

# **RESEARCH ON THE BUILT & VIRTUAL ENVIRONMENTS** Global Symposia Presentations 2004 • College of Architecture • Texas A&M University

## On the Cover



## Back to the future

A glimpse into the future as imagined in 1930 by architecture professor Gilbert Allan Geist (1880-1937). The drawings on the cover are part of a series of futurescapes created by Geist for the 1930 edition of "Longhorn," the yearbook published by the senior class of the Agricultural and Mechanical College of Texas (now Texas A&M University).

Geist taught painting, drawing and architecture at Texas A&M from 1910 to 1933. The primary record of his artistry can be found in the yearbooks published during his tenure. After retiring from Texas A&M, he moved to Philadelphia and worked as an architect for the federal government. He died in Philadelphia in 1937 at the age of only 53, and was buried in Muncy, Pennsylvania.

To date, little of his artwork has emerged, but the excellent illustrations and drawings found in the A&M annuals indicate that he was an artist of great skill. A generation of Texas A&M architecture students received their first artistic training under Geist.

Texas' first formal architecture program was established at Texas A&M almost 100 years ago, on Sept. 1, 1905.

# Research on the Built & Virtual Environments GLOBAL SYMPOSIA PRESENTATIONS 2004



## Research on the Built & Virtual Environments

GLOBAL SYMPOSIA PRESENTATIONS 2004

October 29, 2004

Langford Architecture Center College of Architecture Texas A&M University

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## DEAN'S REMARKS:

J. Thomas Regan

## "One organizing principle of the College of Architecture is the influence of research on teaching."

**Great colleges take time to emerge.** As we look forward to the Centennial Celebration of Architecture at Texas A&M next year, we reflect on the critical components necessary for a college of architecture to consistently demonstrate greatness. Certain questions emerge. Does the college have a worldwide reach? Does the college have the breadth to include all virtual and built-environment disciplines? Does the college integrate teaching and research? Does the college have a flourishing community of scholars?

Positive answers to these questions can be found at the Texas A&M College of Architecture's annual symposium, "Research on the Built & Virtual Environments: Global Symposia Presentations." This special one-day event allows faculty members, graduate students, former students, and interested guests to hear about 40 of almost 300 presentations delivered by college faculty members in 34 different nations around the globe during the past year. The symposium documents the global reach of our faculty's research and scholarly production; it reinforces our commitment to the integration of teaching and research; it promotes interdisciplinary thinking and practice; and it reinforces the respect our faculty community has for one another as contributing researchers and scholars. The event demonstrates that greatness is attainable through focused, collaborative effort.

We welcome you to Research on the Built & Virtual Environments: Global Symposia Presentations 2004, the sixth annual international symposium featuring presentations made exclusively by faculty members of the College of Architecture. The presentations on today's program, and those listed in the appendix of this publication, are refereed or invited papers and exhibits presented at scholarly meetings and academic institutions across the nation and around the world during the 2003-2004 academic year.

It is unusual for a college such as ours to take "time out" from our usual schedule of classes, design studios and meetings to hear our colleagues report on their current research. Too often, faculty colleagues and graduate students are left at home when one of us travels to a distant symposium to deliver the latest in our thinking on a timely topic. It is fitting in our role as the largest college of our kind in the nation to establish new traditions, such as this one, that couple scholarly research solidly with professional education. One organizing principle of the College of Architecture is the influence of research on teaching. This annual symposium is a catalyst for the research-informed teaching in all of our 12 degree programs. The presentations you will hear today reflect the range and depth of research and scholarly work currently under way in our college.

Four concurrent presentation sessions will focus on topics as diverse as health facilities design, hazards mitigation, visual arts, urban planning, energy, construction, and architectural theory. Regardless of the nature of your fascination with the built and virtual environments, this symposium includes a presentation that you will find of interest. At the end of this publication, you will find a list of all presentations made last year by college faculty, along with brief descriptions of the college's research centers and labs.

In addition to faculty presentations, this year's symposium features a keynote address by Dr. Morad R. Atif, director of the Indoor Environment Research Program for Canada's National Research Council-Institute for Research in Construction. His presentation is entitled, "Extending Building-Related Research to Application: Challenges and Success Stories."

Like our last five very successful faculty symposia, this year's event will showcase the international influence of our faculty on the knowledge base of their respective disciplines. The event is yet another effort by the college to positively influence the built and virtual environments of Texas and the world.

Regards, Tom Regan Dean



Research on the Built and Virtual Environments: Global Symposia Presentations 2004 is an official publication of the College of Architecture at Texas A&M University. Comments may be mailed to College of Architecture, Dean's Office, 3137 TAMU, College Station, TX 77843-3137. The college's Web site may be accessed at http://archone.tamu.edu.





# Firmitas, Utilitas & Venustas

The individual sessions at this year's symposium were organized based on the intersection of the College of Architecture's most recent redefinition with one of the oldest written definitions of architecture. The academic core of the college has been reconceptualized as reflecting the principles of sustainability, health and visualization. The Vitruvian troika of *Firmitas, Utilitas* and *Venustas* are routinely translated as "Firmness," "Commodity" and "Delight." In this context they might be more appropriately translated as "Durability," "Convenience," and "Grace."

## 8:00 Continental Breakfast & Registration: Second Floor Atrium, Langford Building A 8:30 Welcome: Dean J. Thomas Regan, Langford C105

	SUSTAINABILITY	VISUALIZATION		
	<b>Utilitas</b> Langford C111 Moderator: Peacock	<i>Firmitas</i> Langford C207 Moderator: Segner	<b>Venustas</b> Langford C307 Moderator: Woodcock	<b>Venustas</b> Langford C105 Moderator: Johnson
8:45 ▶	Giusti, Cecilia ■ Land Titling: Issues of Land Tenure in Low Income Communities: A Case Study	<ul> <li>Horlen, Joe</li> <li>Financial Effects of Reverse Auction Bidding on Telecommunications Contractors</li> </ul>	LaFayette, Carol J. ■ Skateboarding in Sarajevo	Nishimoto, Taeg ■ Descriptive Programming - Fictive and Imaginary
9:10 ▶	<ul> <li>Brody, Samuel D.</li> <li>Conflict on the Coast: Using Geographic Information Systems to Map Potential Environmental Disputes in Matagorda Bay, Texas</li> </ul>	<ul> <li>Nichols, Anne B.</li> <li>Integration of Structural Design and Architectural Design for Comprehensive Design: An Engineer's Perspective</li> </ul>	Beltran, Liliana O. ■ The Tales of Three Museums	Davison, Richard R., Jr. ■ Drawing Book: An Update
9:35 ▶	Sharkawy, M. Atef ■ Are Healthy Communities Profitable?	Eldin, Neil N. ■ Construction Equipment Selection	Tabb, Phillip J. ■ Architecturalizing the Serenbe Community Plan	Blake, Nan Standish ■ Growing Up
10:00 >	Jourdan, Dawn ■ Mending Fences: Resolving Neighbor Disputes with Squatter Settlements in Belize	Nichols, John M. ■ Development and Calibration of an Earthquake Fatality Function	Hill, Rodney C. ■ The Role of Creativity in the Future	Williams, Yauger R. ■ Digital Art
10:25 ▶	Abrams, Robin F. ■ Lucy's Feat: Frederick Law Olmsted's Journey Through Texas	Graham, Charles W. ■ The Earth Construction Course at Texas A&M University	<ul> <li>Downing, Frances E.</li> <li>Philosophy in the Flesh: Embodied Realism and Significant Form</li> </ul>	Akleman, Ergun ■ Modeling Expressive 3D Caricatures
10:50 ▶	Peacock, Walter Gillis ■ Hurricane Risk Perceptions Among Florida's Single Family Homeowners	Burt, Richard A. ■ The Survey & Documentation of Pointe-du-Hoc Historic Battlefield, Normandy, France	Miranda, Valerian ■ Assessing the Influence of Diversity on Design	Regan, J. Thomas ■ Healthy Cities in China
11:15 ▶	Rogers, George O. ■ Long-term Development of a Watershed: What Determines When Enough is Enough?	Warden, Robert B. ■ The Survey & Documentation of Pointe-du-Hoc Historic Battlefield, Normandy, France		Quantrill, Malcolm ■ The Architect as Master of Two-Part Inventions



Dr. Morad R. Atif

# Keynote to focus on multidisciplinary research in sustainability, conservation and healthy design

Morad R. Atif, an internationally acclaimed expert on multidisciplinary research in sustainability, conservation and healthy building design and construction, will deliver the keynote address at the Texas A&M College of Architecture's sixth annual faculty research symposium, "Research on the Built and Virtual Environments: Global Symposia Presentations 2004." The daylong event, which features a series of faculty presentations previously delivered at scholarly venues around the world, will be held Friday, Oct. 29 at the Langford Architecture Center on the Texas A&M campus.

Atif is director of the Indoor Environment

Research Program for Canada's National Research Council-Institute for Research in Construction (NRC-IRC). His keynote presentation, tentatively titled "Extending Building-Related Research to Application: Challenges and Success Stories," will focus on the NRC's research and development mandate as it relates to health, well-being, safety, productivity and sustainability. His talk will highlight successful NRC-IRC projects involving innovative collaboration with academia.

As director of the Indoor Environment Research Program, Atif oversees initiatives aimed at deliver-See KEYNOTE, Page 27

11:30 ► 1:30 ►	Lunch: Second Floor Atrium, Langford Building A Keynote Address: Dr. Morad R. Atif (See article at top of this page), Langford C105			
	VISUALIZATION		HEALTH	
	Firmitas Langford C205 Moderator: Clayton	<b>Utilitas</b> Langford C414 Moderator: Vasquez de Velasco	<b>Venustas</b> Langford C105 Moderator: Tassinary	<b>Utilitas</b> Langford C111 Moderator: Shepley
2:15 ▶	Kang, Julian H. ■ XML-Based Vector Graphics: Application for Web-Based Design Automation	Srinivasan, Vinod ■ Column Modeling	<ul> <li>Deviren, Senem</li> <li>THE INSIDE STORY: Courtyard Experiences in an Eastern Mediterranean City: Antakya</li> </ul>	Hamilton, Kirk ■ Evidence-Based Design for Healthcare
2:40 ►	Haque, Mohammed E. ■ A Computer Simulation Model for Emergency Building Evacuation with ARENA	<ul> <li>Vasquez de Velasco, Guillermo</li> <li>Changing the Culture of Design Studio Reviews: The Use of Large Format Interactive Plasma Screens in Design Studio Reviews</li> </ul>	<ul> <li>Rodiek, Susan D.</li> <li>Enhancing Quality of Life for Older Adults: Improving Outdoor Access at Assisted Living Facilities</li> </ul>	<ul> <li>Lee, Chanam</li> <li>Built Environments for Transportation Versus Recreation Walking: Similarities and Differences</li> </ul>
3:05 ►	House, Donald H. Model-Based Motion Filtering for Improving Arm Gesture Recognition Performance	<ul> <li>Haberl, Jeff S.</li> <li>Demonstration of the use of Multimedia Electronic Information Enhancements for a Chapter Handbook CD- ROM Overview (1017-RP)</li> </ul>	<ul> <li>Kweon, Byoung-Suk</li> <li>■ Urban Design for the Walking Child: Pedestrian Design and Public Health</li> </ul>	<ul> <li>Shepley, Mardelle M.</li> <li>Evidence-Based Design for Infants and Staff in the Neonatal Intensive Care Unit.</li> </ul>
3:30 ►		<ul> <li>Parke, Frederic I.</li> <li>■ Facial Animation: History and Applications</li> </ul>	Mann, George J. ■ Megatrends in Health Facility Design	Bame, Sherry I. ■ COMMUNITY NEEDS ASSESSMENT: Profile of unmet needs and at-risk populations using 2-1-1 data.
3:55 ▶		Johnson, Robert E. ■ Digital Innovation and Organizational Change in Design Practice		<ul> <li>Sweeney, Donald A.</li> <li>■ Healthy Communities in the West: History and Concepts</li> </ul>





Cecilia Giusti Visiting Assistant Professor Department of Landscape Architecture and Urban Planning

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Dr. Giusti's interests include urban and regional economic development and planning, urban and regional theory, and economic development planning in developing countries, especially in Latin America.

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## Land Titling: Issues of Land Tenure in Low Income Communities: A Case Study

We will present the results of a study on the impact of a major land title regularization program in 15 *colonias* outside of Rio Grande City in Starr County, Texas. Starr County is among the poorest of all Texas border counties with 47% of the population defined by the U.S. as living in poverty; and a median house-hold income of \$19,834.

Title problems emerge for a number of reasons associated with the informality of land development. First, actual lot limits may be unclear because there are no plots / maps previously approved by any authority. Second, it is not uncommon that lots are sold more than once; this is explained by the fact that many households live elsewhere while they save enough money to build, and in the meantime developers may sell the property again. Third, developers can repossess the lot if payments



stop, resulting in more than one claimant to a single parcel. Fourth, even where owners hold legitimate title, the papers may not relate to the lot that a family actually occupies.

This case study offers an evaluation of the Community Resources Group (CRG) program as the receivership in 15 colonias located outside of Rio Grande City. The CRG program affected a total of over 2000 households and 2500 lots. This study was undertaken by an academic team drawn from: the University of Texas - Austin, Texas A&M University, and the University of Wisconsin-Madison. The staff of CRG cooperated fully with the team and was part of most of the discussions. While the main study was undertaken primarily between January 2002-03, we updated our findings in March 2004. The first study involved a range of methods of data collection: archival analysis, CRG database analysis, key informant interviews, focus groups, and a major household survey of some 266 families living in six of the larger colonias affected by the CRG intervention. The updated version included focus groups and key informant interviews.

We will present our main findings specifically related to the Colonias are impoverished, unincorporated and relatively undeveloped villages sprinkled in clumps near population centers along the U.S. side of the U.S.-Mexico border. Studies estimate there are about 1800 colonias in Texas with an official population of approximately 356,000 people.

community's perception of the varied meanings of formal title, the dynamic of land and housing markets, and the impact of title on access to credit. On the one hand, we found that title has had a profound positive meaning on local residents as expressed on the sense of security, political legitimacy, and psychological relief. On the other hand, we found that title does not seem to have a dramatic impact on land prices or in the ability of new owners to access credit. An important finding is related to the local colonias staff of CRG and the way in which the organization worked within the community. We found that CRG and its involvement with the local community have been a positive factor explaining the success of this experience. On our recent update study we also observed another non-anticipated result: a more knowledgeable community that is more aware of the significance of legal rights and thus more reluctant to continue the pattern of informality that initiated these colonias.

Presented at Who Owns America IV Conference, University of Wisconsin-Madison, Madison, Wisconsin, May 23-25 2004



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Dr. Brody's areas of interest are environmental planning, coastal sustainability, ecosystem management, and Geographic Information Systems.

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## Conflict on the Coast: Using Geographic Information Systems to Map Potential Environmental Disputes in Matagorda Bay, Texas

The sustainable management of coastal natural resources inevitably involves identifying stakeholder conflicts and developing planning processes which prevent these conflicts from becoming intractable disputes. This study links environmental conflict to specific areas within a large ecological system. Specifically, we use Geographic Information Systems (GIS) to map potentially competing stakeholder values associated with establishing protected areas in Matagorda Bay, Texas. By overlaying multiple values associated with a range of stakeholders across space, we are able to identify hotspots of potential conflict as well as areas of opportunity for maximizing joint gains.

Mapping stakeholder conflict is an approach to proactively locate potential controversy in response



Brody uses Geographic Information Systems to map potentially competing stakeholder values associated with establishing protected areas in Matagorda Bay, Texas. He found that regulated uses would produce the greatest degree of conflict on or nearshore, particularly at the mouth of the Colorado River.

to a specific environmental management proposal and guide decision makers in crafting planning processes that mitigate the possibility of intractable disputes and facilitate the implementation of sustainable coastal policies. Results indicate that under different management scenarios, protected area proposals will generate more conflict in specific areas. Most notably, regulated uses would produce the greatest degree of conflict on or nearshore, particularly at the mouth of the Colorado River.

Additionally, of all the management scenarios evaluated, the prohibition of coastal structural development would generate the overall highest level of conflict within the bay. Based on the results, we discuss the policy implications for environmental managers and provide guidance for future research on locationbased conflict management within the coastal margin.

The International Conference on Sustainable Planning and Development, Skiathos, Greece, October 2003.



## M. Atef Sharkawy Professor

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Dr. Sharkawy specializes in land and real estate development, development project feasibility and design, and international real estate.

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## Are Healthy Communities Profitable?

This presentation addressed the financial feasibility aspect of healthy communities in the 1994 international symposium organized by Texas A&M and Tsighua Universities and held in Beijing, China. The paper begins with identifying the focus of land and real estate development as analysis of both site and marketplace, guided by creative synthesis of both design concept and venture structure. The paper proceeds with three premises:

 That a "healthy community," defined as one with healthy individuals, and a healthy environment that is socially and financially healthy, require "green space-centered" planning and design.

- 2. That "green space," as the key design concept in "healthy communities," is the same as in Howard's 1950s "Garden Cities," Olmsted's 1960s "Park Movement," Bellamy's 1900s "City Beautiful," Church's 1970s "Cluster Developments," and Arendt's 1980s "Green Development."
- **3.** Real estate values are positively linked to proximity to green space.

The paper proceeds to identify three sets of requirements to ensure feasibility/profitability of "healthy communities":

- Facility program should be based on thorough market segmentation and consumer profiling, as a basis for determining product mix and health-related amenities.
- "Green Space" should be carefully structured as a hierarchy of green corridors to ensure environmental health while maximizing green space frontage.
- 3. The business venture should be structured as a public-private partnership (co-development) to ensure social health while improving project feasibility/profitability.

The presentation summarizes a number of studies that show the positive correlation between green space and real estate values, and utilizes a number of case studies to show how planning/design of the pattern/structure of "Green Space" increases such values.

Presented at the 2003 International Symposium on Healthy Community Initiative in China, Tsinghua University, Beijing, China, May 2004.



 City parks have a positive effect on the value of adjacent real estate, as exemplified in New York City's Central Park.



## Dawn Jourdan

Department of Landscape Architecture and Urban Planning

Ph.D., (ABD status achieved), Florida State University, anticipated 2004; J.D./M.U.P., University of Kansas, 2000; B.S., Bradley University, 1996.

Ms. Jourdan is interested in legal issues pertaining to planning; citizen participation in planning, especially the role of children; historic preservation; sustainable development; storytelling as a source of evidence for planning; role of communication and argumentation in the planning processes.

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## Mending Fences: Resolving Neighbor Disputes with Squatter Settlements in Belize

The primary mandate that governs those who engage in local planning and zoning activities is to create plans that serve the public interest, as required by most state and local zoning enabling legislation. Not surprisingly, states and local governing bodies are reticent to define the so-called public interest. The primary reason given for the failure to define this term is the fact that the public's interest represents an ever-changing concept which is always in a state of flux. Instead, the courts are left to judge whether or not certain challenged planning activities or zoning decisions are justifiable under this standard.

In the absence of a concise definition for the term public interest, the best planners can hope to do is turn to as many groups of stakeholders as will make themselves available for comment to discover what the

Continued on next page





A "squatter settlement" adjacent to the University of Belize Belmopan campus.

Continued from previous page

public interest is. One of the primary mechanisms planners employ to discover the public interest is by deliberating with diverse groups of stakeholders about their positions on the issues in controversy. Such conversations are not likely to yield clear cut responses in the way that a survey or scientific study might. However, these conversations between planners and stakeholders often yield a richer understanding of the context of existing controversies.

This paper will describe how a planning problem may be defined and potentially solved by the richness of the stories offered by stakeholders. The context for this paper emerges out of a campus planning project engaged between students and faculty from two universities: Florida State University and the University of Belize at Belmopan. The paper focuses on the

identification and planned resolution of a specific issue which arose during the campus planning process. Specifically, this paper will discuss how the perceptions of university students, faculty, and administration and an adjacent squatter settlement were important in the creation of the campus plan with respect to issues of access and the creation of a boundary between the university and the neighborhood.

Presented at PACE University's Annual Conference on Issues of Space and Place, Pace University, New York City, New York, April 2004.



## **Robin F. Abrams** Associate Professor

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Dr. Abram's areas of interest include urban design, urban landscape, housing, site design, neighborhood preservation, participatory planning process and sustainable community design. robin@archone.tamu.edu

## Lucy's Feat: Frederick Law Olmsted's Journey Through Texas

2004 marks the 150th anniversary of Frederick Law Olmsted's travels on horseback through the new State of Texas, to the edge of the frontier (just beyond San Antonio), and into Mexico. This journey was in part commissioned journalism, partly an antislavery crusade, but mostly a big adventure for the East Coast gentleman farmer and his broth-



Frederick Law Olmsted

er. Olmsted went on to become the creator of Central Park and the first American landscape architect. The journal that resulted from the Texas travels is a record of the Olmsteds' awakening sensitivity to the American cultural landscape. It is also a remarkable record of the settlement of our state at that time, as seen through the eyes of a strongly opinionated outsider. This talk introduces the audience to this important text through a critical examination of Olmsted's political and social reflections.

Presented to the Planning Forum at the University of Texas at Austin, Austin, Texas, April 2004.



## Walter Gillis Peacock

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Dr. Peacock is interested in urbanplanning, sustainable communitydevelopment, natural hazard, hazard mitigation, and long-term recovery quantitative methods. peacock@tamu.edu

## Hurricane Risk Perceptions Among Florida's Single Family Homeowners

Hurricanes and associated storm damage remain a constant threat to the health, safety, and welfare of residents in Florida. Hurricane risk perception has been found to be an important predictor of storm preparation, evacuation, and hazard adjustment undertaken by households,

such as shutter usage. Planners and policy makers often employ expert risk analysis to justify hazard mitigation policies, yet expert and lay risk assessments do not always agree. Because the public is increasingly involved in planning and policy decisionmaking, consistency between "expert" risk assessments and lav perceptions of risk are important for policy legitimization and compliance. This article examines factors contributing to hurricane risk perceptions of singlefamily homeowners in Florida. Utilizing data from a statewide survey, we first map and spatially analyze risk perceptions throughout Florida. Second, we examine

the influence of location on shaping homeowner perceptions along with other factors, such as knowledge of hurricanes, previous hurricane experience, and socioeconomic and demographic characteristics. The findings suggest there is a good deal of consistency between residing in locations identified by experts as being high hurricane wind risk areas and homeowner risk perceptions. Finally, we discuss the implications of these findings for land use and hazards planning.

CoAuthors: Brody, S., & Highfield, W.

To be published in the Journal of Landscape and Urban Planning.



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Dr. Rogers is interested in the areas of sustainability, risk analysis and planning, technology and society, and quantitative methods. rogers@tamu.edu

## Long-term Development of a Watershed: What determines when enough is enough?

It has been observed that human activity is making damage from flooding worse by building in the floodplain. Development in a watershed also systematically augments the potential for flooding by changing the watershed's function with respect to the flow of water.

This presentation examines

the impact of land development in a closed watershed over a fifty-year period. It analyzes the relationship between land development and the amount of flow out of the watershed. The results lead to an enhanced understanding of the mechanisms that result in augmented flooding and an ability to use planning tools and policies to more effectively control development to avoid watershed problems years before these problems become apparent through their event history.

This study of sustainable development examines the development of a watershed in the greater metropolitan area of Houston, Texas where flooding has become a major issue, and intervention by planners has been minimal.

To address the first issue of "Is flooding getting worse?" data was obtained from the USGS. The recorded daily maximum flow (in CFS) from the mouth of the watershed was obtained for every day from June 1, 1936 to December 31, 2000. Flow from the watershed was increasing. but could it be related to changes in precipitation? Data to address this issue were obtained from NOAA sufficient to determine rainfall (in hundredths of an inch) in the watershed from January 1, 1949 to December 31, 2000. Still, the number of days with above-expected out-



 Land development in a watershed systematically augments the potential for flooding by changing the flow of water. (Generic flood photo from the NOAA archives.)



 To measure the longterm impact of land development on watershed flooding, investigators poured over National Oceanic and Atmospheric Administration records from Houston, Texas dating back to 1936. (Generic flood photo from the NOAA archives.)

flow given the rainfall on that day increased exponentially.

But could the increase in flow be related to development in the closed watershed? Development data for every property in the watershed was obtained from the Harris County Appraisal district. These data were geo-referenced to account for the relative position to each other as well as within the watershed. Each parcel included its location, boundary, area, year of development and sufficient items to estimate the impervious footprint of the building(s) on the property. These data were combined using GIS techniques to address spatial patterns of development and watershed output. The results were accumulated annually for the watershed and examined to determine how the patterns changed throughout the 50-year period.

While conventional wisdom that watershed impervious cover is important in determining the impact of development on watershed function is confirmed, impervious cover alone is not sufficiently sensitive to guide development decisions that impact the long-term future of

the watershed. For example, the double impact of roads as impervious cover and roads as streambed channels is missed entirely when only impervious cover is considered. In addition, this work finds that residential development is important, not just the associated impervious cover. This seems to be driven by the idea that developed properties are designed to shed excess water, rather than absorb it. Finally, these impacts are made more serious by a double exponential process.

First the underlying relationship between the factor (e.g., total developed area, the ratio of commercial to residential developed area, or length of roads) and above-expected outflow is exponential. This is augmented further when development increases these factors exponentially over time as well.

#### CoAuthor: DeFee, B.

Presented at Workshop 10: Reducing Future Flood Losses: The Role of Human Actions, Disasters Roundtable, National Academy of Science, Washington, D.C., March 2004.





Joe Horlen Assistant Professor Department of Construction Science

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Mr. Horlen specializes in legal issues involving construction, dispute resolution, employment law, and product liability.

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## Financial Effects of Reverse Auction Bidding on Telecommunications Contractors

The purpose of this study was to identify and analyze the "financial impacts" of reverse auction bidding (RAB) on telecommunication contractors. More specifically, the research objectives were to identify and quantify revenue, profit, cash flow, and expense changes incurred by telecom contractors that have participated in the reverse auction bidding of jobs in comparison to jobs using traditional bidding.

In order to identify these financial impacts, a case study was conducted on a telecom contractor. The case study identified both financial and non-financial factors effecting telecom contractors. From the case study a mailout survey was built and sent to a sample of other telecom contractors to gather data for analysis.

With the data gathered from the surveys and organized in a database, statistics were run to describe the findings. Descriptive statistics were used to present the data. In addition, correlation tests were also run on the data to find relationships between the variables.

The results showed that RAB had an overall negative effect on telecom contractors' revenue, gross profit, gross profit margin, and cash flow. The data showed a similar negative effect on the non-financial effects as well. Overall the effects of RAB on telecom contractors were negative. Not one telecom contractor was satisfied with the RAB process.

CoAuthors: Bilbo, D., Horlen, J., Novak, J.

This will be the first presentation on this study.



## Anne B. Nichols Assistant Professor

Department of Architecture

Ph.D., University of Illinois, 2000; M.S., Purdue University, 1986; B.S., Purdue University, 1985.

Dr. Nichols' interests include masonry and concrete materials, computer modeling, and fracture mechanics.

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## Integration of Structural and Architectural Design for Comprehensive Design: An Engineer's Perspective

Comprehensive Design, as interpreted by a faculty member with training in engineering and experience with teaching structural course work at two schools of architecture, is defined with respect to the levels of thinking outlined by Bloom's Taxonomy of undergraduate and graduate student performance. Areas of difficulty with respect to technology



 Students test the strength of spans constructed from newspapers.

courses are summarized. Performance expectations are compared to the comprehensive design criteria required of engineering schools by the Accreditation Board of Engineering and Technology. Assessment and evaluation of the comprehensiveness of student design with respect to what technical faculty want, what design faculty want, and what employers and engineering consultants want will be discussed. Methodologies used in schools of architecture will be compared and contrasted with respect to criteria and outcome, and the application of problem-based learning methods used in engineering education will be investigated.

Presented at ACSA Southwest Regional Conference, Houston, Texas November 2003.



Neil N. Eldin Associate Professor, Coordinator for Master of Science in Construction Management Program Department of Construction Science

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Dr. Eldin is interested in computerized project control systems, construction materials, solid wastes, and neural network applications. neldin@archone.tamu.edu

## Construction Equipment Selection

Scrapers are valuable construction equipment for large earthmoving operations. Their production rates vary widely as they depend on the equipment performance, operation's travel time, and haul-road conditions. Determining the most economical selection of the size, model and number of scrapers is a



Scraper at work.

rather tedious process that involves repetitive calculations. A spreadsheet application was created in order to facilitate such calculations and select the most economical scraper from the list of available equipment for the job under consideration. The application is made of seven spreadsheets containing a scrapers' database, performance charts, soil properties, and other supporting worksheets. The application provides a user interface to solicit all data entries specific to a project. Once the user enters the required data, the system compares the production rate, time required for the

job, determines the estimated unit cost for each scraper in the database and recommends the most economical selection.

Presented at the Fourth International Conference on Engineering Computational Technology, Lisbon, Portugal, September 2004.



John M. Nichols Assistant Professor Department of Construction Science

Ph.D., University of Newcastle, 2001; B.E., University of Newcastle, 1981.

Dr. John Nichols' interests include predicting fatalities in earthquakes, masonry materials, and damage mechanics. nicholsj@tamu.edu

## Development and Calibration of an Earthquake Fatality Function

Structures present a risk during seismic events from partial or full collapse that can cause death and injury to the occupants. The United States Geological Survey (USGS) has collated data on deaths from and magnitudes of earthquakes. These data have not previously been analyzed to establish any relationships between fatality tolls or fatality rates in different earthquakes. An investigation of the fatality catalogue establishes a bounding function for the Twentieth Century fatality data using the USGS assigned earthguake magnitude as the depend-



 Earthquake deaths and injuries are largely due to structural collapse.

ent variable. A simple equation was established and calibrated to relate the fatalities in earthquakes having tolls lower than the bounding function to the bounding function. This equation and the calibration data, essentially for unreinforced masonry and timber-framed buildings, provides a procedure for estimating fatality counts in future theoretical events with a specific combination of circumstances.

Potential uses of the fatality function with further refinement include economic analysis of seismic mitigation alternatives for unreinforced masonry structures. Current uses of the fatality function can be for real time estimating of fatalities in earthquakes in remote locations, and estimating fatality counts in future earthquakes for planning purposes.

CoAuthors: Nichols, J. and Beavers, J.

Published in Earthquake Spectra, August 2003.



 Potential uses of the fatality function include economic analysis of seismic mitigation alternatives for unreinforced masonry structures.



Charles W. Graham Professor, Holder of Mitchell Endowed Professorship, AIA Department of Construction Science

Ph.D., Urban and Regional Science, Texas A&M University, 1988; M.A., Environmental Management, University of Texas-San Antonio, 1978; B.Arch., Texas Tech University, 1974.

Dr. Graham's areas of interest lie in residential design and construction, alternative construction delivery systems, and building failure analysis with an emphasis on moisture intrusion studies. cwgraham@archone.tamu.edu

## The Earth Construction Course at Texas A&M University

The Department of **Construction Science at Texas** A&M University has, since 2002, offered a graduate class in earth construction as part of their Master of Science in **Construction Management** degree. The objective of the class is to introduce students to the use of earth as a construction material. This class signals a re-birth of interest in earth building techniques at Texas A&M University that actually began with the publication of Earthen Home Construction by Lyle Wolfskill, Wayne Dunlap and Bob Gallaway in March, 1962. This document, which was published by the Texas Transportation Institute, provides an overview of several earth building techniques. Texas has a large stock of adobe buildings, particularly in the western part of the state. The College of Architecture at Texas A&M University draws a large number of graduate students from countries where earth is still a contemporary building material. These two factors were instrumental in the decision to develop









 Since 2002, construction science students at Texas A&M have been learning how to use earthen bricks as construction material.

a graduate class in earth construction. The earth construction course is preceded by a course in sustainable construction.

CoAuthors: Burt, R. & Graham, C.

Presented to the Adobe Association of the Southwest, El Rito, New Mexico, May 2004.





A tiled panorama of the Pointe du Hoc D-Day battlefield.



#### Richard A. Burt Assistant Professor Department of Construction Science

Ph.D., Texas A&M University, 2000; M.S., Construction Science, Texas A&M University, 1993; Prof. Assoc., Royal Institution of Chartered Surveyors, London, England, 1987.

Dr. Burt's special interests lie in historic preservation, adobe and other earth construction, and photogrammetric measurement and visualization of historic buildings.

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Robert B. Warden Associate Professor

Department of Architecture M.A., University of New Mexico, 1994; M.Arch., Texas A&M University, 1986; B.S., Purdue University, 1974.

Professor Warden's areas of interest are in historic preservation and documentation and philosophy of architecture.

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Above, architecture professor Bob Warden takes measurements of the craterstrewn battlefield at Pointe du Hoc on France's Normandy coast. On June 6, 1944, Colonel James Earl Rudder, who would later become president of Texas A&M University, led elements of the U.S. Army's Second Ranger Battalion to victory in one of the greatest feats of the Normandy invasion, the perilous assault on German gun emplacements at Pointe du Hoc—a sheer promontory towering more than 100 feet above a narrow, pebble-strewn shore between Omaha and Utah beaches.

## The Survey & Documentation of Pointe-du-Hoc Historic Battlefield, Normandy, France

**PRESENTATION I: BURT** 

## The Site, Significance and Objectives of the Project

Pointe du Hoc is a medium coastal battery built as part of Hitler's Atlantic Wall. On the morning of June 6, 1944 Lt. Colonel James Earl Rudder led the 2nd Ranger Battalion up a shear cliff face under enemy attack to capture the battery in what is considered one of the most heroic acts of D-Day. Pointe-du-Hoc is the most iconic of the D-Day Battlefields that still retains many of the cultural resources from the day of the battle. The site is under the perpetual care and maintenance of the American Battle Monuments Commission. This presentation explains how the Historic Resources Imaging Laboratory at Texas A&M University is attempting to survey and document the battlefield using topographic survey data, aerial reconnaissance photographs and other documentary evidence. The presentation addresses the following topics; the significance of the battlefield, the results of a reconnaissance visit in September 2003 to identify cultural resources and evaluate scope of the project, the availability of supporting documentary evidence such as bombing reports and aerial reconnaissance photographs to support development of the site plan, and the efforts of the project team to obtain funding for the project.

#### PRESENTATION II: WARDEN A Report on the First Season's Work

For three weeks in June 2004, four faculty and 12 graduate students from Architecture, Geology and Geophysics, Construction Science, and Archeology began the task of collecting data at Pointe du Hoc in Normandy, France. Pointe du Hoc is a medium coastal battery built as part of Hitler's Atlantic Wall. On the morning of June 6, 1944 Lt. Colonel James Earl Rudder led the 2nd Ranger Battalion up a shear cliff face under enemy attack to capture the battery in what is considered one of the most heroic acts of D-Day.

This summer's work focused on three main objectives:

- To gather data on the existing condition and location of six of the structures. This will allow the production of architectural drawings of these buildings in their current state.
- To record photographically the Observation Post and Ranger Memorial. This will allow for the building to be measured digitally using photgrammetric methods and will ultimately allow the production of a virtual model of the building.
- To identify significant underground features using geophysical methods such as ground penetrating radar.

Work has continued this fall at College Station to produce the architectural drawings and develop a web site for the project. In September the Historic Resources Imaging Laboratory was awarded a \$40,000 grant from the National Center for Preservation Technology and Training to continue with the work in June 2005.

CoAuthors: Burt, R., Warden, B., Dickson, B., Everett, M.

Presented to the American Battlefield Protection Program's 7th National Conference, Nashville, Tennessee, April 2003.





## Carol J. LaFayette Assistant Professor Department of Architecture

M.F.A., SUNY-Buffalo, 1991; B.F.A., University of Washington, 1981.

Professor LaFayette's interests are in film, video, and conceptual art with an emphasis on the language of images. She is also the faculty advisor for the Aggie SWAMP (Screenwriters, Actors, and Movie Producers) Club.

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Liliana O. Beltran Assistant Professor Department of Architecture

Ph.D., University of California, Berkeley, 1977; M.Arch., University of Oregon, 1985; Professional Degree of Architect, Universidad Nacional de Ingenieria, Lima, Peru, 1983.

Dr. Beltran's areas of interest are in daylighting design and analysis, climatic design and lighting, intelligent building facades, climateresponsive design of vernacular and contemporary architecture, sustainable design and green buildings, and energy & daylighting design tools.

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## The Tales of **Three Museums**

Light in museums is necessary to enhance and view museum objects; at the same time, light can be harmful and destructive, and reduce the life of the museum objects. This paper

## **'Skateboarding** in Sarajevo'

Author Jerry Cullum ponders the siege of Sarajevo, the Civil War, and urban warfare in modern Atlanta, while posing a tentative answer to the question, "What good is art, anyway?"

"Skateboarding in Sarajevo" weaves together images from different countries and centuries in response to Mr. Cullum's question. In Sarajevo, citizens



presents the assessment of lighting exposure of specific exhibit areas in three museums located in the Dallas-Fort Worth Cultural District in Texas. These museums are: the Modern Art Museum by Tadao Ando (2002), the Kimbell Art Museum by Louis Kahn (1972), and the Amon Carter Museum by Philip Johnson (1961, 2001). Each of the museums presents different lighting conditions. The study focused on specific galleries that include daylighting as the main source of ambient lighting. Each selected gallery is examined, assessed on the site and simulated using state-of-the-art lighting tools. These galleries were evaluated according to good lighting practice: lighting exposure, glare, visual adaptation, and ultraviolet radiation.

Museum lighting differs from other types of lighting design. Museum lighting must balance the exhibition and conservation needs. Exposure to light gradually causes permanent damage to many museum objects. Light is radiant energy, and when radiant energy strikes on the surface of a material, it can cause degradation

Site inspections to the museums at different times of the year, site surveys, and detailed computer simulations have



used political posters and performance art to counteract horrific destruction and genocide. Cullum presents the interesting concept, defined very differently in East and West that "civilization depends on such stuff that makes nothing happen." Along the way, Rainer Maria Rilke helps him chant a plea for mercy to the angels of heaven and earth. Artists on both sides of the ocean respond.

Produced and directed by Carol LaFayette, the video fea-



shown that direct sunlight strikes several display areas. Site assessments at these museums showed that several display areas receive direct sunlight, about one third of the annual daylighting hours with vertical illuminance levels ranging from 2,000 lux to 11,500 lux over valuable oil paintings. These illuminance levels exceed the maxi-



tures a generous collection of images by artists such as TRIO, Sarajevo, and E.K. Huckaby, Atlanta, as well as images of war by international photojournalists. The DVD package contains artwork by Atlanta artists Hope Hilton, Tom Ferguson, and Karen Tauches.

Presented at Solomon Projects, Atlanta, Georgia, December 2003, and at Zebra Poetry Film Award, Berlin, July 2004.



mum recommended lighting standards for oil paintings. Curators at these museums have taken several measures to protect their artwork by incorporating dark tinted glass, dark sunscreens. fixed interior louvers. interior fabrics, block completely windows with dark opaque boards, cover paintings on a daily basis, and some galleries are left empty during specific months of the year.

The main goal of this research was to identify good lighting gualities and/or adverse lighting conditions in each of the selected museum galleries. The findings of this research will serve as design guidance for lighting museums.

- Presented at the Proceedings of the EuroSun 2004, ISES Europe Solar Conference, Freiburg, Germany, June 2004.
  - Direct sunlight over oil painting, at the Modern Art Museum's west gallery, 03/05/04, 6:30 PM. Above, a fisheye photo taken from the painting's viewpoint with sun path diagram.





Phillip J. Tabb Professor, Department Head Department of Architecture

Ph.D., The Architectural Association Graduate School of Architecture, London., 1990; M.Arch., University of Colorado, 1976; B.S.Arch., University of Cincinnati, 1969.

Dr. Tabb's interests are in the areas of climatic, energy and sustainable architectural design and village planning with a special focus on sacred building and place typologies.

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## Architecturalizing the Serenbe Community Plan

This paper describes a presentation given in Atlanta, Georgia describing the on-going work for Serenbe Community being planned in south Fulton County outside of Atlanta, Georgia. Empirical research conducted in England was applied, beginning in 2001, with a series of charrettes that were organized at various planning scales and a community plan of interconnected villages and hamlets was designed and approved by the county with the first of these villages — the Artist Village — now in construction. Part of the evolution of this unique project has been the inclusion of graduate architectural work generated by Career Change students in the Department of Architecture at TAMU, to which this paper is largely focused. A partnership between the private sector of developers and landowners and the academy has created rich and productive results.

The community plans employ a transect spatial organization accompanying omega-shaped geometric order. At the extremities of the plan, single-family estate homes are placed away from the main access road within the existing canopy of trees. As the plan progresses nearer the center of the community, buildings move closer to the road, move closer to one another and eventually change in use from residential to commercial building types. This gradient of land use, building typology and density provides an interesting context and challenge within which to create architectural forms and corresponding public places. The two studios were organized by Drs. Phillip Tabb, AIA and Vallie Miranda, who guided the transformation process from plan to three-dimensional form.

It has been at the center of this transect that the TAMU students have interpreted the intentions of the plan and generated innovative architectural designs. In the summer of 2003 the first group of twelve students focused on the west live-work unit cluster of twelve connected buildings.



And in the summer of 2004 the second group of sixteen students focused on the east live-work cluster and the commercial village center. While the buildings represent the urban center of the community and are connected to one another, each student was able to formulate their own owner profiles, program of activities, and resulting architectural designs. However, each student had to respond to the designs of adjacent projects and contribute to the form of the overall public space(s).

The West Court Live-Work project was a wedge-shaped site with eleven live work units and a shop. In the center of the wedge was planned an intimate pedestrian plaza, primarily to be shared by the residents of the project. The designs responded to the urban fabric of the place, the changing topography and individual internal needs. The developer of the project. Steve Nygren, selected two of the projects for actual construction. In the spring semester two graduate students, Jason Herber and Jeff Chapman, were flown to Atlanta to meet a local architect, charged with executing their

designs, and the actual building owners, who provided some additional input. Construction has begun on each of these live-work units with completion targeted sometime in spring 2005.

The East Court Live-Work project, completed at the end of this summer, combined nine livework units and a commercial center with a large pedestrian plaza. Using similar design pedagogy, students generated personal programs and site specific individuated architectural designs. Unique to this project was the nesting of live-work units by retail building projects and an attempt to create a magnetic village center complete with plaza, tower, and market pavilions. The changing topography and clustered and variable forms provided a playful and exciting urban design. The collaborative work being conducted at Serenbe provides both developers and students with valuable learning opportunities and useful products where ideas are generated, tested and actually realized.

Presented at a workshop in Palmetto, Georgia, May 2004.





**Rodney C. Hill** Professor, Director of University Connections, Institute for Applied Creativity

#### Department of Architecture

M.Arch., University of California-Berkeley, 1969; B.Arch., Texas Tech University, 1962.

Professor Hill's interests include social and behavioral factors in architecture, creativity and future studies. He is the faculty advisor for the American Institute of Architect Students, the American Creativity Association, and the Kappa Sigma Fraternity. rhill@archone.tamu.edu

## The Role of Creativity in the Future

The institutions of higher learning that do not adapt to change, create change and pro-



▲ A futuristic scene from the Isaac Asimov-inspired movie "I, Robot," set in 2035.

duce new knowledge will become lower tier universities as the 21st Century will generate more progress in technology, genetics and artificial intelligence than in all of recorded history. Creative thinking will be paramount to the survival of the human species. Intellectual property will be the coin of the realm. The world has gone from hunting and gathering to farming, farming to factory, from factory to knowledge work and now from knowledge work moving into knowledge creation. The creative

mind capital of a nation will determine a nation's future place in world power in every category. Technology is accelerating at an exponential rate and the nations without the creative mind capital to produce new knowledge will be left behind. The number of a nation's population engaged in knowledge creation will predict the future health of a country. Institutions of higher learning will have to reverse the existing pedagogy of rote memory to discovering and generating knowledge. No longer can society progress

Photo courtesy of Twentieth Century Fox

with instructing students on the present and past when the halflife of most degrees is three years. Creativity must become a fundamental element of education at every level. New curriculums must be developed to achieve optimum behavior in mind capital and knowledge creation.

Presented to the World Future Society, Washington, D.C., July 2004.



Professor, Faculty

Ombudsperson

Frances E. Downing

Department of Architecture

Milwaukee, 1989; M.Arch.,

1978; B.Arch., University of

Oregon-Eugene, 1976.

Ph.D., University of Wisconsin-

University of Oregon-Eugene,

Dr. Downing's interests include

architectural design, design

## Philosophy in the Flesh: Embodied Realism and Significant Form

An architecture of the body is emerging out of theories of biology, complexity, and systems by utilizing an evolving organism as its metaphor. Autopoiesis is the term used by biologists to describe the realm of existence for a living organism as it slides between the interchange of structure and information. Incoming information is filtered through the organism for its usefulness in the art of staying alive. Structural or organizational changes evolve as the organism adjusts to new information.

To remain a viable organism-to survive means that an entity must keep evolving without surrendering identity. Humans must maintain an embodied identity, often referred to as an organized self, while viably exchanging information with other entities and the environment.

The role of cognition in this equation is to allow humans the use of embodiment to explore abstract ideas through metaphor (such as "grasping and idea"). In doing so it allows the invention of an evolving language that refers to things "outside" our skin, like buildings.

My understanding of flesh is that it is another of our organs; in this case, however, it serves as a porous filter, delicate and complicated. It is our body boundary. Buildings have boundaries of foundation, wall or roof, parts of which could be thought of as the "skin."

In today's practice the various skins of a building have become more complicated and porous as the field of architecture extends itself into "systemic" conditions, within and without. Architecture is beginning the process of aligning itself with a new moral codeone that is inclusive of our biological reality, the embodiment of ideas, systemic evolution, and ecological necessities.

Presented to the American Society for Aesthetics, Santa Fe, New Mexico, July 2004.



 Autopoiesis is the term used by biologists to describe the realm of existence for a living organism as it slides between the interchange of structure and information.

## process, design theory, design pedagogy and epistemology. fdowning@archone.tamu.edu





## **Valerian Miranda**

Associate Professor, Associate Department Head, Coordinator of Master of Science in Architecture and Ph.D. in Architecture Programs Department of Architecture

Ph.D., Texas A & M University, 1988; M.Arch., Texas A&M University, 1984; B.Arch., University of Madras, India, 1977. Dr. Miranda's areas of interest are in architectural design, architectur-

VENUSTOS VISUALIZATION



Taeg Nishimoto Associate Professor, Coordinator of Bachelor's in Environmental Design Program Department of Architecture

M.Arch., Cornell University, 1985; B.Arch., Waseda University, Tokyo, Japan.

Professor Nishimoto specializes in architectural design. His particular interests include the manipulation of abstract space, the descriptive nature of programming, and the tectonic development of prototype.

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## **Descriptive Programming** - Fictive and Imaginary

This presentation is a part of a theoretical investigation into the idea of "descriptive programming" as a relevant understandal computing, imaging, design process and energy optimization. vallie@archone.tamu.edu

# Assessing the Influence of Diversity on Design

This paper reports on research that is directed toward diversity values and the way in which they inform architectural design. The hypothesis of this research is that students with study abroad experiences are more likely to become aware of these values and develop the ability to express them in design.

While much attention is focused on diversity in ethnicity, gender, age, economic status, etc., much less attention is paid to the effects of diversity of ideas and values and their impact on student designs. This project, supported by the Quality Enhancement Program, compares the differences in the experiences of two groups of students, one in College Station and another in Santa Chiara, Italy. The study also compares the differences in the design projects produced by both groups of students.

The assessment process will yield data from pre- and posttests, journal entries, and design charette boards for each student. The two study groups are being compared and specific conclusions will be formulated. Conclusions drawn from an analysis of this data will be used: 1. To add experience to study abroad programs and field trips that will further define diversity issues.

- To add to study abroad design briefs that will feature issues of diversity.
- To add to College Station programs greater opportunities for diversity experiences.
- 4. To add to College Station design briefs that feature more local issues of diversity.
- 5. To provide evaluation methods, such as the diversity indicators, for on-going studios in both locations.

CoAuthor: Tabb, P.

Presented at the Fourth Annual Assessment Conference, College Station, Texas, February 2004.



ing of the mechanism of architectural programming in contemporary culture. Based on Nelson Goodman's premise of "worldmaking," the aim of this hypothesis is to construct an operational mechanism of programming in parallel to the discussion of narrative discourse and its core operation of "make-believe." This departs from the prevalent ideas of programming in the Modernist paradigm; i.e., typology, diagram, and metaphor, which are all essentially spatial conditioning. The idea probes into the possibilities of how the conceptual premise of programming can be discussed in relationship to the making of and the reception of literary text, which engages the temporal dimension. This



approach also involves the issue of quality as well as quantity of information generated in the description of conceived situations.

In my previous presentations, the topic of "plot" and its manipulation as a programmatic device, and the idea of "voice" as structural analysis of the programmatic conceptions, were discussed. In this presentation, the focus will be made on the analysis of "fictive" and "imaginary" as two different operative modes of the conception of text, and their implications to the analogous operation in the architectural programming.

This will be the first presentation of this research.













Drawings by Dick Davison.





#### Richard R. Davison, Jr. Professor, Advising Coordinator for Bachelor of Environmental Design Program

Department of Architecture M.F.A., Washington University, 1979; B.F.A., University of California-Irvine, 1976; B.E.D., Texas A&M University, 1975.

Professor Davison's areas of interest include design communication, drawing, painting, and color theory.

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## **Drawing Book: An Update**

The current digital revolution's impact on a plethora of disciplines is an accepted fact of discourse. In the field of architecture and design, for a decade or more now, advances in both

computing and user sophistication is also accepted facts of discourse. What has apparently diminished reciprocally with these advances is the use of drawing, that is, manual drawing, in virtually every aspect of these fields. As an instructor of drawing in the College of Architecture at TAMU for more than two decades. I have witnessed this decline in both pedagogy and practice; drawing is simply being replaced by digital imaging. Drawing is not being supplemented by digital media, or added to the available range of media, it is being replaced. This is defendable in several respects and could be left at that, except that there are qualities associated with drawing that do not translate to digital media. This issue and other issues are the topics of a book I have been working on for about six years. The book is primarily visual and is intended to be a celebration of the manually created image in an age of digital images. To date, it contains over 150 pages and several hundred drawings.



## Nan Standish Blake Senior Lecturer

Department of Architecture M.F.A., The University of Texas-Austin, 1973; B.F.A., The University of Texas-Austin, 1969 Professor Blake has taught interior design, photography, design fundamentals, drawing, and design communication. She practices interior design and her photography has been exhibited extensively.

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## **Growing Up**

The selection of four of my photographs of children and

adults by Austin Art in Public Places for the Health and Human Services Administration Complex rekindled an interest in photographing people. After focusing on natural forms for the past ten years, I realized I had also amassed a large number of photographs that dealt with people of all ages, sizes, races and ethnic backgrounds from many areas of the world. After reviewing them carefully, a progression of age and development began to emerge; a pattern of growth from days old to oldest age. This work is now emerging in book form, and the ages are divided into childhood, adolescence, parenthood and senior years. Essays by two prominent psychologists will accompany the photos.

Presented to Austin Art in Public Places for the Health and Human Services, Austin, Texas, July 2003.









Yauger R. Williams Assistant Professor

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Professor Williams' areas of interest include web, 3D and modern art with a focus on the art historical contextualization of new media. His artwork is exhibited in galleries and museums and his designs have been used for Yahoo and other industry clients. He teaches multi-media communication and expression.

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## **Digital Art**

A presentation of aesthetically based digital forms. Using a simple matrix structure, basic methods of marking are explored through computer generated drawings. We will see the translation of a digitally based form as its own content. Core essences of these virtual images are compared with traditional drawings and paintings. In analyzing digital materiality we will discuss beauty and the quest for a sublime transcendence through the technology.

Exhibited at Traver Gallery and 911 Media Arts, Seattle, Washington, March 2004.









## Ergun Akleman Associate Professor

Department of Architecture

Ph.D., Georgia Institute of Technology, 1992; M.S., Georgia Institute of Technology, 1986; B.S., Istanbul Technical University, 1981.

Dr. Akleman participates in research studies on shape modeling, geometric data structures, non-photorealistic rendering, volume modeling and rendering. ergun@viz.tamu.edu

## Modeling Expressive 3D Caricatures

The concepts of abstraction, simplification and exaggeration, which are very common in traditional art and caricature, can directly be applied to the 3D modeling process. Therefore, the development of methods to teach these concepts is essential for 3D computer art and design education. In this work, we present an educational method to teach students these artistic concepts by modeling expressive 3D caricatures. This method has been successfully used in a geometric modeling course that combines artistic and scientific aspects of 3D modeling. Using the method, all the students, regardless of their artistic abilities, can create convincing 3D caricatures.

CoAuthor: Reisch, J.

Presented at ACM SIGGRAPH 2004, Los Angeles, California, August 2004.



Angelina Jolie by Angelique Ford



William Defoe by Frank Chance

 Laurence Fishburne by Kevin Singleton



## J. Thomas Regan Professor, Dean Department of Architecture

Graduate Diploma, The Architectural Association Graduate School of Architecture, London, 1973; B. Arch., Auburn University, 1964

Design education, visual languages and design methodology are the major areas of Dean Regan's research. He has served as dean of four major universities, and he has served as national president of the Association of Collegiate Schools of Architecture. reganjt@archone.tamu.edu

## **Healthy Cities in China**

With one quarter of the world's population and the fastest growing economy in the history of the world, China is rapidly changing from an agrarian to an urban nation, from an agricultural based economy to a manufacturing and industrial based economy.

The development of a larger infrastructure and industrial capacity to meet the needs of the people and industry and the demands of world markets has

also created unprecedented condition and challenges for China. This economic growth has resulted in challenges of biodiversity, ecosystems, human health, air quality, global warming, and pollution.

A country as large and as diverse as China faces challenges whose magnitudes and scope are bigger than any other country in the world. Because we live in an interdependent world, China's problems become challenges for the rest of us. And drawing on the experience from other industrialized nations. China can avoid the mistakes they made.

The four major areas that require serious attention and forward-thinking public policy are:

adequate food for the population; adequate water supply; an adequate infrastructure, especially energy and transportation; and a healthy and productive population.

These four areas are discussed within the contexts of balanced economic growth, trying to achieve ZPG, the tidal wave of migration from rural to urban areas, and most importantly, the creation of healthy habitable communities.

Presented at the 2003 International Symposium on Healthy Community Initiative in China, Tsinghua University, Beijing, China, May 2004.



#### Malcolm Quantrill Distinguished Professor of Architecture

Department of Architecture

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## The Architect as Master of Two-Part Inventions

My thesis is: Although the creation of architecture requires "single-mindedness of purpose," its invention necessarily draws upon two complementary "parts" or "aspects of knowledge:" the one concerning the TECHNICAL or TECHNIQUE (1) and the other the POETIC.

To structure the ABC of architecture's "Two-Part Inventions," let's begin with "A," which in architecture should stand for "ART." We are inclined to speak

loosely of the Art of Architecture or Baukunst,

about (2). So

as though. having only a cursory view of its presence we pretend to know what it's all

our observa- Bach tions about

architecture tend to thrive on over-familiarity with the object and little or no knowledge of the subject.

In a word, we want to possess the prize in a game for which we lack almost total knowledge of the rules. Indeed, we should understand that such rules cannot be learned in the way one learns those of mathematics, because the Rules of Baukunst are playable only when one is in possession of deep and often discomforting knowledge.

We might proceed to "B." This means citing its origins, as in "B" for Bach, because Johann Sebastian Bach invented Two-Part Invention.(3) And Bach, as in "brook," babbled his way through 32 Inventions, putting sparkle into the spring of our modern musical cadence. "B" also stands for "The Beatles," who drew on Bach's Two-Part Inventions as they brooked our



cal diggings. And what do The Beatles have to do with matters of construction? The answer is everything. For they spawned the arches of

cultural land-

scapes and

archaeologi-

The Beatles

Beatle-Mania, against which our delusory notion of producing a popular form of modern architecture is but an impoverished and low-impact cult.(4)

The success of Beatle-Musik totally depends upon the bi-partite nature of its invention. It's not simply a "sound of the 60s," but a total integration of the "now" within the music-culture of Bach's Barogue contribution. So it provides an admirable demonstration of the use of technique in the historical process, which is more easily learned, and the complementary part of the invention which refers to my concept of "Building a Vision Beyond Seeing." (5) That is, after all, Bach's essential contribution.

Marco Frascari has subdivided the Two-Part Invention by creating two categories in the first part, under "A" and "B," then defining the second part as

"C."(6) In Frascari's case, the C stands for Cantor (my cultural accentuation of his "troubadour"), who sings the prevailing melody, intertwining it within the fabric and texture of technical accompaniment. As with any form of song - lieder, fado and, of course, balad - knowing the rules is not enough. In any language, the object of the game lies beyond regulation, and is discovered and explored within the cultivated terrain of fluency.

NOTES:

- 1. William Barrett, THE ILLUSION OF TECHNIQUE, London, 1978
- 2. Peter McCleary: His famous remark, originally made at a Seminar in the University of Pennsylvania, April 1985. "This is where we find out what you're all about!" (Scottish-English pronunciation being "oot" and "aboot."
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- Presented at Los Instituto Tecnologico Estudios Superiores de Monterrey, Queretoro Campus, Mexico, May 2003.





Julian H. Kang Assistant Professor Department of Construction Science

Ph.D., Texas A&M University, 2001; M.S., Yonsei University, 1988; B.S., Yonsei University, 1986.

Dr. Kang's interests include 4D visualization for construction planning and computer integrated project information management. juliankang@tamu.edu

## **XML-Based Vector Graphics: Application for** Web-Based Design **Automation**

Most retaining walls and box culverts built for arterial road construction are simple, and the design process of these structures is often repetitive and labor-intensive because they are so similar in structural configuration. Although some integrated design automation systems developed for retaining walls and box culverts have expedited the design process of these structures, the process of collecting and distributing the resultant engineering documents has not been fully integrated with the computer applications. We have been developing a Web-based design automation system to manage the resultant documents as well as to speed up the repetitive design process.

Manipulation of engineering drawings in the Web page is one of the critical functions needed for Web-based design automation. eXtensible Markup Language (XML) and XMLbased vector graphics are expected to facilitate the representation of engineering drawings in the Web page. In this paper, we present how we used XML and Scalable Vector Graphics (SVG) to compose engineering drawings and represent them in the Web page. XML Data Island we designed to define drawing components turned out effective in manipulating the engineering drawings in the Web page.

CoAuthors: Lho, B., Kim, J., Kim, Y.

Presented at the Xth International Conference on Computing in Civil and Building Engineering, Weimar, Germany, 2003.

**Mohammed E. Hague** Associate Professor, holder of the Cecil O. Windsor Jr. Endowed Professorship in **Construction Science** Department of Construction Science

Ph.D., New Jersey Institute of Technology, 1995; M.S.C.E., New Jersey Institute of Technology, 1986; B.S.C.E., Bangladesh University of Engineering & Technology, 1982.

Dr. Haque's areas of interest are in reinforced/pre-stressed concrete design, fracture mechanics of engineering materials, computer applications in structural analysis and design, artificial neural network applications and knowledgebased expert system design.

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## **A Computer Simulation Model for Emergency Building Evacuation with** ARENA

During an emergency, such as fire, allowing occupants to safely exit from the building requires clear and established paths of escape. Designing these means of escape egress demands more than just calculating pedestrians flow rates and occupant loads. This paper describes a computer simulation model for emergency fire evacuation of an educational building with Arena. The large floor plan of the College of Architecture Building-A was divided into various subsystems in order to model within the technical limitation for the academic version of the Arena software that was used in this research. The simulation model helped in finding the congestion/queuing in corridor spaces, the maximum time taken by people to evacuate if a fire breakout, and the exit stairs' duration of use during evacuation.

#### CoAuthor: Balasubramanian, S.

Presented at the First International Conference on Knowledge Engineering & Decision Support, pp. 95-100, Porto, Portugal, July 19-23, 2004.

dynamics and containing a control system. We hypothesize that by embedding human performance knowledge into the processing of arm movements, it will lead to better recognition performance. We present details for the design of our filter, our evaluation of the filter from both expert-user and multiple-user pilot studies. Our results show that the filter has a positive impact on the recognition performance for arm gestures.

#### CoAuthor: Schmidt. G.

Presented at the Fifth International Workshop on Gesture and Sign Language Based Human-Computer Interaction, Genoa, Italy, April 2003.



**Donald H. House** Professor, Coordinator for Master of Science in Visualization Sciences Program

Department of Architecture

Ph.D., University of Massachusetts, 1984; M.S., Rensselaer Polytechnic Institute, 1978; B.S., Union College, 1969.

Professor House teaches graduate programs in Visualization Sciences. His research interests are in all aspects of the field of computer graphics, from 3D modeling/rendering to 2D image manipulation, with focus on physically based techniques for modeling and simulation.

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## Model-Based Motion **Filtering for Improving Arm Gesture Recognition** Performance

We describe a model-based motion filtering process that, when applied to human arm motion data, leads to improved arm gesture recognition. By arm gestures, we mean movements of the arm (and positional placement of the hand) that may or



may not have any meaningful intent. Arm movements or gestures can be viewed as responses to muscle actuations that are auided by responses of the nervous system. Our method makes strides towards capturing this underlying knowledge of human performance by integrating a model for the arm based on





## Vinod Srinivasan Assistant Professor

Department of Architecture Ph.D., Architecture, Texas A&M University, 2004; M.S., Aerospace Engineering, Texas A&M University, 1998; B. Tech., Aerospace Engineering, Indian Institute of Technology, 1996.

Dr. Srinivasan is interested in architectural visualization, 3-D modeling, and physically based modeling.

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## **Column Modeling**

Modeling shapes with a large number of holes and handles while requiring minimal human interaction is a difficult problem in computer graphics. Such shapes are common in classical architecture in many parts of the world. These forms are dominated by columns, beams and arches. This type of construction in architecture is not restricted to classical architectural styles but is also prevalent in modern architectural designs.

In this work we have developed a new tool which allows users to create such complex and architecturally interesting models with extreme ease. The tool extends the capabilities of our existing topological mesh modeler and is designed to be interactive and easy to use.

Our tool is geared towards use by artists and architects. It can be used to create interesting architectural forms, either to create real and virtual environments or

represent existing architectural forms in a stylized manner. It can also be used to create various other artistic shapes that would be difficult to generate using traditional modeling methods.

CoAuthors: Mandal, E., Srinivasan, V., Akleman, E.

Presented at the Visual Proceedings of ACM SIG-GRAPH 2004, Los Angeles, California, August 2004.



#### Guillermo Vasquez de Velasco Professor, Coordinator of Master of Architecture Program

Department of Architecture

Ph.D., Delft University of Technology, The Netherlands, 1991; M.Arch., University of Toronto, Canada, 1982; Professional Degree, Universidad Ricardo Palma, 1980; B.A., Universidad Ricardo Palma, 1980;

Dr. Vasquez de Velasco specializes in the field of computer-aided architectural design, virtual architecture and computer-mediated distance education.

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Changing the Culture of Design Studio Reviews: The Use of Large Format Interactive Plasma Screens in Design Studio Reviews

This paper elaborates on the use of electronic pin-ups in realtime local reviews making use of larger format interactive plasma screens.

The paper briefly explains the technical aspects of an actual implementation in the College of Architecture at Texas A&M University. The main focus of the paper is placed on the use of a 61interactive plasma screen in a graduate design studio during the second semester of 2003 and the benefits that such an implementation has reported.

The narrative explains how the use of an interactive plasma



Interactive plasma screens facilitate the critique of student work.

screen for informal as well as formal reviews is not only saving printing resources, but it is also having a very positive impact on how we conduct design reviews.

Presented at ECAADE '04, Copehagen, Denmark, October 2004.





#### Jeff S. Haberl Professor, Associate Director of Energy Systems Laboratory Department of Architecture

Ph.D., University of Colorado-Boulder, 1986; M.S., University of Colorado, 1981; B.S., University of Colorado, 1978.

Dr. Haberl's areas of interest are in HVAC design, energy conservation savings measurement techniques, metering and monitoring equipment, calibrated building energy simulations, building energy data visualization, on-line diagnostics for HVAC equipment, solar energy heating and cooling systems, solar energy measurements and emissions calculations.

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## Demonstration of the use of Multimedia Electronic Information Enhancements for a Chapter Handbook CD-ROM Overview (1017-RP)

A set of enhancements to the ASHRAE Handbook (ASHRAE) are presented to demonstrate the effectiveness of multimedia and advanced presentation techniques such as 3D computer graphics, visualization and animation techniques. These results can also serve as a model and guide for the broader use of these techniques in other ASHRAE publications.

CoAuthors: Akleman, E., Haberl, J., Parke, F., Skaria, S., Halstead, J., and Andrews, M.

ASHRAE Transactions -Research, Vol. 109, Part 1, pp. 143-150, Chicago, Illinois. February 2003.



#### Frederic I. Parke Professor, Co-Director for Visualization Studies Department of Architecture

Ph.D., Computer Science, University of Utah, 1974; M.S., Computer Science, University of Utah, 1972; B.S., Physics, University of Utah, 1965.

Dr. Parke has interests in many aspects of computer based systems, including visualization, computer graphics, computer animation and immersive visualization.

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## Facial Animation: History and Applications

A survey of the development of computer facial animation over the past 35 years, a look ahead to the future of computer facial animation, and an introduction to the major uses of this technology.

Presented at the SIGGRAPH Conference, Los Angeles, California, August 2004.



#### **Robert E. Johnson** Professor, Thomas Bullock Endowed Chair in Leadership and Innovation, Director CRS Center

Department of Architecture

D.Arch., University of Michigan, 1977; M.Arch., Syracuse University, 1974; B.Arch., Syracuse University, 1973; B.A., Colgate University, 1968. Dr. Johnson specializes in the

practice and management of

design, and design studio as well as construction and facility management with a specific focus on how information and communication technologies are changing those practices.

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## Digital Innovation and Organizational Change in Design Practice

The real estate and construction industry is among the largest industries in the world. It also is one of the most fragmented industries, with few economies of scale and historically low productivity. Recent technological advances in the use of information and communication technology have the



potential for dramatically improving construction productivity. But substantial organizational barriers exist that inhibit the effective adoption of these technologies.

This research project (in progress) examines the practices of selected, innovative firms in order to develop an in-depth understanding of the factors that have influenced the effective adoption of information and communications technology in the design and construction industry, and, potentially, provide examples that may provide prototype models for an alternative, future organization of the AEC industry.

CoAuthor: Laepple, E.

Presented at the ACADIA Conference, Muncie, Indiana, October 2003.





Semen Deviren Visiting Assistant Professor Department of Architecture

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## THE INSIDE STORY: Courtyard Experiences in an Eastern Mediterranean City: Antakya

The courtyard houses are distinguished embodiments not only with their urban but also with their social role in shaping the complex identity of the Mediterranean cities. The courtyard can be seen as the primary unit of the city, the larger cultural context, which is physically and socially produced.

As the core of the house, the courtyard constitutes a contact ground for self identity and culture; a sophisticated spatial construct with all levels of interaction between privacy and publicity. The existence of courtyards with their place-bound identity is becoming more important in contemporary Mediterranean cities which are in need of contextual consolidation and transformative processes for new developments that could be done without losing





the memory. The role of the courtyards are essential at that point because of their capacity to embody this dual character of the memory, the private and the public, united and assimilated in their built form.

The courtyard houses of the city of Antakya, which are the leading actors in this study, are expressing the unique values of locality in a city center that is still home to a multicultural community, their houses of worship, public and private institutions. Founded by Seleucids in 300 B.C., the city of Antakya was a vital metropolis of the Roman Empire, the third in the rank after Rome and Alexandria. After that period, the city went under the control of Byzantine, Arab, Seljuk, Mamluk and Ottoman civilizations which caused overlapping of different urban layouts and formed a meeting place of diverse cultures. Through history the city has been destroyed by several big earthquakes that made changes in topographic conditions and serious damages erasing the traces of the past urban fabric. However, the courtyard houses preserved their presence



through transformation of building forms and superimposition of diverse urban layers which are enriched by cultural values. More than the houses the courtyards made the way of living.

Although the remaining contexts of courtyard houses are still a physical part of the city of Antakya, the contemporary production of space in the city is now far from its social content. The values of courtyard spaces, which seem to be ignored by dominant contemporary culture, need to be rediscovered to sustain the living quality of the place.

This study is an attempt to explore a more comprehensive understanding of the role of courtyards and the deep expression of place concept revealed by the experience of the built forms in that particular eastern Mediterranean city.

Presented at The Mediterranean Medina International Seminar, Pescara, Italy, June 2004.





## Susan D. Rodiek Senior Lecturer

Department of Architecture M.Arch., Texas A&M University, 1998; Cert., Texas A&M University (Health Systems and Design), 1998; B.A., Western New Mexico University, 1996.

Professor Rodiek is interested in architectural design, communication and practice, emphasizing human-behavior research, healthcare, and environments for the aging. She is a registered architect with NCARB certification.

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## Enhancing Quality of Life for Older Adults: Improving Outdoor Access at Assisted Living Facilities

Although spending time outdoors is known to have potentially therapeutic benefits for older adults, many long-term care facilities may not adequately support resident needs for outdoor access. Two studies were conducted at assisted living facilities to explore resident preferences for outdoor activities and environmental features. Fourteen facilities were selected randomly from all facilities having more than 50 residents in a 12-county region of southeast Texas, which included the city of Houston.

Using focus groups and written surveys, the first study found high levels of interest in outdoor access, with preference for specific activities (such as walking and sitting/watching), as well as for environmental elements such as fresh air, greenery, and comfort features. Residents indicated they typically felt better physically and psychologically after being outdoors, but that existing facility environments presented several barriers to outdoor access.

The second study generated photographic comparisons based on the findings of the first study. to further test some of the main constructs that emerged which fell into the general categories of 1) relief from the indoor environment, 2) indoor-outdoor connections, and 3) activity as a factor in outdoor usage. The photo survey assessed each of these theoretical categories with two "patterns" showing how they might be actualized in the built environment (four examples of each pattern yielded 24 photo comparisons). To isolate the variables of interest, digital techniques were used to manipulate a single element in each pair — otherwise both photos were identical. Significant levels of preference



were found for the hypothetically preferred images in all 24 pairs.

The findings of both studies will be compared, and discussed in terms of the potential for specific design application.

Presented to the Environmental Design Research Association, Albuquerque, New Mexico, June 2004



## Byoung-Suk Kweon Assistant Professor

Department of Landscape Architecture and Urban Planning

Ph.D., University of Illinois, 1999; M.L.A., Cornell University, 1992; B.S.L.A., The City University of New York, 1989; B.S., University of Seoul, 1985.

Dr. Kweon's research interests include the physical, social and psychological effects of urban green spaces, and social and psychological aspects of ecological restoration.

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## Urban Design for the Walking Child: Pedestrian Design and Public Health

Mom knows what's best for her child, especially where walking safety is concerned. Even though parents know that walking makes their children healthy, they sense too much danger in the street. In this project, parents of young children in Bryan/College Station, Texas, provide researchers with insights into how urban street design can discourage healthy behavior. These insights, gathered during focus group discussions, were used to build six variations of virtual pedestrian worlds at Texas Transportation Institute. Variations in sidewalk location, buffer width and presence of trees were tested in the simulator under real-time peak-hour traffic conditions. Each of the twenty-seven parent participants in the simulator experiment "walked" through each world, answering multiple choice questions regarding their willingness to walk and their perception of safety, as well as their willing-



ness to let their children walk and their perception of safety for their children.

The results from the original parent focus group were confirmed in the simulation experiment. Parent's perception of overall safety is significantly different among the six pedestrian environments (F(5, 25)=27.26, p<.0001). Walkability and perceived safety is significantly higher in pedestrian environments with a landscape buffer between the sidewalk and the traffic lane than with the sidewalk adjacent to the traffic lane. Our conclusion is that certain features and combination of features in the design of pedestrian landscapes may encourage parents to let their children walk to school.

#### CoAuthor: Naderi, J.

Presented at the American Public Health Association Annual Conference, Washington, D.C., January 2004



 Model of Children's Hospital at Covenant Medical Center in Lubbock, Texas designed as Master of Architecture Final Study by Fang Yang, a student at Beijing Polytechnic University, in cooperation with NBBJ Architects in Seattle, Washington.



#### George J. Mann Ronald L. Skaggs Endowed Professor of Health Facilities Design Department of Architecture

M.S.Arch., Columbia University, 1962, B.Arch., Columbia University, 1961.

Professor Mann has 43 years experience in the field of architecture for health through his consulting, teaching and research. He has established a national and international reputation as a leader in health facilities design.

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## Megatrends in Health Facility Design

Professor Mann will present Recent Architecture for Health projects undertaken by his graduate and undergraduate studios at Texas A&M University. He will also relate these projects to "Megatrends Affecting Health Facilities Design."

Presented at the 2003 International Symposium on Healthy Community Initiative in China, Beijing, China, May 2004.







## **Kirk Hamilton** Associate Professor Department of Architecture

M.S., Organization Development, Pepperdine University; B.Arch., University of Texas.

FA

Mr. Kirk is interested in evidencebased design for healthcare and the relationship of facility design to organizational performance.

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## Evidence-Based Design for Healthcare

The presentation defines evidence-based practice and healing environments in the design of complex healthcare environments. Four levels of practice are described, each with an increasing level of rigor. Several examples are given of projects that feature research-based decisionmaking.

The author concludes that practitioners need to be increasingly rigorous with their interpretation of credible research findings, and ultimately have a moral obligation for the safety of patients as strict as an aircraft designer's obligation for the safety of their ultimate passenger. The relevant implications of the evidence-based model to other practice types is the analogous decision-making required in education, criminal justice, and other demanding or complicated building types.

Presented at the AIA Board Committee on Knowledge Management Summit, Austin, Texas, April 2004.



Architects should be increasingly rigorous with their interpretation of credible research findings, and ultimately have a moral obligation for the safety of patients as strict as an aircraft designer's obligation for the safety of their ultimate passenger.







#### **Chanam Lee** *Assistant Professor* Department of Landscape Architecture and Urban Planning Ph.D., University of Washington, 2004; M.L.A., Texas A&M

2004; M.L.A., Texas A&M University, 1995; B.A., Jyungpook National University, 1996.

Dr. Lee specializes in urban design and physical planning, urban form and non-motorized transportation, physical activity and public health.

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## Built Environments for Transportation Versus Recreation Walking: Similiarities and Differences

Walking is emerging as an important topic in the fields of transportation, urban planning, and public health, because it is an environmentally friendly and healthy means of travel and exercise. Also, the forms and characteristics of the built environment are known determinants of walking. The urban and transportation planning literature shows land use and transportation infrastructure conditions to be associated with walking trips. Literature from the public health field finds access to recreational facilities, aesthetics, and safety of environments significant for overall or recreational walking. Yet knowledge is lacking of the similarities and differences in specific environmental conditions associated with particular purposes of walking.



## Mardelle M. Shepley

William M. Peña Endowed Professor for Information Management, Associate Dean for Student Services, Interim Director of the Center for Health Systems and Design

Department of Architecture D.Arch., University of Michigan, 1981; M.A., University of Michigan, 1979; M.Arch., Columbia University, 1974; B.A., Columbia University, 1971.

Dr. Shepley specializes in architectural design, social architecture, health care facility design, applied research, and environmental psychology. She is also a faculty advisor for the Texas A&M Dance Arts Society.

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## Evidence-based design for infants and staff in the neonatal intensive care unit

The sensory and perceptual environment of the neonatal intensive care environment has a significant impact on staff and infants. To create appropriate spaces designers must understand relevant theories of environmental psychology such as Environmental Press Theory, Prospect and Refuge Theory and the concepts of control, choice, territoriality and privacy. Developmental issues for infants and stress issues for staff will be discussed in this context. Recent research on light, noise, music and the visual and spatial environment will be summarized and the future of evidence-based design explored.

Presented in Healthcare Design '04, Journal of Perinatology,





## Sherry I. Bame Associate Professor Department of Landscape Architecture and Urban Planning

Ph.D., University of Michigan, 1985; M.S., Boston University, 1972; B.S.N., University of Michigan, 1969.

Dr. Bame has special interests in health systems planning and policy, cost and quality of healthcare, survey research methods, and environmental health. sbame@tamu.edu

## Community Needs Assessment: Profile of unmet needs and at-risk populations using 2-1-1 data

Information and Referral (I&R) 2-1-1 programs provide valuable services to communities by connecting those in need with appropriate community resources. The non-emergency 2-1-1 systems are expanding rapidly throughout the U.S. and will become as pervasive as 9-1-1 emergency systems. This program also may be considered a "gold mine" of data to determine unmet needs and access barriers in the community.

Traditionally, community needs assessments that provide this scope of information are costly, fragmented, and time-limited. In contrast, evaluating the existing I&R 2-1-1 database is a lowcost, all-inclusive analysis of all those seeking I&R help for unmet needs over time.

Agencies throughout a community can benefit by these findings to: 1) determine high risk groups for outreach services. 2) coordinate services to address complex clusters of needs, and 3) support policies to reduce access barriers. The purpose of this presentation is to discuss the findings from analysis of 2-1-1 data in the Brazos Valley 7county region, 2002. These findings serve as a case study to illustrate the potential of exploring this "gold mine" of data applicable to other 2-1-1 programs nationwide.

Presented at the Alliance for Information & Referral Systems and Aging Services International Conference, Norfolk, Virginia, May 2004.



## Donald A. Sweeney Associate Professor Department of Landscape Architecture and Urban Planning D.E.D., Texas A&M University, 1972; M.Arch., Texas A&M

University, 1968; B.A., Texas A&M University, 1967.

Dr. Sweeney's professional interests involve all aspects of health systems policy, planning management. His current interest includes participation in the international healthier communities movement. dsweeney@archone.tamu.edu

Healthy Communities in the West: History and Concepts

The rapid urbanization in the 1800 and 1900s in the West was fueled by many factors including the demands and promises of the industrial revolution. Towns quickly became cities with large populations at urban densities never experienced before. Massive new, unanticipated problems plaqued the new urbanites and public officials charged with somehow managing them. For many, the promises of better lives in cities went unfulfilled. Many of the solutions cities developed for the difficult challenges they faced were effective, but thorny residual problems from that era persist today along with whole sets of new ones.

But something new is stirring. Something is different about the way many cities and communi-



ties are beginning to approach their problems: a growing awareness that stubborn issues. like violence, homelessness, drug abuse, race relations, inequality, weakening family structures, poverty, decaying infrastructure, sparse participation in civic affairs, inadequate access to health and social services, and many more must be traced back to root causes and attacked there. The growing number of movements which have spontaneously developed across the globe which take a broader, more ecological view seem to share many common characteristics. Whether sustainable communities, livable cities, safe cities, smart cities, green cities, clean cities or whole communities, the focus is on an approach to community building which is systemic, long-term, and highly participatory. The phrase "healthy communities" is used in this piece for all broad-based, community-wide efforts to improve the quality of life. Implicit in all of these movements and explicit in the several thousand healthy communities initiatives around the world is a broad definition of health, a new paradigm for planning, and a systemic perspective.

Presented at the 2003 International Symposium on Healthy Community Initiative in China, Beijing, China, May 2004.



The following invited and/or refereed presentations and papers were delivered or published during the 2003-04 academic year by faculty of College of Architecture faculty at Texas A&M University. Green text denotes presentations scheduled for the 2003 faculty research symposium.

#### Abrams, Robin F.

- Abrams, Robin. Byker Revisited, Built Environment, November 2003.
- Abrams, Robin. Tale of Two Gardens, Landscape Architecture Magazine, August 2003.
- Abrams, Robin. Lucy's Feat: Frederick Law Olmsted's Through Texas, Planning Forum at the University of TX at Austin, Austin, Texas, April 2004.

## Akleman, Ergun

- Akleman, Ergun, Ozener, O., Srinivasan, V. Rind Modeling for Architectural Design, ECAADE 04: Computer Aided Architectural Design for Europe 2004 Conference, Denmark, September 2004.
- Akleman, Ergun and Reisch, J. Modeling Expressive 3D Caricatures, ACM SIGGRAPH 2004, Los Angeles, CA, August 2004.
- Akleman, Ergun. Mandal, E., and Srinivasan, V. Column Modeling, Visual Proceedings of ACM SIGGRAPH 2004, Los Angeles, CA, August 2004.
- Akleman, Ergun. MultiCam Smooth & Fractal Polyheda, Bridges 2004, Mathematical Connections in Art, Music and Science, Winfield, KS, July 2004
- Akleman, Ergun and Srinivasan, V. Connected and Manifold Sierpinsky Polyhedra, Solid Modeling International 2004 & Solid Modeling 2004, Genoa, Italy, June 2004.

- Akleman, Ergun and Srinivasan, V. Connected and Manifold Sierpinsky Polyhedra, Solid Modeling International 2004 & Solid Modeling 2004, Genoa, Italy, June 2004.
- Akleman, Ergun, Srinivasan, V., Melek, Z., and Edmundson, P. Semi Regular Pentagonal Subdivision, Shape Modeling International 2004 & Solid Modeling 2004, Genoa, Italy, June 2004.
- Akleman, Ergun, Topological Construction of 2-Manifold Meshes from Arbitrary Polygonal Data, January 2004.
- Akleman, Ergun, Chen J., and Srinivasan, V. A Minimal and Complete Set of Operators for the Development of Robust Manifold Mesh Molders, Journal of Graphical Models, Vol. 65, Issue 5 pp. 286-304, September 2003.
- Akleman, Ergun, Mandal, E., and Srinivasan, V. Wire Modeling, Visual Proceedings of ACM SIGGRAPH 2003, San Diego, CA, July 2003.
- Akleman, Ergun, Chen J., and Srinivasan V. Interactive Rind Modeling, Seoul, Korea, May 2003.
- Akleman, Ergun. Progressive Refinement with Topological Simplification, January 2003.
- Akleman, Ergun. Tiled Textures, January 2003.
- Akleman, Ergun. Topologically Robust Mesh Modeling: Concepts, Data Structures and Operations, January 2003.



## Alexander, John H.

- Alexander, John. Federico Borromeo al Collegio di Pavia: Studente a Patrono, Conference proceedings of Dies Academicus, Milan, Italy, 2004.
- Alexander, John. Shaping Sacred Space in the Sixteenth Century: Design Criteria for the Collegeio Borromeo's Chapel, Journal of the Society of Architectural Historians, June 2004.
- Alexander, John. Public Architecture and Its Representation in Early Modern Europe, Fifty-Sixth Annual Meeting of the Society of Architectural Historians, April 2003.

Alexander, John. Two Universities and a College: Educational Buildings under Pious IV, Fifty-Sixth Annual Meeting of the Society of Architectural Historians, Denver, CO, April 2003.

## Bame, Sherry I.

Bame, Sherry. Community Needs Assessment: Profile of Unmet Needs and At-Risk Populations Using 2-1-1 Data, Alliance for Information & Referral Systems and Aging Services International Conference, Norfolk, VA, May 2004.

- Bame Sherry. Community Needs Assessment: United Way's COMPASS Survey of Health and Social Service Needs and Programs in the Brazos Valley, College Station, TX: Urban Planning Program & Bush School of Government, Texas A&M University, College Station, TX, 2003.
- Bame, Sherry. Demographic Profile of Unmet Needs in the Brazos Valley: United Way First Call for Help, 2001-2002, College Station, TX: Urban Planning Program & Bush School of Government, Texas A&M University, College Station, TX, 2003.
- Bame, Sherry. Environmental Needs Assessment of the Brazos Valley: United Way Community & Program Assessment (COMPASS), College Station, TX: Urban Planning Program & Bush School of Government, Texas A&M University, College Station, TX, 2003.
- Bame, Sherry. Aesthetic and Physical Features Associated with Quality of Walking Environment, Robert Wood Johnson Conference.
- Bame, Sherry. Aging TX Well. TAES & TEES and Public Policy Research Institute (PPRI), College Station, TX.

#### Beltran, Liliana

- Beltran, Liliana, Atre, U., Chongcharoensuk, C., and Martins, B. *Evaluating the Daylight Performance of Three Museum Galleries*, Proceedings of the Solar 2004, 29th National Passive Solar Energy Conference, Portland, OR, July 11-14 2004.
- Beltran, Liliana. The Tales of Three Museums, Proceedings of the EuroSun 2004, ISES Europe Solar Conference, Freiburg, Germany, June 24-26, 2004.
- Beltran, Liliana. Daylighting Design of the Kuwait National Museum, School of Architecture, Universidad Autonoma Metropolitana, Azcapotzalco, Mexico, December 16, 2003.

#### Blake, Nan Standish

- Blake, Nan. Growing Up, Austin Art in Public Places for the Health and Human Services Administration Complex, Austin, TX, July 2003
- Blake, Nan. Dwellings, Juried Exhibit, IDEA Austin Artists Coalition, Austin, TX, January 2003

#### Brody, Samuel D.

Brody, Samuel. Watershed Planning and Management, Department of Engineering Sustainability Seminar Series, College Station, TX, November 2003.

# Keynote

Continued from page 3

ing cost-effective technologies for designing, operating and maintaining indoor environments. His program focuses on sustainable building solutions that maximize occupant's health and satisfaction through improved acoustics, thermal comfort, and lighting use.

The National Research Council is the Canadian government's premier organization for research and development. NRC-IRC develops and maintains the core competencies and the knowledge base critical to the needs of the Canadian construction industry, supports the development, commercialization and implementation of leadingedge technologies, and fosters the provision of safe and sustainable built-environments through the development of codes and standards.

The NRC-IRC includes five key program areas: Indoor Environment, Building Envelope and Structure, Urban Infrastructure Rehabilitation, Fire Risk Management, and Codes and Evaluation. The center is also headquarters for Canada's National Guide for Municipal Infrastructure and the Canadian Center for Housing Technologies.

Atif earned a Ph.D. from Texas A&M University in 1992, a Master's Degree from UCLA in 1987 and a Professional Bachelor Degree in Architecture in 1984. He served on the A&M faculty from 1990 until 1992. As a research officer at NRC, he managed more than 20 research projects which have made significant contributions to the improvement of indoor environments while maximizing operations and maintenance costs related to energy and lighting.

Since May 2004, Atif has been the chairman of the IRC's Cross-Program Research Committee, which manages the Sustainable Built Environment portfolio. He is also on the executive committee of Canada's Panel for Energy Research and Development — Building and Communities. The committee develops and implements strategic plans for a \$20 million federal research program for energy conservation and sustainable buildings and communities.

Atif currently serves on a federal committee charged with climate change mitigation. Between 1996 and 1998, he led the Canadian team in Vancouver's Green Building Challenge and he served on the International Framework Committee that developed green building performance indicators.

Atif also serves as chairman of the International Energy Agency's Executive Committee for Buildings and Community Systems (ECBCS). The committee oversees collaborative research between 23 countries for energy conservation and sustainability in buildings and communities. It also manages the dissemination of an implementing agreement which includes the Air Infiltration and Ventilation Center in Brussels, Belgium.

Since its inception, the ECBCS has completed 40 research projects investigating local energy planning for communities, environmental aspects of buildings, moisture and heat in the envelope, ventilation, HVAC, building envelope, and fuel cell application in housing.

Throughout his career, Atif has worked with Canadian partners to champion research and development on healthy buildings. In 2002, he was elected to the board of Canada's Healthy Indoors Partnerships, Inc. (HIP), a multi-sectorial, public-private partnership that promotes healthy buildings. As chairman of HIP's Strategic Research Committee, he led and organized the Science & Technology Workshop on the health and remedial aspects of mold.

In 1999, Atif received the NRC's Outstanding Corporate Award for Industrial Partnership for a multidisciplinary research project on indoor environment and energy performance in large glazed spaces. In 1998 he earned the IRC's Outstanding Achievement Award for Research. He has served on numerous editorial boards, including the Journal of the Illuminating Engineering Society of North America (IESNA). He served as chairman of the **IESNA** Technical Committee on Daylighting from 1997 until 2002, when he received the IESNA Presidential Award. He has authored more than 100 publications, including book chapters and articles for refereed journals and conferences. He has been on several technical committees in ASHRAE, IEA, IESNA, and has given several training/professional courses in the area of daylighting/lighting; and energy aspects of buildings.



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# COLLEGE OF ARCHITECTURE • TEXAS A&M UNIVERSITY

One distinctive feature of the Texas A&M University College of Architecture is its commitment to improving the knowledge base of the design and planning professions. To meet this commitment, the College sustains a wide range of scholarship and supports the following formally organized research centers and laboratories which support five approved graduate certificate programs: environmental hazards management, facility management, health systems design, historic preservation and sustainable urbanism.

## The Center for Housing and Urban Development

is a research and outreach center dedicated to improving the quality of life of Texas residents. Major programs in CHUD include the Colonias Program, which is designed to assist residents of low income settlements; Target Cities, which annually selects a city in Texas to receive assistance from graduate students; the Community Planning & Design Program, in which faculty and students work with a community or region within Texas: and the Economic **Development & Heritage Marketing** Program, which is also directed toward a community or region within Texas.

Interim Director: Bob Segner

Web: http://chud.tamu.edu

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## The Center for Health Systems and Design

was created by the Colleges of Architecture and Medicine to promote research, teaching, and communication in an interdisciplinary program that focuses on health facility planning and design. Research interests of faculty associates range from the effects of environmental stress on patients' well-being and health to evidencebased design of hospitals, nursing homes, neighborhood clinics, healing gardens, accessible communities, and healthy cities. CHSD also supports graduate student education and research opportunities that lead to the interdisciplinary Certificate in Health Systems and Design.

The Environmental Psychophysiological Laboratory is administered by CHSD. This lab measures human physiological and behavioral responses to computer-simulated environments and real settings. Researchers in the Environmental Psychophysiology Laboratory study the effects of the natural and built environments on perception, cognition, emotion and behavior, exploring linkages to health and well-being.

Interim Director: Mardelle Shepley Web: http://taz.tamu.edu/ departments/centers/

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Phone: 979-845-7009.

## The CRS Center for Leadership and Management in the Design and Construction Industry

was approved by the Board of Regents of the Texas A&M University System in 1990. The purpose of the CRS Center is to advance innovation and leadership in the design and construction industry. The Center is also the repository of the business archives, slide archives, publications and architectural program library of CRS, the architecture engineering and planning firm and its successor firm CRSS. The Center also manages the Rowlett Lecture Series and sponsors the following annual awards: The CRS Archive Scholar, the CRS Center PhD Scholar and the Jonathan King Student Research Awards. The center also administers the graduate certificate program in facility management. Current research interests include the impact of information technology

on facility management and other issues related to leadership and management in the design and construction industry.

Director: Dr. Robert Johnson Web: http://crscenter.tamu.edu Email: rejohnson@tamu.edu Phone: 979-847-9357

## The Hazard Reduction and Recovery Center

has the distinction of having been designated a Collaborative Centre by the United Nations Office for the Coordination of Humanitarian Affairs - being one of only two such centers worldwide. The HRRC also supports other international agencies such as the International Atomic Energy Agency and the Organization of American States and is the only university-based institution in the United States to have performed statewide hurricane hazard analysis and evacuation planning. HRRC staff are currently involved in or completing four projects sponsored by the National Science Foundation -"Hurricane Andrew Ten Years Later," "Develop an Evacuation Management Decision Support System," "Damage Synthesis: Socio-economic Impact Assessment," and an NSF Career Award by Samuel D. Brody entitled "Modeling Watershed Flooding and Adaptive Flood Management." The HRRC also sponsors the College of Architecture's Certificate in **Environmental Hazards** Management.

Director: Walter Gillis Peacock

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## The Historic Resources Imaging Laboratory

was established in 1991 to build upon a twenty-year tradition of documenting historic and cultural resources to the standards of the Historic American Buildings Survey. It now acts as the focus for historic preservation teaching, research and service at Texas A&M University. Faculty Fellows represent disciplines in six colleges across the university who support

graduate teaching and research. Professional Fellows are practicing professionals in architecture, landscape architecture, planning and engineering who support the academic programs by visiting lectures, internships and financial assistance. Activities include recording of resources from medieval Europe, Native American dwellings, vernacular buildings, and National Historic Landmarks; analysis of historic buildings for reuse; preservation planning; interpretation for heritage tourism; preservation of cultural landscapes; and understanding the relationship between historic buildings and sustainable design and new construction. The Certificate in Historic Preservation was established in 1995 and provides graduates with an understanding of the field and specialized knowledge applicable to their discipline. An annual Historic Preservation Symposium brings international and national experts to examine aspects of preservation theory and practice.

Director: David Woodcock

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## The Visualization Laboratory

supports the research activities of the Visualization Sciences graduate program as well as other related research activities of the college. Activities of the laboratory are centered around the digital computer as a tool for visual communication. Areas of research include 3D modeling, animation, image synthesis, visual effects, visual communication, digital photography and videography, and visualization software. The laboratory houses a hetrogeneous array of visual workstations, sophisticated visual software, video production facilities, and specialized devices for data capture, interaction, and image input and output.

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