

Two Visits to One of Texas' Academic Powerhouses: Rice University

Da Hsuan Feng

Vice President for Research and Graduate Education and Professor of Physics
The University of Texas at Dallas (UTD)

Preamble: A Tale of Two Cities, the Metroplex and Greater Houston

Ever since The University of Texas at Dallas (UTD) and Rice University (as well as The University of Texas at Austin, The University of Texas at Arlington and the Air Force Material Research Laboratory on Wright Patterson Air Force Base in Dayton, Ohio) developed SPRING (Strategic Partnership for Research in Nanotechnology) more than two years ago, I have felt that it is crucial for UTD to broaden its relationship with Rice University. I came to this conclusion based on the following:

First, with a most intriguing origin and nearly a century of sustained intellectual growth, Rice University has emerged as one of the intellectual powerhouses of Texas, if not the United States. While I have first hand knowledge of its prowess in material science (even as a nuclear theorist, I was well aware of the enormous impact of the discovery of Buckeyball, or C60, on commercial applications) and nuclear science (from which some of the current leading nuclear astrophysicists emerged), I also am quite familiar with many of the exciting research being done beyond these two areas. Indeed, even before coming to UTD, I was aware of the influential James A. Baker III Institute for Public Policy. Thus, as UTD's Vice President for Research and Graduate Education, I can see the enormous benefits for the school to further explore intellectual and other opportunities with my colleagues at Rice.

Second, even being new to Texas, it was not difficult for me to see that the Dallas-Fort Worth Metroplex and Greater Houston region are two of the most sophisticated metropolitan areas in the Southwestern United States, if not the world. These two regions power many of the nation's economic activities in the global market, from electronics to energy. It only makes sense for research universities from these two regions -- which are, or can be, intellectual, economic and political engines -- to develop linkages. Such linkages would include developing closer intellectual collaborations on the one hand, and promoting complementary economic activities on the other. Such a relationship can only have positive and hopefully significant impact on the intellectual and economic landscapes not only for Texas, but the world.

Third, having visited the Pacific Rim more than 70 times in the past 25 years, I am amazed that my friends from that part of the world still think of United States' East and West Coasts as the nation's intellectual and economic centers of gravity. The Southwestern United States' potential economic and intellectual impact remain an afterthought, if considered at all. Thus, it makes sense that research universities in the Southwest shoulder the responsibilities in promoting the region globally. In recent years,

there have been piecemeal economic investments in Texas from the Pacific Rim. I am convinced that if research universities can promote collectively, the positive impact on such investments from the Pacific Rim would be far greater than if individual universities were to do it alone.

Finally, ever since the global success of the basketball superstar Yao Ming of Houston Rockets and the less successful Zhi-Zhi Wang, formerly of Dallas Mavericks, 1.3 billion people in China have become familiar with both Houston and Dallas. Should we not capitalize on this?

For these reasons (and more), I was extremely pleased to have the honor and pleasure to be invited by Ambassador Edward Djerejian -- former United States Ambassador to Israel and now Director of the James A. Baker III Institute for Public Policy-- and Tony Elam, Associate Dean of the George R. Brown School of Engineering to visit Rice on two separate occasions.

James A. Baker III Institute for Public Policy (BIPP)

In studying the history of BIPP, I recognized that its creation and execution is a classic example of what a great university can achieve when having innovative faculty members and forward-looking administrators who can execute the innovation.

This Institute began in 1993, when former Secretary of State under President George Bush Sr., the Honorable James A. Baker III accepted Rice University's suggestion to set up an Institute in his honor, an institute to be "...strictly non-partisan and dedicated to the highest standards of intellectual excellence and integrity with the goal of helping bridge the gap between the theory and practice of public policy by drawing together experts from academia, government, the media, business, and non-governmental organizations." (from <http://www.rice.edu/projects/baker/BakerIns/index.html>)

Since Rice has a great faculty, I am not surprised that such an innovative idea of having an important institute of this nature emerged from professor of Political Science, Dr. Richard J. Stoll. Stoll recognized the link of Baker's grandfather to the founder, Baker's importance in the regional, national and international landscapes, and the position of Rice University as a rapidly emerging intellectual powerhouse. Rice administrators, on the other hand, recognized that to turn this idea into a successful practice, it clearly needed an individual with enormous administrative skills who could command international respect. Thus, in 1994, Rice University invited the Honorable Edward Djerejian to be BIPP's director. This decision was clearly the right one because under the leadership of Djerejian, BIPP has flourished.

During the meeting on January 20th, I was extremely pleased and honored to meet three distinguished faculty of Rice who were invited by Ambassador Djerejian to join him. They were

- o Dr. Neal Lane, University Professor and Senior Fellow in Science and Technology of the Baker Institute
- o Dr. Steve Lewis, Senior Researcher in Asian Politics and Economy,
- o Dr. Allen Matusow, W. G. Twyman Professor of History Associate Director of BIPP for Academic Programs

I was awed by the expertise these individuals possess, especially since Steve Lewis and Allen Matusow are profound scholars in areas I know little about. With respect to Neal, I have a personal story to tell. I was a program director at the NSF from 1983-1985, which was precisely the period Neal was not at the NSF as the Physics Division Director. Neal is a super administrator, both as a university president, and as a United States Presidential science advisor! My good friend and fellow program director for gravitational physics Rich Isaacson often reminded me that this was unquestionably one of the most “unlucky” periods of my life when, at that critical juncture of my career, I could not tap into Neal’s wisdom.

Our discussion, which was quite intense and lasted an hour, centered on two topics -- how nanotechnology, via SPRING, could exert greater intellectual and economic impact on the Southwest and beyond and how the United States and China could explore ways to create win-win situations, economically and intellectually. It seems to me that working with the nationally influential Institute BIPP, the possibility of achieving a real impact is high. Further discussions are now underway.

Meetings with Engineers and Scientists

About a year ago, I met Tony Elam, the associate dean of Engineering of the Brown School of Engineering of Rice University. The Engineering School of Rice, which has all major disciplines, is highly ranked. Its faculty has some 10 members of the National Academy of Engineering. In fact, as one walks in the Engineering building, one can immediately see the gallery of the photos of all its distinguished Academy members.

Tony and I share similar experiences of spending a portion of our careers in industry. In industry, our respective portfolios included the development and promotion of collaboration among groups and/or institutions of disparate expertise. We agreed that it was indeed a satisfying experience for us and that is why in our current positions, we continue to want to develop and promote collaboration.

With this common interest, and with the possibility of furthering UTD’s interactions with Rice, Tony suggested that I come to visit Rice to meet with individuals in science and engineering (beyond the nanotech groups that I know quite well already). This is why I visited Rice on February 10th, 2004.

Knowing how tough it is to set up meetings with extremely busy people, Tony must have worked very hard to set up one hour meetings with the following individuals:

- Dr. C. Sidney Burrus, Maxfield and Oshman Professor of Electrical and Computer Engineering and Dean, Brown School of Engineering,
- Dr. Kathleen S. Matthews, Stewart Memorial Professor of Biochemistry and Cell Biology and Dean, Wiess School of Natural Sciences
- Dr. Jan E. Odegard, Executive Director, Computer and Information Technology Institute (CITI)
- Charles R. Holmes, Executive Director of the Shell Center for Sustainability
- Dr. Kyriacos Athanasiou, Professor in Bioengineering

After five hours of discussions, I arrived at the following conclusions:

First, the theme of “interdisciplinary research” is common to all. It is quite exciting to hear the endorsement and promotion of strong interdisciplinary research from all the individuals. In the past, I have heard this theme from the nanotech folks at Rice, but that was not surprising because of the nature of the discipline. But to see that significant centers, such as CTTI and the Shell Center, were set up specifically to promote interdisciplinary research is impressive.

I mentioned to Dean Burrus that a number of recently hired faculty members in UTD’s Erik Jonsson School of Engineering also hold appointments in either chemistry or physics. Given their research, I believe the two schools could blend together more than simply joint appointments. As I was listening to the discussions from the engineering and natural science deans at Rice, I could not help but wonder whether within a decade or so, such academic silos will blend into one another.

Second, Dean Burrus was proud that engineering in Rice is not a “professional school” (such as law, medical, etc). I could surmise from what he said that there is essentially no academic difference between the faculty in this school and other “traditional academic” schools in the university. The atmosphere of the engineering school is to carry out research to answer questions (either of natural or technological nature) and to promote collaboration with other disciplines, such as those in the natural sciences and social sciences.

Third, Rice has hired a new cadre of managers, with strong industrial backgrounds, whose jobs are to promote university collaboration with industries. Indeed, both Tony Elam and Charles Holmes are individuals of such ilk. I was quite startled to learn that until they came to Rice University, they had essentially only industrial experiences. After listening to Tony and Charles, I did a mental calculation of the total number of years both spent in industry and came up with an amazing number of “half a century.” As a sidebar, I also was very interested to learn that Charles was a senior corporate representative of an American company in China for six years. These experiences clearly have a positive and substantial impact on how Rice is carrying out the business of education.

I also am very interested in CITI, led by Dr. Jan Odegard who did his Ph.D. in computational engineering at Rice. The institute has the following active centers:

- The Center for Computational Finance and Economic Systems
- The Center for High Performance Software Research (HiPerSoft)
- The Center for Technology in Teaching and Learning (CTTL)
- The Center for Multimedia Communication (CMC)
- The Center for Computational Geophysics (CCG)
- The Statistical Consulting Lab (SCL)
- The Center for Chemical Processing Technology (CCPT)

As one can see, these are clearly interdisciplinary research centers. Jan's job, according to him, is to bring groups together, even those in other universities and from industry, to collaborate. With UTD's interest in high performance information technology, I believe that stronger connectivity to CITI can only benefit us.

Fourth, it was truly a great pleasure to have the opportunity to talk to a senior bioengineer of Rice, Dr. Kyriacos Athanasiou, who also is the President of the Biomedical Science and Engineering Association, an international organization with 4,000 members of the field, and the ABET accreditation body in the United States. Bioengineering or biomedical engineering is one of the fastest growing disciplines in the United States. The field ranges from genomics, new materials to medical devices. I remembered that a senior science manager in the federal government said that "as long as humans pursue the activity of improving the quality of life, there will always be bioengineering!" In addition, since there is considerable discussion about UTD developing this area, making a connection with Kyriacos, both as an active researcher and as the president of the national professional organization, can tap into his wisdom.

Epilogue

This visit deepened my conviction that strong collaborations between UTD and Rice University can be win-win not only for both universities, but for the two regions.

I would love to see more research collaboration between the active faculty members of both universities. Our two universities have an excellent collaboration beginning via the SPRING program. I obviously cannot force faculty to collaborate, especially if they are unfamiliar with each other. Thus, more encouragement of networking is necessary for this to happen. I see that the research administrators' job is to provide as friendly a landscape as possible so that collaborations can bloom!

I believe that from the research administrative level, and indeed all administrative levels, Rice and UTD can develop a higher level of communication. In this way, we as administrators can "pave the way" for more collaboration.

I am excited about the possibility of me, representing UTD, to work with the outstanding members of and hopefully contribute to BPPI. BPPI is an Institute of global importance. I can see that activities of this Institute can impact not only the region, the nation, but the world. In these days of global uncertainties, all citizens of civilized nations should work towards mutual understanding. BPPI is obviously a platform to further this goal.

I hope that with increasing interaction between Rice and UTD, there will be a blossoming of relationships between all universities in the two regions. I have seen in recent years some serious collaboration between UTD and University of Houston, and between UTD and UT Houston Health Sciences Center. In the coming decade, I hope that such intellectual traffic between the two regions can be deepened, broadened and even better organized!