

CHAPTER

Lessons about Regional Economic Development from the Austin Story

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Over my professional lifetime, economic development in the region of Austin, Texas, has been, by any measure, spectacular. In 1960, the Austin metropolitan area had a population of 300,000, according to the U.S. Census Bureau, and almost no industry. The Texas state government was the primary basis of employment. Today, Austin is a metropolitan area of 1.4 million people and has become an internationally recognized centre of creative activity, not only in technology, but also in the fields related to the arts, such as advertising and film-making. In real terms, the Austin region's gross product has multiplied more than fourfold since 1980 and is now about US\$65 billion per year. This represents a growth rate above 6% per year on an inflation-corrected basis, impressive even by Chinese standards.

The University of Texas is, without question, the single most important reason for this transformation.

Some have called the city's economic growth "the Austin Miracle". But like every secular miracle, it took more than 40 years to happen "overnight". How and why did it happen? What preconditions and environment led to the opportunity? What steps brought the opportunity into reality? What can one learn from this history about the influence that a strong university can have on the economic and cultural development of its environs?

1 The author is grateful to Mr. Thomas Zigal for assistance in the preparation of this article.

THE CITY AND THE UNIVERSITY

Austin, Texas, is remarkable on its own. Richard Florida, in his widely read book *The Rise of the Creative Class* (2002), names Austin as the second most creative city in the United States, right after San Francisco. Austin likes to call itself “the Live Music Capital of the World” and it does harbour a lively environment for the arts and culture. But it has also become a place of inventive technology and entrepreneurial activity.

Within this city, the University of Texas has evolved into one of the largest and most powerful teaching and research centres in the United States, with a faculty recruited in competition with other top institutions in America and around the world. The university has been historically the most important institution for developing leadership in Texas society across the gamut of human activity in science and engineering, politics and government, media, literature, business, the arts and so on. Its governing board is very powerful in the larger life of Texas. And Texas is important in the life of the nation and the world. It is the second largest of the American states, both in population and geographic area. It is the largest exporter of all the states and its “gross domestic product”, if compared internationally, would come in just behind Spain’s and South Korea’s (both with nearly double the Texas population). The Texas public looks to the University of Texas at Austin to provide knowledge and expertise for solving public problems of all kinds, especially those related to the educational challenges associated with the state’s demographic shifts. All of these elements conspire to define the university’s relationship to its region, which in turn is central to an understanding of its role in regional economic development.

Over the past 45 years, the University of Texas at Austin has become much larger and more sophisticated. In 1960, it employed about 7,000 faculty and staff members. Today it is Austin’s largest employer with 22,000 members. The university budget in 1960 was slightly less than \$30 million. Now it is 55 times larger at \$1.65 billion. Of course, a large part of that arises from inflation, but the real growth is in the range of eight times.

In fact, a university as large as ours is an economic engine of significant magnitude. Our current students contribute, in direct personal expenditures, more than \$800 million into the Austin economy each year, nearly all of it brought in from outside the city. The local economic activity derived from the university’s own expenditures multiplies to about \$7.4 billion per year. The university generates 82,000 jobs throughout the state both by direct employment and by indirect means, through construction, purchasing, and economic multiplication. A recent study indicates that the university manifests a multi-faceted economic impact through its large research enterprise, for which UT Austin receives about \$400 million in research grants every year. This is all

very stable activity, rather insulated from the business cycle, and with good annual growth.

But the economic activity originating in the University of Texas is not the main reason for the outstanding economic development of the Austin region. That has come from interactions between the university and the larger society of the region.

A CHRONICLE OF DEVELOPMENT

The foundation of the development in Austin is in the powerful College of Engineering developed at the university under consistently superb leadership over decades. By the early 1960s, the college was strong enough to be hosting some excellent, large research programmes in advanced electronics, and it was producing large numbers of well educated engineers. A seminal technology-based business named Tracor spun out of the research programme. And not long afterward, Texas Instruments and IBM — attracted by the availability of engineering talent — built facilities in Austin.

The technological talent found Austin attractive as a place to live and wanted to stay. By the early 1970s, a new company named Radian had spun out of Tracor, and quite a few entrepreneurial engineers from Texas Instruments and IBM had left those companies to begin smaller enterprises of their own.

Perhaps the most important single event in Austin's development was its success in attracting the Microelectronics and Computer Corporation — MCC — in an intense national competition in the 1980s. With American electronics and computing industries under heavy competitive pressure from Japan, the U.S. government sponsored MCC as a richly funded, government-industry consortium to conduct leading-edge, pre-competitive research. Metropolitan leaders across America saw MCC as an enterprise that would define the future of microelectronics and computing, so they bid fiercely for it to be located in their areas. Austin was the successful bidder. There were five important parts to the package:

- Financial inducements offered by the Governor of Texas and the civic leadership of Austin. (A good example of how government and the university, working as partners, can benefit everyone.)
- A commitment by the university to locate MCC in a building to be constructed specifically for MCC's needs on university land. (A good example of how the business sector and the university, working as partners, can benefit everyone.)
- The strength and scale of the university's science, mathematics and engineering programmes.

- Commitments by the State of Texas and by private donors to recruit additional top-level faculty talent into those programmes.
- The attractiveness of the Austin area as a place to live.

The university was a major factor in all five of these elements.

In the late 1980s, there was a similar success when the Austin area won another national competition for a second government-industry consortium dedicated to leading-edge, pre-competitive research in the semiconductor industry. That one, called Sematech, was intended to support the development of the tools and materials needed for advancement of technology into new generations. The same five elements used to attract MCC were used to bring Sematech to Austin, including a new facility on university land.

Through the 1980s and into the 1990s, a great many major companies in the semiconductor and computer fields placed large facilities in Austin because MCC and Sematech were in town. They typically drew heavily on the talent and expertise available to them at the university.

During this period, a remarkable entrepreneur named Michael Dell went into business making computers at the age of 19, after just one year as a student at the University of Texas at Austin. His company, Austin's largest corporate success story, has become a global powerhouse in the computer industry.

By the middle and late 1990s, software had also become a significant part of the commercial mix, and Austin became a major centre for development of systems, web-based applications and services, and games. Of course, this sector suffered greatly during the "dot-com bust" in the years after 2000, but there is new vitality in it now. Evidently the dot-comers have not yet been swept into the dot-compost heap of history.

The Austin area now hosts corporate headquarters for four Fortune 500 companies. The largest is Dell. Second is the recently spun-off Semiconductor Division of Motorola, which is now called Freescale Semiconductor. The third is Temple-Inland, a major forest products, paper and financial services company. Just having joined the Fortune 500 is Whole Foods, which has built an empire, in typical Austin fashion, on organic peanut butter, brown rice and tofu.

Did the university assist in the creation of this scene? You bet! (as we say in Texas). Dell was founded by and is led by an ex-student of the university. Temple-Inland was brought to Austin by a UT graduate who built its financial services arm to a substantial degree on Austin-area real estate opportunities extending from the technology-driven growth. Freescale is in Austin because Motorola headquartered its semiconductor division there after MCC and Sematech came to town. Whole Foods built its business concept on the cultural independence of Austin, which has its roots in the university. All four of

these companies have relied on the flow of educated talent from the University of Texas at Austin.

And there is more:

- The Austin Technology Incubator, which is part of the university, has graduated 65 technology-based companies. These companies have generated nearly 3,000 jobs in the Austin region and have raised \$1.2 billion in capital.
- Scores of companies have been spun off from the university, including Tracor, Radian, National Instruments, Evolutionary Technologies and many smaller enterprises.
- About 2,000 business managers per year are trained in our executive education programme at the university's McCombs School of Business. Many of the programmes are tailored to the individual needs of the companies employing the managers participating in them.
- The university is committed to developing transnational business partnerships. We are especially interactive with Mexico, our neighbour across the Rio Grande River, in industry and educational exchanges. For example, we have ongoing research agreements with PEMEX, the Mexican national oil company, in which our university's geological, environmental and engineering expertise is put directly at the service of Mexico. The North American Free Trade Agreement (NAFTA) has dramatically increased the volume and variety of business between Texas and Mexico, and the University of Texas at Austin has set a priority on facilitating positive mutual development on our border.

GENERAL ATTRIBUTES OF RESEARCH UNIVERSITIES SUPPORTING ECONOMIC DEVELOPMENT

Because universities harbour brain power, ambition and expertise, they are natural partners in building a strong regional economy. In regional economic development, knowledge is indeed power. All sound universities make important, economically significant contributions to the regions that host them. Here are some of the ways that are common to all:

- Universities are magnets that draw young people of talent from a large area and concentrate them into an interactive, creative community. Much of this talent is retained in the home area of the university.
- Universities develop knowledge and skills in their students, so that their graduates are capable of making much more valuable contributions to their families and their society.
- Universities recruit and sustain a talented faculty, who contribute to the creation of a vibrant community outside the university itself and

can bring expertise to the solution of public problems or, as inventors and consultants, to the service of commerce and industry.

- A university has great power to influence the attractiveness of its region as a place to live and work, through the ability, leadership and creativity of its graduates, through its effect on the intellectual life of its community, through cultural and artistic events that it sponsors, and through its ability to build identity.
- Universities also have convening power. They can bring people together from all sectors of society to address the issues of the present and future. In this way, and in others, universities become seen publicly as places where the future is created. The reputation and the reality are both valuable for the economic development of the region that hosts the university.
- Finally, all universities are sizable, stable economic engines in themselves. They bring employment to a community and generate income for many supporting businesses.

With properties such as these, it is no surprise that virtually all regional economic development teams in the United States are placing a strong focus on their local colleges and universities. They are right in doing so, because their educational institutions add value of a kind that cannot be obtained in other ways.

SPECIAL CONDITIONS FOR EXTRAORDINARY GROWTH

Even so, a story like the development of Austin is a rare case, and it rests on more than the basic list of contributions made by universities. To realize the kind of university-aided development that has occurred in the Boston area, or Silicon Valley, or the Research Triangle of North Carolina, or San Diego, or Austin, the assets of one or more exceptionally strong universities must come together with special assets of the region itself. For growth of that kind, four particular conditions must all be satisfied:

- First, the university must host a superb faculty and truly exceptional research programmes, as measured by international standards.
- Next, the university must have high social importance and public credibility.
- Third, the region must be a competitively attractive place for talented people to live.
- Finally, the university leadership must be well engaged with the business and political leadership of the region, and all must be interested in fostering economic development.

Extraordinary university-assisted growth must be built on the basis of a substantial advantage in some specific portion of the world of ideas. This means that the region must host a commanding presence in critical supporting fields, manifested in resident expertise and respected, intensive research at the very edge of knowledge. Experience suggests that these elements can be brought together only in a university with a top-quality faculty and a large volume of internationally respected research. Unless there is broad strength in the institution, it is practically impossible to recruit academic talent at the level and in the numbers required to produce the focused expertise needed for strong economic development. Because such development typically arises from new forms of economic activity rooted in technical advances, the critical areas are likely to be in science or engineering. However strength in other disciplines is also important, not only to the overall reputation and capability of the university, but also for their impact on the larger community.

A close observer may note that Austin's technology base began to develop before the University of Texas at Austin could have laid much of a claim to a top-quality faculty or a large base of research. This is true, but the real take-off in Austin's development as a technology centre did not occur until the early 1980s, when the university was rapidly establishing itself as a leading academic institution.

In a region that has already achieved much knowledge-based development, neither the expertise nor the research will be confined to the academic institutions. To the contrary, the bulk of it may reside among the industries of the region. However, the university is still a critical catalyst, because it continuously furnishes new talent, including expert talent in the very fields most relevant to the region's core activity. Moreover, the university can upgrade the abilities of people already involved in that activity; it can offer consulting strength; and it can serve as an exchange point for experts from industry, who otherwise have limited access to open intellectual environments.

When I say, in my second point, that the university must have social importance and public credibility, I mean that people in the broader society of the region must have confidence in the institution and must see it as centrally important to the welfare of the region. They must regard it as a place for educating the most talented of their young people, and they must perceive it as a place where the issues of the society can and will be addressed and where solutions will be found. A university with strength in these public connections has the power to affect events in its region and the power to make things happen. Just as important, it commands the confidence that it must have to gain the public and private investment essential to the very creation and sustenance of programmes that give rise to the knowledge advantage.

As I outlined the role of the University of Texas at Austin in our state, my purpose was to illustrate how well the university is situated with regard to social importance and public credibility. For decades, it has held the leading position among Texas universities in these respects, and that position has been critical to its work on behalf of economic development, not only in the Austin region, but throughout the state.

Third in my list of conditions was that the region must be attractive to talented people. Folks who can enable and drive extraordinary economic development have choices about where to live and work, and they will migrate to the most attractive. Physical beauty and recreational advantages are among their considerations, and both are high among the reasons for the success of Silicon Valley, San Diego, the Research Triangle and Austin. Good transportation is absolutely essential, and, in the U.S., that means convenient access to an airport that offers non-stop service to a significant spectrum of cities. Affordability is a secondary consideration. Of course, the university can do nothing about any of these things, but they do affect in a strong way whether extraordinary growth is really possible.

The absence of real advantages in this sphere is probably the main reason for the lack of examples of such development around the truly great universities located in the smaller "college towns" of America. Many of these towns are quite healthy economically, precisely because of the effect of the local university, and many have experienced modest to good recent development rooted in their university's intellectual strengths. But my focus here is on extraordinary development, and college towns just do not have the assets required for that.

Universities do have a strong influence on one important aspect of livability, namely, the cultural milieu. Creative people like to be around universities, because the intellectual atmosphere is lively, and cultural opportunities are more plentiful than in the larger society. The attractiveness of the environment created by the three universities of the Research Triangle is a big part of the success in North Carolina, and the same can be said of Austin. For decades, Austin has been known as a place that harbors a great range of creative people. Favourite T-shirts and bumper stickers in the Austin area even admonish the community to "Keep Austin Weird". While Austin is widely known as a technology centre, it is a multi-dimensional place with all political and cultural viewpoints expressed, with an appreciation for education and intellectual activity, with a strong environmental tradition, with an especially varied live-music scene. Austin also has a professional symphony orchestra and professional opera and ballet companies operating at a quite high standard. The combination is very unusual for a city of Austin's size. There are also strong elements in the visual arts and drama. Finally, Austin is even the home of Lance Armstrong, recently the

winner for the seventh time in the Tour de France. Much of Austin's atmosphere and activity flows from the youth and intellectual liveliness of the University of Texas at Austin, and these things are powerful assets of the community.

My fourth and last condition for extraordinary growth was that the university leadership must be well engaged with the business and political leadership of the region, and all parties must be interested in fostering economic development. Economic development rarely happens in this era just because intellectual conditions are right. It is fostered by collaborations among civic leaders, including the leadership of universities. In the case of Austin, I noted above how such collaboration was essential to attracting MCC and Sematech. Without the public confidence emphasized just a moment ago, the required collaboration could not have happened. But also required was entrée to top-level leadership of the state. The strength of U.T. Austin's governing board in the life of Texas helps to sustain the essential connections. In the Austin area and in Texas at large, collaboration of this kind continues to be important, as the region seeks to persuade firms to locate new facilities, or to upgrade established ones, in our region.

One final point: land is a special asset of a university that can be important in collaborative regional economic development. Stanford's use of its extensive landholdings in support of knowledge-based corporate development is a very large part of the Silicon Valley story. The commitment of university land and facilities to MCC and Sematech was likewise critical to the Austin story.

CLOSING COMMENTS

Of course, there are many specific lessons about the impact of universities on regional development, of which we have been able to examine only a few here. Perhaps my main message is to suggest the importance of the interaction between a university and its surrounding society. That interaction is what leads to social energy, leverage on capital, and political help with removal of barriers — all critical for amplifying the university's benefits in the larger society. I have focused here on American stories, because I know them well, but there are others that could be cited from around the globe. And there surely will be more in years to come.

In the world before us, ideas and know-how, developed talent, and a well-educated workforce are more essential to regional economic well-being over the long term than access to capital and materials. The great research university has become the single most powerful and persistent source of regional wealth and social strength, because it builds the basis for adaptation in a continuously changing social environment. The society that discovers this truth and invests on the basis of it will own a good share of the future.

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