way to become more competitive in the microelectronics industry and also to direct urban growth and, ultimately, create a city and region that better reflected the private, growth-oriented interests of the Dallas business community. However, when the center began to falter economically in the mid-1960s, TI leaders sought out the state to take it over and transform it into a science and technology graduate school branch of the University of Texas system (UT). The exchange, although mutually beneficial, demonstrates how powerful businesses coopted the resources of the state to further their own ends.

Keywords: R&D; technology; economic development; business-government relations

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Introduction

In the decades after World War Two, urban business and political elites in a variety of cities became aware that their economic fortunes would increasingly be tied to their ability to produce, attract, and retain scientific researchers and the businesses that employed them. In many places, older, low-skill economic sectors like agriculture, extraction, and heavy manufacturing declined rapidly in the face of mechanization and increased mobility among firms.¹ To compete, new types of economic production, often focused on technologies that were honed during the war, like aerospace, computing, and weapons, would be necessary.² Research universities, some savvy leaders noticed, were at the heart of many of these growing agglomerations, most notably Silicon Valley near San Francisco, and Boston's Route 128. These two high-tech complexes, tied to elite, established universities, became the paradigm that other cities attempted to emulate, with varying levels of success. Scholars studying these metropolitan areas have usually focused on which attributes have led to successes and failures for each region³ or emphasized the ways that universities both shaped and were shaped by metropolitan technological agglomerations and federal spending priorities during the Cold War era.⁴ The rise of defense technology as a lucrative economic sector, as well as the increased presence of the federal government, shaped capitalism in myriad new ways: a heightened emphasis on science and technology and the human capital

1. This was especially true in the South and West. Wright, *Old South*; Scranton, *The Second Wave*; Schulman, *From Cotton Belt*; Abbott, *The Metropolitan Frontier*; Nash, *The Federal Landscape*. For loss of heavy industry broadly, see Bluestone and Harrison, *Deindustrialization of America*.

2. Markusen et al., *The Rise of the Gunbelt* demonstrates that the vast majority of defense industry was located in the South and West after World War Two, especially in Los Angeles. See also Soja, Morales, and Wolff, "Urban Restructuring"; for urban development policy and defense, see Kirby, *The Pentagon and the Cities*.

3. Economic geographers were the first group to study this phenomenon in the 1980s and 1990s. They focused on California and the Northeast. Important works include Hall and Markusen, *Silicon Landscapes*; Saxenian, *Regional Advantage*, which argues that Silicon Valley's main advantage was its flexible, integrated, and entrepreneurial culture; Scott, *Technopolis*. More recently, historians have analyzed the earlier spatial context of the knowledge economy and assessed the strengths and weaknesses of tech sectors in other cities. O'Mara, *Cities of Knowledge*; Leslie and Kargon, "Selling Silicon Valley." Other scholars have broadened the emphasis on high tech to include categories like "creativity" and "cognitive-cultural" in an attempt to determine how cities attract skilled workers and their businesses. See Florida, *Cities and the Creative Class*; Scott, "Capitalism and Urbanization."

4. Geiger, *Research*; Leslie, *The Cold War*; Lowen, *Creating the Cold War University*; Loss, *Between Citizens*. Other scholars focus on the corporatization of the research university. Slaughter and Rhoades, *Academic Capitalism*; Newfield, *Ivy and Industry*; Bok, *Universities in the Marketplace*; Berman, *Creating the Market University* provides the most comprehensive historical account of this phenomenon.

employed in those fields; a shift away from heavy industry; and a geographic shift to less developed areas, often in the South and West.⁵

This article explores the efforts of Dallas businessmen, especially the leadership of Texas Instruments (TI), to build a science and research sector to facilitate new types of capital accumulation for Dallas and North Texas in the 1960s. North Texas, a prosperous yet economically bifurcated region, long invested in agriculture, energy, and banking, but without even one PhD-granting university in the mid-1950s, seemed like an unlikely place for a technological agglomeration. However, science and defense businesses steadily moved there during and after World War Two, making Dallas the second largest aerospace center in the United States. TI leaders, however, did not think that the growth was sustainable without a “brainpower center” that would help to attract and retain scientists and produce new ones, because they believed that cities and regions that lacked top intellectual talent would become “colonial to intellectually advanced regions” regardless of their other characteristics.⁶ Driven by this economic anxiety and animated by an intense competition for scientists who were in short supply, the TI leadership and other Dallas elites created and funded a private research facility that connected and organized local universities, brought in federal funding, and contributed to basic research for the city’s high-tech firms.⁷ They used their ample business connections to bring in leading experts on high-tech growth like Frederick Terman from Stanford and Lloyd Berkner from Brookhaven Labs.⁸ They founded the Graduate Center of the Southwest (GRCSW) in 1961 and

5. O’Mara, *Cities of Knowledge*, is especially relevant. Also see Mozingo, *Pastoral Capitalism*; for changes to urban capitalism engendered by Keynesian economics, see Jackson, *Crabgrass Frontier*; Cohen, *A Consumer’s Republic*; Sugrue, *The Origins of the Urban Crisis*; Kruse and Sugrue, *The New Suburban History*, especially Freund, “Marketing the Free Market,” 11–32. For shifts to the South and West, see especially Schulman, *From Cotton Belt*, and for declining reliance on heavy industry, see Bluestone and Harrison, *Deindustrialization of America*.

6. Lloyd Berkner, “Renaissance in the Southwest: Science Brews New Respect for the Intellect on a By-passed Frontier,” *Saturday Review*, June 3, 1961, 43.

7. Jonsson and others around Dallas also saw cotton and oil, the two principle industries that drove the local and state economy before World War Two, as “passed their peak,” and thus new types of economic development were necessary. See “Brainwave from Dallas to Canaveral Expected,” *DMN*, February 27, 1963; “Graduate Research Center of the Southwest Luncheon Meeting, May 15, 1962,” Folder “Graduate Research Center,” Box 1, Graduate Research Center Papers, SMUD; “Engineer of the Intellect,” *Saturday Review*, June 3, 1961.

8. For a discussion of the moderate conservative viewpoints in Dallas during that era, as well as the far right faction, see Miller, *Nut Country*, especially the introduction in which Miller discusses H. N. Mallon, President of Dresser Industries, the largest firm to locate some operations at the GRCSW campus, and retailer Stanley Marcus, both of whom worked against ultraconservatives and supported the GRCSW.

lauded it as a centerpiece of regional growth, a hub for elite scientists, and an example of private ingenuity.⁹

The creation of the GRCSW, and its subsequent transformation into the public University of Texas at Dallas in 1969, offers new perspectives on science and research, urban growth strategies, and the relationship between business and government in the postwar Sunbelt. TI leadership, led by Chairman Erik Jonsson and founders Cecil Green and Eugene McDermott, saw the center as a research arm that would undertake basic research that could help Texas Instruments as well other local and regional science-oriented businesses—including oil exploration and production. As TI leaders knew well, the evolving field of high technology, and especially electronics, could be extremely lucrative, but also presented significant risks and challenges. Capital costs were often high at the beginning of the development process, patenting competition became more intense, and getting highly specialized products to market efficiently became paramount to achieving maximum returns. A center that was able to attract top researchers from around the world, share information among local corporations and universities (a type of local consortium), and undertake directed basic research would increase the competitiveness of businesses, especially TI. However, a traditional university, whose function was to educate undergraduate students, would actually hinder this purpose by drawing resources away from research. From their perspective, graduate education focused exclusively on advanced research would streamline the production process and reproduce the labor power they needed to flourish in the present and future.¹⁰ The point was driven home by the physical site of the facility. When completed, the GRCSW was located as the centerpiece of a private research park, owned by the TI founders' nonprofit corporation and that contained corporate research labs hoping to benefit from proximity to the knowledge resources available at the center.

But the center's role in promoting a certain type of urban growth, indeed in saving the region from ruin if we are to believe their rhetoric, by attracting a certain type of worker and firm was equally important.¹¹ They envisioned the center as a way to direct urban growth and,

9. For a full articulation of this argument, see "Mayor Jonsson Talks Education in the Megalopolis," *Texas Metro* (April 1969), Folder 12, Box 99, J. Erik Jonsson Papers (JEJ), SMUD.

10. The founders continued to employ this logic when negotiating with the state to create UTD. See, for example, "Institutional Advancement—A Goal for UTD," Folder 32, Box 6, GRCSW Records, UTDA; "Notes on SCAS-University Industrial Cooperation, February 25, 1963," Folder 42, Box 116, JEJ Papers, SMUD.

11. See, for example, Erik Jonsson, "Technological Progress and Its Implication," speech, June 1958, in which he describes a "scientific-industrial revolution" that will shape economic winners and losers for the foreseeable future. Folder 15, Box 6, JEJ Papers, SMUD.

ultimately, create a city and region that better reflected their interests. The founders thus imagined the GRCSW as a center of intellectual culture that would be attractive to potential technologically skilled migrants, but importantly, also to high-tech businesses looking for resources to improve their own research and productivity. As Alex Cummings has argued, in the 1950s and 1960s, some urban leaders “target[ed] the interests and preferences of a middle-class technical elite” that rose in power and prestige as the Cold War reorganized society in the interests of national defense.¹² This paradigm also applied to high-tech firms. In an era when businesses and workers were more mobile than ever before, the GRCSW would be the key component in drawing in the types of businesses and workers that would in turn transform the image of the metroplex. They recognized the economic and social potential that research and research campuses held as anchors for private technology firms and as places that could change the image of a region. They emphasized human capital as the key, and spoke and wrote constantly about the need to attract and retain “the best men.” As GRCSW President Lloyd Berkner opined in 1961, Dallas could be “a Mecca for men of science and technology.”¹³

For Dallas’s technological elites and the chamber of commerce, which acted in almost complete lockstep with TI executives throughout the process, reforming the city’s image was key to sustaining economic growth in large part because of its reputation for radical conservatism, segregationist attitudes, and by the 1960s, high profile violence against liberal politicians. These attitudes, many businessmen argued, would dissuade investment and migration from the North and California and ensure Dallas’s subservience to more advanced, and livable, regions.¹⁴ Lucrative energy and banking fields helped Dallas elites to rapidly develop impressive cultural institutions, but the leaders still worried about the city’s reputation. Jonsson thus saw himself as an image maker for Dallas; he ran for and became Mayor of Dallas in 1964 in an effort to unite the city against radicalism and Old South tendencies after the Kennedy assassination and to promote his vision of a more technologically oriented, white collar, and forward-thinking city.

12. Cummings, “Brain Magnet,” quoted on 471. O’Mara, *Cities of Knowledge*, makes this point explicitly as well.

13. “Research Center Described as Key for Dallas,” *DMN*, February 26, 1963; see also Tandy Shermer, *Sunbelt Capitalism*, 209, for the need to create a place to attract “brainpower.”

14. See, for example, Edward C. Bursh to J. Erik Jonsson, June 28, 1960, Folder 12, Box 102, JEJ Papers, SMUD. Miller, *Nut Country*, describes how common “ultra-conservatism” was among Republicans in Dallas, as well as the more Old South mentality of area Democrats in the early 1960s. See especially pp. 52–68. For socially moderate policy as a business tool, see Tandy Shermer, *Sunbelt Capitalism*, 210–218; and Kruse, *White Flight*, chap. 1.

Although the business community and specifically the corporations who stood to benefit from the center were predominantly social moderates looking to distance themselves from segregationists and radicals, they were also steadfast economic conservatives and resisted most forms of government intervention into the local economy. Dallas politicians and business leaders were much more reticent to embrace federal programs from the 1930s to the 1950s than most of their counterparts throughout the South, going so far as to refuse federal anti-poverty assistance until the 1970s. Their anti-government voices and policies were unusually aggressive, even for the South. “Dallas,” Bruce Schulman writes, “represented the limit of southern intransigence” toward government involvement in local affairs.¹⁵ As a privately funded, developed, and administered entity, the GRCSW reflected their economic beliefs and also separated Dallas from other similar places across the South and West. After World War Two, industrialists often provided political and economic support for university development, but academic administrators and politicians took the lead in building the new institutions.¹⁶ In Silicon Valley, the template for other attempts across the country, the Stanford Research Park was created and administered by Fred Terman, a dean of engineering at the private institution.¹⁷ Growing public research universities in Atlanta and Arizona were transformed with a mix of public and private money but were guided internally; Arizona State, for example, was “born out of a postwar alliance between investors, boosters, and liberal educators.”¹⁸ In North Carolina, Research Triangle Park was a public-private partnership that drew resources from three universities as well as state government.¹⁹ Closer by in Austin, a small group of engineering professors and the mayor persuaded federal officials to donate a World War Two magnesium plant to the University of Texas to become an off campus research facility.²⁰

15. Miller, *Nut Country*, especially 34–46. For the New Deal specifically, see Biles, “New Deal in Dallas,” which argues that, although the New Deal did provide some capital investment, the Citizens Council controlled the local government to such an extent that federal authorities had little impact on Dallas. Schulman, *From Cotton Belt*, makes the point about the Citizens Council’s disinterest in federal anti-poverty funding on pp. 181–182. Cebul and Williams, “‘Really, Truly a Partnership,’” 97, point out that Dallas elites did readily accept federal investment.

16. Tandy Shermer, *Sunbelt Capitalism*, makes this point well on p. 201.

17. O’Mara, *Cities of Knowledge*; Leslie and Kargon, “Selling Silicon Valley”; Gillmor, *Fred Terman at Stanford*.

18. O’Mara, *Cities of Knowledge*; Tandy Shermer, *Sunbelt Capitalism*, 200–217, especially 203.

19. Cummings, “Brain Magnet.”

20. Busch, *City in a Garden*, 117–125. J. Neils Thompson, who ran the facility for two decades, was assisted by other university administrators and Austin Mayor Tom Miller, but no private businesses.

By contrast, the GRCSW was funded and run entirely by private businessmen. It reflected what Harvey Graff called “The Dallas Myth,” a narrative that emphasized Dallas’s lack of natural advantages and lauded the business community’s initiative as the sole driving force of the city’s growth and prosperity. According to this narrative, high tech was simply another frontier to be conquered by the community’s business acumen, drive, and resiliency.²¹ Dallas had neither a large public nor a research university, and it was private businessmen who both understood the new landscape of competition for scientists and for federal funding and generated the capital that supported the research center. The Dallas Chamber of Commerce universally supported the entire process and worked relentlessly to promote the center at talks and luncheons, collect data on the region’s educational needs, and eventually lobby for state assistance in Austin. Dallas’s business community effectively created the predominant research facility, rather than the other way around, in which a growing and dynamic research university drove business growth. In this way the business community’s emphasis on the power of Dallas’s private sector and free enterprise was reflected in the GRCSW.

However, when the center began to falter economically in the mid-1960s, TI leaders sought out the state to take it over and transform it into a science and technology graduate school branch of the University of Texas system (UT). The exchange, although mutually beneficial, demonstrates how powerful businesses coopted the resources of the state to further their own ends. While seeking to limit the power of the state in business affairs, they simultaneously sought out the state to save their business failures. Historians have detailed the myriad ways that businesses attempted to strip away government in the postwar era, especially by endeavoring to undo New Deal programs, undermine the efforts of organized labor, and minimize welfare programs and federal regulatory frameworks.²² More recently, historians have also begun to explore how business employed government to bolster their own prospects. Businesspeople took advantage of subsidies and development programs, used government to form public-private partnerships, and worked closely with New Dealers and later their Keynesian counterparts. As Brent Cebul writes, they “formed an institutional and civic bedrock on which liberal policymakers built

21. Graff, *The Dallas Myth*. For a related primary example, see “Leaders Cite Dallas Growth,” *DMN*, December 10, 1959.

22. Phillips-Fein, *Invisible Hands*; Moreton, *To Serve God and Wal-Mart*; Fones-Wolf, *Selling Free Enterprise*; Cowie, *Capital Moves*; Phillips-Fein and Zelizer, *What’s Good for Business*.

subsequent local-national, public-private development partnerships.”²³ TI leaders and other Dallas businessmen accomplished their goal in a slightly different way, by calling on state legislators and partnering with powerful academic administrators.²⁴

As their private funding dissipated, then, Dallas business elites targeted the state government and the powerful University of Texas rather than the federal government as potential sources of local investment. In contrast to the rural businessmen studied by Cebul, TI executives had little experience with New Deal programs; their relationship to and knowledge of the federal government was built around military contracts rather than development subsidies. They also saw the State of Texas as a much more promising source of investment. For Jonsson and his allies, then, the focus turned toward demonstrating broad benefit to the state that would be worthy of public entities absorbing the capital-intensive risk associated with the center. They accomplished this, primarily, by emphasizing the region’s lack of public educational infrastructure and its overburdened private universities, and by selling the new university not as a venue for basic research to enhance their own economic prospects, or as a hub for elite scientists, but rather as a school that would help to mitigate a growing educational crisis in the metroplex and the state. They yoked UTD to a large and expensive plan to bolster higher education in Texas, which the state identified and began to allocate resources toward in 1965. Broad emphasis on graduate and undergraduate education, rather than the more narrowly defined research interests that characterized the GRCSW’s actual activities, became the means with which they petitioned the state for assistance, but the ends were defined by their economic and social goal: growth centered on corporate science and research. One uncommonly forthright GRCSW supporter made this point clearly, noting that the only real solution to Dallas’s research problem was the “acquisition of the Center and its assets by the state in order to assure

23. Quoted in Cebul, “They Were the Moving Spirits,” 141. See also Tandy Shermer, *Sunbelt Capitalism*, for an extensive history of urban boosterism; Richard John provides a great synopsis of the trajectory of the history of capitalism as a field in “Introduction: Adversarial Relations?” in John and Phillips-Fein, *Capital Gains*; *Capital Gains* and Cebul, Geismer, and Williams, *Shaped by the State*, provide sophisticated cross sections of contemporary works on the history of capitalism in relation to the state, emphasizing the diverse ways that business and government intersected in the twentieth century.

24. Historical studies of business-government relations have tended to focus on the federal government and municipal governments. Geographers have concentrated more on the state level. See Tretter, *Shadows*, especially pp. 57–76, and Eisinger, *The Rise of the Entrepreneurial State*. These studies, however, emphasize the 1980s.

the growth and quality that no realizable amount of private funds could provide.”²⁵

Texas Instruments and the Scientific Turn

Like many science-oriented firms, Texas Instruments rose to prominence as a military contractor during World War Two. The company was founded as Geophysical Services, Inc., in 1930 and located in Texas because its primary work was with the petroleum industry, as a provider of seismic exploration. Employees Erik Jonsson and Cecil Green, along with GSI founder Eugene McDermott, purchased GSI in 1941. As demand for electronics manufacturing increased during the war, TI diversified to capture parts of that market and developed electronic components for the Army Signal Corps and the United States Navy. The firm's success encouraged a change of direction in the post-war era, when GSI made the difficult decision to focus on electronics and military contracts despite the decrease in defense spending immediately after the war. The choice turned out well. By 1951 the name was changed to Texas Instruments, and the company was investing heavily in researchers specializing in transistors and semiconductors.²⁶ By 1958 Jonsson had identified geological exploration, defense electronics, and integrated circuits as TI's three main sources of revenue.²⁷

World War Two also encouraged agglomeration of manufacturing operations in war-related production activities. Although much war industry was located in cities like Detroit and Chicago that were already geared toward heavy industry, the federal government also sought to decentralize production as a defense measure and because of the logistical issues that a world war created in terms of moving large equipment like ships and airplanes. DFW, long a regional hub of aviation, prime candidate for investment based on wartime decentralization policy, and also positioned well politically in Washington,²⁸ became the second largest aircraft production center in the United States almost overnight,

25. “A Fable for Educators; their Friends and Natural Enemies,” 8. Folder 6, Box 9, Graduate Research Center Collection (GRC) Records, UTDA; Tandy Shermer makes a similar point regarding the emphasis on education for business ends, not increased democratization of higher education, at Arizona State University. *Sunbelt Capitalism*, 208.

26. Joe Cunningham, “Jonsson of Texas’ Transworld TexIns,” *Texas Parade*, March 1958; Pirtle, *Engineering the World*, 27, 34–35.

27. Erik Jonsson, “Technological Progress and its Implications,” speech, June 6, 1958, Folder 15, Box 6, JEJ Papers, SMUD.

28. Texas was supported in Washington by some longtime figures: Speaker of the House Sam Rayburn, Senator Tom Conally, and younger Congressman Lyndon Johnson.

trailing only Los Angeles. North American Aviation, Southern Aircraft, and Lockheed led the way. Lockheed Martin operated the largest aviation plant of its kind during the war, and Dallas drew in more defense manufacturing money, by far, than any other southwestern city (outside California). Manufacturers within the city and surrounding environs won numerous other defense contracts during the war.²⁹

Aerospace investment, both federal and private, continued after the war. Low taxes, anti-unionism, a friendly business climate, and federal decentralization policy drew these firms to Texas and the South and West more broadly. Led by the federally funded migration of aviation corporation Chance Vought in 1948, a sizable defense contracting agglomeration emerged in DFW in the broadly constituted electronic industry. Texas was the largest recipient of defense spending among all southern states in the 1950s, a region that the federal government invested in heavily.³⁰ A tightly knit leadership group, composed of industrialists and corporate interests but led by bankers and executives who financed local real estate development, agriculture, construction, and oil, ensured that local politics was dominated by a relatively homogenous, conservative group known as the Dallas Citizens Council. They resisted federal investment forcefully and controlled politics in Dallas to a degree unseen in most cities. A Neiman Marcus executive claimed that Dallas was a city run “by a group of at most ten, at fewest three, men” and “government by private club.” These leaders saw the Cold War as a threat to U.S. national security and the American way of life, but also as an opportunity for economic growth. Although they were not particularly interested in defense contracting, they were open to growth in that sector based on their opposition to communism and their general belief that urban growth benefited everyone.³¹

29. “Key to Changing World,” *DTH*, July 6, 1962; Robert Fairbanks, *For the City*, 138–144; F. O. Burns, “Dallas—The War Capital of the Southwest,” *Dallas*, December 1943; Scott and Davis, *A Giant*; Fairbanks, “Dallas in the 1940s”; Melosi, “Dallas-Fort Worth,” 163–4. The term “Southwest” and its variants were employed differently by different historical actors. The term always referred to Louisiana, Texas, Oklahoma, and New Mexico, and could also include Arkansas, Arizona, and Colorado.

30. Schulman, *From Cotton Belt*, 109 and 139. Chance Vought’s relocation is also a good example of the type of federal subsidies that DFW often sought and received, focused on military-related industries.

31. Dallas was long known for its Citizens Council, a very small, exclusive group of elites who dominated local politics to an unusual degree. Schutze, *The Accommodation*; Payne, *The Dallas Citizens Council*; Hansen, *Civic Culture*; Fairbanks, *For the City*, chap. 8; Fairbanks, “Dallas in the 1940s”; Thometz, *The Decision Makers*; Miller, *Nut Country*; Melosi, “Dallas Fort-Worth,” 165–168. Quote is from David Allison, “The University and Regional Prosperity,” *International Science and Technology* (April 1965) quoting Warren Leslie. Folder 27, Box 109, JEJ Papers, SMUD; Harry Hunt III, “The Most Powerful Texans,” *Texas Monthly* (April 1976), Folder 42, Box 103, JEJ Papers, SMUD.

The growing technological and military threat posed by the rise of the Soviet Union provided an impetus to increase emphasis on defense-related technology, particularly in the wake of the Sputnik launch in October 1957. Threats of Soviet dominance resonated especially well in Dallas, where anti-communist sentiment was so strong that high schools were required to teach anti-communism beginning in 1960.³² For defense companies and universities, Sputnik and its aftermath also signaled a new era of federal funding for research and development; from 1957 to 1960 federal funding for defense-related R&D grew by roughly 140 percent.³³ In September 1958, President Eisenhower signed the National Defense Education Act, the most comprehensive federal investment in defense-related education to date, which included funding for graduate education in science and technology courses.³⁴ However, regional competition for funding, as well as for skilled workers, would likely be intense and, although the area had a robust electronics sector that employed more than one in four Dallas workers (over 17,000) and generated \$263 million in business revenue in 1961, business leaders quickly saw that the region's education and technological infrastructure was sorely lacking. A center of research would be vital to winning the city's appropriate share of the funds and for attracting new businesses.³⁵

The TI leadership and the Dallas business community took the lead in analyzing the problem. Erik Jonsson, TI chairman as well as the president of the Dallas Chamber of Commerce, created a chamber committee on graduate education in 1957. In early 1958, the committee found that no university in the ten-county area that tied together Dallas, Fort Worth, and Denton offered PhDs in science or engineering. Furthermore, they found that the entire Southwest lagged far behind all other U.S. regions in producing PhDs. Dallas itself was in woefully poor

32. Miller, *Nut Country*, 32. Berkner also pointed to Sputnik as the crucial moment when the need for "men of great intellect and skill has become obvious." Berkner, "Renaissance," 42.

33. "Federal Spending on Defense and Nondefense R&D," American Association for the Advancement of Science, accessed May 21, 2019, <https://www.aaas.org/sites/default/files/2019-05/Function.jpg>.

34. Whereas the NDEA was vitally important in focusing U.S. intellectual activity on science and technology, it was also important to U.S. education more broadly. See Urban, *More Science than Sputnik*; Loss, *Between Citizens*.

35. For federal investment in the South, see Schulman, *From Cotton Belt*; Wright, *Old South*. For electronics workers, see Honorable Bruce Alger, "Dallas Initiative Claims Well-Deserved Tribute," *Congressional Record*, July 25, 1961, Folder 42, Box 103, JEJ Papers, SMUD. For electronics industry stats, see "Dallas is Leader in Electronics," *DMN*, July 31, 1961, Folder 22, Box 100, JEJ Papers, SMUD; "Five Million Minutes," unpublished essay, 1962, Folder 1, Box 6, GRC Records, UTDA; "Code Seeks to End Cajoling in Race for New Engineers," *DTH*, September 16, 1957.

shape regarding graduate education; among large U.S. cities only Portland, Oregon, produced a lower percentage of PhDs.³⁶ For Jonsson, this lack of graduate education was doubly worrying. On the one hand, the lack of a research university meant that both high-tech companies and federal money would be less inclined to locate in Dallas than in other areas. On the other hand, talented young engineers from DFW would not be able to stay in the area to go to graduate school or to work, nor would potential transplants be likely to migrate. For Texas Instruments, which rose to national prominence in the late 1950s based largely on Jack Kilby's highly technical work with semiconductors, the threat was even more urgent. Most of the TI leaders and other chamber of commerce members thought that Dallas was a good place for business, and due to the city's large upper class, their cultural resources far outpaced most southern cities. However, unlike the Research Triangle in North Carolina or Georgia Tech in Atlanta, Dallas lacked a real center for research. Leaders readily acknowledged that talented scientists would find the lack of a "brainpower center" unappealing.³⁷

After some sporadic attempts to lure tech firms to Dallas, Jonsson organized a plan to institutionalize high-tech education in Dallas.³⁸ Based loosely on the Stanford Research Park and Stanford Research Institute, the new facility would combine Dallas's ethos of free enterprise and the new American emphasis on defense, research, and graduate education. To succeed, he argued, TI would need to generate initial funding and also make the case that tech education and research were more than simply a way for Dallas's electronics industry to stay competitive. Instead, research needed to be promoted as a civic good that extended beyond narrow corporate interests in the tech sector. To do this, Jonsson and his chamber allies articulated two points that had long resonated among the Dallas business community. The first was the aforementioned "Dallas Myth," which created a sense of shared identity and purpose among business leaders. The second trope was the

36. "Graduate Education in the Southwest," *Journal of the Graduate Research Center*, May 1961. Among other alarming statistics, the article found that Texas produced half the national average of PhDs per one million residents. Folder 29, Box 100, JEJ Papers, SMUD; Al Mitchell, "Timeline," Notes of corporate meeting held on January 11, 1963, Folder 1, Box 1, GRC Records, UTDA; "Five Million Minutes."

37. "Challenges of Greatness," *DMN*, December 7, 1961; "Dallas: Larger Education Role Proposed for Research Center," *Science*, December 13, 1968; "Earnings High Seen," *DTH*, April 18, 1956; "Research," *Business Week*, December 22, 1956. Folder 18, Box 100, JEJ Papers, SMUD; "Five Million Minutes"; Mitchell, "Timeline," i–iii; Pirtle, *Engineering the World*, 81–83; for North Carolina and Atlanta, see Cummings, "Brain Magnet," and O'Mara, *Cities of Knowledge*, 201–207.

38. "Chamber Patters Outlook to Dallas," *DTH*, November 24, 1957; Al Mitchell, "Timeline—Introduction," p. 1, Folder 1, Box 1, GRC Records, UTDA.

inherent strength of free enterprise as the engine of Dallas's robust economic activity. Dallas politicians in Washington during this era of federal spending, as well as Dallas media outlets, were quick to point to private business as the harbinger of Dallas's success. Congressman Bruce Alger summed up the chamber's economic message succinctly in 1961: "Dallas business and industrial leaders have not waited on government planning or federal handouts, they have kept abreast of, and even ahead of developments in the Space Age until today Dallas ranks as one of the outstanding centers of the electronics industry."³⁹ Alger's strong anti-government stance was echoed by TI leaders in the early 1960s as well as by much of the Dallas business community. Erik Jonsson, for example, somewhat ironically denounced people who would "expect the government ... to buy something for [them]" in a graduation speech at the public University of Houston in 1962.⁴⁰

Despite the free market rhetoric, however, the chamber of commerce and high-tech corporations in Dallas knew quite well that federal funding would be an indispensable resource to perpetuate economic growth. TI leaders took the lead with a series of initiatives designed to create institutions that would compete for federal research money and, they hoped, attract the scientific talent so vital to the region's future. Their first move was to partner with Southern Methodist University (SMU), a private university close to downtown Dallas, to create the Graduate Research Center, Inc., a nonprofit corporation designed to fund a new Science Information Center on SMU's campus in late 1957. They imagined the center as a "forerunner for the regional assimilation, storage and dissemination of scientific literature,"⁴¹ a sort of

39. Quoted in Honorable Bruce Alger, "Dallas Initiative Claims Well-Deserved Tribute," *Congressional Record*, July 25, 1961, Folder 42, Box 103, JEJ Papers, SMUD. Alger was the first Republican sent to congress from Dallas County and a self-described "ultraconservative." See Fairbanks, *For the City*, 221, 226, 232–236; for free market rhetoric see, Erik Jonsson, "Commencement Address at the University of Houston, August 25, 1962," Folder 5, Box 69, JEJ Papers, SMUD; The infamous John Birch Society ad in the *DMN* titled "Welcome Mr. Kennedy to Dallas," November 22, 1963, is another good example of this ideology. For the Dallas Myth, see Graff, *The Dallas Myth*. For examples of the "Dallas Myth," see "Leaders Cite Dallas Growth," *DMN*, December 10, 1959, and "Challenges of Greatness," *DMN*, December 7, 1961; Erik Jonsson, "The Keystone in Dallas," address to the Salesmanship Club of Dallas, July 7, 1960, Folder 3, Box 69, JEJ Papers, SMUD; according to Miller, the myth traces back to Holland McCombs, "The Dynamic Men of Dallas," *Fortune*, February, 1949. Some scholars have argued that there is a myth of western cities more broadly, in which they are free of many the problems that plague cities in the East. See Findlay, *Magic Lands*, especially the introduction.

40. "Commencement Address, University of Houston, August 25, 1962," Folder 5, Box 69, JEJ Papers, SMUD.

41. "Untitled Document—heading 'Table of Contents,'" dated 9/12/68. Courtesy University of Texas at Dallas archives. See also Al Hester, "SMU Center Wins Trustees Okay," *DTH*, October 29, 1957.

intellectual warehouse available to universities and researchers across the area, and a physical place for researchers to interact and exchange ideas. “In concept,” SMU President Willis Tate declared, “it is the first graduate research center of its kind in the world,” privately owned but designed as a center for fusion between industry and private university research. Jonsson saw it as a magnet for scientists, writing in a TI-wide memo that the center would provide an “atmosphere and facilities conducive to such creative work” vital to sustained industrial success in DFW.⁴² The three men sold off portions of their TI stock to generate the \$2 million necessary to build it. A second function of the center, more related to business growth, was to find and disseminate information about technological and economic conditions in Texas and DFW. Texas, they learned from the University of Texas’s Bureau of Business Research, was eighth among U.S. states in its number of electronics firms despite the low number of graduate degrees granted. In DFW, Chance Vought Aircraft had recently won a \$3.3 million federal contract to perfect the Minuteman ICBM, and firms like Continental Electronics, General Dynamics, and Collins Radio were similarly working on Department of Defense projects worth tens of millions of dollars.⁴³ The only thing missing, it seemed, was an institution to bring in scientists and guide growth.

Mobilizing the Metroplex around Graduate Research and Corporate Space

By early 1960, Jonsson, Green, and McDermott realized they would need a larger, more integrated, and more dynamic institution to fulfill what they considered the region’s destiny as a tech hub. Although the center did bring scientists and researchers together, it had yet to provide any tangible benefits for the region in terms of graduate education, high-tech growth, or increased federal funding. SMU had been unable to make any headway in generating PhD programs in science or engineering. It did not have the capacity to attract scientists from elsewhere. Whereas the lack of research universities, and the attendant lack of educational investment by states, was a problem all through the South, Jonsson also worried about the commitment of private business to

42. Bill Glines, “Industrialists Found Center of Research,” *DMN*, October 29, 1957; “Information Bulletin,” Erik Jonsson memo to TI, March 20, 1959, Folder 29, Box 100, JEJ Papers, SMUD.

43. “Electronics Firms Spread in Texas,” *DTH*, August 21, 1960; Jimmy Banks, “Support of Education to Aid Texas Electronics Industry,” *DMN*, August 21, 1960; “Information Bulletin,” Erik Jonsson memo to TI, March 20, 1959, Folder 29, Box 100, JEJ Papers, SMUD.

improving educational resources.⁴⁴ He used TI as a model; led by its enormous semiconductor division, as well as federally sponsored missile programs, the firm was growing at an astounding pace. TI added almost 13,000 jobs between 1956 and 1960, an increase of close to 400 percent; but TI executives worried that the lack of young talent skilled in advanced in the area would soon dry up. The company doubled the amount of employees with advanced degrees every two years from 1946 to 1960.⁴⁵ Flush with money but worried about their future prospects and the severe paucity of researchers in the region, the three leaders began to plan for a private research center that would lead Dallas and the Southwest into a more diversified economic future.⁴⁶

In the spring of 1960, Jonsson contacted SMU Foundation board member Lloyd Berkner to conduct a brief study of Dallas's potential for extending its research capabilities. Berkner was quite familiar with the burgeoning high-tech world of the 1950s and the role that large laboratories could play in bringing together elite researchers from different universities and companies to propel regional growth. Since 1950 he had been president of the prestigious Associated Universities, a consortium of nine elite East Coast universities that created and operated Brookhaven National Laboratories in consort with the Department of Energy on Long Island, New York. Berkner was enthused about what he found in Dallas: a market with great research potential and entrepreneurial spirit, but as yet untapped because of the lack of graduate education and research infrastructure.⁴⁷

In late May 1960, Berkner met with a diverse group of Dallas businessmen, from the TI founders to Stanley Marcus, to present his plan, which he based in part on the Brookhaven model. The scientific revolution engendered by World War Two, he argued, meant that knowledge was now the key resource for regional economic growth, rather than natural resources or labor power. In his calculus, even strong sectors like energy would become ineffective without the application

44. Edward C. Bursh to J. Erik Jonsson, June 28, 1960, Folder 12, Box102, JEJ Papers, SMUD; Helen Hill Miller, "Private Business and Public Education in the South," *Harvard Business Review* 38, no. 4 (1960): 75–88, also in Folder 12, Box 102, JEJ Papers, SMUD.

45. Braun and McDonald, *Revolution in Miniature*, chap. 10; Leslie and Kargon, "Selling Silicon Valley," 452; Dr. Ross McDonald, "Industry Presentation by Dr. Ross McDonald," Folder 5, Box 6, GRC Records, UTDA. McDonald was the director of TI's Central Research Labs in the early 1960s.

46. TI's stock increased in value by about 4,000 percent from 1953 to 1958. "The Big Man in Big D," *Southern Living* (n.d., likely 1968–1969), Folder 28, Box 99, JEJ Papers, SMUD.

47. "Five Million Minutes"; David Allison, "The University and Regional Prosperity," *International Science and Technology* (April 1965), Folder 27, Box 109, JEJ Papers, SMUD; "SRC Bold New Plan for a Bright New Day," *DMN*, February 30, 1963.

of cutting-edge technology. The area needed a facility dedicated solely to “high scholarship” and graduate education that would also serve as a place to house advanced equipment and a meeting place for scientists from around DFW. Its focus would be on fundamental research that would inform local industry, and its goal would be to attract elite researchers from around the world. Rather than granting PhDs, it would work with local graduate students to enhance their programs and avoid competition. After an initial investment to get it up and running, founders expected the center to pay for itself with grants and research contracts. Excited by the possibility of building a privately funded regional center of growth from nothing, Berkner offered to step down from his position at Associated Universities to run the new facility. Dallas business leaders, impressed with Berkner’s plan, his emphasis on the interconnections between high tech and overall economic health, and his ample connections to the Department of Defense, left the meeting with a consensus that both Berkner and his ideas were essential to Dallas’s future prosperity.⁴⁸

In February 1961, with Berkner on board as director, Jonsson, McDermott, and Green chartered the Graduate Research Center of the Southwest as a nonprofit educational institution.⁴⁹ Businessmen in four other states backed it. Berkner began by promoting the new facility nationally and initiating a search for talented scientists to head up the center. In June 1961, he published an essay in the *Saturday Review* titled “Renaissance in the Southwest,” which laid out not only the growing importance of scientific dominance in the Cold War era but also the ability of science to drive agglomerative urban and regional economies. In the piece, Berkner charted the course of research in the United States, arguing that World War Two had demonstrated the need for increased levels of basic research to supplement applied research. He cast research as more than just a benefit to industry; instead, the need for more PhDs reflected his main argument: that “new industry springs up in the geographic regions where men of the most suitable intellectual backgrounds are available.” Regions that could harness brainpower via broad planning, he argued, would be primed to succeed: “The whole community must depend on scholarly

48. “Untitled Document—heading ‘Table of Contents,’” dated 9/12/68. Courtesy University of Texas at Dallas archives; “Dallas: Larger Education Role Proposed for Research Center,” *Science*, December 13, 1968; “Graduate Research Center Abuilding,” *DMN*, n.d., Folder 29, Box 100, JEJ Papers, SMUD; *Graduate Research Center of the Southwest, Annual Report 1963*; “Research Chief Predicts Revolution in Graduate Education,” *DTH*, December 4, 1960; “Five Million Minutes”; “A Fable for Educators: Their Friends and Natural Enemies,” unpublished paper, Folder 6, Box 9, GRC Records, UTDA.

49. *Graduate Research Center of the Southwest, Annual Report 1963*, 6.

accomplishment” for its economic health. Success would flow out of knowledge industries, but only if business and political leaders could create and sustain a culture that cherished an “intellectual climate ... that can benefit all.” Scientists needed an atmosphere of intellectual independence, but also one that facilitated collaboration. Although the Southwest was lagging behind, it had great leadership and enthusiasm and was primed to take advantage of policies that encouraged the decentralization of military-related activity. Following the lead of California and Boston, regional cooperation in the Southwest, rather than competition, would allow for many universities and their scientists to share resources. Effectively, Berkner tied science to strong cities, a theme that would not become widely articulated for two more decades.⁵⁰

In another article in the same issue, Erik Jonsson and Stanley Marcus articulated the importance of the center to Texas. For Jonsson, Texas was the right venue for this project because Texans “believe in the future even when they can’t see the future very clearly.” Dallas retail giant Stanley Marcus reiterated the importance of the center to all of Dallas and Texas. “Not since the discovery of the east Texas oil field,” he claimed, “have we enjoyed anything so stimulating to our future prosperity.”⁵¹ While conforming to the embellished booster rhetoric of the era, the *Saturday Review* essays sought to change the national narrative, as well as the views of the scientific community, about what Dallas and Texas were—not just sites of extraction but rather sites of scientific production, driven by a unique blend of technological labor and business ingenuity.

Locally, the emphasis quickly turned toward funding and defining what the new center would be. The TI trio invested close to another \$2 million on their own, but to get up and running the project required substantial investment from other Dallas businesses. Berkner’s first efforts focused on framing brainpower as something that was both lacking in Dallas and had the potential to enhance all aspects of the local economy. Berkner’s research for “Renaissance in the Southwest” provided the basic grim statistics about just how behind Texas was in terms of PhDs. The entire Southwest region generated fewer science and engineering PhDs than Columbia University in 1959, and Texas turned out just twenty-three PhDs per million residents, less than one-third of the ten top states. None of the top twenty-two PhD granting

50. Berkner, “Renaissance”; see also “Graduate Education in the Southwest,” *Journal of the Graduate Research Center*, May 1961, which expands upon many of the ideas the Berkner emphasizes in “Renaissance,” Folder 29, Box 100, JEJ Papers, SMUD.

51. “Engineer of the Intellect: John Erik Jonsson,” *Saturday Review*, June 3, 1961.

schools in the United States, which produced 54 percent of science and engineering PhDs, were located in the South or Southwest.

For DFW, with no PhD programs and the highest demand for “highly-trained minds,” the problem seemed even more acute. Berkner made this point when discussing the impact that the center could have on the local economy. Multiple research-oriented firms, including an electronics lab that would have created six thousand jobs, had considered the Southwest but then chose to move elsewhere because they feared skilled labor shortages. Texas actually lost a large market share in both military prime contracts and federal research and development money between 1958 and 1962.⁵² One journalist wrote that, to be competitive in the future, Dallas’s industry would need 25 percent of its workforce to be engineers. The same writer warned that businessmen from all backgrounds needed to be educated on the importance of science in the contemporary economic landscape and cautioned against the “provincial” mindset that Dallas’s primary competition was other Texas cities.⁵³ The emphasis, clearly, was nothing less than a shift in the business culture and mindset of Dallas.

A small but wealthy cohort of Dallas businessmen demonstrated that they agreed with the new message by initiating a funding drive and, in some cases, opening up their checkbooks. After the exciting announcements that Radio Corporation of America was poised to move their headquarters to Dallas and that the GRCSW won a \$1.5 million grant from NASA, in January 1963 the GRCSW leadership met with C.A. Tatum, President of Dallas Power & Light, to gauge his interest in leading a local funding campaign. Tatum was enthusiastic. He thought that many Dallas businesses were eager to diversify the city’s economy away from oil and agriculture, and he thought that he could raise \$5 million toward that purpose. Berkner and Jonsson both proved to have wide appeal within Dallas and elsewhere. They brought in Fred Terman of Stanford, the leading expert on university-industry relations in the United States, to speak to industrial and educational leaders about the importance of research facilities. The audience consisted of thirty-four GRCSW board members, including university and corporate presidents from around the Southwest. In February, Tatum and Stanley Marcus launched the Dallas Founding Fund Campaign, which Tatum pitched as the startup fund for “a whole new economic era for the Southwest.” Neiman Marcus made the largest philanthropic donation

52. Berkner, “Renaissance”; “Industry Report to the Texas Commission of Higher Education,” 1961, Folder 5, Box 6, GRC Records, UTDA; “SRC Bold New Plan for a Bright New Day,” *DMN*, February 30, 1963; GRCSW, “Luncheon Meeting, May 15, 1962,” Folder “Graduate Research Center of the Southwest,” Box 1, SMU—Graduate Research Center Papers, SMUD.

53. “Key to Changing World,” *DTH*, July 6, 1962.

in its history. By May, the campaign had secured contributions in excess of \$4 million, and roughly \$7.5 million was privately donated by 1968.⁵⁴

With operations underway, Jonsson, Green, and McDermott knew that the GRCSW would also need a new campus to attract great scientists and provide them with an environment in which they could flourish. In early 1961, they began negotiations to purchase a tract of land just north of the small suburb of Richardson, immediately north of Dallas. The location, far removed from the city yet close to TI's new semiconductor campus and to the Texas Research Foundation campus, was purchased by the founders' nonprofit in early 1962.⁵⁵ TI's new semiconductor campus and the GRCSW reflected evolving beliefs about the relationship among the scientific labor process, architecture, and urban space. While corporations in general left aging cities for the new forward-looking suburbs, their executives and managers specifically imagined pastoral suburban campuses containing many spaces for interaction as places best suited to science.⁵⁶ And for Jonsson, well-manicured pastoral campuses were simply more attractive to "the best people."⁵⁷ Located just a few miles apart, both were large, suburban campuses well removed from downtown Dallas (eleven and fourteen miles respectively) and adjacent to open space (Figure 1).

They were the drivers of suburban growth here; in North Dallas and Richardson new neighborhoods emerged, one of which was developed as a direct result of the siting of the GRCSW by Dallas's most prominent developer Trammell Crow, who also served on GRCSW's Land Development Committee. Coined "blue sky communities" by Stuart Leslie and Layne Karafantis, these residential areas reflected large-scale federal spending on infrastructure, housing, education, and defense, and provided the suburban environment in close proximity to work desired by scientists. Each also took advantage of proximity to new highways that increasingly connected formerly isolated parts of the metroplex; in fact, the decision to locate both campuses ultimately hinged on

54. Mitchell, "Timeline," xix–17; "Research Center Described as Key to Future of Dallas," *DMN*, February 26, 1963; "Research Center Gets NASA Grant," *DMN*, November 16, 1962; "Advisers, Directors Discuss Impact of Research Center," *DMN*, June 15, 1963; "Dallas: Larger Educational Role Proposed for Research Center," *Science*, December 13, 1968.

55. Mitchell, "Timeline," iv–vi. The Texas Research Foundation was a nonprofit research entity focusing on agricultural science, founded by Dallas business leaders in the 1940s.

56. Mozingo, *Pastoral Capitalism*, 7–8; O'Mara, *Cities of Knowledge*.

57. Bill Morgan, "The Big Man in Big D," *Southern Living*, n.d., Folder 28, Box 99, JEJ Papers, SMUD.

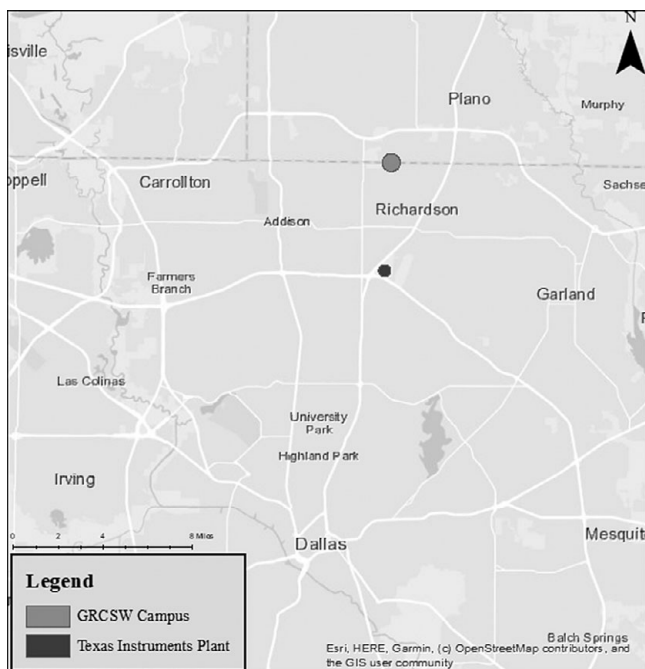


Figure 1. Map of Dallas showing location of the Texas Instruments campus and GRCSW. Map created by Amber Fields and Andrew M. Busch

accessibility and the potential to become a hub of technology for DFW (see Figures 2 and 3).⁵⁸

Both facilities were built in a modernist style that emphasized collaboration, the potential for physical growth, and the idea that scientists' work environment should reflect "freedom and flexibility." The TI plant, which replaced a more centralized facility built in the 1940s near Love Field, was a sleek, black design that promoted a "spacious effect" using prestressed concrete and glass. The design, the architects claimed, was also for a "larger purpose ... to stimulate creative people." It was built in such a way that the outer walls of the building could be easily disassembled and added to in the likely event that TI would need more space. Rooms could be revamped and enlarged "almost overnight," the physical manifestation of flexible accumulation. The space mimicked a college campus, with multiple buildings and

58. "Points in the Rationale for Establishing a U.T. Doctoral Program in Engineering, 12/30/66," Folder 2, Box7, GRC Records, UTDA; Leslie and Karafantis, "Suburban Warriors." John Stemmons and Trammell Crow, two of Dallas's largest real estate developers, both served on the GRCSW's Land Development Committee, and they also developed a subdivision near the GRCSW that was intended for its employees. *Advance* 2, no. 2 (1965), courtesy UTDA.

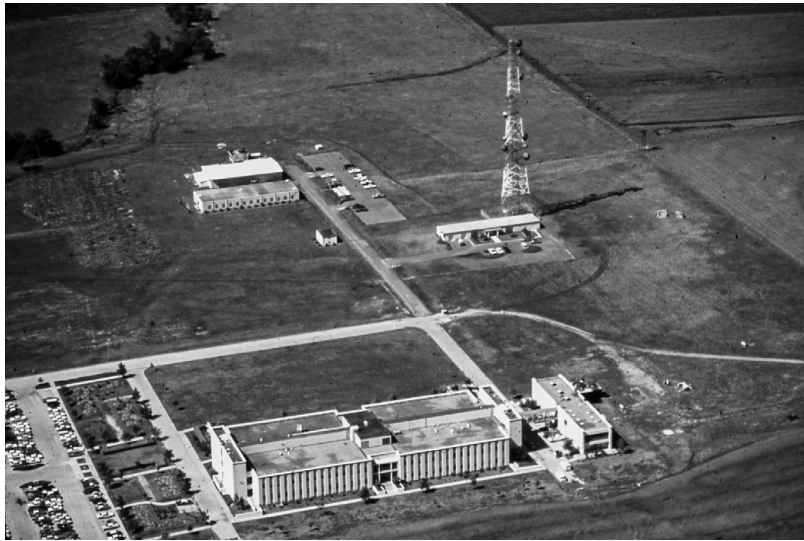


Figure 2. Graduate Research Center of the Southwest Campus, Richardson, TX, circa 1963, with farmland in the background. Courtesy University Archives, University of Texas at Dallas



Figure 3. Aerial photo of the Semiconductor-Components Building under construction on TI's expressway site in North Dallas, 1958. Note the lack of development around the site. Texas Instruments Records, Degolyer Library, Southern Methodist University

extensive, pristinely manicured outdoor areas; the landscaping alone cost \$500,000.⁵⁹ “Patios, with bedded trees, ceramic murals and abstract paintings hung in unexpected places, a rock garden rippling cozily outside” were especially inviting to the technical elite.⁶⁰

Although much more spartan, the GRCSW campus reflected the strong growth mindset of the tech and business community. The 340-acre main campus was surrounded by 1,060 open acres owned by the center and 700 acres owned by the nonprofit Texas Research Foundation. The plan, leaders suggested, was to rent out the 700 acres to private businesses looking to take advantage of the center’s research capabilities. Stylistically, the site was intended to be “a blend of the contemporary research park and modern university campus” with “an expansive front yard,” botanical gardens, and circular walkways to promote “chance encounters” between scientists to promote “cross-fertilization.” With plans to develop a high-tech business park and house a number of nonprofit research foundations and a growing body of research-oriented firms in North Dallas and the northern suburbs, both TI and Richardson leaders lauded it as an engine of future prosperity. Led by this corporate vision of what suburban knowledge space should look like and with almost universal blessing among the city’s residents and businesses, Richardson’s population tripled from 1960 to 1970.⁶¹

Although both campuses were symbols of the new emphasis on the knowledge economy, their designs were primarily intended to attract top scientists and research corporations to Dallas and, importantly, to connect GRCSW scientists with corporate researchers. Jonsson and Berkner both saw great scientists as the most important component of a thriving technological region. Berkner, with his long history of success at Brookhaven, facilitated the process, and some distinguished researchers from both academia and business agreed to come almost

59. Lee Higginson Corporation, “Texas Instruments Incorporated.” Higginson Corp was an investment bank reporting on TI’s new facilities. Folder 19, Box 100, JEJ Papers, SMUD; “Welcome to a New Texas Instruments Plant,” brochure, Folder 20, Box 112, JEJ Papers, SMUD; “Texas Instruments to Build New Plant for Transistors,” *DTH*, April 18, 1956; J. Erik Jonsson, “The Story of TI Incorporated,” slide show notes, December 13, 1956, Folder 18, Box 100, JEJ Papers, SMUD; for Cold War science and the suburbs see O’Mara, *Cities of Knowledge*.

60. Don Freeman, “New Look Factory,” *DMN*, June 28, 1958; Pritle, *Engineering*, 96–97.

61. “What is GRC Worth to Richardson?” (Dallas: Graduate Research Center of the Southwest, 1965), courtesy UT-Dallas archives, accessed May 23, 2019, <https://utd-ir.tdl.org/handle/10735.1/4070>; *Graduate Research Center of the Southwest, Annual Report 1963*, 10, 37–41; “Discussion with Dr. Wilson Stone, October 2, 1967,” Folder 15, Box 6, GRC Records, UTDA; “What Do You Think?” *RDN*, June 5, 1969; for corporate suburban space, see Mozingo, *Pastoral Capitalism*. <https://utd-ir.tdl.org/handle/10735.1/4070>

immediately. By early 1965, the center had close to fifty researchers (not including twenty-seven postdoctoral associates) from seventeen countries, some of whom were teaching PhD classes in SMU's new PhD programs in engineering and geology.⁶² Four separate programs of research were established, and new facilities, such as the National Magnetic Observatory, the Southwest Center for Advanced Studies (SCAS) Computer Center, and the Institute for Graduate Education and Research, an entity to coordinate with local universities, were built. Total sponsored research reached \$2.6 million by October 1965, and the facility had already become the center of a small but growing cluster of private research firms. Science-oriented corporations moved to the 700-acre research park adjoining the center's campus. TI, Atlantic Refining, Geotechnical Corporation, and later the large Dallas-based firm Dresser Industries all located at the campus's research park. By 1967, the center had doubled its yearly level of sponsored research to over \$5 million, the third highest total among all Texas institutions.⁶³

Going Public: Mobilizing the State in the Interest of Education

However, despite the center's successes and the growing group of corporations that made the research park home, long-standing funding issues threatened the center's existence by the mid-1960s. The initial capital outlays that funded the creation of the center and much of its maintenance were drawn largely from Texas Instruments stock owned by Jonsson, Green, and McDermott. In 1963, TI's stock plummeted by over half due to a glutted global semiconductor market, severely cutting the GRCSW's operating budget; the stock fell sharply again in 1965. The

62. "SRC Bold New Plan," *DMN*, February 30, 1963; "What is GRC Worth to Richardson?"; David Allison, "The University and Regional Prosperity," *International Science and Technology* (April 1965), Folder 27, Box 109, JEJ Papers, SMUD; "Preliminary Case Statement, 5-11-67," Folder 15, Box 6, GRC Records, UTDA; "A Fable for Educators," 4; "Minutes of Meeting with Area Legislative Representatives, 5 January, 1967," Folder 3, Box 5, GRC Records, UTDA; "Minutes, February 19, 1962," Folder 5, Box 1, GRC Records, UTDA; for the need to make the campus attractive to attract top researchers, see "The Big Man in Big D," *Southern Living* (n.d., likely 1968–1969), Folder 28, Box 99, JEJ Papers, SMUD; "R.C. Peavey to Mr. G.-K. Johnson, December 19, 1966," Folder 2, Box 7, GRC Records, UTDA; "J.E. Jonsson to Mr. Frank Irwin, March 3, 1967," Folder 15, Box 7, GRC Records, UTDA.

63. *Graduate Research Center of the Southwest, Annual Report 1964–5*; "Notes on SCAS –University/Industrial Cooperation, February 25, 1963," Folder 42, Box 116, JEJ Papers, SMUD; *Southwest Center for Advanced Studies: Annual Report, 1966–1967*, 21; "Faculty of the Graduate Research Center of the Southwest," Folder 1, Box 7, GRC Records, UTDA; "S.C. Fallis to G.K. Johnson, 31 July 1967," Folder 4, Box 7, GRC Records, UTDA.

\$7.5 million raised by the local business community in the early 1960s came from Dallas sources. The national funding campaign was almost a complete failure.⁶⁴ Privately, university administrators around DFW worried that the center would create competition for resources, despite assurances to the contrary from Berkner and Josnson. Berkner, who lacked experience in academic finance, severely mismanaged the operating budget. He suffered a heart attack in 1965 and stepped down as president. That same year, and despite the notable accomplishments, academic commentators perceived relatively little benefit to the area. A report on Dallas's higher education in high-tech fields articulated regional apathy honestly: "No region in the country is perhaps better representative of such academic wastelands—in fact, to the outsider, no region might seem a less-likely crucible for new ideas in science—than the region of Dallas, Texas."⁶⁵

By early 1966, new president Gifford K. Johnson was scrambling for funding because federal research contracts were the only consistent source of revenue the center was receiving.⁶⁶ Compounding the issue was a decrease in federal funding for science and research as emphasis shifted to social issues and increasingly the Vietnam War. Johnson complained that the federal commitment to increasing social expenditures was misguided and would have negative effects on the economy; the irony that he was simultaneously encouraging the state to take on the GRCSW was apparently lost on him.⁶⁷ Berkner's thoughts were similar. Although social programs were necessary to a "stable society," he wrote, we "should not sacrifice technological development to rehabilitate underprivileged groups."⁶⁸ Indeed, the dramatic increase in federal funding that began in 1958 crested in 1966; that level of funding would not return until the Reagan era.⁶⁹

64. "A Fable for Educators;" "Minutes of GRC Board, Feb.16 1962," Folder 5, Box 1, GRC Records, UTDA.

65. David Allison, "The University and Regional Prosperity," *International Science and Technology* (April 1965), Folder 27, Box 109, JEJ Papers, SMUD.

66. Mitchell, "Timeline," 115; "Revised Observations of Dr. Frederick E. Terman, Feb. 5, 1968," Folder 18, Box 7, GRC Records, UTDA; "Goals for Dallas: Higher Ed," June 19, 1966, Folder 31, Box 9, GRC Records, UTDA; "Gifford K. Johnson to Dr. Norman Hackerman, March 3, 1966," Folder 1, Box 7, GRC Records, UTDA; "Minutes," pp. 295 and 320, Folder 5, Box 1, GRC Records, UTDA.

67. "SCA Chief Warns of Cutback," *DMN*, April 20, 1969; Terman and Oklahoma University President J. Herbert Holloman echoed these sentiments. "Minutes," 304, Folder 5, Box 1, GRC Records, UTDA.

68. From a speech by Berkner titled, "Psychological Impact of Science on Society," in "Minutes," 240, Folder 4, Box 1, GRC Records, UTDA.

69. "SCAS Forward Planning," August 15, 1967, Folder 15, Box 6, GRC Records, UTDA; for funding stats, see Richard Rowberg, *Federal R&D Funding: A Concise History* (Washington: Congressional Research Service, 1998), https://www.everycrsreport.com/files/19980814_95-1209_5099a81054a63d58f79d6d18b4572fe7270f5a2e.pdf,

TI leadership began to reevaluate by bringing in experts to assess the situation, mostly notably Fred Terman for a second visit in early 1967. In an earlier visit to Dallas in 1964, Terman spoke optimistically about the city's potential for growth based on its scientific industries and, primarily, the GRCSW.⁷⁰ On this trip, Terman's outlook was much less sanguine. He found that the center lacked a well-rounded faculty, except in fields that reflected Berkner's specialties like physics, geoscience, and computing. Politically, the center made too many promises that it could not keep to local universities in terms of furnishing equipment and faculty, and it had also alienated administration in those universities by repeatedly claiming that DFW was "educationally underprivileged," a slap in the face to administrators. Perhaps most importantly, it could not continue to function without new sources of revenue, which would be very difficult to generate because there were no students enrolled and hence no federal education funding was available.⁷¹ He offered the somewhat perfunctory advice that had by that time become his trademark: develop "steeples of excellence," meaning areas that were already strong points.⁷² The need for PhDs among Dallas firms was already increasing, and upward demand was projected to continue for the foreseeable future.⁷³

GRCSW leaders, and now Dallas Mayor Erik Jonsson, decided on an alternate route to long-term viability: transferring the facility to one of the state university systems. In the past the GRCSW, because it was imagined as a regional entity that crossed state borders, would not have been attractive to state institutions. However, as interests in other states backed away, a relationship with the state became possible. While the Texas A&M system found the center too costly to run, the University of

70. *Advance* 2, no. 2 (1965), courtesy UTDA; GRCSW also brought in another outside evaluator, Thomas F. Jones, President of the University of South Carolina, who agreed with Terman. Al Mitchell, "Timeline," 57, Folder 2, Box 1, GRC Records, UTDA; and Thomas F. Jones, "Personal Remarks to the Board of Directors, 5/15/64," Folder, "Graduate Research Center – Information Booklet 1964," Box 2, Graduate Research Center Papers, SMUD.

71. "Notes on Discussion with Dr. Terman, January 16, 1967," Folder 18, Box 7, GRC Records, UTDA; "Revised Observations of Dr. Frederick E. Terman, February 5, 1967," Folder 18, Box 7, GRC Records, UTDA; "S.C. Fallis to Gifford K. Johnson and R.C. Peavy, January 3, 1967," Folder 3, Box 7, GRC Records, UTDA; C. Bresch, "Memorandum on the Future Objectives of the Southwest Center for Advanced Studies," July 26, 1967, Folder 3, Box 6, GRC Records, UTDA; for federal funding, see Gifford K. Johnson, "Considerations for Planning the Center's Future," November 2, 1967, Folder 15, Box 6, GRC Records, UTDA.

72. *Ibid.*; "Notes and Comments, January 4, 1967," Folder 18, Box 7, GRC Records, UTDA; "Discussions with Terman, January 7, 1967," Folder 18, Box 7, GRC Records, UTDA.

73. Ross McDonald, "Industry Presentation by Dr. Ross McDonald, Director of Texas Instruments Central Research Labs," 1963, Folder 5, Box 6, GRC Records, UTDA.

Texas system, already looking to expand its reach, especially in graduate education, was far more amenable. In the late 1950s, the UT Board of Regents created a Committee of 75 to study what the system needed to become “a university of the first-class,” as it was chartered to do at its inception in 1884. One of the main areas in which the system lagged behind was in scientific research.⁷⁴ At the same time, Texas, like many southern and western states, was experiencing intense population growth by the mid-1960s as migrants followed businesses to lower cost areas and baby boomers began to reach college age. The federal emphasis on education (in the form of the GI Bill and direct investment in public universities) dramatically increased enrollments.⁷⁵ Historically, private institutions shouldered a large portion of the educational burden in Texas. In Dallas, private universities enrolled roughly 40 percent of undergraduates and 60 percent of graduate students in 1965.⁷⁶ The public system in Texas had always been “patchwork” according to Governor John Connally’s Committee on Higher Education, with no systematic implementation of a plan for where universities would be located or what they would offer students. The result was “a disorganized jumble of duplications based on parochial considerations” and few public universities in Texas’s large urban areas.⁷⁷

The paucity of state schools and their lack of organization were compounded by the drastic increase in Texas’s higher education enrollment that began in the late 1950s. Collectively, 90 percent more students were enrolled in Texas colleges and universities in 1967 compared to 1960.⁷⁸ The system, it seemed to legislators, was at a breaking point. Tuition, room and board, and fees rose by over 25 percent across Texas from 1963 to 1967. Private universities, as well as

74. For A&M, see “A&M Nixed Plan for U of T Center,” *FWP*, August 9, 1968; University of Texas Board of Regents, *Prospect: A Platform for the University of Texas* (Austin: University of Texas, 1960), courtesy Dolph Briscoe Center for American History, University of Texas (BCAH), especially page 26, 33.

75. See, for example, Robert E. Ford, “Colleges Burst at Seams,” October 6, 1968, n.p., Folder 15, Box 6, GRC Records, UTDA; for direct federal investment in higher education, see “Nation’s Colleges Seek New Kinds of U.S. Aid,” *FWP*, November 13, 1968. Norman Hackerman, “Building Graduate Education in Texas,” March 17, 1966, a speech by UT-Austin president Hackerman, Folder 1, Box 7, GRC Records, UTDA. The Johnson administration also passed the federal Higher Education Act of 1965, which provided federal support for numerous aspects of higher education.

76. “Educational Needs of the Dallas-Fort Worth Area,” June 7, 1966, Folder 1, Box 7, GRC Records, UTDA.

77. “Era Downgraded,” n.p., n.d., Folder 9, Box 8, GRC Records, UTDA.

78. “Look at All the Angles,” *DMN*, June 10, 1968; “J.K. Williams to Mr. Andrew DeShong, July 5, 1968,” Folder 3, Box 6, GRC Records, UTDA; Gifford K. Johnson, “Our Higher Education Goals and Needs,” speech, October 25, 1967, Folder 4, Box 7, GRC Records, UTDA.

GRCSW leadership, went so far as to ask the state for funding because their share of the burden was so high and their resources so strained, with demand increasing so quickly and little time or space to expand operations. After all, they argued, it was the state's lack of educational institutions that created this predicament in the first place.⁷⁹ In response, and in consort with the federal Higher Education Act of 1965, Governor Connally set about to rectify the situation by increasing state revenues for education and creating the Texas Higher Education Coordinating Board, which was tasked with creating and managing an efficient statewide system of universities.⁸⁰

In Dallas, GRCSW administrators and especially chamber of commerce members were quick to design a plan to integrate GRCSW aims with the state's new goals. The chamber created an Educational Committee and partnered with the Inter-University Council, a group of administrators from private universities around the region, to study the educational situation in Dallas and survey the predicted needs of the business community.⁸¹ They began, as they had a decade earlier, by amassing and disseminating statistics, but this time they concentrated on education more broadly and, importantly, the underfunding of North Texas public higher education relative to the rest of the state. Dallas's commitment to creating private higher education institutions had encouraged the state to underinvest in public education in the region. "Educational Needs of the Dallas-Fort Worth Area," a report distributed in June of 1966, demonstrated the dire need for public education. It tied regional and state economic prosperity directly to educational opportunity, and demonstrated that Dallas was educating more students with fewer resources than any other large city in Texas. With growing demand, however, this could not last. The region deserved its fair share of public investment.⁸²

In subsequent reports and a series of presentations to UT administrators, state legislators, and business groups around the state, chamber members continued to emphasize the changing labor market, Dallas's

79. "Private College Request State Aid," *DMN*, June 13, 1968; "Armies of Higher Education on the March," *DTH*, October 24, 1968; "Should State Help Private Colleges?" *DTH*, August 1, 1968; "Tuition Hike Urged for State Schools," *DTH*, February 11, 1969; "College Costs to Double," *San Antonio Express*, January 10, 1969. The legislature did provide funding for private medical and dental schools, and seriously considered subsidies for undergraduate education, in 1969. "Legislature Cracks Door to Aid Private Colleges," *DTH*, June 1, 1969.

80. "Battle over Colleges," *DTH*, December 8, 1968; "Era Downgraded," n.p., n. d., Folder 9, Box 8, GRC Records, UTDA; HB1, 59th Texas Legislature. (1965).

81. "S.C. Fallis to Mr. Lee S. Turner Jr., 7 September 1967," Folder 4, Box 7, GRC Records, UTDA.

82. Dallas Chamber of Commerce Statement of Position," a letter to higher education coordinating board, Folder 16, Box 7, GRC Records, UTDA.

importance to the state, and the relationship between education and overall economic health. Whether it be the petrochemical and space industries in Houston or computing and aerospace in Dallas, Texas's urban economies were becoming significantly more diversified. In addition, higher education would be beneficial to knowledge workers looking to improve their skills, by keeping young, talented scientists and engineers in the region for graduate school, and by acting as a "center of intellectual atmosphere" which could attract other knowledge-based people and industries to Dallas.⁸³ The support for improved higher education among the business community was astounding. By 1968, 7,700 member of the Dallas Chamber of Commerce supported University of Texas investment in Dallas.⁸⁴

Despite the shortfalls in graduate education, DFW industries had long created more demand for highly trained scientists and engineers than any other city in the Southwest, let alone Texas. DFW's population, roughly 2.3 million residents in 1965, made up just under 20 percent of the Texas population. Because of migration and increased urbanization, that number was projected to grow to 27 percent by 1985.⁸⁵ The demand for education in DFW would likely outpace the rest of the state and all its metro areas in the coming years as well. In 1968 over 20 percent of the educational demand in Texas was in DFW; by 1980 that number was projected to increase to 25 percent, around 170,000 students in all.⁸⁶ The future need for advanced degrees in the metroplex was even more acute. Led by Ling-Temco-Vought and especially Texas Instruments, the report forecast a labor market demand for 7,500 total master's degrees and 2,700 PhDs in science, engineering, and related fields by 1975. In total, North Texas businesses hired more science and engineering MAs and PhDs per year than the entire state of Texas could currently produce. Meeting these demands, they plainly surmised, would require a significant increase in state support for higher education because the entire region had only produced

83. Al Mitchell, "The Graduate Research Center of the Southwest," xix. The document is a history of the center provided by the longtime secretary. Available at UTDA; see also "Goals for Dallas: Higher Education, June 19, 1966," Folder 31, Box 9, GRC Records, UTDA; and "Challenge Worth Meeting" *DMN*, December 13, 1966.

84. "Resolution of the Board of Directors, Dallas Chamber of Commerce, July 23, 1968," Folder 16, Box 7, GRC Records, UTDA.

85. "Dallas Chamber of Commerce Statement of Position," a letter to higher education coordinating board, Folder 16, Box 7, GRC Records, UTDA; "Educational Needs of the Dallas-Fort Worth Area, June 7, 1966," Folder 1, Box 7, GRC Records, UTDA; Dallas Chamber of Commerce, "Metro Dallas Manpower Outlook to 1975," 1965, Folder 2, Box 6, GRC Records, UTDA.

86. "More Education Facilities," *DTH*, July 30, 1968; "Received 7-10-68 for Chamber," Folder 3, Box 6, GRC Records, UTDA.

225 master's degrees and 10 PhDs in those fields in 1966. The vast majority of new hires with advanced degrees were trained elsewhere.⁸⁷

The Inter-University Council and the chamber report also found that state educational funding for North Texas lagged significantly behind funding for other areas. Here they focused on undergraduate education. Of the \$296 million appropriated by the state legislature for higher education in 1968, for example, only \$32 million of that was allocated to North Central Texas, and only \$5 million to Dallas County. Houston-Galveston, a region with fewer people, received \$60 million.⁸⁸ Morris Hite, President of the Dallas Chamber of Commerce, addressed business groups from around DFW with these and other statistics, predicting economic catastrophe if the situation was not rectified. The area, he argued, was being penalized for having so many private universities and essentially taking care of its issues locally and without government assistance. Historically, North Texas had been severely shortchanged in state investment for education infrastructure, programs, and research, and that in the future the chasm would become more pronounced. He appealed to the business community's sense of economic anxiety and, now, ideologies of regional competition rather than cooperation: Why are DFW tax dollars going to fund education in other parts of the state when we have so little public higher education or publicly funded research here? How, furthermore, will your workers, who need advanced training to stay competitive in their fields, find access to that education locally?⁸⁹ By characterizing North Texas as underfunded (Hite also often cited studies claiming that DFW's roads and infrastructure were underfunded), Hite was able to create higher levels of cohesion among business owners from all around North Texas.⁹⁰

87. "Educational Needs of the Dallas-Fort Worth Area, June 7, 1966," Folder 1, Box 7, GRC Records, UTDA; "Table of Contents," untitled report, September 12, 1968, courtesy UTDA, 9; "Morris Hite to Mr. J.W. Johnson, September 5, 1968," Folder 3, Box 6, GRC Records, UTDA; "Hunt on for Grads," n.p., March 18, 1969, Folder 7, Box 8, GRC Records, UTDA; "Statement by Gifford K. Johnson, July 26, 1968," Folder 16, Box 7, GRC Records, UTDA.

88. "Received 7-10-68 for Chamber," Folder 3, Box 6, GRC Records, UTDA; see also *Southwest Center for Advanced Studies, Final Annual Report, 1968-1969*, 4-5.

89. "Received 7-10-68 for Chamber," Folder 3, Box 6, GRC Records, UTDA; "Address of Mr. Morris Hite to the Business Leadership of Fort Worth," Folder 16, Box 7, GRC Records, UTDA; "A Study of the College & University Level Continuing Education Needs for the Dallas Metropolitan Area," Folder 3, Box 6, GRC Records, UTDA; "To: G.K. Johnson, 6 August 1968," Folder 3, Box 6, GRC Records, UTDA; "Hite See Slight in Funds to Dallas," *DTH*, December 5, 1968; "Chamber Endorsement Sought on UT System," *IDN*, October 22, 1968; "We've Helped Ourselves into a Penalty Box," n.p., n.d., Folder 9, Box 8, GRC Records, UTDA; for demand for continuing education see, "North Texas Gap," *DMN*, January 3, 1968.

90. "Getting Our Share of Funds," *DTH*, December 6, 1968; "University System Will Be Subject of Chamber Meeting," *RDN*, October 1, 1968; "Civic Leaders Would Stay with UT System," *FWP*, September 26, 1968; "Unity in Education," *DMN*,

In Austin, the coordinating board and top administrators at UT, working with GRCSW leaders and Dallas legislators, both unveiled plans to improve the metroplex's higher education situation in 1966. The UT plan, which was created in large part by TI and GRCSW leadership and the Dallas Chamber of Commerce, emphasized research, graduate education, and an expanded reach for the UT system. Three facilities were at the heart of the plan: the University of Texas at Arlington, which was currently Arlington State College; the Southwestern Medical School at Dallas (already a UT facility); and the GRCSW, which would become a graduate school in science and engineering. It called for a Dallas-based vice chancellor to oversee North Texas operations and to ensure that some control would remain local, and it sought to secure the facilities and faculty at the GRCSW.⁹¹ Conversely, the coordinating board's master plan sought to create a separate North Texas system that combined existing universities, Arlington State College and the University of North Texas most prominently, into an autonomous organization distinct from the UT and A&M systems. Enrollment caps would be placed on existing universities and emphasis placed on new junior colleges to absorb growing student demand. Most importantly, the master plan did not include GRCSW as a member of the system at all.⁹²

The GRCSW leaders were quick to understand what the new plans in Austin meant for their future prospects. The only downside they saw was that going public would undermine their relationships with the private universities they had sought to work with. This private consternation never deterred the group, however, and they continued to mobilize the business community in an effort to build a case for a new graduate school in Dallas using the UT plan.⁹³ SMU President Willis Tate was happy to lose a research partner in exchange for lower

October 28, 1968; "Chamber Endorsement Sought on UT System," *IDN*, October 22, 1968.

91. "Andy DeShong to Dr. W.B. Heroy, Jr., July 9, 1968," Folder 3, Box 6, GRC Records, UTDA; "Gifford K. Johnson to Dr. Norman Hackerman, March 3, 1966," Folder 1, Box 7, GRC Records, UTDA; "Advanced Degrees' Arrangement Seen," *DMN*, March 9, 1967; "UT Regents Approve Region Complex Idea," *DTH*, July 26, 1968; "Morris Hite to Mr. J.W. Johnson, Sept. 5, 1968," Folder 3, Box 6, GRC Records, UTDA. For the facilities and faculty at the GRCSW, see "Contingency Plans for Center Development, 1969–1971," Folder 33, Box 6, GRC Records, UTDA.

92. "UT Chancellor Objects to Plan for 6 Colleges," *DMN*, June 22, 1968.

93. Erik Jonsson and Gifford K. Johnson began to negotiate with Chancellor Harry Ransom and Board of Regents Chairman Frank Irwin in mid-1966. See "Dear __, From JE Jonsson" and "Alternative Plans for GRCSW Cooperation with the University of Texas and their Effects on the Aims and Objectives of the Center 12/17/66," Folder 2, Box 7, GRC Records, UTDA; "Frank C. Irwin to Hon. Erik Jonsson, January 4, 1967," Folder 4, Box 1, GRC Records, UTDA; "J.E. Jonsson to Mr. Frank Irwin, July 6, 1966," Folder 15, Box 6, GRC Records, UTDA; "R.C. Peavey to Mr. G.K. Johnson, December 19, 1966," Folder 2, Box , GRC Records, UTDA.

enrollment pressure, and he supported the UT plan. In March 1965, a group of executives from TI and the GRCSW invited the governor, lieutenant governor, and speaker of the house to the TI and GRCSW facilities to hear presentations on the importance of graduate education and to tour the campuses.⁹⁴ In June 1966, GRCSW leaders met with Board of Regents Chairman Frank Erwin, UT Chancellor Harry Ransom, and Vice-Chancellor Charles LeMaistre to discuss how the GRCSW could contribute to UT in graduate education. In 1967 the Texas legislature took the first step in creating a new UT agglomeration in North Texas by passing House Resolution 375, which encouraged the UT system to create a regional university complex aimed specifically at doctoral programs in science and technology, and allowed UT to work with private institutions.⁹⁵

By early 1967, Jonsson, now acting as GRCSW leadership, chamber of commerce member, and the mayor of Dallas, worked with the chamber of commerce and UT administrators to finalize a plan to transfer the center to the UT system.⁹⁶ While the Dallas business community needed little convincing, statewide legislators were less enthusiastic and sometimes hostile to the UT plan.⁹⁷ Rather than revealing the GRCSW's grave financial condition, they presented the center as a "gift to the UT system"—between \$10 and \$14 million worth of land, personnel, and federal research contracts. The goal was to "develop in a reasonable time an outstanding school of science and technology."⁹⁸ As one writer argued, the deal would prove that private initiative was a boon to the state and even an act of patriotism. "In the true tradition of American enterprise," he wrote, "private capital showed the way, establishing the center, then making it available to the state."⁹⁹ Such lofty proclamations belied the center's financial problems, which made the transfer the only

94. "Presentation on Science Industry Educational Needs, March 20, 1965," Folder 14, Box 7, GRC Records, UTDA.

95. "University of Texas Negotiations," Folder 1, Box 7, GRC Records, UTDA; "House Special Resolution 375," 1967, in Folder 3, Box 7, GRC Records, UTDA.

96. "Dallas Lawmakers Propose Legislation," *DMN*, March 10, 1967; "Ralph N. Stohl to Gifford K. Johnson, December 14, 1966," Folder 2, Box 7, GRC Records, UTDA; "SCAS Concludes Private Operations as Graduate Research Center," press release, September 11, 1969, Folder 15, Box 8, GRC Records, UTDA; "\$11 Million Deal: Can It Graduate?" *DTH*, February 16, 1969.

97. In March of 1969, for example, only 85 of 149 Texas House of Representative members supported UTD. "UT at Dallas," *DTH*, March 30, 1969.

98. See for example "UT Regents Again Offered Advanced Studies Center," *DTH*, July 26, 1968; "Where Else is the State of Texas Getting a \$14 Million Gift?" unpublished pamphlet, Folder 16, Box 7, GRC Records, UTDA; "J.E. Jonsson to Mr. Frank Erwin, March 3, 1967," Folder 15, Box 7, GRC Records, UTDA; quoted in "Dear__ From J.E. Jonsson," Folder 2, Box 7, GRC Records, UTDA.

99. Lester Strother, "Real Area Strength in Technologies Must Be Based on Depth in Education," *FWST*, November 1, 1968.

viable outcome for the GRCSW and, in fact, a heavy burden for the state and its tax payers to assume, especially in its early years.

The state-centric approach adopted by UTD proponents was not lost on the plan's critics, who crafted their own arguments against the center. Whereas opposition came from all over the state, it was most heavily centered in Tarrant and Denton counties, home to Arlington State University, and North Texas State University and Texas Women's University, respectively, easily the largest public universities in DFW. Many opponents worried about the center siphoning off state resources, students, and especially graduate programs from their universities. One Tarrant County resident warned that the Arlington campus, which had a master's program in engineering, would become "nothing more than a sort of liberal arts college."¹⁰⁰ Tarrant County legislators and university administrators reiterated this fear, arguing that they wanted the region's science graduate school to be at Arlington.¹⁰¹ Others offered more general criticisms of Dallas's motives, expressing the longstanding urban rivalries between the two cities.¹⁰² Bud Shrake, a former LTV executive who became a state representative for Fort Worth, was apprehensive because of how important Arlington's engineering programs were to their company.¹⁰³ Working within the traditional anti-statist paradigm central to ultraconservative DFW politics for decades, others complained about the reach of the University of Texas system "monolith" and its complicity with elite Dallas "gods."¹⁰⁴ There was likely some truth to this claim, despite the elevated rhetoric; Frank Erwin was not shy about his interest in making the UT system one of the largest in the nation.¹⁰⁵

By far, however, the loudest objections were ironically directed at the increasing role and costs of state institutions. Led by the truculent Fort Worth state senator Don Kennard, anti-university forces skillfully played upon fears of increased government and taxation

100. "Here's a Chance for Cooperation," *FWST*, September 20, 1968; "Graduate Education Holds Center Stage," *DTH*, February 11, 1969; W.C. Sherman, "UT-SCAS Proposal: A Position Paper," Folder 30, Box 7, GRC Records, UTDA.

101. "Tarrant to Fight School Location," *DMN*, March 11, 1967; "NTSU's Dr. Matthews against UT Plan," *DRC*, July 28, 1968; "Let's Get Into This Act!" *DRC*, May 13, 1968; "Studies Center Likely to Change UTA Role, Scope," *FWST*, August 18, 1968.

102. "Paddling Higher Ed's Boat," *DTH*, August 11, 1968.

103. "G.K. Johnson to Mr. J.E. Jonsson, August 22, 1968," Folder 14, Box 7, GRC Records, UTDA.

104. "UT Invasion" n.p., n.d., Folder 9, Box 8, GRC Records, UTDA; "Letter to the Editor," *DRC*, May 25, 1969; "A Coordinating Board with No Legs," *DRC*, May 18, 1969.

105. "The MIT of the South?" n.p., May 8, 1969, Folder 7, Box 8, GRC Records, UTDA.

—concerns that UTD supporters had similarly articulated just years before. The *Dallas Morning News* projected that higher education would cost \$300 million in 1970. As a result, college costs across the state were already on the rise and projected to double within the next decade. A poll of Texans from across the state in late 1968 showed that education and its rising costs was the second most important issue to voters, and, unlike among supporters of high technology, surveyed Texans were not appreciative of the benefits associated with graduate education in science and technology.¹⁰⁶ The costs would be so high, one university administrator warned, that the state might have to implement a personal income tax.¹⁰⁷ Kennard used the steep increases in educational spending to portray Texas Instruments as a giant corporation looking to enrich itself at the public's expense. He baldly asserted that Erik Jonsson's plan was to pawn the center off on the state and, even more directly, argued that the UT plan would "subsidize Texas Instruments at the expense of taxpayers" and claimed that an official from MIT told him the center would be far more expensive to run than its proponents claimed.¹⁰⁸ Newspapers made similar arguments. The *Denton Record Chronicle*, among the most vociferous opponents of the plan, argued that the supposed gift of \$10 million was very little compared to the operating costs the state would bear.¹⁰⁹ When the bill made it to the floor in May of 1969, Kennard filibustered for twenty-seven hours in an attempt to delay a vote.¹¹⁰ Governor Preston Smith, who waffled back and forth on the bill, vetoed it in an attempt to make the new campus into a graduate school and senior university only; despite the fact that this option would not help alleviate the shortage for freshman and sophomores, Erwin, Ransom, and the TI leaders acquiesced.¹¹¹

106. "Texas Education to Boost Tax Headaches," *DMN*, January 5, 1969; "College Costs to Double," *San Antonio Express*, January 10, 1969; "The Texas Poll—Finances Viewed as Major Task," *DMN*, January 5, 1969; "Tuition Hike Urged for State Schools," *DTH*, February 11, 1969.

107. "NTSU Official Opposes UT Dallas," *DMN*, December 5, 1968.

108. "Sen. Kennard Pledges Hard Fight against University of Texas at Dallas," n. p., April 17, 1969, Folder 7, Box 8, GRC Records, UTDA; "Tarrant to Fight School Location," *DMN*, March 11, 1967; "Senator Sees SCAS as 'White Elephant,'" *DMN*, July 27, 1968; "'Super U' Brings Problems," *DTH*, July 28, 1968.

109. "Will the Senate See the Light?" *DRC*, April 27, 1969; "UT—Dallas Bill Get Nod," *DHT*, April 2, 1969.

110. "UT Dallas Wins Approval after 27 Hour Filibuster Fails," *RDN*, May 18, 1969.

111. "State Spending Bill Looms," *FWST*, May 29, 1969; "House Acts to Recall and Alter UT-D Bill," *FWST*, May 29, 1969.

However, despite the politicians' and administrators' objections, which invoked long-standing business ideologies of anti-taxation and government overreach, the DFW business community offered a remarkably united front supporting the UT plan. Every DFW area chamber of commerce publicly backed the plan.¹¹² The Dallas chamber got a resolution signed by all 7,700 members supporting it. Time and again the chamber took the lead when they thought legislators were not doing enough. They laid the groundwork in the middle of the decade by writing a letter to the coordinating board asking them to visit Dallas and "connect with business and education leaders" to begin developing a statewide education plan.¹¹³ In 1968, the chamber put forth a resolution to the Texas state legislature demonstrating full support for the UT plan and opened a liaison office employing fourteen people in Austin as something of a full-time lobbying outfit on Dallas's behalf.¹¹⁴ They regularly attended meetings of the UT Board of Regents and presented their arguments to legislators around the state.¹¹⁵ In March 1969, over one hundred Dallas chamber members chartered planes and flew to Austin to support the UT plan at a legislative hearing; this came just three weeks after a similar contingent flew there to meet with the governor, who was upset that Dallas legislators had not supported him in his election campaign. In what a journalist called an "unusual peace parley," they pledged support for Smith's proposed widespread tax increases. The author inferred that the tactic would help the UT plan curry favor in Austin.¹¹⁶ In the final GRCSW annual report, former president Gifford Johnson singled out the Dallas chamber as the impetus for the research and publicizing necessary to transfer the GRCSW to the UT system.¹¹⁷

Upon signing House Bill 303, the bill creating the university, Governor Preston Smith echoed these new arguments about the importance

112. Jack Blanton, "Transcript of the Talk and Question and Answer Period Given by Representative Jack Blanton, Friday June 20, 1969," Folder 1, Box 9, GRC Records, UTDA.

113. "Dallas Chamber of Commerce Statement of Position," Folder 16, Box 7, GRC Records, UTDA.

114. "Getting Our Share of Funds," *DTH*, December 6, 1968; "Statement by Gifford K. Johnson, July 26, 1968," Folder 16, Box 7, GRC Records, UTDA.

115. "SW Center Due UT Approval," n.p., July 26, 1968, Folder 9, Box 8, GRC Records, UTDA; "S.C. Fallis to Mr. Lee S. Turner Jr, September 7, 1967," Folder 4, Box 7, GRC Records, UTDA; Al Mitchell, "Minutes," 258, Folder 4, Box 1, GRC Records, UTDA.

116. "Dallas Residents Ask Legislature for 4-Year School," *Cleburne Times Review*, March 6, 1969; "Businessmen Out to Correct Neglect of Area Legislators," *DTH*, February 19, 1969; "Governor Smith, Dallas Leaders Hold Unusual Peace Parley," *DMN*, February 15, 1969; "Support for New UT Branch," *DTH*, March 7, 1969; Blanton, "Transcript."

117. *Southwest Center for Advanced Studies: Annual Report, 1968–1969*, 4–5.

of public institutions for Dallas's future. Dallas, Smith claimed, "has long been without the quantity of state-supported institutions of higher education that it deserves." UTD would rectify that discrepancy for Dallas and provide the city, as well as the state, with both federal research money and the talented science and engineering graduates that were desperately needed by industry.¹¹⁸

Conclusion: For Business or Science?

The dramatic increase in high technology and defense spending in the postwar era encouraged urban businessmen to develop new methods to secure investments, get products to market more efficiently, and attract top scientists and tech businesses to bolster their cities. As the Dallas case suggests, these methods often included devising ways to use state institutions to subsidize the risk inherent in high technology, and to make cities and regions more competitive in an aggressive, high stakes quest to attract investment and elite scientific laborers.

When evaluating the strength of a technological agglomeration, then, it makes sense to adopt a perspective that reflects the interests and goals of the region's leaders. Leslie and Kargon, who analyzed the diffusion of the Silicon Valley model in Dallas and elsewhere, employed a perspective that emphasizes science and education in determining value and, ultimately, urban and regional success. The GRCSW, they argued, was a failure because it never came close to approaching Stanford Research Park in size or importance but also because "the high technology community of Dallas could not move beyond a common interest in promoting research and education in selective specialties to true collective learning."¹¹⁹ The GRCSW never coordinated institutions well enough to create a balanced, dynamic regional tech center. It could not integrate the high-tech community. Using this lens it is impossible to disagree. Early attempts at regional coordination fizzled very quickly. UTD became the preeminent science and technology research university in the metroplex, but it lagged far behind the University of Texas and Texas A&M within the state. It never became a preeminent national institution in graduate education. Dallas never became a city dominated by science and technology the way that Silicon Valley or even Austin or Raleigh-Durham did.

However, viewed from a vantage point that emphasizes business growth and city building, judging what the TI leaders actually valued,

118. Henry Tatum, "Smith Signs UT-Dallas Bill," *DMN*, June 14, 1969; "UT-Dallas Becomes Reality," *DTH*, June 14, 1969.

119. Leslie and Kargon, "Selling Silicon Valley," 456.

a much different picture emerges. Rather than a metropolitan area oriented predominantly toward high technology, a “city of knowledge” like Silicon Valley, the tech industry in Dallas became one of many leading sectors (oil and energy, also supported by the center, among the most prominent), characteristic of larger, more economically diverse cities that Jonsson strove to mold Dallas into. The TI leaders did not want Dallas to be a carbon copy of Silicon Valley; rather, they needed a viable path to sustained economic growth for their city and their businesses. Overall, DFW economic and demographic trends continued a strong upward trajectory and diversified away from older industries. Energy was augmented, not replaced, and energy industries were able to modernize in part because of new centers of knowledge.

The Dallas SMA, for example, grew by 50 percent in the 1960s but doubled during the 1970s despite a decrease in crude oil and natural gas production during that decade. This growth occurred largely in the sectors that GRCSW had hoped for; in both the 1960s and early 1970s, the fastest growing segment of the labor market was “professional/technical” according to a University of Texas report. Spatially, the growth was also consistent with the goals of the founders—the “great majority” of new corporate plants and research facilities were built in the suburbs during and after the 1960s.¹²⁰ DFW likewise maintained its role as regional leader in defense contracting; the largest four contractors in DFW, General Dynamics, Bell/Textron, TI, and Vought Aircraft received over half of the state’s \$10 billion in procurement contracts in 1991; Texas continued to trail only California in federal defense funding.¹²¹ In DFW as well as Texas more broadly, high tech and defense have helped the economy diversify away from energy, and those sectors have likely mitigated the negative impact of turbulence in the energy industry.¹²² As of 2015, DFW continued to be among the top four American metros in both tech jobs and tech growth.¹²³ The “Telecom Corridor,” stretching north from the TI campus, led the way.¹²⁴

Growth in the north suburbs of Dallas was even more pronounced and reflected the ability of UTD and TI to generate the type of city the founders hoped for. Plano, a suburb directly adjacent to the north of the research park, is a good example. A town of just 3,600 residents in 1960, housed over 220,000 residents by 2000. Whereas regional trends that have

120. *Changing Industrial Patterns in a Growing Metro Area: Dallas*.

121. *Defense Transition*, 24–29 and 61–66.

122. Weinstein and Gross, “Structural Change,” 14; “The High Tech Challenge,” *DTH*, March 25, 1984.

123. “Tech in Metros: The Strong Are Getting Stronger,” Brookings, March 8, 2017, accessed November 5, 2019. <https://www.brookings.edu/blog/the-avenue/2017/03/08/tech-in-metros-the-strong-are-getting-stronger/>.

124. Pirtle, *Engineering the World*, 95.

brought business and people to the Sunbelt surely factor into this growth, the area outpaces regional and even metropolitan trends in all statistical areas. A 2007 economic survey found that Plano had the highest median income of any U.S. city larger than 250,000 residents. In 2017, Plano's diversified economy was led by the professional, scientific, and technical service sector, and the city's average wage earner made over 150 percent of the Texas and U.S. averages. Four of the city's largest ten employers were in technology or health fields, and two more were engaged in finance. Plano was demographically similar to most other suburbs north of Dallas. Fifty-seven percent of Plano adults held at least a bachelor's degree; of those, almost half were in STEM fields. Other North Dallas suburbs such as Richardson, Addison, and Hebron had similar populations. The average in Texas was 27 percent, and in DFW it was 36 percent. The city, as well as other suburbs in the region like Richardson and Frisco, was decidedly white-collar, educated, and oriented toward science and research. It has been one of the most consistent growth regions in the state and in the nation. Finally, the racial and ethnic makeup of the northern suburbs is an indicator that the business communities' goal of attracting workers and companies from other places by promoting their urban vision—"an abstract thing called 'intellectual atmosphere'" in the words of a GRCSW advocate—was largely successful as well. Over one-quarter of the city's residents were born in another country in 2017, and the city was fast approaching majority-minority status.¹²⁵

The process by which UTD was founded also alerts us to the ways that businessmen learned to cooperate with government and state institutions to support their interests. In working together, governments also learned to be more like business, to find opportunities that only the private sector could provide, to form the foundation for public-private partnerships, and, eventually, make the turn toward more entrepreneurial forms of governance. By the 1980s, Dallas and Texas business, government, and public institutions excelled at public-private partnerships, particularly ones centered on technology, urbanization, and economic growth. In 1983 a diverse array of academic administrators, municipal and state politicians, and businesspeople won a bid to locate the new federally sponsored research consortium Microelectronics and Computer Corporation (MCC) in Austin, with a package ranging from

125. Quote in Al Mitchell "Introduction: The Graduate Research Center of the Southwest," xix, quoting a Dallas Chamber of Commerce vice president, Folder 1, Box 1, GRC Records, UTDA. "Plano-City TX, Texas Education Data," Town Charts, accessed October 29, 2019, <https://www.towncharts.com/Texas/Education/Plano-city-TX-Education-data.html>. See also Ross Perot, "EDS Moves to Plano," *D Magazine*, June 2010, accessed October 17, 2019, <https://www.dmagazine.com/publications/d-magazine/2010/january/eds-moves-to-plano/>. For earlier, more industrial trends in suburban growth near Dallas, see Fairbanks, "Planning the Suburban City."

free state-of-the-art lab space at UT-Austin to use of corporate helicopters. “Of prime importance,” MCC president Bobby Inman said, “was whether there was a clear working relationship among state, local, academic, and private sectors”¹²⁶ along with investment in public universities. Low taxes, he added, mattered little.¹²⁷

In Dallas, the business community continued to promote UTD and to work closely with public legislators and administrators to nurture its growth. In 1984 the Metroplex High Technology Education Task Force was assembled. In contrast to early tech education groups that were organized and administered almost exclusively by the chamber of commerce, this group included public and private university presidents and chancellors, senior executives from eleven local high-tech firms, and chamber of commerce representatives from Dallas and Tarrant counties. When UTD was unexpectedly able to open an engineering school in 1985, Higher Education Coordinating Board member William Sanford was blunt about why: “The UT-Dallas people didn’t convince us,” he claimed, “the industrial and civic community convinced us.”¹²⁸ Businessmen continued to take the lead in helping DFW public institutions grow, but they increasingly also helped them to grow in a way that reflected their interests and that benefited them by supporting fields like engineering. The lessons of the 1960s were obvious in retrospect—public and private interests were becoming more intertwined and were increasingly willing to partner in economic development via public investment.

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126. Bobby Inman, “We’ll Have Silicon Prairies, Too,” *USA Today*, August 24, 1983. For broad incentives offered to MCC, see “The Texas Incentive for Austin,” Box 1, MCC Recruitment Papers, Austin History Center, Austin Public Library; and Gibson and Rogers, *R&D Collaboration*.

127. “The High Tech Challenge,” *DTH*, March 25, 1984.

128. Doug Nogami, “UTD Engineering School Beats Long Odds,” *DMN*, July 29, 1985. For the task force, see “Metroplex High-Technology Education Task Force, Dec. 1984,” Folder 30, Box 90, J EJ Papers, SMUD.

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