

Foundations for the Built Environment for the 21st Century

Strategic Plan of the College of Architecture

Texas A&M University

2002-2005

1 May, 2003

Introduction

The Built Environment

Architecture is the provision of shelter for people. It is the built environment and the structure that people impose upon the natural environment. It is the habitat of people. It is anything that satisfies the basic need for shelter. It is the infrastructure for delivery of all other services. It is our homes, our workplaces, our worship places and our recreational places. It is residences, neighborhoods, cities, metropolitan areas, regions, nations and the world. It is the product and the trace of civilization. The intellectual concern of the College of Architecture is the planning, design, construction and study of the built environment. The College is recognized internationally for its creativity, innovation and leadership in fields that address issues in the built environment.

The industry and disciplines concerned with the built environment address the entire life cycle, including planning, design, construction, operation, rehabilitation and demolition. Construction alone is the second largest economic sector in the United States, representing a \$650 billion industry in the U.S. (Economist 2000). The global construction industry is worth annually \$3.2 trillion (Red Herring 2000). If aggregated with facility management, household goods and other aspects of architecture, the sector may well dwarf all other human economic activity including health care. There is growing awareness that one should consider there to be a single Architecture/Engineering/Construction/Facility Management industry that addresses all aspects of the built environment (Kiviniemi 1999). Although few studies have considered both the wealth expressed in the built environment, a government agency of Finland estimated that 70% of the nation's national wealth is tied up in real estate and construction (Confederation of Finnish Construction Industries 2001).

In spite of this pervasive role in people's lives, the built environment as a discipline is often overlooked and marginalized. As an academic focus, studies of the built environment include basic awareness, historic precedent, expertise, practical knowledge, aesthetics, management and research. Research opportunities are rare and minimal in monetary value. There is no National Science Foundation directorate for the built environment, nor do other federal funding agencies set aside significant resources for research in the built environment. Colleges of Architecture and Environmental Design are small in comparison to Colleges of Engineering, Liberal Arts, Sciences and even Medicine. Among University priorities, a College of Architecture is rarely the target of flagship initiatives.

Because of this situation, there are both an overwhelming need in society for support of studies in the built environment and a rare opportunity for leadership that will be unique and indisputable. The need for attention to the built environment is readily apparent in the prolonged and seemingly intractable problems of our cities and environment. Urban sprawl degrades the

environment and the quality of life. Water scarcities will affect agriculture and urban development (Reisner 1986). As energy consumption in the United States is projected to increase by 32% by 2020, conservation of energy through improved building practices and more efficient urban planning are crucial parts of meeting and managing needs (National Energy Policy Development Group 2001). Historic structures that represent the traditions and culture of our nation and the world are being destroyed at a depressing rate. Some experts estimate that 1/3 of construction cost is wasted through poor management and use of information (Pittman 2002). The human costs of inadequate civil infrastructure and inappropriate urban form are extraordinary. For example, the 350,000 residents of the border communities of southern Texas known as the Colonias lack access to basic civil services and consequently have little economic opportunity (<http://chud.tamu.edu/>). Architecture and regional planning can solve some of the problems faced in the Colonias and assist the residents in contributing positively to the Texas economy. Population growth in the state of Texas is estimated to approach 30 million by the year 2020, an increase of 1/3, most of it in urban areas (Murdock 2002). Globally, urban populations are likely to increase from 3 billion to 7 billion in the next half century (Board on Sustainable Development 1999).

An opportunity for leadership

The opportunity for Texas A&M University resides in the lack of competition nationally for leadership in addressing these inefficiencies in the state, national and global economies and social ills that affect us all. No school of architecture has stepped forward with adequate resources to address these social problems. While research agendas are emerging at other academic and government institutions, the existing strengths Texas A&M University serve as a foundation upon which the College can quickly establish national prominence in studies of the built environment.

Already, industry leaders have recognized the Texas A&M University's Architecture program as among the top 10 of more than 100 accredited programs in the nation (Cramer, Yanjopolus and Campbell 2002). The Construction Science program compares favorably with other such programs across the country (Rosenbaum and Rubin 2001). The Department of Landscape Architecture and Urban Planning has garnered rankings of number 2 nationally for both its graduate landscape architecture program and its undergraduate landscape architecture program (Gourman 1996; 1997).

The research centers and labs of the College are acknowledged to be leaders nationally and internationally in various research niches. The Center for Health Systems and Design is world-renowned as the originator of a movement toward evidence-based design of health facilities. The Visualization Lab is often called the premier program focused upon computer animation for the entertainment industry. The Hazards Recovery and Reduction Center is internationally known for its leadership in emergency preparedness. The CRS Center has a growing profile as a national leader in architectural business management and facility management. The Historic Resources Imaging Lab is gaining national prominence for its role in documenting historic sites of national significance, such as the Civil War era Fort Pulaski and the pre-Columbian settlement at Montezuma's Castle. Research conducted with the Energy Systems Lab of the Texas Engineering Experiment Station is arguably without peer in the area of building energy modeling, calibrated energy use simulations, and building commissioning. The excellence in research achieved by these units is an extraordinary foundation for ascending to a top ranking.

By leveraging modest additional funds, the College of Architecture can improve and solidify its position of disciplinary prominence and be a point of institutional excellence and pride for Texas A&M University.

Vision

Drawn from the College Strategic Plan of 1999 (Target 2000), the college vision is:

We will educate the leaders of the professions and industries of the built environment in Texas, the nation, and the world.

We will have a direct, significant influence on the 'state of the art' of all aspects of the design and construction of the built environment.

We will be recognized as the most important College of its kind in the nation.

This vision for the College still applies.

Mission statement

The mission of the College remains unchanged from the strategic plan of 1999:

Teaching Mission: To develop and implement the best means of translating the knowledge and abilities of the disciplines that plan, design and construct the built environment to the best qualified undergraduate and graduate students with the best qualified faculty members.

Research Mission: To develop critical new and applied knowledge and processes for those who plan, design, construct, evaluate, finance and use the built environment in order to maximize the influence of our students, faculty, staff, and former students.

Outreach Mission: To develop 'knowledge partnerships' with government agencies and private industries which make our research and teaching available to the state of Texas and the world. Our outreach mission will attain the stature and critical mass to merit recognition as the most important College of its kind in the nation.

Envisioned future

The College will meet the challenges that are related to the built environment by educating the leaders of the planning, design and construction industry. The drivers behind these challenges are: demographic changes, environmental degradation, pervasive and advanced information technology, and new economic patterns and structures. Extrapolation from these drivers has led to a vision of the College in 2020 that contrasts distinctly with the College in the present.

In 2020, the College will be in the same facilities in College Station as currently, but with new additions and a new building. Branch campuses and night school will provide distance learning opportunities and continuing education throughout the state and even internationally. Students and faculty will move fluidly among the campuses. Advanced computer networks and digital infrastructure will provide classrooms and offices with computational power almost without limits and communications capabilities that deliver interactive audio and video anywhere.

Bryan and College Station will be much larger and will encompass a much larger land area. The local population will reflect Texas demographics and will be more diverse than it is presently.

The student population will also be more diverse and much larger, as will be the faculty population. Admissions will be highly selective, drawing upon the best scholars in the world. Faculty members will be world-renowned and will receive compensation packages that compete favorably with any educational institution as well as industry.

The College will be known for its research and education that addresses environmentally conscious and sustainable built environments, awareness of its faculty and students across disciplines concerned with the built environment, its ability to equip graduates to be comfortable in global practice, and technical excellence of its students and faculty.

This description of the future of the College is elaborated in an appendix.

Achieving the aspirations of Vision 2020

The achievement of excellence in the College of Architecture and the university as whole rests on adopting and attaining a handful of goals. Vision 2020 sets out the goals for the university, naming them “imperatives”. More money is, of course, part of the equation for producing a position of excellence. However, the College has identified ways to do more and achieve more without excessive additional resources by, to use the cliché, “working smarter, not harder.”

First, the College of Architecture must recruit, cultivate and retain the finest faculty in the world to engage in innovative and significant research, service and education. This is in keeping with Vision 2020 *Imperative 1 Elevate our Faculty*. The administration of the College must provide services that enable our faculty to work efficiently and to innovate. It must provide opportunities for compensation that exceed those of competing institutions. It must engender a culture that is supportive, interdisciplinary and enjoyable. The provision of high quality infrastructure and services will establish the support necessary to achieve excellence among the faculty in teaching, research and scholarship.

Second, the College of Architecture must develop curricula and delivery vehicles that are attuned to the needs of today’s educational markets and that anticipate emerging educational markets. This goal conforms to the Vision 2020 *Imperative 2 Strengthen Our Graduate Programs; Imperative 3 Enhance the Undergraduate Academic Experience; Imperative 4 Build the Letters, Arts, and Sciences Core; Imperative 5 Build on the Traditions of Professional Excellence; Imperative 6 Diversify and Globalize the Texas A&M Community* and *Imperative 12 Meet Our Commitment to Texas*. The College is responding aggressively to several educational trends: international and off-campus programs respond to globalization; distance education and continuing education respond to demographic trends of aging populations, needs for retraining, and professional partnerships. Environmental ethics has been identified as a key topic that must pervade our programs to address the severe challenges to built and natural environment that face Texas, the nation and the world. The College will preserve and expand its strengths in design, visualization, computing, planning and management. In particular, it will complete the development of an undergraduate visual studies program and further increase and enhance its offerings in interdisciplinary graduate certificates.

Third, the College aspires to preeminence in research in the built environment through a coherent identity revolving around the concept of evidence-based planning, design and construction. This goal is aligned with Vision 2020 *Imperative 1* and *Imperative 2*. All teaching endeavors of the College will be imbued with an attitude that planning, design and construction are based upon

scientifically valid evidence. Research in the College is the wellspring for the content of these academic programs.

Fourth, the College, aligned with *Imperative 6*, is committed to faculty hiring and student recruitment that assembles a diverse community that is inclusive across racial, national, gender and class boundaries in all functional segments. Current actions have cultivated awareness of the need for increased diversity. The next steps will develop further mechanisms to assure that diversity is achieved and to document the change within the College.

Finally, the College realizes that outreach and publicity are a critical part of attainment of these goals, as elaborated in *Vision 2020 Imperative 12*. Part of the challenge facing the College is low awareness of the contributions of the College and the pervasiveness of impact of architectural studies on society. Better publicity addresses that low awareness. A positive image is also necessary for recruiting top faculty and students. Outreach affects development of external gift funding and research sponsorship. College initiatives will address a goal of improving and disseminating the image of the College as well as the general importance of the study of the built environment.

Goals

The need for a short list of goals is derived from the demands of action on a daily basis. Administrators are continually confronted by requests for resources that must be evaluated and accepted or denied. Broad goals are a framework for those decisions. Of necessity, the goals must guide the institution toward its strategic vision in the mid-range timeframe. In summary, the goals of the College for the next five years are:

- Goal 1. Faculty excellence.** The College will attend to infrastructure that increases the satisfaction of the faculty. It will recruit new faculty and encourage existing faculty to achieve a community of teachers and scholars who are without peer in comparable institutions.
- Goal 2. Innovative curricula and educational delivery systems.** The College will encourage new thinking and innovation in the content and methods of teaching about the built environment. The College will also recognize current practices that “best-in-class” and endeavor to maintain, expand and propagate them.
- Goal 3. Exceptional research in knowledge-based design, planning and construction.** Untapped research sponsorship is a key target for improvement in the College. Indirect returns from sponsored research promise increased discretionary funding. Un-sponsored research and internally funded research will continue to be prized and channeled toward leveraging of committed funds and achievement of widespread recognition.
- Goal 4. Culturally, ethnically and internationally diverse faculty, staff and student body.** To meet the needs of the future, the College must reach all groups in Texas society. To address globalization trends, the College must include perspectives from across the world.
- Goal 5. Recognition through outreach and publicity.** Visitors to our College frequently express surprise at the richness and level of our accomplishments. It is critical to increase the level of recognition of the achievement of members of our community. The College will increase its participation in national and international leadership organizations.

The achievement of these goals will depend on a careful selection of initiatives. The initiatives that are planned are described in an appendix.

Assessment

The progress toward attaining these goals will be assessed annually by the Office of the Dean.

Goal 1. Faculty excellence. The College will document external awards and speaking invitations received by our faculty. The awards and invitations are expected to increase in number and quality each year. Furthermore, the number of faculty receiving awards and invitations is also expected to increase. The Office of the Dean will implement databases to track these numbers. Each year, the meeting of the Big 12 Deans of Schools of Architecture will be asked to assess the progress based on these reports.

Goal 2. Innovative curricula and educational delivery systems. Each department will prepare an annual report on educational innovation. These reports will be assessed for progress by a panel of experts from the Center for Teaching Excellence and by the Big 12 Deans.

Goal 3. Exceptional research in knowledge-based design, planning and construction. Using improved tracking systems for research proposals and awards, the Office of the Dean will prepare annual reports of research activity. The College expects sponsored research for the college to increase by 25% annually for each of the next five years. In addition, the proportion of faculty who are involved in sponsored research is expected to increase each year. The College Industry Advisory Board will be presented with a report of College research annually and asked to provide an assessment of progress. The College will also use its Research Symposium as the focus for an annual assessment of research in the College by external reviewers.

Goal 4. Culturally, ethnically and internationally diverse faculty, staff and student body. The College expects to increase enrollment of students from minority groups each year. Office of Institutional Statistics and Planning data will be used each summer to assess whether success has been achieved. The College will employ increasingly aggressive means to include women and minorities in faculty search pools. The Big 12 Deans will be consulted to assess the recruiting strategies.

Goal 5. Recognition through outreach and publicity. Each year, the College will introduce new publications that can better reach our constituency, completing a comprehensive suite of publications by the year 2005. Rankings of departments within the College by Design Intelligence and the Gourman Report are expected to maintain their high levels and rise. Mention of the College in national mass media will be tracked and is expected to increase each year. Faculty members are expected to have increasingly prominent roles in national professional and academic organizations. These measurements will be collected continuously and tabulated annually to assess whether there has been progress.

A comprehensive assessment will be compiled each summer by the Office of the Dean as an Annual Report of the College of Architecture.

The specific initiatives are largely action items that represent milestones and accomplishments. They are tactics that describe “how” to achieve the goals. Their progress and completion will be noted in the Annual Report.

Summary

The strategic planning process of the College of Architecture has led to goals and initiatives that can guide decision-making during the next few years. The plan will help the College to reach long-range goals of excellence and preeminence in the disciplines concerned with the built environment. The attainment of the goals is dependent upon engagement of the College with the fundamental and overriding challenges in the realm of the built environment that face Texas, the nation and the world.

The plan includes specific initiatives that address each of these goals and that can be implemented and completed in the next few years. The College will use this plan to set in place changes that will lead to preeminence in the upcoming decades.

Appendix One: Initiatives

The longer-term goals must be translated into a handful of initiatives upon which the College can concentrate in the coming few years. The initiatives that appear to be both achievable with current resources and likely to produce a large impact are described below. They have been numbered to correspond with the identification numbers of the goals.

Some of the initiatives are operational in that they are continuations of efforts underway and have a short time horizon. Other initiatives are strategic and are expected to have a new and far-reaching impact. Each initiative description includes a measurement and assessment component. The College Research and Interdisciplinary Council will serve as an advisory unit for guiding the assessment of the initiatives and the assessment of progress toward the strategic goals.

Goal 1. Faculty excellence

1.1 Information Management Initiative

The College administrators and support staff will accelerate the adoption of information technology and best practice workflows to provide timely information in support of strategic and operational decision-making. This initiative is expected to increase faculty satisfaction by reducing workload on all members of the community and raising the quality of support services. It is expected to assist in the quality of human interaction by improving access to information.

This operational initiative will be supported by the reorganization of existing staff and responsibilities. The focus is upon streamlining existing work processes and reducing the duplication of effort across the various units of the College. The initiative is expected to require about two years to complete.

Priorities are as follows:

- Mission-critical quality College servers
- Replacements for aging and incompatible staff computers
- Scheduling and calendaring information system that covers all personnel and resources
- Faculty workload information system
- Research tracking information system
- Student degree plan and degree scheduling information system

Reports on improvements and accomplishments in these areas will document the progress.

1.2 Facility improvements

Cramped and aging facilities appear to be reducing the level of morale. They also may be a discouragement to new recruits. Consequently, the College will continue and intensify its efforts to improve the physical plant that support its activities. Activities are the following:

- Plan, design and construct the Langford Architecture Center Addition. This is projected to require two years of effort.
- Follow through on the roof repairs that have been promised by the University.

- Prepare a plan for faculty office renovation. Continue the acquisition of improved office furniture.
- Prepare a plan for instructional facility renovations, including identification of needs for classroom instruction, studio instruction, hands-on instruction, computer instruction and distance education.

As these activities are already planned and even underway, this is an operational initiative. Funds are available from several sources, including University allocations, College reserves, and Instructional Equipment and Enhancement Fee funds. It is expected that these activities will be largely complete within two years, although some of them will be permanently recurring.

A report on the physical improvements to the College facilities can document progress in these areas.

1.3 Faculty recruiting and retention

Direct attention to recruiting and retention will lead to a higher level of excellence among faculty. The College will undertake the following efforts:

- Prepare a development leave policy.
- Prepare a policy for sponsored buy-out of teaching duties.
- Foster off-campus opportunities for faculty who desire them, and develop packages of support that reduce the financial and social impact upon faculty of participating in off-campus programs.
- Develop more extensive start-up funds for new faculty.
- Initiate travel for faculty recruiting. Incorporate recruiting into the tasks of travel that has other primary purposes.

This effort is operational. Some of the activities are already underway. The creation of new programs and procedures can be accomplished in one year, and then will continue indefinitely. Current College operational funds will be committed to this initiative while other funds may be obtained from the University.

Data can be gathered regarding the completion of the new policies, the satisfaction of faculty in off-campus programs, the success of recruitment, the size and richness of start-up packages, and faculty satisfaction in general.

Goal 2. Innovative curricula and educational delivery systems

2.1 Instructional Computing

The College is an established leader in instructional computing in planning, design and construction. We will continue this leadership in numerous ways. Accommodations for student-owned computers will be created with the College buildings, such as development of a Virtual Private Network, and increases in available IP addresses. Wireless LAN technology will be installed throughout the Langford Architecture Center. Advanced technologies such as high-end renderers, video editing and Computer-Aided Manufacturing systems, will expand the instructional computing environment.

These efforts are ongoing and operational, although they are recognized as having strategic initiative due to its long-term impact. Most of the funds will come from the Instructional Equipment and Enhancement Fee fund and the University Computer Access Fee fund.

This initiative can be measured by listing computing acquisitions and surveying the community to rate satisfaction.

2.2 Visual Studies

As part of its focus on innovative teaching and curriculum, the College will devote appropriate resources toward the development of further curricular offerings addressing visual and performing arts. These efforts have thus far led to the creation of a Visual Studies option within the Bachelor of Environmental Design degree and to increased course offerings in the University Core Curriculum. In 2002-2003, the Department of Architecture intends to hire another faculty member with specialization in multi-media art for teaching in the Visual Studies option. The College will support this hire and further support study of a new Bachelor degree focused on Visual Studies.

This strategic initiative of the Department of Architecture will continue to be supported by the College. Resources are allocated from current funds; however, as the Visual Studies option and degree progress there will be a need for allocating new faculty positions from University funds to the programs. The initiative will retain a focus of the College for three or four years.

Success of this initiative will be measured by the enrollment in the new option and progress toward the new degree.

2.3 Interdisciplinary Studies

The College foresees that professionals in the future will combine expertise across the boundaries of current disciplines to create services of improved value in the economy. Consequently, the College will foster interdisciplinary curricula. Support will be given to partnerships that cross departmental boundaries and integrate the research labs and centers into the departmental activities. The current certificates offered by the College will be supported and encouraged to grow. New graduate certificates in interdisciplinary studies are planned, particularly in Design Computing and in Sustainable Environments.

This is a strategic initiative that builds upon existing strengths of the College. It will require attention for the next three to five years. Resources in the coming year will be minor and will be accommodated from current College funds. As programs are developed, there will be a need to turn to fund-raising for faculty positions and chairs from external and University sources.

An audit of interdisciplinary activities will be conducted each year to determine whether this initiative is achieving its objective. The Professional Advisory Boards of the various units will be informed of the interdisciplinary activities and invited to comment.

2.4 Distance Education

The College has developed a rich set of distance education offerings and rich off-campus programs. The next challenge is to integrate distance education with the off-campus programs, such as the internship program (newly driven through an interactive Web site), the program at Santa Chiara, the program in Mexico City and the program in Alexandria, Virginia. Incentives will be developed to encourage faculty members to adapt their courses for distance education delivery. Facilities and infrastructure for distance education, such as specially equipped

classrooms, expanded Web servers, and widely available communication nodes, will be developed further.

This is a strategic initiative of high importance to the future of the College. Distance education is crucial to the development of off-campus programs and the global focus of the College. Distance education is also key to the efforts of the College in continuing education. The College will pursue University funds for developing courses that are delivered using distance education methods. Internal funds and resources will be devoted to improving awareness of distance education methods, and enhancing computing and network infrastructure. This initiative will be of importance for five years.

The College will track the number of courses that are offered through distance education, the number of faculty involved in distance education, and the number of students served. It will begin a survey of participants to establish baselines for assessing satisfaction.

2.5 Continuing Education

Untapped potential lies in the continuing education programs of the College. Continuing education can increase the compensation of faculty members and the funds available to the College, and consequently can provide resources to accomplish other initiatives. The College will establish its new Center for Planning, Design and Construction Education to focus on continuing education. Through the Center and with collaboration from the other research Centers and Labs, the College will provide administrative support and seed funding for new programs.

This is a strategic initiative that will receive College attention for the next five years. The College will devote existing funds to hire the Director of the Center for Planning, Design and Construction Education and provide staff support. The Director will be expected to apply entrepreneurial ability to generate funds to fill out his or her salary and further support the Center.

The number of new continuing education programs will serve as a primary benchmark for this initiative. Surveys of satisfaction of participants in the programs will provide data for assessment of success.

2.6 International and Off-Campus Studies

Globalization is a very real phenomenon and a major driver of change. The College will capitalize on its strengths in off-campus studies to create a premier program in that area. Incentives will be directed toward faculty to incorporate international studies in existing courses and create new courses to focus on international issues. The College will conduct an intensified campaign to recruit students to off-campus programs.

This operational initiative is already underway and is expected to continue for three more years. The Paige Fund and Northrup Fund will provide a significant amount of money for international programs. As possible, the College will redirect and earmark existing funds to support this initiative. Relationships with industry and former students will be utilized to develop internship support for students, partnership research relationships for faculty, and gift giving opportunities. Partnerships with other units on campus, such as the European Union Center and other Colleges, will be used to make a case for University support for this initiative.

The number of students and faculty who are involved in international studies will be the metric for this initiative. Satisfaction surveys of participants will also be useful. Advice from Professional Advisory Board will establish the legitimacy of the initiative.

2.7 Environmental Ethics

Because of the dramatic affects on natural and built environment that are anticipated in the next few decades, there exists an immediate need for endowing those entering the professions in the field of built environment with a strong sense of ethical conduct that preserves options for future generations. The College will conduct activities to raise awareness of issues in environmental ethics and explore ways to incorporate the issues into courses.

This strategic initiative is important to establishing a leadership position for the College. It is not expected to require a large amount of funds, but will require focusing current funding on this topic. Incorporation of environmental ethics can be achieved in three to five years.

Consultation with industry leaders and futurists will help determine the legitimacy of this initiative. An audit of course content will be conducted to determine the extent of incorporation of ethics content into courses.

2.8 Curriculum innovation planning

The College will work with the departments to prepare an evaluation of current curricula and its relationship to current and future educational markets. Our intention is to innovate in curricula in response to the drivers of future change to establish a leadership position among peer schools. Part of this initiative is a mandate to the departments to set aside ten percent of their teaching effort for experimental courses.

This is a new and strategic initiative that will receive College focus for the next two years. It is not expected to require additional funding. However, as innovations in curricula are produced, there will be a need for other funding, which may come from University sources, gift development, or diversion of funds from other programs.

The initiative will be evaluated after two years to determine whether faculty and unit leaders have found it to be a useful activity. Records will be kept of experiments in our curricula and the outcomes of those experiments.

Goal 3. Exceptional research in knowledge-based design, planning and construction

3.1 Research Services

The College will commit resources to a staff person who will provide support to research development and administration in the College. The new services will include assistance with proposal writing, tracking of research proposals and grants, identification of funding sources, fostering of collaborative efforts, and preparation of monthly and annual reports.

This is a strategic initiative that will be put into place during the coming year. The initiative will continue for three years before being reassessed. Resources will be committed from current funds.

This initiative will be assessed by examining the quality of research reports, the number of proposals submitted by faculty, the number of faculty submitting proposals, and the amount of external funding obtained by the College.

3.2 Targeted research

The College will require the creation of research plans from each unit within the College. The plans should describe the research opportunities and resources available, and establish a focus for efforts in the coming year. These plans will not preclude individual initiatives of faculty, but will coordinate efforts and establish a focus upon productive and strategic directions. The College will establish a reserve of funds for distribution to faculty member to hire graduate students to undertake research in special target areas.

This is a new and strategic initiative that will receive College focus for the next two years. It is not expected to require additional funding. However, funding could be devoted to enhancing the ongoing College Global Research Symposium and establishing an account for bringing guests to the College to guide the plans.

The initiative will be evaluated after two years to determine whether faculty and unit leaders have found it to be a useful activity. In addition, the expectation is that the planning will lead to a higher volume of proposals, more coordinated proposals, more joint proposals, and more funded research.

3.3 Full-size research laboratory

A strength of the College is in its ability to simulate the built environment, particularly with computer methods, in demonstrably accurate ways. Considerable advantage can be attained through obtaining facilities and resources to conduct research in full size, physical environments. Possible studies include the health benefits of walking in landscaped environments, construction using novel materials, building climatology, and correlation of job productivity to quality of interior environments. The College will pursue the creation of an extensive laboratory for research using full size constructions.

This effort is expected to require three to five years for completion. Initially, the expense to the College will be minor and may be covered from discretionary funds for full size constructions. Current projects include the Solar Decathlon and the compressed earth construction. If the initiative moves forward, funds in the range of several hundred thousand dollars will be solicited from University and external sources to begin construction of facilities.

Success of the initiative can be measured by the amount of external funds generated, the increase in sponsored research, the press attention upon the efforts, and the number of faculty and students involved in the research.

Goal 4. Culturally, ethnically and internationally diverse faculty, staff and student body

4.1 Outreach to historically under-represented groups for new students

The College will devote resources in the form of staff support, faculty release time, and marketing publications to recruit students from feeder schools that have contributed many students to the College of Architecture in the past. The College will also cultivate other schools with large under-represented student populations to feed students to our programs.

This operational effort is expected to continue for at least three years. The College will work closely with the University to identify appropriate funds from existing internal sources.

This initiative can be assessed by analysis of student application and enrollment figures as well as documenting the outreach efforts.

4.2 Outreach to recruit faculty candidates among women and minorities

The College will intensify efforts to hire diverse faculty and staff and enroll a diverse student population. We will prepare a strategy for recruiting the highest quality women and minorities to join our faculty.

This operational effort is expected to continue for at least three years. The College will work closely with the University to identify appropriate funds from existing internal sources.

Assessment will include counting the faculty and staff from minority and under-represented groups and evaluation of the particular efforts toward recruitment.

Goal 5. Recognition through outreach and publicity

5.1 Publications

The College has established a Publications Committee to devote attention to developing marketing materials and plans. The activities of the Publications Committee will include:

- Overseeing revisions to the Web site
- Refinement and establishment of a regular publication schedule for the College Newsletter
- Feasibility study of a branding program for the College
- Preparation of graduate student recruiting materials
- Preparation of undergraduate student recruiting materials
- Preparation of a College prospectus

This is a strategic initiative that will become operational and ongoing. The College will devote funds as available to this effort. However, additional funds must be identified from University sources or external sources.

Assessment of this effort can be measured by the number of new and revised publications that are produced. A survey can establish market awareness of Texas A&M University College of Architecture, followed by a similar survey after at the completion of the project.

5.2 Activity tracking for publicity

The College will establish administrative workflow patterns that better collect the activities of faculty that have publicity value. These activities include research, studio design projects, consulting, continuing education, awards, service in professional organizations and others.

This is an operational initiative. Existing staff support will be reallocated to capture and collect this information.

The records of activities will be reviewed and assessed annually. Surveys of those associated with the College can establish the degree of awareness of College activities.

Appendix Two: Vision

Issues and Challenges

Change between now and the year 2020 is the result of inexorable forces that have become relatively clear. Different formulations and emphases lead to conflicting lists and priorities. A brief review of publications that have prognosticated for the United States and the world provides a context for planning for the College.

A study conducted under the direction of the National Intelligence Council identified the following drivers for change projected to 2015 (National Intelligence Council 2000):

1. Demographics. Aging patterns, particular the aging of populations in developed countries and the simultaneous trend toward youthfulness in undeveloped countries, will have a large impact on social and political patterns. Migration of populations will in some cases be dramatic. Health issues will be prominent.
2. Natural resources and environment. Food production will be adequate, but distribution of food remains uncertain leading to potential for devastating famines. Water scarcities will become prominent causes of global tension. Energy supplies will be sufficient to meet demand, but political instability may lead to failures of distribution.
3. Science and technology. Information technology, biotechnology, materials science and nanotechnology will stimulate innovation. Proliferation of military weaponry will reduce stability and security.
4. The global economy and globalization. Rapid and unrestricted flows of information and wealth will enable very high levels of economic growth that may be very uneven across regions. The wealth differential may be a cause of conflict.
5. National and international governance. States will continue to be the dominant players. Agile, advanced and adaptive governments will reap the benefits of economic growth for their constituencies while ineffective governments will be catalysts for instability and threats to global security.
6. Future conflict. The United States will maintain a technological superiority, but will be vulnerable to indirect attacks. Conflicts within and between less developed countries will remain frequent.
7. The role of the United States. The United States will have “unparalleled” influence, although there will be sporadic opposition. Other nations will emerge to increased influence, such as China, Russia, India, Mexico and Brazil, as will regional organizations such as the European Union. These nations and organizations will challenge the power of the United States.

The report also describes four scenarios of the future, ranging from optimistic projections of economic growth that is widely beneficial to pessimistic projections of high tensions in all regions of the world.

While useful for identifying trends that affect the built environment, this report focused largely on political and international ramifications of trends, and provides an incomplete picture for strategic planning for the College of Architecture.

Another recent study of trends, authored by J. F. Rischard, vice president for Europe of the World Bank, identifies twenty problems that must be solved in twenty years (Rischard 2002). The drivers of his vision are two: demographics and the new global economy. The list of problems spans across issues of quality of life, basic human needs, political organization and economic regulation. They are:

Sharing our planet

1. Global warming
2. Biodiversity and ecosystem losses
3. Fisheries depletion
4. Deforestation
5. Water deficits
6. Maritime safety and pollution

Sharing our humanity

7. Massive step-up in the fight against poverty
8. Peacekeeping, conflict prevention, combating terrorism
9. Education for all
10. Global infectious diseases
11. Digital divide
12. Natural disaster prevention and mitigation

Sharing our rule book

13. Reinventing taxation
14. Biotechnology rules
15. Global financial architecture
16. Illegal drugs
17. Trade, investment, and competition rules
18. Intellectual property rights
19. E-commerce rules
20. International labor and migration rules.

Many of these problems are directly related to the built environment. Global warming is related to energy production and consumption that is a consequence of patterns of urban planning and architectural design. Housing is a key concern in combating poverty. Hazards mitigation is a direct concern of regional planners as well as architectural designers and constructors. The built environment includes the infrastructure necessary for hospitals, medical research labs, and schools that are essential to combating infectious diseases and providing education for all. The College of Architecture has expertise that can be directed toward solving these global problems.

Water scarcity appears to be a particularly difficult problem (Reisner 1986). The problems with our water supply may be intractable: reservoir siltation, aquifer depletion, and farmland contamination due to irrigation. Natural ecosystems, including grassland, forest, freshwater, and marine ecosystems, are imperiled by intensifying use and misuse, placing our long-term welfare at risk (Board on Sustainable Development 1999).

Some researchers have developed projections specifically limited to the future for the industries concerned with the built environment. A notable report for its strategic vision and commitment to action is *Vision 2010, the Finnish Real Estate and Construction Cluster's vision for 2010: Foundations for a good life* (Confederation of Finnish Construction Industries 2001). This report identifies five drivers:

1. Growth of customer relations into partnerships. The authors project different patterns of economic enterprise that incorporate increased cooperation through partnership.
2. Reshaping of the operating environment by technology. The built environment will be reshaped by new technologies, both in its production and its utilization.
3. Transforming ownership and support functions. Real estate will be managed at a much higher level of efficiency and productivity.
4. Increased emphasis on environmental values. Environmental expertise will be a fundamental ingredient of business.
5. Internationalization of investment and business operations.

Of particular interest is an emphasis on response to environmental degradation through embracing services related to ecological responsibility.

In another publication, authors have made strong arguments for the economic benefits of investment in the construction industry (Schwegler et al. 2002). Adoption of emerging and new information technologies could save several percentage points on the value of construction nationally and internationally, a value of tens of billions of dollars. They identify mid-term research priorities, focusing on building and construction simulation, and collection of data from information transactions between enterprises.

Education is also changing. Demographic, social and technological changes will put severe pressure upon institutions of higher education. These drivers will challenge institutions to develop the capacity to change, remove constraints, remove unnecessary process and administration, question existing premises and arrangements, and to embolden members of the campus community (Duderstadt 1999). Information technology is both a subject for education in the future and a driver that is changing the processes and forms of education. Dramatic increases in Web-based teaching both on campus and across distances will address needs of those pursuing degrees as well as those pursuing continuing education (Glick and Kupiec 2001). These changes represent both an opportunity for schools that embrace the change and a threat to schools that oppose the change. However, the traditional models of design education that emphasize teamwork, "learning by doing" and peer learning in a studio setting contribute much that should be preserved.

Common themes are discernible across these various prognostications. The four drivers identified in this strategic plan are a simplification, summary and synthesis of other work.

Primary drivers for the College

The vision articulated by the College is based upon discussion and literature review focused upon trends that are discernible now. Although prediction of the future is a contentious and controversial practice, investigation has uncovered drivers for change that provide a context for strategic action. The College of Architecture perceives the following trends upon which it must act to achieve a position of recognized excellence and influence:

1. Demographic changes. Texas population will increase to 30 million and become predominantly Hispanic by 2020 or soon afterward (Murdock 2002). Growth will continue to consolidate in urban areas, placing increased demands upon city planning, architectural design and construction.
2. Environmental degradation in natural, rural, suburban, urban and personal scales. Depletion of aquifers, pollution of air due to transportation and industry, exhaustion of capacity of waste disposal sites, and increasing concern about indoor pollution are some of the challenges that planners, architects and constructors will face in 2020. “Green” or sustainable architecture, planning and construction are likely to become greatly valued.
3. Pervasive and advanced information technology. Advances in computing, communications and informatics will dramatically change service professions such as design, planning and project management. Biotechnology and materials science will also affect the built environment in profound ways.
4. New economic patterns and structures. The professions represented by the College of Architecture are already undergoing extreme, even convulsive changes. Industry at large appears willing to consider dramatically different new business patterns to address needs for built environment. By 2020, the design professions and the businesses that offer them as services may be nearly unrecognizable to an observer from our time. Educational form and institutions will also undergo dramatic changes in the next few years.

These drivers are consolidated from discussions among College faculty as well as from published resources.

Envisioned Future

Projecting forward to the year 2020 is a daunting challenge in this era of breathtaking technological innovation and social change. A retrospective of social prognostication reveals two seemingly contradictory truths: the future is never what is expected and the future shares much with the past. A biological concept of punctuated equilibrium is a good guide: changes are generally slow and evolutionary but are also at times convulsive and dramatic in response to extreme stress.

We see the College of Architecture in the year 2020 as familiar but very different. The project-based, professional-oriented educational method of design studios will retain the messy vitality that it has had for a century. The physical plant of the College in College Station will be little changed, although a new addition and new buildings will supplement the existing facilities. Subtle improvements will endow them with increased gracefulness. The infrastructure, furnishings, and equipment will be state-of-the-art using super high-bandwidth fiber-optic lines and high-speed wireless communications to bring teleconferencing and digital resources into every classroom and office in the College.

The global and national situation will be different. Issues of environmental degradation and urban decay will have risen to universal recognition and attention. Under the guidance of ethical and environmentally sensitive leaders working with communities, technology will have been used to ameliorate many of the problems that the world faced in 2002. Community empowerment and ethical behavior by business and commercial interests will be enforced by law and embraced by the general population. Energy-efficient and sustainable transportation, manufacturing, construction and habitation will be prevalent. Empowerment through respect for individuality and social justice will be the norm.

The community of Bryan/College Station will be very different. The population will have nearly doubled and the land area of the city will reflect significant suburban sprawl. Sprawl will have resulted in congested highways, placing a premium on real estate near campus, and influencing the community to adopt mass transit, pedestrian routes, and bicycling routes. In spite of the congestion caused by the reliance on the automobile, College Station will be an attractive community that depends upon professional and service industries. Professional firms will be attracted to College Station to be near the resources of the faculty.

The faculty will be different. Attrition, retirement and new hires will result in almost all new faces among faculty. The faculty will be strongly credentialed with Ph.D.s, professional licenses and certification, and internationally recognized specialist expertise. There will be more faculty members. The faculty will be diverse, reflecting an ability to attract individuals from all social, ethnic, national, and cultural backgrounds to contribute to a rich educational environment.

The student body will be different. It will reflect the changing demographics of Texas. It will be more diverse racially and ethnically; it will be older, and more likely to be employed professionally while being matriculated. Approximately the same number of students will be accommodated in College Station in day school. Students will be technologically sophisticated and able to work fluidly and naturally with digital tools. Indeed, they may well have computer implants and enhancements that help them to overcome physical handicaps or enhance natural capabilities. The College will enable them to try out even more advanced technology.

Less visible on the surface will be more dramatic changes. The College will serve students located throughout Texas by using branch campuses and distance education. A Riverside site will support experimental and hands-on educational and research activities. Partnerships with other educational institutions will enable our students to study throughout the United States and at many locations around the world. Night school and weekend school will serve students who are not accommodated by the traditional schedule. Telecommunications and informatics technology will enable these changes by bringing faculty expertise to those at the main campus and satellite campuses, and permitting time-shifting of course material presentation. Increased access to transportation, such as trans-Texas rail and expanded commercial airline service will enable the faculty and students to travel widely and thus experience architecture first-hand throughout the globe. Indeed, Houston will be merely a 40-minute ride away on the train. These expansions beyond the traditional educational model of daytime residential University education will nearly double the student population and double the faculty size.

The faculty will be much better compensated through complex packages that reflect a diversity of responsibilities and contributions. Continuing education revenues will supplement standard contracts. Sponsored research funds and consultancy revenue will further enhance compensation. Endowed chairs, faculty fellowships and incentive funds will provide

discretionary reserves by which most faculty will be able to bridge between projects and fund their own initiatives. The end result will be that faculty in the College of Architecture are among the best paid in the field in comparison not only to other educational institutions but also industry.

The content of the educational programs of the College will have both evolved and convulsed. Environmental awareness and environmental ethics will be a key part of all College educational programs. They will also be parts of the University core curriculum, leading to a very heavy University service role for the College. A new undergraduate general educational curriculum will be the largest program in the College. It will emphasize creativity, visual thinking, communication, collaboration, management, ethics and problem solving in the context of the built environment.

Professional education that equips people to be licensed as architects, landscape architects and city planners will be part of the mission of the College, but other educational programs will have emerged and become widespread or even dominant. The Master of Science and Ph.D. programs will focus specifically upon research and will be large, prominent and prestigious. They will serve not only those aspiring to careers in education but also to top professionals in industry. The research produced by these programs will be internationally recognized as the final answer on many topics. Research will be integrated into undergraduate programs such that all students are well equipped in the scientific method and other forms of rigorous scholarly and creative inquiry. The curricular innovations of our College will be widely emulated at other schools.

The former students of the College will be internationally prominent. The many years of the Ph.D. programs will have resulted in professors from Texas A&M University at most schools of architecture and construction in the United States and the best institutions throughout the world. Graduates of our undergraduate programs will be widely respected and pursued for employment in a variety of fields, due to their reputation for leadership, creativity and technical excellence. Former students of the College of Architecture will lead the leading firms in the industry, dominating the responsibility for built environment and new construction nationally.

This vision is an outgrowth from earlier strategic plans and an extrapolation from existing trends. It is the result of an intentionally optimistic attitude that has been tempered by realism. Scenarios that are very disheartening are easily conceivable. However, if the College of Architecture and Texas A&M University seize a position of leadership now, we can exert influence that will assure that the future is more utopian than dystopian.

Appendix Three: Assessment of previous plans and initiatives

Planning in the College and the University has been a periodic intensive effort that sometimes appears to have been marginalized. However, last year the College embarked upon an approach that places strategic planning at the forefront of governance. Strategic planning is conducted annually and is used as the justification for budgets and policy. Strategic planning employs a long-term vision, addressing a twenty-year or more time horizon. Strategic planning is fact-based, employing the best of scholarly research and deduction to produce well-founded goals with assessable results, and carefully planned initiatives. Because this is still a new approach, the previous strategic plans provided by the College, Departments, Centers and Labs are in a transition to the new model.

To enhance readability, the previous plans still need to be adapted to conform to a common terminology. A glossary is included as an appendix that defines the key words and concepts that under gird this effort.

The University President's Vision 2020 Council distributed a common assessment of the plans of the units of the University. The assessment was conducted rigorously by an expert panel, but, as it included only a representative sample of unit plans, it was not comprehensive. The comments, excerpted from a letter by John R. August and Jon L. Hagler dated January 22, 2002, are as follows "From our review of the plans, the Advisory Council has developed the following observations:

- All of the Colleges acknowledge the Vision 2020 initiative, and some Colleges appear to us to have fully embraced the aspirations of Vision 2020 in their planning processes.
- Some, but not all, Colleges have developed courageous visions of their own in support of the goals of Vision 2020.
- The explicit academic strategies needed to gain high national recognition should be described in more detail in some of the College reports.
- As a whole, the Advisory Council felt that current strategic plans do not adequately articulate the resources required to achieve Vision 2020 goals. More discussion about the source of such funds would be helpful. Finally, we did not see alternative or contingency planning for strategies in the event that not all desired funding is achieved.
- Some College plans would benefit from the inclusion of a well-defined process for linking specific goals with action plans, and timelines for achievement of goals."

The College Faculty Strategic Planning Committee has conducted an extensive review of plans developed by the College and its units. The plans were analyzed with respect to various "screens" to filter out extraneous material and focus on particular themes. The screens compare the plans with respect to:

- 1) drivers or trends;
- 2) academic activities such as fund raising, assessment, curricula, diversification, facilities, faculty, teaching, off-campus programs, and research; and
- 3) timelines.

Furthermore, perusal of the plans leads to some generalizations and constructive criticism:

- Vision 2020. Some plans address Vision 2020 explicitly, but other plans do not. All plans should use Vision 2020 as a framework for posing goals and initiatives to allow easier interpretation by University officials.
- Envisioned future. Few plans articulate a portrayal of the unit in the future, particularly not within a timeframe of decades. All plans should include a conscientious effort to prognosticate toward the year 2020 or 2025.
- Distinction between strategic and operational. Some plans distinguish between strategic and operational activities, but others do not. Because of the lack of an envisioned future, the strategic initiatives tend not to be revolutionary or even dramatic. They tend to be conservative, preserving and enhancing current programs and patterns of operation. The College cannot assume a leadership role among similar academic institutions without differentiating itself strongly from the status quo (except by embracing a reactionary agenda.) Future plans should consider major changes in activities within the units.
- Many small ideas. A corollary to the point above is that most of the plans collect many small initiatives. There is a danger that the profusion of small initiatives will result in diffusion of effort and lack of accountability. It is very difficult to hold in mind thirty of forty strategies when making daily decisions. Future plans should organize strategy into 3 goals, give or take two, or defer goals into a phased long-term plan.
- Ability to operationalize strategic initiatives. Few plans elaborate initiatives sufficiently into plans of action. Budgets are not considered, nor are schedules or assignment of responsibility. Some plans provide metrics by which achievement of goals can be assessed, but others do not. Consequently, the likelihood of achieving goals is low. Future plans should elaborate initiatives into budgets, fund requests, timelines, and expected assignment of personnel.
- Attention to increasing resources. One key trend at the University is the transition from being a “State funded institution” to a “State assisted institution.” Most plans look toward the College, the University and the Legislature to provide increased funds. A more promising source for funds for strategic initiatives is outside that traditional source. An entrepreneurial component of unit activities is critical to success. New plans should conceive of units as “profit centers” rather than “cost centers.”

Comprehensive and effective strategic planning is a new task for many of us in the College. It should be expected that plans must go through many iterations over several years before the participants become adept at producing strategic plans. The assessment presented in this subsection is intended as constructive criticism rather than condemnation. This assessment is merely part of a learning process for the entire College.

Appendix Four: References

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