Baylor University
School of Engineering and Computer Science
Board of Advocates
Fall Meeting – September 29, 2006
Baylor University

Board members attending: Mark Cannata, Joe Cestari, Mike Ingrim, Larry Johnson, Lloyd Lund, Rick Maule, Jim McDonough, Bill Mearse, Craig Nickell, Clell Oravetz, Bill Ratfield, Daryl Sims, Steve Smith, Dean Swisher, Harold Spangler, Trent Voigt, Matt Watson

Board members absent: Danny Meyer, Brian Sheets

Others attending: Dean Ben Kelley, Jim Farison, Bill Jordan, Rob Kennedy, Leigh Ann Marshall, Cheryl Tucker, and various faculty from the School of Engineering and Computer Science

Welcome

Following a continental breakfast, Bill Mearse convened the meeting. He introduced the four new members of the Board of Advocates. Finally, he introduced Dr. Larry Lyon, Vice Provost for Institutional Effectiveness and Dean of the Graduate School.

Dr. Lyon addressed the Board, saying Baylor University is changing and needs to change. Further, these changes ought to happen with the help of people outside of Baylor, some who may not be alumni. Baylor recognizes the global environment and aims toward becoming a national research university with an unapologetically Christian message. Baylor can accomplish this goal by continuing to recruit the brightest students and working toward strategic planning goals.

With regard to strategic planning, Dr. Lyon reported that university units have been asked to think strategically: Where is the unit currently positioned? What programs work for that unit? Who are its competitors? What are its long-range goals? How will the unit achieve them? There is also an emphasis on "friends" of those programs who understand the need for change and who will help support the unit's goals.

Ultimately, five or six strategic plans will be recommended by a University committee. If one or more of those chosen from ECS, it will be because of ECS "friends" who championed a clear plan.

In a brief question-and-answer, Dr. Lyon was asked the following:
Q: What is the difference in mission between Baylor, Notre Dame and BYU?
A: Baylor falls approximately in the middle between most-religious BYU and least-religious Notre Dame. Baylor is satisfied with this placement, and tailors its mission accordingly.

Q: How has Baylor benefited from the recent publicity surrounding the religion study?
A: The study was successful because of Baylor's focus on religion—an area where Baylor can successfully compete. The study is changing the way religion is viewed in the United States. Baylor's challenge will be to continue to develop areas of strength planted during this study.

Dean's Report

Dean Kelley provided an update on Leadership, Personnel, Development, Board scholarship, ABET, Globalization, US News Ranking, Board meeting w/ President Lilley and Provost O'Brien, Enrollment information, and Strategic initiatives. Faculty members provided brief summaries of the strategic initiatives. The initiatives are:

- Joint CS/ECS Ph.D. & Avionics Research
- Gaming & Simulation Environments
- Center for Appropriate Technology, Social Entrepreneurship, and Christian Missions
- "Institute for Biomedical Science and Technology"

The full presentation may be viewed at the Board of Advocates archives website: http://www.baylor.edu/ecs/index.php?id=29849

Full Board Session – Strategic Initiatives

Although the initiatives are still in early development, the Board articulated some common threads among the proposed strategic initiatives. Those include:

- virtual prototyping/simulation,
- high-end graphics,
- all aim at microtech,
- synergies already present (momentum in industry)

With regard to the facilities expansion initiative, purposely omitted from active discussion at this meeting, Dean Kelley emphasized that this initiative is different from the others. It principally has a development, rather than academic, focus, and Board previously provided input.

The Board also enumerated some general concerns about the initiatives:

- Will the initiatives attract students (by the time the initiatives are realities)? How to plan for longer-term future.
- "Gaming" term has negative connotation. (How about "entertainment simulation environment"?)
- Getting feedback from alumni, potential employers, venture capitalists is important. The initiatives should include market analysis and proposed revenues and costs.
- Measuring success and staying relevant will also be critical.

Dean Kelley emphasized that the initiatives are still emerging and developing. The initiatives' current framework will need to be sellable to the University administration. He stressed that the Board's conversation will help direct how the initiatives develop.

Joint Breakout Session – Mechanical and Electrical and Computer Engineering

Board members present: Clell Oravetz, Bill Ratfield, Rick Maule, Mark Cannata, Trent Voigt, Jim McDonough, Steve Smith, Mike Ingrim, Danny Meyer, Craig Nickell, Lloyd Lund, and Bill Mearse

Faculty members present: Jim Farison, Bill Jordan, Don Farris, Russ Duren, Dick Campbell, Randall Jean, Mike Thompson, and Brian Thomas

Both engineering groups met together in the early afternoon. Dr. Jordan related his experience with the teams who went to Kenya last summer. While it was a valuable "mission trip-type" experience for the students, the challenge is in awarding academic credit. A course being developed in appropriate technology may provide a solution. Questions posed to Dr. Jordan:
Q: Who supports the projects in Africa, once the Baylor team has left?
A: Local (in Africa) non-profit groups continue to support the projects.

Q: How are opportunities identified?
A: Through networking and projects evolve from previous trips and experiences.

Q: How are the trips funded?
A: A portion of support comes from University Ministries; another from personal support raised.

Next, Dr. Farison gave an overview of the evolution of engineering at Baylor. In 1979, the first engineering faculty member was hired at Baylor. The engineering program received its first accreditation in 1989. In 2000, separate engineering programs were individually accredited. In 2004, separate engineering departments were formed. The size of the faculty grew from 10 in 2001 to 19 in 2006. In summary, the program is relatively small and young and making tremendous progress in its priority areas: teaching, research, and Christian mission. Soon, an accreditation team will visit the engineering program to review its objectives and outcomes. Dr. Farison encouraged the Board members to become accreditation team evaluators. The Board asked Dr. Farison if it is possible for a program to lose its accreditation. Dr. Farison responded "yes."

Following these discussions, the mechanical engineering and electrical and computer engineering breakout groups separated.

Breakout Session – Electrical and Computer Engineering

Board members present: Clell Oravetz, Bill Ratfield, Rick Maule, Mark Cannata, Trent Voigt, and Jim McDonough

Faculty present: Jim Farison, Don Farris, Russ Duren, Randall Jean, Mike Thompson, and Brian Thomas

Dr. Don Farris reported on a recent ECE faculty retreat, where the program's current and future directions were discussed. A copy of his presentation may be viewed at the Board of Advocates website: http://www.baylor.edu/ecs/index.php?id=29849

In response to Dr. Farris' retreat overview, the Board had these questions:
Q: What are the reasons behind the lower level of student preparedness for college versus the higher SAT average scores?
A: The disparity is possibly due to weak math background and lack of experience (younger children aren't actively "taking things apart" and exploring their physical world). Dr. Farris relayed a statistic that 50 percent of entering freshmen are not ready for calculus. There also may be a lack of hands-on academic experience.

Q: Do other universities carry engineering support courses the way Baylor's English and history departments do?
A: No. However, a larger engineering program might require a support course for the separate engineering majors within its program, but not for the university as a whole.

Next, Dr. Farison reported on the future within the electrical and computer engineering program. With regard to the strategic planning initiatives, it may be realistic to expect a single ECS initiative to be selected (but probably not more than one). The amount of money the University has earmarked per initiative ($1 million) may not be enough for an ECS proposal. Combining the proposals, as has been done with the combined CS/ECE PhD and avionics initiatives, will be beneficial. Making the University's December deadline will be crucial. Finally, Dr. Farison announced a faculty position search for either chair or ECE faculty.

Dr. Thompson reviewed the accreditation process and discussed graduate preparedness. It would be beneficial to evaluate alumni in the workplace, compared to other schools' graduates. The challenge is to reach the appropriate person, the "engineering manager," as opposed to a contact in human resources, in industry.

Breakout Session – Mechanical Engineering

Topics included:

- Accreditation issues
  - ABET visit October 8-10
  - Review of ME program objectives
- Faculty search
- Africa service trip (May 2006)
  - Examining ways to make service learning more significant
- Curriculum issues
  - Revisions to ME curriculum
  - Pilot courses in engineering economics, technical communications, international, and entrepreneurship
    - For this year replaces engineering economics and one technical elective
- Senior design projects

     o   This fall it is a drop weight mechanical tester that can perform both Charpy and Izod tests

Advocates were given a copy of the Mechanical Engineering Program Educational Objectives, which are shown below:

> Upon successful completion of the BS in Mechanical Engineering at Baylor University, the graduate will be able to:

> 1. Apply their knowledge of mathematics, basic science and engineering design to creatively bring a project from problem statement to final design.
> 2. Be professionally competent and engaged in life-long learning, serving society in a professional career or by continuing their education in a graduate program.
> 3. Work in interdisciplinary teams and clearly communicate ideas through a variety of media.
> 4. Be a responsible professional with a strong sense of vocation, ethics, and integrity developed in an educational environment shaped by Christian ideals, enabling graduates to become leaders in their churches, communities, professional societies, and society as a whole.

Comments by Advocate members attending this Mechanical Engineering session:

- Agreed we have a problem with more students than available faculty members.
- With respect to proposed moving the experimental methods course to the sophomore year:
    - Need to keep as much hands on lab courses as possible
- Curriculum comments
    - Always need to make our students write whenever possible. Other soft skills are also important, such as
        - Ability to work in teams
        - Speak well
- Internships and co-ops are important and we should increase the number of students involved if at all possible.

- Advocates gave a re-approval to our program educational objectives. They did not recommend any changes to the wording
- Some of their comments about the objectives were:
    - Pleased about the Christian part and calling
    - Fourth objective (dealing with Christian principles) is what makes Baylor different
    - We need to say who we are in our objectives (that we are Christian).

Breakout Session – Computer Science

The complete text of the breakout session may be found here:
http://www.baylor.edu/content/services/document.php/35633.pdf

Computer Science Advocate Board Members Present: Dean Swisher, Shawn Sedate, Harold Spangler, Matt Watson, Larry Johnson and Joe Cestari

Dr. Gaitros began the meeting by stating that we are getting ready for 2008 accreditation visit and will looking to the Board for assessment feedback.

1) Drs. Jeff Donahoo & Mike Korpi: Gaming/Simulation
Dr. Donahoo presented the new BSCS-Gaming track and a slide presentation on Gaming/Simulation. (Handout and slide presentation attached). The Proposal includes a partnership with Communications, a BSCS Gaming Track with a 3-course gaming sequence, calculus-based physics, Industry internship and communications courses. For resources, a new gaming faculty member would be needed.

Questions from the morning session from Board members:

Is "Gaming" the term known to students? Yes. And, this is not an "easy" program-students will not realize the depth and difficulty of this program. This is still accredited BSCS with a gaming track. A student gives up all electives to fill with gaming requirements. Mr. Johnson pointed out the need to show benefit to Telecommunications in this proposal and also the Christian influence and impact of this. Mr. Sedate stated that perhaps an Intro to Gaming course early in the curriculum may pull in interested students who realize this would be a program for them. Board members were very favorable to this proposal. Talked about Immersive Simulated Environments-business, education, psychology, CST 4330, 4365-marketing technology and HCI, Production Methods I and II; how to deploy things worldwide-business side of this track.

2) Drs. Greg Hamerly & David Sturgill: Competitive Learning Program
This is a new way to develop CSI skills and started in Fall 2005. The class is at 3 different levels; local contests to bring students in (even outside of CSI major); increase interest in international programming contest. Board members comments: Possible help from area high schools in hosting contests-good recruitment tool for our undergraduate program. Building up of knowledge and of team concepts. Good PR for regionals we'll host at Baylor this year. Board consensus-Press On With This!

3) Dr. Pete Maurer: Joint Ph.D.-CSI/ECS
Background of Dr. Speegle's Ph.D. proposal. Response back was it was too expensive and contained no Baylor-specific elements. We need Ph.D. for the success of our faculty and to enhance our undergrad program. Join together with engineering because of need for faculty coverage for extra courses. Computer Engineering and EE courses that CSI could benefit from and EE could also. Strategic Initiative for School now. If it does not succeed as this, it will be proposed again. Board comments: Great message to the university that 2 depts. come together to reach goal of Ph.D. to strengthen our program and our school. Uniqueness of integrated program. Could bring in more funding if we had more students to help. Another goal: get undergrads involved in research. Faculty involved in research leads to improved faculty teaching and knowledge. Combined programs do very well and grads can be hired to teach which would be beneficial. Consensus of a united, combined approach. It supports 2012, drives enrollment, drives contributions.

Our uniqueness as Tier I, no one else like this now. Dean Kelley is 100% behind this joint program.

Dean Swisher asked what are market numbers to go with this. Ability to take hardware and software to come up with solutions is a Big Plus! Select Ph.D. students would teach a course-this would be a proponent of our proposal.

4) Drs. Erich Baker & Bob Kane: Institute for Biomedical Science & Technology
Dr. Baker presented this proposal. BMST is based on current Institute for Biomedical Studies (BMS). This proposal will involve 5 different academic units. Each track (or module) will have a set of core requirements determined by the module administrator and student research interest. There is flexibility in this. Currently, 24 out of 27 students are Ph.D. students. Presented the ECS benefits of this proposal. Board members were very interested in this. There was discussion and comment regarding the need for a streamlined method of Post-Doc proposal process.

5) Dr. Paul Grabow: Software Engineering Program
This has been approved at the faculty level. Process will move forward to doing CAF's and getting university approval. Plans are to begin this program next fall. This will be a 3 to 5 year process of being an accredited degree program. Board members questions: Is there a licensing test to take? Yes. Asked why is this program important-what does this lend to our program? Consensus of the board-in support of this for growth of the school and needed in industry.

Full Board Session – Closing Session

The Board agreed on the Spring meeting date: April 27, 2007 (at Baylor).

Dean Swisher presented a summary of the computer science breakout session.
- Background of PhD program development
- Gaming initiative's message and program description and possible ties to mathematics and physics
- Competitive Learning Initiative's success
- Collaboration with others for biomedical initiative
- Software engineering development and timing for accreditation

Jim Farison presented a summary of the engineering joint and ECE breakout sessions. In the joint session, appropriate technology experience (Africa 2006) and ABET accreditation were discussed. In the ECE session, the following topics were covered.
- ECE faculty retreat for long-range planning
- strategic initiatives' connection to ECE programs
- Plea for upcoming faculty search
- accreditation

Dr. Farison concluded by complimenting the Board on their enthusiastic input during the day's meeting.

Steve Smith recapped the mechanical engineering breakout session.

- Accreditation
- Mechanical engineering program objectives and the possibility of moving a senior lab experience to the sophomore year and replacing the foreign language requirement.
- Summer internships and potential co-op opportunities
- Senior design project

Bill Mearse gave a brief report on the Board's afternoon closed session. He relayed the Board's wish to help with shaping the strategic initiatives, especially as the December deadline looms. He reported that the August meeting with the President and Provost was helpful and positive. Finally, he suggested that the Board looks forward to assisting Rob Kennedy in sharing priorities and opportunities. If Board members can be helpful with personal visits, the members are willing to accompany Rob while in members' respective cities to make those calls, if needed.