Howdy!

On October 18, 2010, the College of Architecture at Texas A&M University held the 12th Annual College of Architecture Research Symposium — Natural, Built, Virtual. Within this document are the official proceedings of our 2010 symposium, a list of our faculty's scholarly activities from the past academic year and, at the end of the publication, brief descriptions of the college's research centers.

The College Research Symposium is a unique tradition in the college, which for more than a decade has annually featured faculty member presentations showcasing the diversity and breadth of scholarship in the natural, built, and virtual environments, within the college's departments of Architecture, Landscape Architecture and Urban Planning, Construction Science, and Visualization, and within the Center for Health Systems and Design, the Center for Heritage Conservation, the Center for Housing and Urban Development, the CRS Center for Leadership and Management in the Design and Construction Industry and the Hazard Reduction and Recovery Center.

To be eligible for inclusion in the symposium, each presentation had to be an invited lecture, conference paper, exhibit or any other form of research or creative work, presented nationally or internationally during the 2009-10 academic year at technical conferences, scholarly meetings or at academic institutions. This year's symposium featured 56 presentations structured around four sets of five or three concurrent sessions on 14 topics: aesthetics, health, environs, value, modeling, perception, prescience, reflections, process, structures, hazards, history, planning, and pedagogy.

The range of presentation topics demonstrates our college's commitment to an integrated approach to the core pillars of the college's academic mission — learning and teaching, research and creative work, and engagement — within an environment of pluridisciplinary (i.e., multidisciplinary, interdisciplinary, cross-disciplinary, and transdisciplinary) collaboration and practice.

The symposium is also evidence of the respect that our faculty have for one another as researchers and scholars contributing to the improvement of the professions and industries associated with the natural, built and virtual environments, and through them, to the improvement of society at large.

For this year's symposium, Dr. Shannon S. Van Zandt, assistant professor of urban planning and coordinator of the Master of Urban Planning program, was invited to be Chair of the Symposium in recognition of her numerous research and other scholarly accomplishments. In addition, Dr. Jeffrey R. Seemann, vice president for research and graduate studies at Texas A&M University, opened the symposium with a keynote address highlighting the diversity and the quality of the college's research contributions. Also, a daylong poster session of selected scholarly work of graduate students provided a complement to the faculty presentations.

It is now a firm tradition in our college to take a “time out” for one full day each fall semester and cancel our usual schedule of classes, design studios and meetings so students, faculty, staff, former students, and interested guests can hear and see presentations that reflect the diversity, breadth, depth and quality of scholarship currently under way in our college.

With the talent, infrastructure and capacity currently in place throughout the College of Architecture, embodied across our departments and within our research centers, through our faculty, students, staff, former students and partners, the college is uniquely positioned to take our academic mission to higher levels of relevance, significance, excellence, accomplishment and impact.

We hope you enjoy exploring the content of these proceedings.

Gig ‘Em!

Jorge A. Vanegas, Ph.D.
Dean
**Aesthetics**

Joshua Bienko ............... Page 6
Art, ‘Restoring Honor,’ and other empty gestures

Karen Hillier. ............... Page 7
I Remember

Philip J. Tabb. ............... Page 8
Place drawing as a sacred practice

Philip Galanter. ............... Page 9
Computational aesthetic evaluation: Past and future

**Health**

Mardelle McCuskey Shepley .. Page 10
Pre and post-occupancy evaluation of the Arlington Free Clinic

Susan D. Rodiek ............... Page 11
Multimedia educational tool to improve outdoor access in long term care

Rogers S. Ulrich. ............... Page 12
Evolving trends in healthcare design for infection control

George J. Mann. ............... Page 13
The health facilities planning and design program at Texas A&M University

**Environ**

Chanam Lee. ............... Page 14
GIS and the built environment for active living research

Bruce Dvorak. ............... Page 15
Rooftop membrane temperature reductions with green roof technology in South-Central Texas

Ming-Han Li. ............... Page 16
Performance of bioretention boxes for hot climate, large-scale application

Timothy J. Lomax. ............... Page 17
Investigating the effect of freeway congestion thresholds on decision-making inputs

**Value**

Ifte Choudhury. ............... Page 18
The effect of private outside space quality on the property value of a single family dwelling

Jesse Saginor. ............... Page 19
Leveraging land development returns to finance transportation infrastructure improvements

**Abstracts**

Paul K. Woods ............... Page 20
A multiple liner regression model to predict the appraised unit value ($/SF) for raw land in Houston, Texas meeting LEED transportation acceptance criteria

Geoffrey Booth. ............... Page 21
The Sustainability Dividend: Real estate value creation and three emerging trends toward the delivery of built environment sustainability

**Modeling**

Ergun Akleman ............... Page 22
Cyclic Twill-Woven Objects

**Perception**

Ann McNamara. ............... Page 25
Does screen tiling influence navigation time in immersive environments?

Sarel Levy. ............... Page 26
Facility managers' preferred interior wall finishes in acute-care hospital buildings

**Prescience**

Rodney C. Hill. ............... Page 28
The Perfect Storm

Valerian Miranda. ............... Page 29
Architectural innovation: Facing challenges the CRS way

Jorge Vanegas. ............... Page 30
Managing the creative process for innovation: An interactive workshop

Jose Fernandez-Solís. ............... Page 31
The challenges of growth in construction

**Reflections**

Sarah Jinyong Deyong ............... Page 32
A manual for urban acupuncture

Frances E. Downing. ............... Page 33
The edge of a novel — A journey from academia

Peter Lang. ............... Page 34
The architectural anomaly of 2A+P/A

Michael D. Murphy. ............... Page 35
The designer’s emerging role in a knowledge application process: Systems management as the context for landscape change

**Process**

Boong Yeol Ryoo. ............... Page 36
Web-based construction project specification system

Julian H. Kang. ............... Page 37
Empirical application of GPS fleet tracking technology to a soil excavation process

Jeff S. Haberl. ............... Page 38
ALM: Web-based, residential energy calculator for homeowners

Charles Culp. ............... Page 39
Energy management and control systems

**Structures**

Anne B. Nichols. ............... Page 40
The intent of the buttresses of Narnbone Cathedral

Michael O’Brien. ............... Page 41
Hybrids on the way to the western platform frame

Weiling He. ............... Page 42
The Visual, the Corporeal, the Temporal, and the Tectonic: When architecture meets fashion in space

Nancy Holland. ............... Page 43
An experimental investigation of the shear properties of limestone masonry

**Hazards**

Shannon Van Zandt. ............... Page 44
Housing Inequalities and Social Vulnerability to Natural Disasters: Findings from 2008's Hurricane Ike

John M. Nichols. ............... Page 45
A review of the dynamic test loading patterns for in-plane masonry experiments

Samuel D. Brody. ............... Page 46
Evaluating the effectiveness of mitigation strategies for flood reduction: How much can we save?

Michael K. Lindell. ............... Page 47
The protective action decision model: Theoretical, methodological, and practical implications for crisis research

Forster Ndubisi ............... Page 48
Sustainable regionalism: Promise for mitigating effects of adverse climate change

**History**

Gabriela Campagnol ............... Page 49
Bitter/Sweet: Case studies in transformation of sugar space in Brazil

Nancy L. Klein ............... Page 50
Building B and the Mnesiklean Propylaia on the Athenian Acropolis

Wei Yan ............... Page 51
Recording and Documenting the Chromatic Information of Architectural Heritage

Logan Wagner ............... Page 52
European origins of the urban grid layout implemented by the Spanish in the New World

**Planning**

Louis G. Tassinary ............... Page 53
Equal protection and aesthetic zoning: A possible crack and a preemptive repair

June Martin ............... Page 54
Milestones in urban revitalization: East Athens, Georgia (1994-2009)

Walter Gillis Peacock ............... Page 54
The Need for Resiliency and Vulnerability Observatory Network: RAVON

Elise M. Bright ............... Page 56
Regulatory plan implementation: A comparative international view

**Pedagogy**

Zofia Rybkowski ............... Page 57
Last planner and its role as conceptual kanban

Tim McLaughlin. ............... Page 58
A framework for evidence based visual style development for serious games

Mohammed E. Haque. ............... Page 59
Multi-dimensional construction visualizations with examples: Suggested topics for graduate course

Thomas J. Regan ............... Page 60
The Architecture + Construction Alliance: A new organization

D. Kirk Hamilton ............... Page 61
Survey of design competencies and skills
College of Architecture’s 12th annual symposium spotlights faculty research

The 12th Annual Texas A&M College of Architecture Research Symposium: Natural, Built, Virtual, held Monday, Oct. 18 at the Langford Architecture Center on the Texas A&M campus, featured a series of faculty presentations previously delivered at scholarly venues around the world. This year’s symposium included invited or refereed presentations, papers and creative work from the 2009-10 academic year.

“The individual sessions comprising the symposium displayed a wide range of scholarship with respect to people and place,” said Louis G. Tassinary, executive associate dean for the College of Architecture. “Fundamentally, the symposium sessions reflect themes that emerged in the work of the faculty and research staff over the past year.”

The symposium featured 56 presentations grouped into 14 diverse categories and delivered in several concurrent sessions.

The faculty research symposium was established a more than a decade ago to underscore the influence of research on teaching and practice at the Texas A&M College of Architecture. The event also serves as a catalyst for research-informed teaching in the College of Architecture's six undergraduate and nine graduate degree programs. And, because many of the faculty presentations were originally delivered at scholarly venues abroad, the event also showcases the global influence of research conducted by college faculty.

Providing keynote remarks for the college’s 2010 research symposium was Jeffrey R. Seemann, vice president for research and graduate studies at Texas A&M University. An internationally recognized plant biochemist with research interests in photosynthesis and global change, Seemann is listed by Current Contents, a leading database of scholarly journals, as one of the top 250 most cited researchers in the world in the area of plant and animal sciences.

This book of proceedings includes abstracts from the faculty presentations delivered at the 2010 symposium, a list of faculty research activity during the 2009-10 academic year, and brief overviews of the college’s five research centers and Visualization Laboratory.

The information within this document is also available online on the symposium website: http://researchsymposium.arch.tamu.edu/

Texas A&M research vice president keynotes College of Architecture research symposium

Jeffrey R. Seemann, vice president for research and graduate studies at Texas A&M University, provided an overview of recent Texas A&M College of Architecture research initiatives in his keynote address at the college’s 12th annual research symposium, Natural, Built, Virtual, held Oct. 18, 2010 at the Langford Architecture Center on the Texas A&M campus.

Seemann is an internationally recognized plant biochemist with research interests in photosynthesis and global change. He is listed by Current Contents, a leading database of scholarly journals, as one of the top 250 most cited researchers in the world in the area of plant and animal sciences.

As vice president for research and graduate studies, Seemann works with the faculty, staff, and administrators as the university stakes out an ambitious agenda, which includes elevating Texas A&M to be among the top 10 public research universities in the nation by the year 2020. Since joining Texas A&M in 2009, he has led a host of programs and initiatives furthering research, scholarship and creative works at Texas A&M, while overseeing the university’s critical research support operations.

Seemann serves on the Houston Technology Center and Research Valley Partnership Boards of Directors. He earned a bachelor's degree with honors from Oberlin College with a major in biology, and a doctoral degree from Stanford University in biological sciences.

For eight years prior to joining Texas A&M, Seemann served as dean of the University of Rhode Island's College of the Environment and Life Sciences and co-chair of the R.I. Science and Technology Advisory Council. He also served 17 years as a professor and head of the biochemistry department at the University of Nevada, Reno.

A video of the keynote remarks can be viewed online at http://www.vimeo.com/15999931.
Joshua Bienko
Assistant Professor
Department of Architecture


Joshua’s interests are broad ranging. His work antagonizes history, fashion, critical theory, the impossibility of desire, and the value of art in the age of Post-Production. Joshua is involved in challenging solutions, eradicating answers, and encouraging inconsistencies in an effort to calculate meaning.

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Art, ‘Restoring Honor,’ and other empty gestures

In the 1992 film, A Few Good Men, Kevin Bacon’s character (a lawyer) hands Jack Nicklaus’ character (a Colonel in the US Army) a Code of Conduct manual. Jack Nicklaus has been accused of ordering a ‘few’ soldiers to perform a “Code Red,” an illegal act of corporeal punishment. Jack cannot find the term “Code Red” in the manual, proving that he couldn’t possibly have ordered a “Code Red.” Such a thing doesn’t even exist!

Kevin Bacon rests his case and returns to his seat. Tom Cruise, (the Defense Attorney) grabs the Code of Conduct manual from Kevin Bacon as he approaches the bench. He gives the manual back to Jack and asks him to find the words, “Mess Hall.” Surely the “Mess Hall” exists, right? Consequently, the “Mess Hall” is not in the book. Perhaps this is one way that we can approach Art. Could Art and meaning exist and yet not be in the manual?

My work obeys similar parameters. It functions simply by masking the emptiness of the space it occupies. In this way, the space of the wall is often emptier with my work on it than without. It is an empty gesture, powerless, meaningless and useless aimed at concealing the fact that it is exactly what it appears to be.

I Remember

The Weatherspoon Museum of Art at the University of North Carolina at Greensboro launched The Lining of Forgetting February 10, 2008. Curator Xandra Eden collected works from an international pool of artists drawing upon personal memory and the media of remembering as source material for artistic works.

I am developing a body of work based upon my own memories of growing up in a small Texas town in the 1950s. My home and the town itself seemed immune to influences from the outside world. It seemed to me that memorization of the place, procedures, and mores was what I could do to comprehend the mysteries of the adult world.

Using drawing, photography, installation, video, sound, and through the construction of garments in ephemeral fabrics such as tulle, I have begun an examination of ordinary household practices. Questions are raised, many in regard to gender imprinting. I remember clearly the loving care given to seemingly mundane domestic tasks, and I celebrate, in this body of work, how effortless this performance seemed to be.

Hillier, K. (2010, July). I Remember. The American Society of Aesthetics annual meeting, Santa Fe, NM.
Place drawing as a sacred practice

Drawing is a form of visual communication that can be a representational, impressionistic, abstract, informational, or even imaginal, yet it can transmit sacred ideas and be part of a transformative experience as well. Drawing can be a process of deepening and of extraordinary discovery. It has the power to enable one to be awake in a place and to really see what is there, contributing to insights, profound deductions, and an eventually enlivened presence. Mythological explorations can be renewing and creative when found in drawing as they become what author J. R. R. Tolkien called “mythopoeia,” and a visual narrative of archetypal themes emerging where the myth-making is closely connected to the actual experience of a place.

Myths are said to take place before a space becomes a place and this process becomes a sacred narrative, which is attached and gives significance to it. Theologian Belden Lane, in his Axiom for Sacred Place, wrote that a place may be tread upon without being entered. This suggests that the sacred realm may exit, but may not necessarily be readily accessed or initially revealed. To call into being the sacred or mythic realms of a place, seems to require either a quieting process into the ethos of the place, enactment with ritual, or possibly a conscious awakening through a process like drawing. It is this phenomenon, which is the focus of this extended abstract. And to that end, four place-oriented drawing typologies are explored: quick in-situ sketches, extended field drawings, studio enhanced drawings, and mythological landscapes.


Author Phillip J. Tabb drew this aerial view of Civitella in Val di Chiana, Italy in 2009.
Computational aesthetic evaluation: Past and future

Human artistic creativity typically includes a self-critical aspect that guides innovation towards a productive end. It seems likely that truly creative computers will require a similar ability to make aesthetic evaluations. This talk offers a brief history of, and outlook for, computational aesthetic evaluation (CAE) by digital systems as they move towards machine creativity.

A summary of CAE related attempts is offered touching on the use of formulaic and geometric theories; design principles; evolutionary systems, agents endowed with curiosity; artificial neural networks and connectionist models; and complexity models. Also touched upon are possible contributions from evolutionary psychology; models of human esthetics from psychologists such as Arnheim, Berlyne, and Martindale; various findings from empirical studies of human aesthetics; and the nascent field of neuroaesthetics.

Given this background it will be seen that there are likely no short paths to CAE. But the direction of a long path to CAE requiring a highly multidisciplinary research program is suggested.

Pre and post-occupancy evaluation of the Arlington Free Clinic

Healthcare facilities are complex environments that must meet the requirements of a wide range of users. Designers should evaluate the impact of the facilities that they design to confirm that they are meeting these needs.

This research, which was performed as part of a university course in architectural programming, involves two phases of data collection occurring before (pre-occupancy) and after (post-occupancy) redesign of a healthcare clinic. The redesign was implemented to provide more spacious, bright, acoustically-controlled spaces, which create a sense of community, safety and respect. Surveys were used to test satisfaction levels of patients and staff with these design factors as well as general design characteristics of the building. Sixty-four staff (46 in Phase I, 18 in phase II) and 170 patients (91 in phase I, 79 in Phase II) completed surveys. The findings suggest that, in general, the new facility has been successful in meeting design objectives. Information is provided regarding the structure of the survey and responses to individual questions.

In addition to helping the clinic staff and designers understand the implications of design decisions, this research provides a model for an effective, objective evaluation methodology that could be used by other healthcare organizations and design professionals.

Multimedia educational tool to improve outdoor access in long term care

Access to nature and the outdoors has been found to promote health and well-being in older adults in long term care (LTC) settings, and may be especially critical for those with limited mobility. In spite of recently increased interest in environmental influences on health, many LTC facilities do not employ evidence-based design principles when creating outdoor space for residents. To improve the quality of outdoor access, an interdisciplinary team of architects, gerontologists, landscape architects, and educational psychologists have developed an innovative media-based educational tool, geared toward a broad range of decision-makers in the LTC industry. This multimedia DVD program provides evidence-based guidelines on key issues such as outdoor walkways, shade, accessibility, and connection with the indoors. Psychosocial goals are linked to specific architectural features, and multiple examples show how the central concepts can be applied in diverse situations. Interactive exercises assess user comprehension of important concepts, and provide immediate feedback. The presentation will demonstrate this new educational tool, funded by a National Institute on Aging SBIR Grant, and describe how decision-makers can use design guidelines to improve residential environments for frail older adults.

Evolving trends in healthcare design for infection control

Hospital-acquired infection is one of the leading causes of death in the United States and other countries. The number of associated deaths in the U.S. now exceeds 100,000 annually. A major problem in both advanced and developing nations is that hospital-acquired infections increasingly are multi-drug resistant and therefore difficult and costly to treat and eradicate. Patients are especially vulnerable to these infections when they are immunocompromised or otherwise weakened because of age, underlying disease, or medical or surgical treatments. The international trend for intensity of care and patient acuity to steadily rise, together with the mounting problem of multi-drug resistant infections, portends a future of increasingly formidable challenges in controlling and preventing infection in hospitals and other healthcare facilities.

The presentation will describe recent developments in the rapidly evolving area of evidence-based design for reducing risk from hospital-acquired infections, including multi-drug resistant pathogens. Speaking generally, infection transmission occurs through three major routes: contact, air, and water. A large scientific research literature supports the conclusion that the design of the physical environment impacts infection rates by affecting all three major routes. The discussion will survey the growing evidence showing that providing single-bed rooms with private toilets is important for reducing infection. The effectiveness of this design measure is reflected in the trend in new construction to provide single rooms with private toilets not only in in-patient care wards, but also in emergency departments, outpatient surgery facilities, and other patient care areas.

The mounting seriousness and prevalence of multi-drug resistance is beginning to spur revolutionary hospital designs that protect staff and uninfected patients by providing transport paths for infected patients which are on the building exterior and open to fresh air. New hospitals are appearing in different countries with radical design innovations and new cleaning technologies suited to an era when antibiotics no longer are effective.

The health facilities planning and design program at Texas A&M University

Professor Mann, Dr. McGraw, Mr. Southern Ellis, Mr. Phillip Cedenco and Mr. Salud Sierra will present recent architecture-for-health projects undertaken at Texas A&M University including:

A Rural Hospital for Tanzania, The C. Ray Nagin Hospital, New Orleans and selected other projects.

They will contrast working in developing areas of the world with the developed world.

Mann, G. J. (2010, March). The Health Facilities Planning and Design Program at Texas A&M University, Franklin Inn, Philadelphia, PA.
Chanam Lee
Assistant Professor
Department of Landscape Architecture and Urban Planning

Dr. Lee’s interests are in urban design and physical planning, urban form and non-motorized transportation, physical activity and public health.

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GIS and the built environment for active living research

The pandemics of obesity and sedentary lifestyle are among the major public health challenges in the U.S. Design and planning professionals have an important role in this, because studies show that the designs and characteristics of the built environment, such as land uses, streets and sidewalks, housing density, safety, and visual quality, are associated with walking and other physical activities.

A method to systematically and objective assess the built environment can help identify barriers and facilitators in the environment that can be modified and regulated by policies to encourage physical activities. Toward this end, Geographic Information System (GIS) has served as effective and efficient measurement tools, and continued to evolve for active living research and other studies dealing with the environment-behavior linkage.

The workshop will cover conceptual issues and methods in four areas: 1) data acquisition and development, focusing on fine-grained land use data, parks and recreational facilities, food sources, and physical activity and fitness facilities; 2) respondent sampling approaches that take into account the characteristics of the environment in which people live or work; 3) external data import and analysis strategies, such as GPS and accelerometer data; and 4) geospatial analyses to measure and model the environment or behaviors. The presentation will focus on how to use GIS to “think spatially.” Examples from on-going projects will be used to facilitate discussions, and sample protocols will be shared.

This presentation includes part of the workshop held at the 2010 Active Living Research conference by the Robert Wood Johnson Foundation. The specific learning objectives of the workshop were to: 1) Learn what and how to acquire, develop, and process GIS data for active living and general environment-behavior research; 2) Learn about a spatial sampling approach that considers environmental characteristics during the sampling process; 3) Understand ways to import and analyze data from external devices, such as GPS and accelerometer; and 4) learn and discuss about geospatial analyses to measure and model the environment or behaviors.

Rooftop membrane temperature reductions with green roof technology in South-Central Texas

Early green roof cooling and energy reduction research in North America took place in Canada and the northern latitudes of the United States, where green roofs reduced rooftop temperatures by 70% to 90%. Less is known about green roof technology in the southern United States; where energy demand for cooling buildings is high, and the urban heat island effect is more pronounced. This paper reports early findings for rooftop membrane temperature reductions from 11.6-cm-deep modular green roof trays, typical of large-scaled, low-maintenance applications. Measurements observed during May, 2010 reveal that temperatures below the modular planted green roof units were 82% to 91.6% cooler compared to the surface temperatures of the control roof membrane. These findings on low-input modular green roof trays reinforce other research findings that indicate green roof technology can dramatically reduce and modify temperatures on roof deck surfaces during peak energy demand periods in hot sunny climates.

Performance of bioretention boxes for hot climate, large-scale application

The purpose of this presentation is to introduce an ongoing bioretention research project sponsored by Texas Department of Transportation (TxDOT), particularly the performance results of bioretention pilot testing in attenuating peak discharge and removing pollutants. The overall objective of the research project is to investigate the applicability and identify benefits and drawbacks of bioretention best management practices (BMPs) in Texas, specifically for highway related applications. Major tasks of the overall research include literature review, laboratory pilot testing, and field project implementation.

Bioretention was developed in the late 1980’s in Prince George’s County, Maryland. This technique uses soil, sand, organic matter, and vegetation-based storage and infiltration facilities for treating runoff from paved surfaces. Up to date, most bioretention research was conducted on residential, commercial and institutional areas that tend to be at the site scale. Few were for large-scale, highway-related applications. Meanwhile, very few bioretention studies were conducted in hot climate areas such as Texas.

For the pilot testing, five 1.8 m (6 ft) (L) × 1.8 m (6 ft) (W) × 1.2 m (4 ft) (D) steel boxes were installed as bioretention cells that contain, from bottom to top, a perforated pipe, gravel layers, soil/compost media and plants. Four of the five boxes were vegetated and one was bare soil as control. For vegetated boxes, one had shrubs and three others were grasses of selected native and non-native species. After one growing season, boxes were tested with synthetic stormwater containing typical pollutants in urban areas, including sediment, nutrients and heavy metals. Results indicate that peak discharge was reduced in all boxes with the most by the bare soil one. Plant roots might have contributed to the increase of soil infiltration rate. Pollutant removal of sediment, nitrate/ammonia, lead and zinc by all boxes was observed. Vegetated boxes appeared to perform better in nutrient removal.

The closing of the presentation will raise challenges either identified or encountered by the research team. These challenges are 1) Can existing detention ponds be converted to bioretention? 2) Are large-scale bioretention applications feasible? 3) Can bioretention be applied to roadsides along highways? 4) South and southeast U.S. are seriously infested by fire ants (Solenopsis invicta Buren) that favor bioretention-like habitats and can dramatically alter soil structure where they reside; how will this affect the water quality performance of bioretention? and 5) how can bioretention BMPs be maintained for effective long-term performance?

Investigating the effect of freeway congestion thresholds on decision-making inputs

The concept of a congestion threshold is embedded in the congestion definition. Two basic approaches exist in current practice for setting the congestion threshold. One common approach uses the “free-flow” or unimpeded conditions. Another approach uses target or “acceptable” conditions. The limited research that has been conducted on the congestion threshold issue focuses on operational problems or policy debates, but relatively little investigation of the effect on decision-making for transportation investment and resource allocation.

This research investigated the differences inherent in the threshold choices using detailed freeway data from seven metropolitan areas. Specifically, this research examined the ranking values of congestion measure for different congestion thresholds under a variety of real-world travel time distributions. Congestion performance measures of delay per mile and Travel Time Index were evaluated.

The research results showed that the rankings of congestion measures for freeway segments hold steady across the congestion thresholds ranging from 60 mph to 30 mph and across the congestion measures. The same sections are ranked as very congested for all possible threshold values. From an investment point of view, therefore, the congestion threshold speed used is not a concern for funding allocation.

The effect of private outside space quality on the property value of a single family dwelling

The purpose of this study was to ascertain whether the quality of private outside space has any effect on the property value of a single family dwelling. Private outside space in the study was defined as the immediate outdoor environments of single family, detached dwellings.

The quality of private outside space was measured by the level of maintenance of yards and territorial personalization of such spaces. Some known predictors of property value of a single-family dwelling, such as total built-up area, number bed and bathrooms, and lot size were included in the statistical model used for the study.

A sample of 100 single family dwellings from four neighborhoods was randomly selected for the study in a university town in Texas, USA. Data related to all the variables included in the model was collected. Statistical technique used for data analysis was a multiple linear regression. Results indicated that at least one of the aspects of private outside space, territorial markers, has a statistically significant effect on the property value of single family dwellings.

Leveraging land development returns to finance transportation infrastructure improvements

The United States faces a crisis in transportation finance with a majority of state and federal investment in transportation infrastructure financed via the gas tax. With an increase in the price of fuel driving decreasing consumer demand, in addition to consumer demand for fuel-efficient cars, the reliance on the gas tax to finance a majority of future transportation infrastructure is expected to decrease as transportation demand outpaces construction. At the same time, greater worldwide demand for transportation infrastructure is resulting in higher prices for asphalt, concrete, and steel. Declining tax revenues coupled with higher construction costs lead to financing shortfalls for new transportation infrastructure and the maintenance of existing infrastructure.

The existing funding mechanisms deemed to be innovative in funding transportation infrastructure include roadway privatization, tollways and high-occupancy traffic lanes, and grant anticipated revenue bonds, all of which fail to capitalize on the benefits of transportation infrastructure improvements on surrounding property values. As the property values increase due to the improvements, the public sector reaps the benefits through increased property tax revenue while the private sector benefits from increased business revenue, higher rental prices, visibility, and accessibility. Analyzing the property value impact from these transportation infrastructure improvements provides an opportunity to determine the likely amount of revenue that could be captured by an alternative financing vehicle such as tax increment finance that can be implemented by a regional mobility authority. More importantly, the financial analysis will be used to identify the relative time needed for the tax increment finance vehicle to capture revenue for bond issuance and related transportation infrastructure improvement financing methods.

Texas House Bill 3588 authorized the creation of Regional Mobility Authorities (RMAs), which have the ability to apply tax increment finance to capture land development returns associated with land development improvements. Moreover, Texas Senate Bill 1266 provides for the creation of Transportation Reinvestment Zones, a specialized form of tax increment finance specifically for transportation improvements. This research seeks to identify the magnitude of property value increases associated with transportation infrastructure improvements, the assessment levels and investment horizon needed to recapture the costs of transportation infrastructure improvements, and how these revenue streams may be further leveraged to support local and regional investments in transportation infrastructure using the Dallas-Fort Worth region as a case study to demonstrate the likely impact on transportation finance.

A multiple liner regression model to predict the appraised unit value ($/SF) for raw land in Houston, Texas meeting LEED transportation acceptance criteria

LEED rated buildings and development appear to gain much positive media exposure and are frequently touted as an answer to our many issues with environmental sustainability and its attendant economics. Little academic backing for these claims appears to be based on scientific research possibly because of the difficulty of obtaining objective data regarding existing LEED projects.

The authors of this work attempted to design a research project that would use publicly available data to probe a very small part of the overall LEED program: the relationship between economic value of a land parcel and whether or not it qualifies for one of the LEED site criteria based on proximity to public transportation. One interpretation of a positive link between value and LEED criteria is that the market already accepts the added value of at least this part of the LEED certification process. The authors believe that both the existence of the link and the acceptance by the market of its economic value would both be positive signs for LEED.

Woods, P.K. (accepted for publication). Predicting the Unit Appraisal value of the unimproved and private land by LEED sustainable site credits in the city of Houston, Texas. Journal of Construction engineering and Management, American Society of Civil Engineers.

The authors examine the relationship between land value and proximity to public transportation, such as the Houston Metropolitan Transithy Authority light rail train pictured above.
The Sustainability Dividend:
Real estate value creation and three emerging trends toward the delivery of built environment sustainability

Real estate value is neither created nor sustained through financial engineering. It is the near perfect alignment of: need in the form of an unsatisfied real estate opportunity; the market’s willingness and capacity to pay; and, the sound conceptualization of the real estate product that will cost-effectively bring the two together. This is what creates and sustains real estate value and thereby minimizes property investment risk.

When real estate development and investment come together in a nexus of optimal conceptualization, design, delivery, and on-going management through an integrated design, delivery, and management system, based on transdisciplinary environmental knowledge and evidence-based practice, the result is a financial performance premium referred to in this paper as the sustainability dividend. In essence, the sustainability dividend is derived from the transdisciplinary application of environmental design, delivery, and management solutions which create and enhance real estate asset value.

The sustainability dividend is poised to become a major driver of real estate value creation. Whilst there exists fatigue in the use of the terms ‘sustainability’ and ‘sustainable development’, three emerging trends in built environment sustainability: an integrated approach to property asset conceptualization, design, delivery, and management; a transdisciplinary understanding of the built environment; and, the emergence of evidence-based practice, all serve to focus, qualify, quantify, and deliver the potential sustainability dividend from real estate assets and portfolios.

Cyclic Twill-Woven Objects

Abstract: Weaving can be an economical way to construct large structures. For this goal, we need to develop algorithms to convert any given surface to a woven object. We have recently shown that any surface can be converted to a plain-woven object. In this work, we study twill as a cyclic weaving structure on general surfaces. Biaxial twill is a textile weave in which the weft (filling) threads pass over and under two consecutive warp threads and each row is obtained from the row above it by a shift of 1 unit to the right or to the left. The shift operation creates the characteristic diagonal pattern that makes the twill fabric visually appealing.

We prove that three mesh conditions are necessary and sufficient to obtain twill weaving from a given mesh. We show that many arbitrary meshes do not satisfy these three conditions. It is, therefore, not possible to obtain exact twill for many meshes. On the other hand, for mostly (4; 4) meshes, i.e. meshes with large areas of quadrilaterals with 4-valent vertices, it is possible to obtain a reasonably good result of twill in most places. Based on this intuition, we have developed a voting algorithm that guarantees to satisfy most of the twill conditions that allow to demonstrate diagonal patterns everywhere.

Reconstructing the music hall and rotunda annex at Vauxhall Pleasure Gardens c. 1764

This paper summarizes work in progress on the digital reconstruction of the structure, space and decorative program of the music hall and annex at Vauxhall Pleasure Gardens c. 1764. The proposed outcome will be a recreation of the space and its contents combining Building Information Modeling in programs such as Revit with panoramic interior views of the larger-than-life modern-subject history paintings of scenes from and allegories based upon England’s victories in the Seven Years’ War, marble busts of British worthies, light effects and mirrors. The final version of the project will also include a choral and instrumental musical element, as the space was physically connected to the garden’s indoor orchestral performance space.

Modeling domestic architecture at Late Minoan IIIC Vronda, Kavousi, Crete

Excavations at the archaeological site of Kavousi Vronda in eastern Crete (1982-1992) brought to light a small rural settlement dating to the Late Minoan IIIC period (12th–early 11th centuries B.C.). These investigations have shown that by the time of abandonment the settlement consisted of 15–20 houses, a large building with storerooms that may have been the ruler’s dwelling, a communal temple of the ‘goddess with upraised arms,’ and a kiln. While abandonment and postabandonment processes have resulted in much disturbance, Vronda has provided a wealth of data for understanding traditional domestic architecture, household activities, religion and society at the end of the Bronze Age. In this study, we present a digital reconstruction of the settlement based upon the ‘analog’ data recorded at the time of excavation, discuss the process of creation and examine the potential contributions of such models for understanding the built environment and vernacular architecture of ancient Crete. The resulting model 1) complements photographs, traditional two-dimensional plans, sections and elevations, 2) highlights effective and innovative ways of presenting our analysis of architectural morphology (mass, height, form, scale, sequence of construction) of individual buildings and complexes, and 3) allows us to “use vision to think” as we explore spatial relationships within the settlement, paths of access and communication, communal spaces between buildings, hierarchy and function.

Does screen tiling influence navigation time in immersive environments?

3D Immersive visualization systems provide a novel platform to present complex datasets and Virtual Environments (VEs). We compared user-interaction and performance between two immersive displays: a low-cost, tiled, multi-screen immersive visualization system and a more expensive, continuous, immersive visualization facility. The low cost system is designed using off-the-shelf components and constructed by arranging LCD displays in a tiled hemispherical layout. The expensive system, the Immersive Visualization Center (IVC) is a Rockwell-Collins semi-rigid, rear projected, continuous curved screen. With the low cost paradigm, seams are introduced into the image where the displays are tiled. The question we are trying to answer is does the presence of tiling influence the speed of simple navigation in an immersive VE. We hypothesize that the tiled system presents an equivalent visual experience, despite the seams introduced by connecting the screens.

To correctly interact with a spatial immersive display, the user must understand the 3D VE, in particular structure and depth perception. We investigated how navigational skills are affected by the physical separation of the imagery. A model comprised of corridors with offices served as the environment. Participants first examined a 2D map of the floor plan showing their initial and end position in the environment. They were asked to navigate the shortest route from start point to end point through the immersive 3D rendition of this environment. Navigation is controlled using a Nintendo Wii controller. Statistical analysis showed that there were no significant differences across seam level, indicating that the presence of seams did not impact the performance of simple navigation in the immersive environments. To further probe this question several subsequent experiments are planned.

Facility managers’ preferred interior wall finishes in acute-care hospital buildings

Facility managers typically provide a variety of services to their organizations, primarily maintenance, repair and cleaning, as well as managing budgets. The largest portion of the envelope in a hospital is formed by wall surfaces, which are covered by thousands of square meters of wall finishes. The materials used for interior wall finishes and covering are typically selected by architects and interior designers; after construction is completed, the facility manager takes charge of it for the duration of the building’s service life. Clearly, facility managers deal with building finishes more than any other building professionals; as a result, it is assumed that they have their own preferences for what finishes they would choose, based on their experience. This study investigates the preferences of facility managers for interior wall finishes used in hospital buildings in the state of Texas, USA. For the purpose of this study, three hospital units were selected: emergency, surgery, and in-patient departments. Three objectives were specified: (1) to identify the preferences of facility managers for interior wall finish materials used in the three hospital units; (2) to study what characteristics facility managers would consider if they could select interior wall finishes; and (3) to compare the facility managers’ preferences for interior wall finishes in the three units. A questionnaire was created, and responses from 48 healthcare facility managers were collected and analyzed using descriptive statistics. A comparison of the preferences was also conducted.

The study found that the interior wall finishes most often used in the three hospital departments are vinyl type II (medium-duty vinyl for wall covering), and latex paint. The study also found that the three major characteristics driving the selection of interior wall covering materials are: infection control, gas emission/VOC, and ease of maintenance. The results of this study can be used to enhance the discussion and improve the collaboration between facility managers and designers, in terms of understanding later maintenance needs, in the selection of interior wall finishes.

Assessment of daylight qualities in sustainable buildings

This paper presents the findings of a study that is evaluating the daylight performance of three recently built certified “sustainable buildings” located in a hot and humid climate (Houston, Texas). These buildings are illuminated mainly through sidelighting windows, clerestories, and diffusing skylights. The evaluation consisted of site visits, occupant’s surveys, annual computer simulations implemented with new dynamic daylight metrics. The goal of this research project was to demonstrate that the good practice of sustainable daylight design is more complex than what current rating systems require.

Preliminary results of the evaluations have confirmed that the buildings achieved the illuminance levels required by the rating systems. However, simulations of overall annual illuminance levels showed inadequate illuminance levels to offset electric lighting throughout the year, and also identified the presence of glare at several locations throughout the buildings. Occupant’s surveys demonstrated that high percentage of occupants enjoy and find visually-attractive the lighting in their workspaces, however, there are occupants that reported problems of glare (about 20% of the surveyed sample). Those occupants seated next to large south- and west-facing windows, unshaded clerestories, and under diffusing skylights reported problems of glare, as was measured onsite and predicted by annual simulation tools. Other occupants reported problems related to uncomfortable temperature, as well as being unable to work with the electric lights off.

The Perfect Storm

The past is no longer predicting the future. World population is expected to peak at 9 billion by 2050. Of the three billion that will be added to the world by 2050, only 120 million are expected in the United States and the European Union will be 40 million less than their present population. We are approaching the limit of our food and water supply. Present energy systems cannot meet the demands of future populations.

If you began building 40 cities of 2 million people every year for the next 40 years, you would meet the needs of the population increase by 2050. This is an unprecedented era of accelerating change in human existence. Currently, there exists no system that can feasibly plan & create the infrastructure for those cities or a construction system to build cities at that speed.

Shadow cites contain over a billion people and another billion could by living in shadow cities within 15 years. There is no more water in the world than there was 2000 years ago when the population was 3% of the present. There has been no world surplus of food for nearly two years. Oil supplies are expected to peak in the next 10 years and raw materials will be sought after and in demand more than any time in the history of mankind. Thus….. The Perfect Storm.

Architectural innovation: Facing challenges the CRS way

Challenges facing the architectural profession today are not dissimilar to those facing the architectural profession in the United States of America after the Second World War. Innovative practices in design process, management and delivery transformed the small-town architecture firm of Caudill, Rowlett & Scott into an international powerhouse leading to the 1972 AIA Firm of the Year award and its co-founder, Bill Caudill, being awarded the 1985 AIA Gold Medal.

This study traces, in detail, innovations in architectural programming, research backed design process, and the team approach over three decades of development. It also analyzes similarities in challenges that faced architectural firms in the 1940’s with those prevalent today. Finally, the study proposes that it is relevant to adopt a similar innovative approach in facing present day challenges.

Managing the creative process for innovation: An interactive workshop

On July 10, 2010, Newsweek magazine reported on “The Creativity Crisis” facing our Nation. For the first time, research shows that American creativity is declining: in our children within our schools, in students within our universities, and in adults within our organizations in the public and private sectors… In addition, the nature of the challenges we face within our cities, our states, our Nation, and the world at large demand solutions that transcend conventional approaches and ways of thinking. Creativity, innovation, and design are the currency of the 21st Century, and the engine for economic growth.

This highly inspiring and interactive workshop will focus on general principles, processes, and mechanisms for creativity that individuals and organizations can use to manage innovation more effectively and efficiently in the development of new products, processes, and services, as well as new business models to deliver them. In this engaging workshop, participants of any age, gender, and background will be able to identify inhibitors, obstacles, and barriers to creativity and innovation, and also, strategies, processes, and tools for overcoming them, from both a professional and a personal points of view... and who knows, someone may leave with the next big idea!

Questions that will be answered in a highly interactive way include:

- What are some current challenges and opportunities for creativity and innovation that organizations and individuals are facing today?
- What are some of the key inhibitors, obstacles, and barriers to creativity and innovation, and what can be done about them?
- What roles do provocative, convergent, divergent, and lateral thinking play in creativity and innovation?
- How do you assemble and develop high performance teams for creativity and innovation?
- What strategies, processes, tools, and resources are available for organizations and individuals in their pursuit of creativity and innovation?

The challenges of growth in construction

An Arab proverb states that “He who predicts the future lies, even if he tells the truth.” The challenges of growth in construction is not about predicting the future but about analyzing current trends of the forces behind construction (population and affluence) the direct and indirect results of construction (Capital Creation, resource consumption and emission generation), our current economic predicament and trend implications to determine what are the challenges of growth (generating value while minimizing waste), since According to Dr. Seuss: “I meant no harm, I most truly did not; But I had to grow bigger. So bigger I got.”

A manual for urban acupuncture

A system is defined by the interrelation of its parts and this property accounts for its particular behavior. Insofar as a system is open and continuously interacts with its environment, it can generate effects that ripple across time and distance in the most unsuspecting ways. The Santa Fe Institute in New Mexico has brought precision and focus to the study of complex adaptive systems and Facebook is an example familiar to us all of the power of parametric networks and bottom-up processes.

System concepts are current, but they are hardly new. Called General Systems Thinking in the 1950s, such concepts were previously allied to the fields of cybernetics and information theory, and were used to explain diverse phenomena, natural and artificial, biological, ecological and urban. And yet, systems thinking suffered an unusual fate, because it raised the specter of the failures of total management and control. In The Postmodern Condition, Jean Francois Lyotard beautifully underscored what was so wrong with systems: The reason why systems fail is not because of a want of data but because a complete picture of a system is a fiction. What is often overlooked in Lyotard’s argument, however, is the fact that his critique was ultimately a positive one; for the Achilles heel of every system turns out to be the very feature that accounts for things like paradigm change and creative evolution.

Since Lyotard, system concepts have returned with considerable force, but with a difference. Instead of lamenting the loss of control, we now seem to celebrate it, or at least embrace it, as a potentially positive and constructive force. Systems thinker, Donella Meadows, for example, has written a 12-point manual for how to leverage change in her essay, “Places to Intervene in a System,” and Deleuze and Guattari have similarly presented a 6-point mapping strategy for processes of becoming based on the systems idea of a rhizome. Such manuals have in turn become the basis of various informal strategies for bringing about social and urban change.

In this paper, I will explore the paradoxical logic of systems on which these manuals are based and how this logic informs the work of contemporary architects, such as Urban Think Tank and eco-pioneer Pliny Fisk. In the case of Fisk, systems inform a mapping strategy he calls Protoscope (after Buckminster Fuller’s Geoscope) for leveraging change from a grey world to a green one, and in the work of Urban Think Tank, it forms the basis of a strategy for intervention or “urban acupuncture” in the barrios of Caracas—a strategy that begins by assessing the lay of the land and its agents (from residents to government officials) in order to propose architectural interventions that can positively change the existing field conditions.

The edge of a novel — A journey from academia

Two years ago I took a hiatus from writing academic papers for journals. Somehow, I thought, my voice was getting lost within the confinement of academic circles; what I had to say about “place” was limited to my classrooms, presentations, and journal articles. At the time I was reading more history than I had in the past. I had been to Istanbul when I was much younger so I began to read about its history; I also enjoyed the complex history of southern Spain, the al Andalusia plain specifically during the 1500’s and until the Inquisition destroyed the earlier balance of cultures. While reading these histories I was formulating a class that addressed issues of embodiment.

I began to think that I should turn what talent I had towards a different medium—a novel. What better way to spread the information about place and embodiment than to make them characters in a story, embedded as it were within the framework of that art form. In particular I wanted to address the “edge” of place because all systems are more complex at the boundaries. The task of writing the first chapter was fairly straightforward, however I had to stop and design the house in which some of the story unfolds; I had to understand the arrangement before I could resume the task of writing. I continued to write folding the edge of place with the circumstances of embodiment, and with history. I had to stop again and outline when all the lives of the characters converged and where; and after writing a bit more I had to stop again and think more carefully about the story line. I do not know “how” to write a novel, but it is quite different than academic papers—the process is different, the structure is quite different, and the pauses I take to regroup are dissimilar; the flow of a novel to me seems to be hermeneutic; the act necessarily “loops” back as the story and characters are revealed so that progression is not purely linear and quite different from presenting a deductive argument.

The architectural anomaly of 2A+P/A

Peter Lang was invited to curate an exhibition on the architecture studio 2A+P/A at Hyunnart gallery in Rome. The exhibition, titled “The Pop Out Show” was tied to a larger week-long series of exhibitions and conferences on architecture taking place around the capital, the “Festa dell’Architettura” (The Architecture Festival) sponsored and organized by the Casa dell’Architettura and the Ordine dei Architetti—two official bodies representing architects in the city, this year under the directorship of the historian/theorist Francesco Garofalo, Professor in Architecture at the University of Pescara.

The exhibition consisted of a recent survey of projects by Gianfranco Bombaci and Matteo Costanzo co-founders of the group 2A+P/A including “Art Wood,” a museum competition designed with Andrea Branzi for Vienna, their winning masterplan “Co-Housing” to be built in Venice-Mestre, and “Floating Clouds” a “fun machine” for residents living in Dunkerque, France. The gallery displayed wall murals, models and video programs. Peter Lang contributed a video commentary played during the exhibition, and wrote the catalogue essay “The Architectural Anomaly of 2A+P/A” later reprinted in the international magazine “Abitare. (July 2010, #504, pages 96-101). This essay, critically positioned the works of 2A+P/A within the larger context of contemporary Italian architecture.

The designer’s emerging role in a knowledge application process: Systems management as the context for landscape change

For landscape architects engaged in interdisciplinary collaboration, an emerging aspect of their role is to manage a design delivery process in which interactive learning can take place. Although the traditional role of the designer is that of an individual form maker, in future, the designer will need to exercise leadership in a knowledge-application procedure to guide landscape change as a systems management process. In future the form of the landscape will be the result of the technical, cultural and natural processes managed by interactive teams. Landscape architects are becoming responsible as systems managers rather than independent decision makers. In a collaborative setting, form is no longer seen as the purpose of design but the improvement of relationships that result from a shared knowledge-application process. A critical area of expertise for landscape architecture is becoming knowledge application process and it will require greater emphasis on systems learning to sustain that role in the future.

Murphy, M.D. (2010, March). The designer’s emerging role in a knowledge application process: Systems Management as the Context for Landscape Change. 2010 Annual meeting of the Texas Chapter of the ASLA, San Antonio, TX.
Web-based construction project specification system

Due to discrepancies and multiple ownerships of construction specifications in Korea, writing a project specification is very challenging. This paper presents a framework and architecture of a Web-based construction specification system (aka SPEC WRITER). Its database includes 15 standard specifications, 13 specialty specifications, national design guidelines, technical standards, standard drawings, over 45,000 construction materials, and more than 600 lists of manufacturers. This system is linked to national construction laws, regulations, and decrees through the internet. A functional framework and system architecture is proposed and construction information breakdown structure is used to reorganize the specifications and construction materials because of different numbering systems and formats. SPEC WRITER enables specification writers to write or edit a project specification in accordance with the national guideline and allows them to find all the related sections using a few keywords. Specification writers can also review, edit, and generate complex specifications with minimum efforts by using premade templates. This paper also presents a method to update and validate the SPEC WRITER through the internet.

Empirical application of GPS fleet tracking technology to a soil excavation process

The unpredictable traffic condition around the construction site and individual operator’s uneven productivity often make it difficult to identify an optimum number of hauling units for a soil excavation process at once. The balance between hauling units for a soil excavation process, for example, has to be updated repetitively until it reaches an optimum stage. Speeding up this process increases productivity especially at the beginning of the soil excavation process. One of the challenges in figuring out the optimum balance between hauling units, however, is to monitor the hauling units’ operation accurately. This paper presents a real-time GPS fleet tracking system integrated with a stochastic construction simulation. It also presents our investigation to figure out whether this system could facilitate the process of identifying the optimum number of hauling units for a soil excavation process.

AIM: Web-based, residential energy calculator for homeowners

This paper discusses AIM, or Assess, Improve, Measure. AIM is an energy efficiency calculator for existing residences that has been developed to provide homeowners, realtors and builders with a method to rate the energy efficiency of an existing house using a minimum number of inputs. To accomplish this, AIM uses DOE-2 loads simulations and a simplified systems model. To simplify the use of the calculator, parameters such as window U-factor, roof and wall insulation, which are normally required for simulations in existing homes, are automatically provided using statistical tables. This allows homeowners to use the calculator with information commonly available during a real estate transaction.

Energy management and control systems

Energy Management and Control Systems (EMCSs) are required to achieve reasonable energy efficiency and comfort in today’s buildings. Often the low cost feature wins out and the occupants experience higher cost and discomfort than would have occurred with a well-designed system. Approaches that can be used to achieve low energy cost and high comfort include optimizing the EMCS “time clock” functions, economizers, resets, demand control and timely reporting. In addition, measurement and verification (M&V) is also a very useful tool to sustain the high performance functions that buildings should have. Sustainable buildings have sustainable control systems. Examples will be discussed on how to achieve high performance, sustainable systems.


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The intent of the buttresses of Narbonne Cathedral

The design of Narbonne Cathedral constructed in the 13th century followed the rayonnant gothic style of cathedrals in the north of France, rather than the regional style of south-central France. The structure has been carefully measured and recorded in order to identify the design issues and decisions made by the builders from the characteristic details. One unusual detail is the arrangement of the buttressing, including an arched horizontal flyer for the inner rank to the exterior piers of the choir. This investigation models the structural behaviour of the buttressing system with consideration of the high coastal wind effects, the presence of a western wall constructed at the transept of the uncompleted structure, and an unusual exterior pier construction, among other details, while considering the properties of the masonry material and elements. The static and dynamic finite element analysis is evaluated with respect to the measured deformations, and the probable intentions of the builder for the design and corresponding design changes are presented.

Hybrids on the way to the western platform frame

The historical origins and development of the “balloon frame” have been widely discussed by such prominent researchers as Giedion (1963), Peterson (1992), Sprague (1983), and more recently Cavanaugh (1997). Details and drawings of the balloon method had been widely disseminated in agricultural and trade journals popular in the 1860s. Bell (1858) and Fair (1909) led the field since the mid 1850s with their trade publications Carpentry Made Easy and Practical House Framing, respectively. The federal government’s “Committee on Wood Utilization” (1931) was still extolling the virtues of the balloon frame almost a century after its assumed invention.

Even though the platform frame was the dominant method of light wood construction in post-war America, this dominance gets little mention while the balloon frame method lives-on as an equal in the professional reference books. As late as 1970 Architectural Graphic Standards was describing the platform frame with an equal emphasis to the balloon frame and the braced frame.

Solon Robinson is associated with the first descriptions of the platform frame in 1855 based on his observations of the California gold fields; but he gave little information and virtually no illustrations.

(Elliott 1994) concludes that the balloon frame was dominant to the turn of the century when it was slowly replaced by Western platform framing. But what were the in the platform frame’s development? Did it emerge in full form as we know it today, or were there hybrid forms?

This paper traces the development of the platform frame across early pre-cut, prefabricated and site-fabricated methods and compares balloon, platform and a hybrid platform frame. It presents a process-based rationale and images from case-studies in western Virginia, which represent a significant step between the full balloon frame and the western platform frame. Preservation issues (identification, conservation, utilization) related to the utilitarian buildings using these framing methods are also considered.

The Visual, the Corporeal, the Temporal, and the Tectonic: When architecture meets fashion in space

Architecture and fashion can be the literal and metaphorical references to each other. The intersections between architecture and fashion include identity, site, body, movement, structure, skin, and construction. Drawn by the fascination of fashion, the author conducted a second year studio in the fall semester of 2009, Wearable and Movable Architecture. The objective of the project was to examine architectural concepts on the close-to-body scale and through the lens of fashion. The intended inquiries in this project were four folds: the visual, the corporeal, the temporal, and the tectonic.

The site of the project was a breezeway connecting the three buildings at our architecture school. Each student picked an electronic sound piece to map the spatial characteristics of the breezeway. Body movements were used to express the rhythms of sound pieces and the spatial characteristics of the site. Students experimented with individual movements, such as extending, contracting, bending, squatting, falling and swirling, as well as the flow of movements, such as progression, climax, continuity and interruption. Through choreographing movements, students identified spaces in between their bodies and the site. These spaces determined the volumes and possible transformations of garments to be designed. Looking for moveable structures to realize the initial thoughts of garments, students researched biomorphic examples, such as wings, human spines, and snake skeletons. These structures were elaborated in materials and construction. At the end, the project concluded in a runway performance at the breezeway. The inquiries of the Wearable and Movable Architecture project will be extended towards broader discourses both in fashion and in architecture.

An experimental investigation of the shear properties of limestone masonry

Limestone blocks are used in a significant number of Old World structures, such as the Narbonne Cathedral in France. Limestone is now one of the major building materials for the south western regions of the USA, with producers in the state of Texas leading US production from an estimated 2,000 quarries. The purposes of this paper are to review the current state of knowledge on the shear properties of limestone masonry and to outline current research on the shear properties of various assemblages of limestone masonry, including ones made from cement lime-based mortar. The experimental results will be used to refine the structural finite element models of the Narbonne Cathedral.


Narbonne Cathedral, Narboone, France.
Housing Inequalities and Social Vulnerability to Natural Disasters: Findings from 2008’s Hurricane Ike

Community resilience can be defined as the ability of a community to resist or absorb the social and physical impacts of natural hazards and to rapidly recover from those impacts. Characteristics of the built, natural, and social environment may exacerbate or mitigate such vulnerability and impede or facilitate the ability of residents and businesses to recover. The same forces that expose populations to hazards also lead to spatial inequities, exposing the most vulnerable populations to the most hazardous conditions. Social vulnerability refers to the variation by person or group in their ability to “anticipate, cope with, resist, and recover from the impacts of a natural hazard” (Blaikie, et al., 1994, p. 9). Although work over the past ten years has made great strides in understanding and assessing social vulnerability, less is known about the variation in household responses to disaster, particularly as they are related to household dislocation and decisions to return and rebuild. A better understanding of household exposure and decision-making is critical to systems for responding to and recovering from disasters. Analysis of primary data collected during the aftermath of Hurricane Ike, which struck the Texas Coast on September 12, 2008, allow us to assess how social vulnerability factors—including the spatial distribution of housing—facilitated or impeded decision-making with regard to dislocation and early repair/rebuilding.

Image: VanZandt_HQ_Ike_Aftermath-Galveston-179.jpg

A review of the dynamic test loading patterns for in-plane masonry experiments

This experimental project focuses on the evolution of the damage mechanic properties for un-reinforced masonry panels, which are subjected to dynamic in-plane shear. A statistical determination of the evolution of the damage parameter for a ceramic material requires firstly, the development of a repeatable time varying load pattern. Secondly, the pattern should resemble the essential characteristics of relevant earthquake loading on realistic masonry buildings, preferably from earthquakes recorded in both interplate and intraplate regions. This paper sets out the development of the analytical criteria for a dynamic loading pattern for masonry that meets the two stated criteria.

Evaluating the effectiveness of mitigation strategies for flood reduction: How much can we save?

Flooding is the most ubiquitous and costly natural hazard in the U.S., averaging approximately $5.2 billion in property damages per year. Among all states in the U.S., Texas has ranked among the top for per capita flood damage and human casualties from floods every year for the last decade. Since Hurricane Ike, much attention has been paid to reducing the vulnerability of coastal communities from damaging flood events and pursuing policies that enhance local resiliency. While both structural and non-structural flood mitigation techniques are being proposed there is little, if any, empirical evidence on the effectiveness of these strategies.

We address this lack of research through a representative survey of Texas communities along the coast on the extent to which they implement an array of flood mitigation techniques. Specifically, we statistically identify the flood damage-reducing effect of multiple mitigation strategies implemented at the local level while controlling for various geophysical and socioeconomic factors. Results demonstrate which strategies may be most effective in reducing the adverse impacts of storm events and provide direct guidance to decision makers on how best to craft flood mitigation programs that will facilitate the development of resilient communities over the long term.

The protective action decision model: Theoretical, methodological, and practical implications for crisis research

The Protective Action Decision Model (PADM) is a multistage model that is based on findings from research on people’s responses to environmental hazards and disasters. The PADM integrates the processing of information derived from social and environmental cues with messages that social sources transmit through communication channels to those at risk. The PADM identifies three critical predecision processes (reception, attention, and comprehension of warnings or exposure, attention, and interpretation of environmental/social cues)—that precede all further processing. It also identifies three important classes of perceptions—threat perceptions, protective action perceptions, and stakeholder perceptions—that form the basis for decisions about how to respond to an imminent or long-term threat. The PADM describes the decision making process in terms eight questions people tend to ask themselves about the information they have regarding the threat, protective actions, and social stakeholders. The outcome of the protective action decision making process, in conjunction with situational facilitators and impediments, produces a behavioral response. In addition to describing the PADM and the research on which it is based, this article identifies a number of the model’s practical implications and theoretical directions for future research.

Sustainable regionalism:
Promise for mitigating effects of adverse climate change

Addressing the effects of adverse climate change is problematic. It is at the forefront of public debate and policy, worldwide. Human activities, and in particular, combustion of fossil fuels, urbanization, land consumptive agricultural practices, and de-forestation, collectively, lead to increased concentration of green house gases and aerosols in the atmosphere. These green house gases trap and reflect long infra-red radiation, creating an ozone-enriched atmosphere and increased warming of the earth surface. The documented evidence on the resultant effects of these changes in the atmosphere has grown substantially in the past two decades [1]. The adverse climate change phenomena, including mitigation and adaptation strategies, have been the subject of many international summits and scientific investigations [2].

The paper investigates the promise of sustainable regionalism as one strategy for adapting and mitigating the effects of adverse climate change. Sustainable regionalism seeks to create, revitalize, and restore the ecological region in metropolitan areas through the physical design and planning of neighborhoods, villages, and cities within a region from a regionally-based sustainable perspective. [3]. It fuses specific ideas from Geddes-Mackaye-Mumford-McHarg concept of natural regionalism, Kenneth Frampton’s notion of critical regionalism, and the sustainable development paradigm, but adapted to contemporary social, cultural, political, and environmental forces shaping the metropolitan landscape.

First, the paper examines selected effects of adverse climate change such as shifts in geographical distribution of plants species and increased extreme weather events, to illustrate the risks communities face if these effects intensify. Second, building upon the growing body of mitigation and adaptation efforts; in particular, those proposed by the Cities for Climate Protection (CCP), the paper prescribes a number of urban design and planning criteria and principles for dealing with specific effects of adverse climate change. [4] Third, it explores how these criteria can be integrated into the sustainable regional spatial framework. The paper concludes by evaluating the promise of sustainable regionalism for dealing with extreme climate change phenomena.

Citations

Bitter/Sweet: Case studies in transformation of sugar space in Brazil

Sugar production, as a sector of agro-industry, bore substantial influence on territorial planning and occupation in Brazil from the seventeenth century through the middle of the twentieth century. The space of the sugar mills incorporated aspects of both agricultural and industrial order characterized by an urban-rural hybrid. Sugar villages are examples of small-scale urbanization, which connect two key areas: industrial and residential. The sugar industry constructed within its over 200 Brazilian settlements an assortment of dwellings and equipment targeted to specific, collective uses. Since the 1960s, however, in the context of overall modernization of the country, the condition for the existence of some settlements was changing profoundly. The study interrogates the influence of the sugar industry’s action on the construction and planning of the territory and investigates the spatial organization — plan, architecture and collective spaces — of several sites located in traditional sugar-producing regions of Brazil. The research plan was based in two activities: documentary search and a program of visiting 24 sugar mills. This paper addresses the consequences of the more recent history of sugar mills’ reduction and elimination of residential provision and investigates the transformations of these spaces after the deactivation of the factory, through the analysis of some examples of adaptive reuse, abandonment, and initiatives towards the preservation of this focus of industrial heritage.

Building B and the Mnesiklean Propylaia on the Athenian Acropolis

In 1884, excavation within the northwest wing (Pinakotheke) of the Classical Propylaia built by Mnesikles on the Athenian Acropolis revealed that the foundations of the east wall and those of a planned extension to the north were built using poros architectural elements from several older buildings. The reused blocks include column drums, wall blocks, tryglyphs and metope backers, and curved and straight Doric geison blocks. In 1904, Theodor Wiegand published drawings of the west and east faces and assigned the Doric elements to two buildings, B (tristyle in antis, apsidal plan) and C (distyle in antis), built in the third quarter of the sixth century. Dörpfeld later proposed that Building B stood in the same location as the Pinakotheke and was the inspiration for the latter’s unusual façade.

While the design and construction of Mnesikles’s Propylaia have been thoroughly researched, a complete study of the reused architectural elements is lacking. This paper considers the relationship between Building B and the design of the Pinakotheke. I present a summary of the blocks that were reused in the classical Propylaia and discuss the grounds for assigning them to different structures. Further attention to the number and type of architectural elements preserved from each one, their state of preservation, and their placement within the Classical Propylaia allows me to consider the process of dismantling and reuse. Finally, I examine the evidence for the reconstruction of Building B, its apsidal plan, and its possible location on the Acropolis.

Recording and Documenting the Chromatic Information of Architectural Heritage

One essential approach in preserving architectural heritage is the documentation of 3D geometries and surface textures of historic buildings. For example, precise colour information, excluding lighting effects, is an intrinsic property of the surface materials of building interiors and exteriors. However, while colour information has been recorded for small sample areas, it has not been accurately documented on the scale of entire building surfaces. This is critical, because building materials decay and their colours fade with time. The goal of this project is to develop a method to assist in recording and documenting the chromatic information of interiors and exteriors of historic buildings with low cost and high efficiency. The method takes advantage of emerging high dynamic range imaging (HDRI) technology, which can store rich information about colour and illumination through digital photography. By recording the colour information, in addition to the geometry and texture information obtained through other existing technologies, we can achieve more complete documentation for architectural heritage. In this paper, we discuss an overview of the problem and present our algorithms for utilizing computer vision techniques to retrieve chromatic information of historic buildings. We also present and discuss our experiments and results of applying our method to studies of lab objects and the Hall of Supreme Harmony in the Forbidden City, Beijing.


Three photos showing ‘color decay’ on historical buildings in the Forbidden City, Beijing: at left, a recent repainting during a major renovation of the Forbidden City before the 2008 Beijing Olympics; top right, colors starting to decay; and below right, significant color degrading.

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European origins of the urban grid layout implemented by the Spanish in the New World

Mesoamerican settlements were based in ceremonial centers. These centers were characterized by a series of open urban spaces whose form was shaped by the architectural groupings consisting of temple platforms, pyramid temples and elite palaces. After the Discovery of America and the subsequent Conquest of the Aztec Capital of Tenochtitlan, Mendicant friars began re-founding existing Native communities and implanting urban design concepts that were in vogue and rediscovered during Renaissance Europe, in particular urban design ideas expressed by Alberti, and other urban theorists. This paper pretends to enumerate the probable influences and physical examples friars might have known from their European antecedents. Of particular interest is the example implemented under the orders of Pope Pius III and his architect/urban designer who had designed and built Piensa, Italy.


A snowy morning in Piensa, Italy, above, with a view of plaza, beyond, the Cathedral, and on the right, the Piccolomino Palace as seen from the loggia of Palazzo Comunale.

At left, an aerial view in Piensa, Italy, the First Renaissance City by Rosselini on commission by Pope Pius II.
Equal protection and aesthetic zoning: A possible crack and a preemptive repair

Equal protection issues arise in zoning decisions when property owners believe they have received differential treatment due to the interpretation of local land use regulations. This is particularly true in cases where municipalities regulate intangible factors like aesthetics. Although such regulation has been considered an appropriate public purpose since the Supreme Court’s decision in Berman v. Parker, it is unclear what type of evidence may be necessary for such regulations to survive equal protection challenges as a result of high court’s ruling in Willowbrook v. Olech. This article reviews the similarly situated standard proffered in Olech using means ends analysis. The authors offer a model to assist courts reviewing equal protection challenges of aesthetics regulations in establishing equivalent congeners. The proposed model is based on the construct validation process and seeks to encourage the consideration of empirical findings as a basis for justifying the regulation of aesthetics.

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Milestones in urban revitalization: East Athens, Georgia (1994-2009)

This paper reviews the effectiveness of the strategies employed and the outcomes of the revitalization plan for the East Athens neighborhood in Athens-Clarke County, Georgia, USA. Located about 60 miles east of Atlanta, Georgia, Athens-Clarke County is a city with an estimated population of 110,490 in 2007. The East Athens neighborhood with a population of approximately 8,600 in 2000, has long displayed many of the typical indicators of communities in distress: High rates of crime, poverty, unemployment, teenage pregnancies, female-headed households, low educational attainment levels, as well as severe physical deterioration of many homes and commercial establishments.

From 1992-1994, a multidisciplinary team of researchers, planners, and landscape architects from the University of Georgia worked with the city and East Athens residents to develop and implement a revitalization plan for East Athens. The team’s approach was grounded on two premises: First, effective community participation was essential to any viable revitalization efforts; and second, physical redevelopment is intricately linked to social and economic viability of neighborhoods [1]. The team implemented a model of participation----collaboration decision making----involving a strategy through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible [2]. Working with community members, the team developed an urban design plan for the commercial district, as well as housing, economic development, and social services plans, with special emphasis on how components of these plans were linked together and reinforce each other. Many components of the plan were approved and have been implemented over the years by the Athens-Clarke County government and non-profit agencies.

Using data from the US Census Bureau, Bureau of Economic Analyses, as well as other sources, this paper examines critically whether or not the outcomes of the intervention efforts have made a difference in the lives of the residents after 15 years---physically, socially, and economically; how, and why. Drawing on the lessons learned, this paper prescribes principles and strategies that can inform the design and implementation of revitalization efforts in similarly distressed communities in the United States.

The Need for Resiliency and Vulnerability Observatory Network: RAVON

Despite advancements in hazards and disaster research in large measure because of the investments in scientific research by the National Science Foundation through programs such as the National Earthquake Hazard Reduction Program (NEHRP), there is a growing sense in the scientific community that current programs and approaches are inadequate for tackling the most fundamental and critical knowledge gaps in resiliency and vulnerability science. The ability to systematically expand the knowledge base is increasingly constrained by a number of major obstacles. This paper discusses these obstacles and a potential solution for overcoming them through the creation of a Resiliency and Vulnerability Observatory Network: RAVON.

Regulatory plan implementation: A comparative international view

This presentation will focus on the discoveries made so far in connection with the author’s recently completed sabbatical. The research question: What, if anything, can we learn from plan implementation practices in other nations that might be applicable in the USA as we attempt to find ways to create more livable places? The quick answer: A lot!


Many other nations have a plethora of what Americans would call “liveable communities” — communities offering a mix of land uses and housing types; many transport options including pedestrian and bicycle; and public spaces inviting social interaction and leisure. What tools do other nations use to create and sustain these communities, and might any of them be useful in the U.S.?
Last planner and its role as conceptual kanban

Lean construction developed as a response to challenges within the construction industry—an industry known for budget and schedule overruns and an adversarial, litigious culture.

Adoption of lean thinking requires a dedicated cultural shift within an organization. Because of this, advocates of lean construction utilize simulation games developed for the lean manufacturing industry to introduce lean to newcomers. Lean simulation games may be viewed as miniature controlled experiments that quantitatively demonstrate beneficial outcomes from lean (experimental) versus non-lean (control) plays of the game. The games are intended to provide convincing evidence that lean is more than a trendy philosophy demanding leaps of faith. Lean is a science; it works.

One lean simulation game is popularly called the Airplane Game, from Visionary Products, Inc. The Airplane Game introduces newcomers to the importance of cell design, small batch size, pull scheduling and a flexible workforce—all which have been demonstrated to enhance flow.

Historically, the Last Planner™ System of Production Control has been coupled with the body of Lean Construction literature. However, the mechanism of the Last Planner and how it fits within accepted lean thinking has not always been apparent. This paper addresses this uncertainty. It examines simulated results from a lean simulation game and argues that the Last Planner serves the role of a Just-In-Time conceptual kanban, among its functions—and therefore sits squarely within the domain of Lean theory. This is good news for Lean Construction, because it strengthens the argument that productivity gains observed during application of lean theory are real, and not due to enhancements from a Hawthorne or placebo effect.

A framework for evidence based visual style development for serious games

This presentation will describe a framework for connecting computer graphics techniques and visual style in video game design with targeted learning outcomes for students. The relationship is organized on a table depicting Bloom’s taxonomy of the cognitive domain and categories of computer graphics imagery from simplified to realistic. This framework is presented as a useful way to economize design development efforts and incorporate visual development in addition to player immersion as an indicator of expected effectiveness for serious games.

Multi-dimensional construction visualizations with examples: Suggested topics for graduate course

Construction industry in today’s world is becoming enormously complex as project sizes are increasing and project duration are decreasing. At the same time designers are conceptualizing ever-complex designs, which no longer can easily be comprehended by 2D drawings. Classroom use of Information Technology (IT) for teaching science, engineering and technology has increased dramatically in recent years and has proved to be very effective in various situations. Using multidimensional (n-D) visualizations, animations, virtual reality and walkthrough of various structures in virtual environment students receive the understanding that is absent from the traditional “chalk-board” approach. The purpose of this paper is to demonstrate with examples various design and construction visualization techniques including image visualization, virtual reality, design animation, walk-through, time-space relationship visualization in 4D (3D+Schedule), time-space-cost relationship visualization in 5D (3D+Schedule+Cost), and Time-Space-Activity Conflict Detection using 4D Visualization in Multi-Storied Construction Project. The techniques demonstrated through virtual models can potentially be valuable course contents for graduate course for construction education and research.

The Architecture + Construction Alliance: A new organization

Deans of the colleges of architecture in the United States housing degree programs in both architecture and construction began meeting in 2006 to discuss strategies by which the academic community could respond to the increasing collaboration of architects and constructors in the built-environment professions and industries. Of the more than 100 US architecture schools, only fourteen have degree programs in these two fields, and several of these deans decided that cooperation among the fourteen schools would be the most effective avenue to develop best academic practices to give faculty members, undergraduate and graduate students the opportunity to understand and prepare for the growing integration of design and construction.

After frequent meetings, thirteen schools formed the Architecture+Construction Alliance in 2008. The A+CA Board of Directors is composed of the deans of the thirteen schools and an appointed executive director. In 2009 the Board elected Dean Jack Davis of Virginia Tech A+CA President; Dean Tom Jones of Cal Poly San Luis Obispo as Vice President-President Elect; and Dean Chris Silver of the University of Florida as Secretary-Treasurer. The Executive Committee of the Board appointed Tom Regan, Former Dean at Texas A&M, as Executive Director.

The A+CA is developing best practices that will encourage collaboration in research and educational programs between faculty members in departments of architecture and construction throughout the A+CA member schools. Research Units that are national in scope are being formed. An Industry / Profession Advisory Council will be formed, composed of leaders in the construction and architecture industries and profession. An inventory of existing educational programs at member schools is underway; the inventory will provide the basis for faculty initiated A+CA short courses, undergraduate minors, certificates, and special degree options that will enhance the cross-disciplinary education of next generation architects and constructors.

Survey of design competencies and skills

Review of a survey conducted to determine the opinions of students, recent graduates, experienced professionals, and design studio faculty as to the skills which can be taught in the graduate design studio. It covered 21 skills in 7 domains of competency and has produced a model featuring 23 skills.

Presentations


- **Bame, S.** (2010, April). Unmet needs during disasters: 2-1-1 Demand in Texas, Katrina-Rita, Fall 2005. 2-1-1 & Disaster Management Conference hosted by TAMU Hazards Center, College Station, TX.


- **Bright, E.M.** (2010, January). Presentation of work to members of the Qatar Ministry for the Environment, Doha, Qatar.

- **Brody, S.D.** (2010, May). Evaluating the Effectiveness of Mitigation Strategies for Flood Reduction: How Much Can We Save? Coastal Resilience Symposium, Rice University, Houston, TX.


Brody, S.D. (2009, October). Examining the Willingness of Americans to Alter Behavior to Mitigate Climate Change. ACSP Annual Conference, Crystal City, VA.


Caffey, S. (2010, February). Exempla Virtutis Imperialis: The Paintings of Benjamin West, 1764-1774. 1763 and All That: Temptations of Empire in the Decade after the Seven Years’ War. Institute for Historical Studies, University of Texas at Austin.


Desai, A., Bame, S., & et al. (2010, April). Unmet housing needs for disabled and ill, Katrina-Rita disasters, Texas, Fall 2005. 2-1-1 & Disaster Management Conference hosted by TAMU Hazards Center, College Station, TX.


Dumbaugh, E. (2010, March). How Urbanism Advances Mobility and Safety Goals... While Building Healthier, More Livable Communities at the Same Time! Houston Tomorrow/Congress for the New Urbanism, Houston, TX.


Dvorak, B. (2010, March). Understanding Elements of Green Roof Design. Emerging Green Builders Lecture Series, Texas A&M University, College Station, TX.


Finley, D., Bame, S., et al. (2010, April). Unmet housing needs: Housing Rehabilitation & House- hold Goods, Texas, Fall 2005. 2-1-1 & Disaster Management Conference hosted by TAMU Hazards Center, College Station, TX.

Garza, A., Bame, S., et al. (2010, April). Analyzing Community Unmet Needs in Texas during Hurricanes Katrina and Rita, 2005. 2-1-1 & Disaster Management Conference hosted by TAMU Hazards Center, College Station, TX.


FACULTY RESEARCH

- Grover, A., Xue, M., Bame, S., et al. (2010, April). Unmet Food Needs in Texas, Hurricanes Katrina & Rita, Fall 2005. 2-1-1 & Disaster Management Conference hosted by TAMU Hazards Center, College Station, TX.
- Hill, R.C. (2010, November). Accelerating Futures: Lecture to the Graduate Teaching Academy, Texas A&M University, College Station, TX.
- Hill, R.C. (2010, October). What the Global Future will mean for Architects. Prairie View A&M University, Prairie View, TX. [Featured Lecturer]
- Hill, R.C. (2010, February). Scott’s House playground design (Playground subcommittee presentation). Engineers without Borders, College of Engineering, Texas A&M University, College Station, TX.


Lee, J. Y., Bame, S., et al. (2010, April). Unmet housing needs: Hurricanes Katrina-Rita in Texas, 2005. 2-1-1 & Disaster Management Conference hosted by TAMU Hazards Center, College Station, TX.


Mann, G. J. (2010, March). The Health Facilities Planning and Design Program at Texas A&M University, Franklin Inn, Philadelphia, PA.


Mann, G. J. (2009, July). The Unique Program in Architecture for Health at Texas A&M University: Executive Committee of Array Healthcare Facilities Solutions, King of Prussia, PA.


Mann, G. J., Schneider, R., & Border, C. (2009, October). Health For All. Lions Club, College Station, TX.


Murphy, M.D. (2010, March). The designer’s emerging role in a knowledge application process: Systems Management as the Context for Landscape Change. 2010 Annual meeting of the Texas Chapter of the ASLA, San Antonio, TX.


Norman, A., Payne, C., Bame, S., et al. (2010, April). Needs for access to emergency organizations during disaster: Red Cross, Salvation Army & FEMA during Katrina-Rita, 2005. 2-1-1 & Disaster Management Conference hosted by TAMU Hazards Center, College Station, TX.


Payne, C., Bame, S., et al. (2010, April). Unmet Shelter Needs: Katrina-Rita in Texas, Fall 2005. 2-1-1 & Disaster Management Conference hosted by TAMU Hazards Center, College Station, TX.


Peacock, W.G. (2010, May). Social Vulnerability and the Texas Coast: Extending the Notion of Vulnerability to Promote Resilient Coastal Communities. 2010 Coastal Resiliency Symposium Agenda, Rice University, Houston, TX.


Rodiek, S. (2009, June). Environmental Influences on Outdoor Usage in Facilities for the Elderly. 6th World Congress on Design and Health (WCDH), Singapore.


Shaw, A., Bell, R., Shaw, F., Bame, S., et al. (2010, April). Unmet Transportation Needs: Hurricanes Katrina and Rita, Texas 2005. 2-1-1 & Disaster Management Conference hosted by TAMU Hazards Center, College Station, TX.


Tai, T., & Bame, S. (2010, June). Organizational Factors Related to Quality of Patient Care: Case of Hospital Quality of Care for Heart Attack Patients in the U.S. Proceedings of the annual Academy for Health Services Research and Policy, Boston, MA.


Ulrich, R. (2010, May). Evidence-Based Priorities for Designing New Hospitals. Lund University Hospital and Malmo University Hospital, Malmo, Sweden.


Ulrich, R. (2010, April). Evidence-Based Design: Overview and Current Research. The Children’s Hospital, Denver, CO.


Ulrich, R. (2010, March). Research Methods in Evidence-Based Design: Lecture and seminar for faculty and graduate students, Aalborg University, Aalborg, Denmark.


Ulrich, R. (2010, January). Measuring Quality Improvements Linked to Evidence-Based Hospital Design. Series of lectures for Vancouver Island Health Authority administrators and healthcare staff, Victoria, BC, Canada.


Ulrich, R. (2009, September). Evidence-Based Design for Creating the Best Possible Hospitals. Building High Quality Hospitals Symposium, Copenhagen, Denmark. [Keynote]

Ulrich, R. (2009, September). Evidence-Based Design: Series of lectures and seminars for clinicians and administrators for the British Columbia Health Authority, Vancouver, Canada.


Ulrich, R. (2009, July). The Importance of Design for Healthy Hospitals and Communities. Canadian Summer Institute for Ph.D. Students and Post-Doctoral Researchers in Health-Related Sciences, McMaster University, Hamilton, Ontario, Canada. [Keynote]


Warden, R. (2009, October). Digital Tools in Documenting Maya Architecture. American Institute of Architecture, Brazos Chapter, College Station Convention Center, College Station, TX.


Xiao, Y. (2010, February). Hurricanes and the Louisiana Economy. 49th Western Regional Science Association Conference, Sedona, AZ.


Zhu, X. (2009, June). Study Community Environment and Walking to School in Austin, TX. City of Austin Safe Routes to School Coalition Meeting, Austin, TX.


Journal Articles


**Published Proceedings**


Woods, P.K. (accepted for publication). Predicting the Unit Appraisal value of the unimproved and private land by LEED sustainable site credits in the city of Houston, Texas. Journal of Construction Engineering and Management, American Society of Civil Engineers.


Published Abstracts


Reports


Faculty Research


- **Qu, T., Dumbaugh, E., & Lomax, T.** (2010). Investigating the effect of freeway congestion thresholds on decision-making inputs (UTCM 09-12-11). Texas A&M University: University Transportation Center for Mobility, Texas Transportation Institute.


Exhibitions


Bienko, J. (2010, July-August). The Big Show. Lannsdale Art Center, Houston, TX.


Bienko, J. (2010, April). Large Graphite Drawings. Mary Washington University, Fredericksburg, VA.


O’Brien, M. (2010, July-August). Above and Within the Karst. [16x20 inch watercolor]. Selected for exhibition by the Houston Watercolor Society, Houston, TX.


Books & Monographs


Posters


Center for Housing and Urban Development

The Center for Housing and Urban Development is an integrated practice, outreach, service, education, and research center dedicated to improving the quality of life of people and the quality of the place in which they live, particularly, in rural and disadvantaged communities, such as the informal low income settlements that lack critical infrastructure along the Texas/Mexico border (also known as the colonias). Major programs in CHUD for improving the quality of life include: (1) Health and Human Services for individuals, families, and communities; (2) Education and Workforce Development programs, from young women and men to the elderly; (3) Economic Development programs. Major programs in CHUD for improving the quality of the place in which people live include: (1) Urban Planning and Design from rural to urban environments; (2) Critical Civil Infrastructure Systems for water, energy, transportation, sewage and stormwater, and communications; and (3) Housing and Critical Community Facilities, including affordable housing and community resource/self help centers.

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Center for Health Systems & Design

The Center for Health Systems & Design operates under the auspices of 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 evidence-based design of hospitals, nursing homes, neighborhood clinics, healing gardens, accessible communities, and healthy cities. The Center supports an annual research colloquium, weekly lecture series, and biannual newsletter. CHSD also helps support to fund graduate student research and travel, and manages the interdisciplinary Certificate in Health Systems and Design. The Center is supported by the Health Industry Advisory Council, a group of professional organizations, founded in 2002 to support the activities of the Center for Health Systems & Design and Texas A&M students with an interest in health design and research.

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

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.

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College of Architecture Research Symposium | 79
Hazard Reduction & Recovery Center

The Hazard Reduction & 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. The HRRC hosts two research units: Environmental Planning & Sustainability and Sustainable Housing. HRRC faculty is currently involved in externally funded research projects totally over $4 million. Funding comes from a variety of sources, including the National Science Foundation, Department of Homeland Security, the National Oceanic and Atmospheric Association, and the National Park Service. The Center also sponsors the College of Architecture’s Certificates in Environmental Hazards Management and Transportation Planning.

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Center for Heritage Conservation

Center for Heritage Conservation was established in 2005 to build upon a 20-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 studies of WWII heritage resources in Normandy, and Medieval structures in southern France, Mayan cities in Belize, 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.

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Visualization Laboratory

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 heterogeneous 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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The 12th annual Texas A&M College of Architecture Research Symposium: Natural, Built, Virtual was held Monday, Oct. 18, 2010 at the Langford Architecture Center on the Texas A&M campus. The daylong research showcase featured a series of faculty presentations previously delivered at scholarly venues around the world. This year’s symposium included invited or refereed presentations and papers from the 2009-10 academic year. ¶ “The individual sessions comprising the symposium displayed a wide range of scholarship with respect to people and place,” said Lou Tassinary, executive associate dean for the College of Architecture. “Fundamentally, the sessions reflected themes that have emerged in the work of the faculty and research staff over the past year.”