

An Eye Opening Visit to Georgia Institute of Technology (Georgia Tech)
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Preamble

Before the UTD Research Advisory Board (RAB, http://www.utdallas.edu/research/ext_advice_councilNew.htm) meeting in March, 2004, one of the members asked me which university or universities would UTD hope to be like "when we grow up". This request prompted me to look into a number of universities in the country which I thought could be a close approximation to what we could be like. Of course, I fully recognize that NO TWO universities growth paths are similar, nor are the boundary conditions they existed under. Still, I thought that this could still be an intellectually interesting lesson.

I imposed the following boundary conditions in my search.

1. It should be an urban university
2. It should be science and technology centric.
3. It should be a State university.
4. It should have a student body not significantly larger than UTD (FTE around 15,000)
5. It should have an outstanding undergraduate body of students.
6. It should have a research expenditure significantly larger than UTD's
7. It should have a national, if not international presence.

One of the universities I used in my presentation to the RAB is Georgia Institute of Technology, commonly known as Georgia Tech. By surfing the web, especially Georgia Tech's website (<http://www.gatech.edu>), I collected and presented the following data of 2002 about Georgia Tech to the RAB:

- Georgia Tech research income is \$237 Million (4 times the combined research income of UTD, UTA, SMU and UNT)
- Georgia Tech has 15,000 grads and undergrads (1000 more than UTD)
- Georgia Tech is an urban university
- Georgia Tech is a State University
- Georgia Tech is very much engineering centric
- Georgia Tech is next to a (private) university, called Emory, which has a powerful medical school. From what I could gather from the web, there seems to be strong interactions between the two universities. I thought that this might give UTD some lessons learned about how to work with medical schools.

The RAB members were very interested about the data I showed. Some knows quite a bit about Georgia Tech and all suggested that I should go for a visit to learn more about the school.

It turns out that one of our research active faculty members, Dr. Bruce Gnade, was a Georgia Tech graduate (in fact, his thesis advisor was a collaborator of mine from the distance past), and he knew the Vice Provost for Research of the university, Charlie Liotta, quite well. My interest in Georgia Tech also spurred Bruce's interest, especially since his understanding of the university is somewhat dated. So with Bruce's help, I made contact with Charlie, and yesterday, June 30th, 2004, Bruce and I went to Atlanta, Georgia, to visit Georgia Tech.

The Day Events

Besides giving us an overall description of the university's current status, Charlie Liotta also set up many great meetings for us in some of the most critical centers. Bruce and I were also extremely gratified that he requested his deputy, Jean Gunter to accompany us the entire day (so that we know exactly where to go next and not waste time in the transition).

We met the following individuals:

Office of the Vice Provost for Research

- Charles L. Liotta, Vice Provost for Research and Graduate Studies
- Jean Gunter, Director, Interdisciplinary Programs, Office of the Vice Provost for Research

Charlie is a jovial and gregarious fellow. He has been at Georgia Tech for 40 years and 8 years as Vice Provost for Research. He gives people the immediate impression of having infinite energy, and an administrator of great vision.

Georgia Center for Advanced Telecommunications Technology (GCATT)

- Nikil Jayant, Georgia Research Alliance Eminent Scholar, Director of GCATT and John E. Pippin Chair in Wireless Systems

Microelectronic Research Center (MiRC)

- James D. Meindl, Director and Joseph Pettit Chair Professor of Microelectronics
- Kevin Marin, Principal Research Scientist and Associate Director, Microelectronics Research Center (MiRC)
- Tina G. Preswtridge, Assistant Director - Business Operations, MiRC

Center for Board Assembly Research (CBAR)

- Steven Liang, Professor and Woodruff Faculty Fellow and Associate Director of CBAR
- Alex Goldstein, Director, Operations and Infrastructure, CBAR

Office of Economic Development and Technology Venture

- H. Wayne Hodges, Vice Provost for Economic Development and Technology Venture

My impressions

Georgia Tech is unquestionably undergoing an incredible growth in the past two decade. The following are my superficial impressions.

First: Georgia Tech students are outstanding. The average SAT of the entering freshmen is close to 1400! That means the average SAT's of their students are approaching those of Rice which has the highest SAT average in the State of Texas.

Second: I found out that the current "numbers" for Georgia Tech are even better then those I quote for the RAB. According to Charlie, the research expenditures have been phenomenal in the past decade (see the below table).

Year	Research Expenditures
1995	\$212 Million
1998	\$260 Million
2001	\$306 Million
2003	\$375 Million
2004	~\$400 Million

It should be mentioned that according to THECB, UT Austin is around \$370 Million and Texas A and M is around \$400 million. The research growth of Georgia Tech is obvious.

Third: The State of Georgia has instituted a program called "The Georgia Research Alliance" (GRA). This is a program of \$400 Million in which the State, through lottery money (I was told), appropriated the money for the "Eminent Scholars program" and research facilities and equipment. The motto of the program is

"Creating a Better Georgia through Innovation and Discovery".

It is impressive that for the Board of Trustees of GRA, all presidents of the six universities of the consortium (Georgia Tech, University of Georgia, Georgia State University, Medical College of Georgia, Emory University and Clark Atlantic

University) are members. According to "Continuum" magazine, the Annual report of GRA, in 2002 there are 33 eminent scholars recruited to the Georgia universities. Among the 33, 15 of them were recruited to Georgia Tech. In fact, we had an exciting conversation with one of them, Dr. Nikil Jayant, who is a world renowned wireless system expert and was recruited from Bell Laboratories. I recalled mentioning to someone that if the Metroplex creates 100 endowed chairs for the four research comprehensive universities (UTD, UTA, UNT and SMU), the Metroplex will be a completely different place. Apparently Georgia did it already!

Fourth: In the past several years (I think it was 5, if I am not mistaken), Georgia Tech invested nearly half a billion (with a B) dollars in infrastructure. If you walked around the campus, you can sense it! For example, GCATT, MiRC and CBAR are all housed in magnificent relatively new buildings. I was quite intrigued by GCATT because one of the floors of the building is devoted to incubations for start up companies. In fact, the director, Dr. Jayant, is also the CEO of one of the companies, IN THE SAME BUILDING! I was also told that all the buildings are now "interdisciplinary", namely Georgia Tech is rapidly moving away from a building for each discipline, such as the "physics building", or "chemistry building", or "electrical engineering building" which many universities still have. In fact, Jean Gunter from Charlie's office, is specifically hired to promote interdisciplinary research!

Fifth: The MiRC is really a very exciting place. I was informed that they now have the state of the art equipment for e-beam lithography (\$4 million from GRA). The director, James D. Meindl (who knew out Dean of Engineering Bob Helms when they were colleagues together in Stanford University), gave us a very comprehensive discussion of their center. This was followed by a tour of the clean room by the Deputy Director Kevin Marin. Both Bruce and I were impressed to see how many students working inside the clean room. According to Kevin, these incredibly smart students were given a great deal of freedom to even making sure that the room is user friendly.

Epilogue

Georgia Tech is an engineering school. I think there is no if's or but's about this aspect. Of the 16,000 students they have (grads and undergrads), nearly 13,000 are in engineering, computing and architecture. Its Science College and Management College have only 1,600 and 1,400 respectively. I am not sure UTD will ever have such disparity.

I am very pleased to hear Charlie said that "university research is the intellectual driver for the economic development of the community, the state, the region and the nation". This of course is in complete agreement with my statement that "UTD should be the regional and global economic and intellectual engine". Everything they have done to the university in the past several decades were guided by this principle.

Georgia Tech is also rapidly becoming an internationally renowned university. They have created joint programs with countries like Singapore, France, Portugal, South Africa and so on.

Finally, all the people we met seemed to be having a great deal of fun! And, all were exceedingly friendly and helpful.

Unquestionably, there is much we can learn from Georgia Tech.