

CELA



2008-2009

ABSTRACTS

CONFERENCE PROGRAM AND ABSTRACTS

Teaching + Learning *landscape*

Council of Educators in Landscape Architecture
January 14th - 17th, 2009
Doubletree Hotel at Reid Park
Tucson, Arizona

CELA CONFERENCE CO-ORDINATORS:

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CONFERENCE INFORMATION

CONFERENCE FACILITY

All of the concurrent paper sessions, panels, and the poster session will be held at the Doubletree Hotel at Reid Park in Tucson, AZ. Room locations will be noted on the schedule, or will be available at the registration desk. Any event that is outside of the hotel will have its location noted on the schedule.

ACCESS TO E-MAIL

The Doubletree Hotel at Reid Park has complimentary WiFi available for all hotel guests and conference participants.

CONCURRENT SESSIONS

Moderators have been instructed to keep speakers and sessions on schedule. This will allow the audience to move between sessions to select specific presentations to attend.

There will typically be three to four speakers per session, although numbers may vary. Each speaker will have 10 - 15 minutes for their oral presentation. Time is allotted for questions and answers which may be after each paper or at the end of all presentations at the discretion of the moderator and presenters.

If you intend to move between sessions, we ask that you do so quietly and unobtrusively.

SPEAKER PREPARATION

A speaker preparation room will be available behind the registration desk for use during regular conference hours. A slide projector will be available for use in the room.

POSTER SESSION

Posters will be located in the conference foyer. Please set up your poster as early as possible so others will have an opportunity to review your work before the scheduled Poster Session. Check at the Registration Desk for the assigned location for your poster.

CONFERENCE SCHEDULE

WEDNESDAY JANUARY 14TH

8:00 am	Registration Opens
8:00 am - 12:00 pm	Pre-Conference Workshops (1) <i>Publishing Workshop - 8am - 12pm</i> (2) <i>LAAB Information Session - 9am - 12pm</i>
1:00 pm - 2:30 pm	Concurrent Session One
2:30 pm - 3:00 pm	Break
3:00 pm - 4:30 pm	Concurrent Session Two
4:45 pm - 6:00 pm	Opening Remarks and Welcome David Yetman, Phd.
6:00 pm - 7:30 pm	Opening Reception (cash bar)
Evening	Dinner on your own

CONFERENCE SCHEDULE

THURSDAY JANUARY 15TH

7:00 am - 8:00 am	Continental Breakfast
8:00 am - 9:30 am	Concurrent Session Three
9:30 am - 10:15 am	Posters and Vendors with Break
10:30 am - 11:45 am	Plenary Speaker Moura Quayle <i>Ideabook 2.1: Design Learning in Progress</i>
12:00 pm - 1:30 pm	CELA Business / Awards Luncheon
1:45 pm - 3:15 pm	Concurrent Session Four
3:15 pm - 3:45 pm	Break
3:45 pm - 5:45 pm	Concurrent Session Five
Evening	Dinner on your own
6:00 pm - 9:00 pm	Administrator's Dinner

CONFERENCE SCHEDULE

FRIDAY JANUARY 16TH

7:30 am - 8:30 am	Continental Breakfast
7:30 am - 8:30 am	Fellow's Breakfast
7:30 am - 10:00 am	Registration Open
8:00 am - 9:30 am	Concurrent Session Six
9:30 am - 10:15 am	Posters and Vendors with Break
10:30 am - 11:45 am	Plenary Speaker Sharon Harlan, Phd. <i>Climate Injustice in Cities: Neighborhoods, Landscapes, and Human Vulnerability to Heat</i>
12:00 pm - 5:00 pm	Box Lunch and departure for Field Trips
Afternoon	Field Trips <ul style="list-style-type: none"> • Sabino Canyon • Arizona-Sonoran Desert Museum • Preservation Studies • Biosphere2
Evening	Dinner on your own

CONFERENCE SCHEDULE

SATURDAY JANUARY 17TH

7:30 am - 8:30 am	Continental Breakfast
7:30 am - 8:30 am	CELA Past President's Breakfast
7:30 am - 8:30 am	Regional Representative's Meeting
8:30 am - 10:00 am	Concurrent Session Seven
10:00 am - 10:30 am	Break
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1:45 pm - 3:15 pm	Concurrent Session Nine
3:15 pm - 3:45 pm	Break
3:45 pm - 5:15 pm	Concurrent Session Ten
5:15 pm	Buses begin departure for Closing Reception at the University of Arizona College of Architecture and Landscape Architecture
5:30 pm - 8:00 pm	Closing Reception
Evening	Dinner on your own
7:30 pm - 10:00 pm	Shuttle Buses return to hotel

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**CONCURRENT SESSIONS I
WEDNESDAY, JANUARY 14TH, 2009
1:00PM - 2:30PM**

WILL WE LEAD, FOLLOW, OR GET OUT OF THE WAY? THE PLACE OF POLICY IN THE LANDSCAPE ARCHITECTURE CURRICULUM AND THE FUTURE OF THE PROFESSION

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The LANDonline news digest of the American Society of Landscape Architects dated November 14, 2006 introduced the ASLA's Public Practice Advisory Committee's series titled "Policy Shapers." The article stated, "When landscape architects shape policy, they expand the parameters in which landscape architects work, and they support higher aspirations for environmental quality in settings that range from site specific to global." The article then went on to state, "By becoming involved in public decision making as a citizen advisor, volunteer commissioner, or paid public official, landscape architects can reshape the environment of assumptions in which goals are established and implemented and in which the scope of their practice is defined."

Policy establishes formal rules by which individuals and communities physically interact with the natural and built environment. Virtually every aspect of the practice of landscape architecture takes place within a policy context. If the profession of landscape architecture wants to secure a leadership role in the analysis, planning, design, management, and stewardship of the natural and built environments the profession must also firmly establish its leadership within the policy arena. This leads to a fundamental question: to what extent should landscape architecture curricula prepare students to become actively engaged in policy? This question is increasingly relevant as the profession attempts to enhance its leadership on issues surrounding sustainability, regenerative development, and climate change.

This paper examines the policy goals and objectives staked out for the profession through the American Society of Landscape Architects, the Council of Educators in Landscape Architecture, the Landscape Architecture Foundation, and the Council of Landscape Architecture Registration Boards and offers

suggestions as to how policy might be integrated into curriculum requirements. It is written from the perspective of two authors with experience in the public and private sectors. One author coordinated work on the 2002 Farm Bill for the National Campaign for Sustainable Agriculture; served as Deputy Commissioner of Planning for Orange County, New York and was also staff director of the Orange County Metropolitan Planning Organization; and served as Deputy Director of Planning and Zoning, and as Zoning Officer, for Calvert County, Maryland. The second author was in professional private commercial and housing development practice in Stuart, Florida. Both are now assistant professors of landscape architecture.

Our goal is to initiate a vigorous discussion about the place for policy within landscape architecture programs and what goals and objectives an enhanced policy approach in education might achieve for the profession.

REFERENCES AVAILABLE FROM AUTHORS

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PEDAGOGY OF DESIGN EDUCATION INTO PROFESSIONAL PRACTICALITY

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The relationship between the academic and professional realms starts with emphasizing opportunities early in the curricular career of design students. Developing a new approach to informing beginning students of these opportunities offers them the chance to better capture professional experiences during their education.

The development of practical skill sets and professional communication starts early in the educational career of design students. But professional skills are increasingly subject to changes in technological advances influencing the landscape architecture profession, alluding to questions on the practicality of design education in comparison to the reality of the profession. How is design education pedagogy influencing the way in which students become aware of this and how effectively do students translate their educational experiences based on professional demands?

The initial research investigation was to identify professional skill and to document trends in professional demands. A survey was sent out to firms hiring interns and entry level employees. Over 2 years, approximately 60 firms responded ranking practical skills, listing forms of graphic communication, and offering suggestions on how to better prepare students for the office environment. The identified values from this survey are important indicators of current trends in professional communication and also address areas where curricular goals supersede practical skills. Another part of the research, conducted in the class, was to identify how students perceive early missed opportunities, how they document their work and how they maintain professional standards for educational projects, all identified as weak links in the development of a thorough portfolio.

By combining the survey results and class discussions, the pedagogy of design education for strengthening and reinforcing professional skills has begun. It has allowed employers to voice their concerns, express connections with the curricula and quantitatively document current trends influenced by technology. This presentation will briefly review the results of

the surveys highlighting some of the curiosities that contradicted what educators viewed as valuable skills prior to receiving this feedback. It will also review student discussions, reoccurring missed opportunities within the curricula and explore the process of portfolio development as a unique professional document. The next step, how to disseminate this knowledge, is up for discussion and will follow the presentation as a method for addressing curricular restrictions, student maturity and educational career timeliness.

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PARADIGMS FOR SUCCESS: ARE PROFESSIONALS OF THE FUTURE GIVEN THE TOOLS TO MEET THE CHALLENGES?

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Effective teaching in landscape architecture must be dynamic and respond to changes and trends in educational pedagogies, environment, culture, technology. The accreditation process and licensure are two of the several instruments employed to assess effectiveness of the education process and a professional's ability to protect the public's health, safety, and welfare.

This paper will discuss the inclusion of research as a third instrument, and focus on the effectiveness of design and construction education from the perspective of two stake holder groups. The first group consists of educators who provide the formal education in the institutions of higher learning. The second group consists of private practitioners who are employers of recent university graduates and who work with them on a day to day basis.

Faculty from three landscape architecture programs have conducted a survey of educators and private practitioners in the USA and Canada. The survey is comprised of 160 topics organized into 14 groups. These topics were evaluated to determine:

1. Differences in the importance of topics between the curricula and the profession.
2. If any topics are insufficiently covered by the academia as related to the degree of usage or application of that topic within the profession.
3. If there are differences in the perceived proficiency of graduates by the educators and the profession.
4. If any trends appear in the comparison of the past and present importance and coverage of topics.

This research also provides an update to a similar research that was conducted by Artunc and Schwind (1989). The findings of that research were presented at the 1991 CELA meeting, which was hosted by Michigan State University. This research paper will be able to present a reliable assessment of the changes since 1989 based on longitudinal quantified data generated from both surveys. This paper presentation will be able to highlight:

1. How is sustainability being implemented in the construction curriculum?
2. How is technology affecting the construction curriculum?
3. What else is being (or should be) taught in construction?

This team of researchers believes that similar studies and research should be periodically conducted for all areas of the professional curriculum and its core knowledge skills and applications of landscape architecture. It is hoped that this presentation would both provide an update of the 1991 CELA presentation and generate a discussion and interest to establish the need for similar studies in other core areas.

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LANDSCAPE CHARTERS, ACCREDITATION STANDARDS AND GLOBAL RECIPROCITY

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Landscape architects now practice in a global market. Reciprocity between countries for holders of accredited qualifications is therefore of increasing importance, to enable graduates to meet the academic requirements for membership of a widening range of national landscape architecture organisations. In Europe, the 1999 Bologna declaration began a process of broadly establishing qualification equivalence through an agreement to establish a coherent, compatible and competitive higher education framework. The European Landscape Convention (ELC) which was adopted in 2000 also began developing points of reference for curriculum design and evaluation in higher education. More recently, the European Council of Landscape Architecture Schools (ECLAS) has been invited by the Council of Europe to review landscape education in regard to the ELC, providing an opportunity to accelerate qualification reciprocity. In North America, LAAB provides consistency of accreditation across the US and Canada, and is now informed by the LABOK study.

However, expectations of a high level of equivalence across countries has the potential to dilute some of the subtle, but important, programme attributes that grounds landscape architecture education in particular cultures and regions, and gives them their distinctive characteristics. Landscape programmes are normally accredited by national organisations under delegation from the International Federation of Landscape Architects (IFLA), and it is important that unique regional or national aspects can be expressed within accreditation systems under the IFLA framework. Landscape charters are one way to encapsulate those national characteristics, by providing a summary of the values that underpin landscape practice in each country.

In this paper, ways in which a 'landscape charter' can enrich and help articulate the accreditation standards for established, and emerging, professional organisations are explored, with reference to the development of a landscape charter by the New Zealand Institute of Landscape Architects (NZILA). Such 'enriched' accreditation standards will be

more relevant to each nation, while still maintaining international currency. The implications for education programmes are explored.

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(ECO)LOGICAL INTENSIFICATION: RE-CONCEPTUALIZING THE ROLE OF THE PASTORAL IN PROMOTING STRATEGIES FOR SUSTAINABLE CITIES

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This paper presents emerging technologies and strategies for incorporating materially productive landscapes within urban environments. The author frames this discussion in light of cultural and visual attitudes toward working and public landscapes.

Density has been the battle cry of planners and urbanists for the greater part of four decades. With fuel prices expected to reach five dollars per gallon by the end of the year, few can argue against the benefits of more densely planned, walk-able, and transit oriented urban areas. Yet, for the majority of American cities truly urban density is decades of zoning amendments and infill away, not to mention unpalatable for a population accustomed to large private open spaces. As our urban centers ideally shift toward increasing population density, can our public lands and landscapes take on an intensification of program in order to accommodate a sustainable agenda?

For earlier generations of Americans the agricultural landscape held great meaning, acting not only as a symbol of American opportunity and potential, but also as an acute visual reminder of the egalitarian ideal at the heart of the new nation. Today, as Americans have become increasingly urban, and the rural has grown increasingly separate from our daily lives, we are left with a strong disconnect between what was, and remains, a national ideal, and what is an increasingly necessary urban lifestyle and environment. It is my hypothesis that emerging productive technologies can be used to harness the potential of interstitial and abandoned urban land, thereby engaging the urban population visually, intellectually, and materially with their landscape as a productive rather than exclusively decorative or visual element.

This hypothesis is reinforced by an investigation of interstitial highway and rail lands within the context of Columbus, Ohio, for their potential to support a wide variety of productive uses. This study was conducted using aerial photography of Franklin County, Ohio and ArcGIS as a means to compile spatial, topographic, maintenance, and soils information concerning each parcel of interstitial land. In total, this study revealed

over six thousand acres of usable land within highway and rail related landscapes. Findings suggest that these highly visible landscapes have the potential to support a small but significant portion of the local energy consumption. More importantly, this thesis offers up the potential of a new paradigm for the working landscape, one that looks beyond traditional agricultural, industrial, or representational aims to identify the 21st century's middle landscape.

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TRADING RED BARNs FOR GREEN WOODS: THE AESTHETIC AND ENVIRONMENTAL IMPLICATIONS OF OUR CHANGING RURAL DEMOGRAPHIC

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POMONA

The dynamics of population change in rural areas will have a significant impact on our rural landscape as increasingly large areas around urban centers become the homes of commuters, retirees, and weekenders (Davis and Nelson, 1994). The aging population and increasing availability of leisure time and resources to these groups (Fogg & Fulton, 1994) is likely to continue to expand the tourism market for recreational tourism, agri-tourism, and rural tourism. This tourism is an important aspect of rural economic sustainability, and will place pressure on the preservation of the rural aesthetic of farm fields, hedgerows, fence lines, and red barns interspersed with heritage architecture and natural areas. Furthermore, the grain of this landscape will be changed with the division of farmland into non-farm parcels, and the character of the landscape will change as farming uses are converted to natural areas and residential use. The land management decisions of non-farm rural landowners and the resulting rural area aesthetics were explored through a series of focus groups and survey of 944 rural landowners.

The study results suggest that landowners management focuses on the planting and expansion of wooded areas, and the removal of agricultural fields, large manicured areas, and hedgerows. Non-farm landowners are positively inclined to adopt responsible practices, and continue to plant trees and protect waterways. As such, they will positively impact water quality, flow stabilization, reduce greenhouse gases, control soil erosion, increase biodiversity, support wildlife, and sequester carbon (Olewiler, 2004). These changes will positively impact our economy as well: they will reduce water treatment costs, increase recreational opportunities, reduce flooding, and improve air quality and human health, among others. However, in the future, the characteristic 'red barn' rural landscape which attracts tourists to agri-tourism destinations, historic sites, and other non-urban experiences may be lost to wilderness areas,

lacking the charm and human appeal of the traditional family farm aesthetic. If it occurs, this change will have significant impact on the economic, community and environmental sustainability of our rural areas.

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NEW RURALISM DECONSTRUCTED: APPLICATION OF PRINCIPLES AND DESIGN ELEMENTS TO THE URBAN FRINGE?

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As cities and towns experience growth, in many cases with no measures in place to preserve open space, agricultural lands are often replaced by development. Existing in the transitional zone between town centers and the rural landscape, edges are experiencing rapid suburbanization with rural development replacing wildlife habitats and agricultural production. The purpose of this paper is to examine the principles and design elements of New Ruralism, as defined by Sibella Kraus, author of *A Call for New Ruralism*. Where New Urbanism promotes healthy, safe, and connected communities, sustainable agriculture seeks to empower communities on the value of local food production and economic and ecological benefits of protecting prime farmlands. New Ruralism aims to bridge these two schools of thought by implementing into urban edge areas their integrated principles.

Because New Ruralism is a recently conceived design model, there is not a large body of literature available for review. As such, the methodology used for this study included researching influences on the New Ruralism design model including New Urbanism, Sustainable Agriculture and the Garden City Movement; deconstructing the principles of New Ruralism into design elements and spatial patterns; identifying case studies in the urban fringe areas of the Northern Rockies that begin to incorporate New Ruralism principles; and proposing three region-specific New Ruralism based community design scenarios.

New Ruralism is intended to: promote the economic viability of preserving agricultural lands, encouraging new agricultural lands, and protecting wildlife habitats; empower the local community to understand the valuable economic and ecological benefits of supporting local agricultural production; provide housing for a variety of incomes; and strengthen the bond between urban and rural communities by creating a community design that fits the character of the place and enhances the overall community fabric.

This study aims to research the viability of the New Ruralism model and how it might influence responsible community design using the Northern Rockies as a case study region.

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CONTEXT AS CITY: ENCROACHMENTS & TRANSFORMATIONS AT THE WATER'S EDGE

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For the first time in history, the proportion of the population living in urban areas will reach 50 per cent during 2008. While a prediction such as this threatens with an escalation of uncontrollable sprawl and undifferentiated urban agglomeration, it also invites a fundamental challenge to the process of envisioning urban alternatives. In the face of increasingly complex and unyielding urban demands, the language of the city and the role of landscape architecture are poised for structural evolution. The increased burdens of urban density, the vacuums left behind by failed or failing repurposed infrastructures, the obsolescence of land uses ill-equipped to handle changing market realities, become fertile ground from which to deploy and redefine transformations such as those proposed in the Envisioning Hudson Square project, in New York, New York.

In this proposal, the enmeshing of ecological with urban infrastructures promises to extend the vocabulary of the city by tapping into the inchoate potential of the Hudson River. An important protagonist in New York's history and especially in this approximately 30-block, formerly industrial district of Manhattan's West Side known today as "Hudson Square," the river has historically loomed large in the city's physical, cultural, natural and economic evolution.

A former hub for the printing industry, the industrial buildings that line the district's edges sever it from its waterfront today. Given its proximity to major thoroughfares like West Side Highway, Canal Street and 6th Avenue, and its adjacency to Hudson River Park, Pier 40 and the Highline, Hudson Square is an appealing target for many, including the Sanitation Department, whose controversial proposal calls for appropriating a substantial amount of an 80,000sf waterfront site for fuel and salt storage. In response, the Hudson Square community invited five design teams to participate in an envisioning charrette to propose possibilities for the district's future development.

In the proposal presented in this paper, the district's connection to its cultural and ecological history and context is viewed as paramount to the district's transformation. As a catalyst that can link the area with year-round activities and programs, this vital connection to the water can transform the district's waterfront into a thriving environment for people

and wildlife alike. This rich new landscape will create a destination with striking seasonal appeal that concurrently fulfils the complicated needs of utility infrastructure, while becoming an urban destination that blends cultural and ecological history into its primary design strategy.

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CONSTRUCTING WITH GREEN ROOF TECHNOLOGY: A CASE STUDY OF THE CHICAGO CITY HALL GREEN ROOF PILOT PROJECT

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Vegetated roofs have accompanied human culture for thousands of years (Osmundson 1999). From the legendary Hanging Gardens of Babylon to modern roof gardens, green roof technology has co-evolved with advancements in building construction (Osmundson 1999). Recent advancements in materials and implementation methods were developed in Germany and Europe over the past several decades (Oberndorfer 2007). Although slow to emerge in North America, green roof technology is now beginning to be embraced across the country and landscape architects are taking leadership roles in working with this technology. Little has been published however, about the means and methods used to construct vegetated roofs.

Landscape Architect Theodore Osmundson, published "Roof Gardens: History, Design and Construction" in 1999. This book is currently one of the most comprehensive publications dealing with the many issues and key processes encountered when constructing vegetated roofs. Since Osmundson's book, little has been published on construction materials or processes. One such technical manual addresses green roof construction details, but is published from the roofing industry perspective (NRCA 2007). The non-for-profit organization, Green Roofs for Healthy Cities, has published hundreds of articles on green roofs with several articles published on materials and methods of construction (L. Peter MacDonagh 2006). There are several North American based academic journals that address vegetated roofs, but most of these articles focus on green roof benefits and only a few on construction technique (Velazquez 2005). Though there is a growing body of literature on vegetated roofs, little has been published in academic journals and less yet on the construction process.

To help build upon green roof construction literature, a case study of the Chicago City Hall Green Roof Pilot Project construction and implementation process is documented. As a case study, the paper begins with a general outline of the design process and design intent to provide a context for the construction process.

The process is discussed in detail along with some of the key decision making issues that the design and construction teams made. The role of the landscape architect will be discussed as well as the understanding of collaborations with other professionals and contractors. The design and construction teams will be referenced and interviewed for discussion of key processes and details. Diagrams and photographs are used to demonstrate methods, materials and outcomes. This paper informs designers and educators about issues relevant to green roof design, planning and implementation.

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GUIDELINES FOR LANDSCAPE ARCHITECTS COLLABORATING WITH SKATEPARK DESIGN/BUILD COMPANIES: THE CONSTRUCTION OF OUTDOOR PUBLIC SKATEBOARD PARKS

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The intent of this study is to improve the ability of landscape architects to work with skateboard park design/build companies to facilitate the best possible construction of public skateboard parks. Designing and building a skateboard park requires very specific knowledge that is difficult to gain without firsthand experience of the sport. Personal knowledge of appropriate alignment, layout, surface, proportion and edge treatments is essential and can be conveyed through design guidelines

Because skateboarding is the fastest growing sport in America, potentially thousands of new skate parks will be built in the United States in the next decade. Skateboarding has reached new levels of acceptance in our society as more people understand that it is a healthy physical outlet practiced by children, teens and adults. As popularity of the sport grew, so did wear and tear on the urban and suburban environments in which it was pursued. Damage to public and private property has encouraged local governments to build alternative facilities that would lessen the strain many skaters cause on their physical environment. As a result, skate parks have become a familiar element in public recreational facilities in many communities. A small contingent of design build companies are responsible for the majority of skate parks. Unfortunately, they universally report difficulties working with landscape architects who do not understand the sport and its needs. Poorly designed and built parks will only send skaters back out on the street to search for new terrain and resources spent building the park will be wasted. As more skate parks are built in our public parks, landscape architects can have an increasing role in the programming of these facilities. Most will need help, however, in the design specifics and construction details that result in an excellent skate park.

This study proposes a general set of design guidelines for landscape architects to use in designing skate

parks. These guidelines are based upon analysis of an established, active skate park, the Kansas City Skate Plaza. Utilizing site analysis and case study methodologies (Francis, 2001) and user analysis tools (Whyte, 1972), this study documents design and use of the park. Detailed analysis of obstacles and maneuvers was completed with movement mapping, site measurements and filming of users with a range of skills. The resulting guidelines for skate park design and construction address maneuverability; transitions; banked surfaces; surface quality; parking availability; obstacle variety and range for skill level; surrounding environment; community connection; safety, security, and accessibility; and, amenities.

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THAT OTHER CYCLE: NITROGEN

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Central Theme

This paper examines the 'new' nitrogen cycle, and how landscape design may alter the cycle. Nitrogen is the largest pollutant, affecting land and sea. Landscape Design can harvest this nitrogen through alga, producing fuels.

Context

This paper will describe a competition project for the harvesting of Nitrogen. Nitrogen is the most prevalent pollutant causing damage to land, water and ocean. While awareness of carbon is high, nitrogen is perhaps a more critical cycle to human health. Nitrogen loading from smog and fertilizer causes damage to soils, leaching them of nutrients, creates landscape-scale shifts in soil ph that alter species composition, and contributes to algae growth in the Gulf of Mexico - a dead zone larger than the state of New Jersey. The havoc is ubiquitous and chronic, yet the design professions have not mobilized around 'nitrogen fixation' or 'nitrogen footprints.' The description in this paper aims to raise awareness and offer that landscape architects can play a critical role in addressing this situation through their marriage of art and science.

The primary source of nitrogen pollution is agriculture, the EPA statistics from 303d lists show it is the number one pollutant in water bodies. Fertilizers and manure choke water supplies with algae from the pollution source to the ocean. While destructive, nitrogen and algae is a potential opportunity as the latest research uses algae for the production of biodiesel fuel.

This paper will show the implications of reconnecting the cycle-using runoff ponds and bio-harvesters to reduce nitrogen runoff. The case study investigation for a prominent design competition centered upon water illuminates a system for nitrogen sequestration and fuel production. Calculations from scientific research suggest that this type of system will not only sequester nitrogen from runoff, but is a viable and economically productive model for fuel production. This case study will show one scenario with potential sizes and configurations and explain the ratios of landmass and runoff to the design of the system.

The system turns algae into fuel through using farm silos as a support and storage infrastructure. This project marries art and science, wrapping the silos in a skin that holds the water for algae harvesting while using the inside for storing the dry algal mass. A Christo-like wrapping of the silos can bring awareness of the Nitrogen cycle and implications while functionally growing the fuel through maximum solar exposure-the fuel for biomass production.

Method of Inquiry

The method of inquiry is a rigorous case studying using scientific data to calculate runoff and production rates for fuel production including economic modeling for viability.

Findings and Conclusions

Algae bioreactors can minimize nitrogen runoff rates from farms and be viable as producers of biodiesel. Landscape architects can provide designs of the systems and affect the largest sector polluting the environment.

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NO PLAN TOO SMALL: TREE PLANTING ON THE GREAT PLAINS

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Before there was an American Society of Landscape Architects and academic programs in landscape architecture or planning, city and regional planning occurred in the United States in company board rooms, government offices, and in collaboration with a new profession: landscape architecture. After the Civil War the landscape architect Horace Cleveland likened the movement of people to western lands to a great reservoir held in check by a dam destined to burst. Cleveland wrote *Landscape Architecture as Applied to the Wants of the West with an Essay on Forest Planting on the Great Plains* in 1873. When urban historian Roy Lubove republished the book in 1965 he unfortunately, made the decision not to reprint the forest planning essay because its relationship to the central theme of the book eluded him.

The essay suggested that planting trees by the millions in new communities and on western farms would have an unparalleled environmental effect and social influence. In suggesting the plan Cleveland betrayed his close association with big business and government. At the time the idea was already under consideration by several railroad companies hard at work knitting the nation with strands of steel. The true test of railroad success would come after the roads were complete, when western lands dotted with prosperous and social stable towns were made agriculturally productive.

Cleveland directly discussed the plan with railroad entrepreneurs including Frederick Billings (Billings, Montana was named after him) of the Northern Pacific Railroad (NPR). Billings like Cleveland suggested a plan for a system of nurseries established along the rails to not only provide trees for railroad use but also for the practical and aesthetic needs of the settlers. He advocated a popular conception that the massive tree planting effort would increase rainfall and thereby improve the productive capabilities of the land. Along with that environmental purpose was a belief in the social (morality and health) benefit of trees set in park-like settings west of the one hundredth meridian where the they were is such short supply. Those new woodland and park settings it was believed would have a positive influence on an increasingly unstable society.

From his stalwart New England view, Billings was anxious about disruptions in the intricate balance of society caused by the wave of immigration in the western lands—immigration that he and other railroad magnates encouraged with money and agents sent abroad. To ameliorate those societal and environmental conditions Billings experimented with tree planting in his Woodstock, Vermont home landscape and along the route of the NPR.

While the grand plan was not implemented in part because promoters like Cleveland and Billings did not fully grasp the scale of their recommendation, remnant forests from those experiments exist today as a testament to a time of unbounded confidence when no plan was too big.

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JAMES RUSSELL LOWELL & THE ATLANTIC: SHAPING THE AMERICAN ENVIRONMENTAL IMAGINATION

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James Russell Lowell (1819-1891) promoted the poetic interpretation of nature and established the *Atlantic Monthly Magazine* as the public voice of Emersonian transcendentalism. An analysis of his writing and the magazine's themes will begin to illuminate Lowell's contributions to the American environmental imagination.

In the wake of aggressive economic progress and technological change, the 19th-century intellectual and political elite created a dialogue through literature and periodicals that promoted a relationship with nature, defined attributes of beauty, and explored the essence of the human spirit. These publications were a moral voice—a counterpoint to the dominant profit driven leadership—and they shaped the American environmental imagination.

One leader has been forgotten by contemporary culture and dismissed by the American literary canon: James Russell Lowell (1819-1891). Lowell, a contemporary and friend of Ralph Waldo Emerson, lived a multi-faceted life as essayist, poet, critic, satirist, Harvard professor, the first editor of the *Atlantic Monthly* (1857), and joint editor with Charles Eliot Norton of the *North American Review* (1864). His literary fame was established with *The Vision of Sir Launfal* (1848), *A Fable for Critics* (1848), and *The Biglow Papers* (1867). He was well known for supporting abolitionism. Also noteworthy, Lowell served as the U.S. minister to Spain and to England (1877-1885). He retired to Cambridge, Massachusetts where he was re-established into the intellectual circles of New England.

Less well understood is Lowell's connection to the profession of landscape architecture and promotion of nature's relevance in civilization. He had a personal relationship with landscape designer A.J. Downing who informed Lowell's opinions on garden making, ornamental horticulture, and the picturesque. Also, Lowell established a professional relationship with Frederick Law Olmsted, Sr. (1822-1903) through the publishing business and Olmsted's observations on the American South. They shared ideas on the poetic influence of nature—and its importance. Lowell

belonged to a discrete group of highly educated men who achieved national stature in their respective professions: religion, poetry, literature, science, and law. They informed each other's view of their world, debated means to influence it, and shared Emerson's transcendent idea on the relationship between humans and nature. They created the intellectual grounding for promoting nature as a civic expression, such as parks, and the impetus to create the *Atlantic Monthly Magazine*.

An analysis of Lowell's writing will seek to reveal his specific anthropomorphic interpretation of nature. Through the "Making of America" database of significant 19th-century periodicals at Cornell University, thematic searches will identify relevant works for comparison and usage of poetic, transcendental ideas. The general environmental themes within the *Atlantic Monthly Magazine*, and other sources, will begin to illuminate Lowell's contribution to America's nature ethic.

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LANDFORM MANIPULATION IN REAL-TIME ENVIRONMENTAL SIMULATIONS

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Recently, there has been a great deal of interest in new communication technology in planning processes. Particularly, the popularity of three-dimensional visualization media is increasing with the benefits of extensive participation capabilities, enhancement of communication and efficiency of data management. (An) Ian Bishop one of the foremost experts in environmental simulation stated in a 2005 paper entitled "Visualization for Participation: The Advantages of Real-Time?" "The raw potential of environmental visualization continues to grow – even to accelerate. So, we look for new ways to put it to use. We experiment, sometimes with success. Most recently, the possibility of exploring complex realistic outdoor environments in real-time has arrived – and awaits our ingenious application."

The purpose of this paper is to describe the development of a new real time landform design tool and visualization application currently being developed specifically for use by environmental planners, landscape architects, and engineers. The software is currently under development by Diamond Visionics a leading military flight simulation developer in conjunction with researchers from West Virginia University's, Environmental Visualization Working Group. This unique application combines military grade real time flight simulation software, an integrated ArcGIS interface allowing users to utilize existing GIS (geographical information systems) datasets, and an integrated real time landform design module designed specifically for modification and creation of landforms. Detailed explanation of the workflow that led to the development of this application and the various technologies used will be explained through the presentation of a case study of a real time interactive computer simulation that was created for the Faro Mine Closure Office (FMC) who has been charged with the responsibility for developing a closure and remediation plan for the Faro Mine complex, a large scale mine located in the Yukon Territories of Canada. The mine complex, has a total footprint of over 25 km² (9.65 mi²) which mining pits over 335 m (1072

ft) deep and the surrounded by approximately 500 million tons of waste rock, and 55 million tons of stored mine tailings.

Through this case study we hope to explain of the complexities of developing an environmental simulation and the need for software developed exclusively for landform design and the role that such application can play in the active landform design process.

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EIDETIC ALABAMA, FILM & THE MEANDER

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No media better lends itself to change over time, to documentation of landscape than film. While our tried and true watercolors, pen and ink, and even photography can attempt to capture the hotly pursued genius loci, only film can enter, move through, and record the very breath if not the spirit of a place. Additionally through interview, thoughtful editing, and soundtrack, film has the capacity to investigate, and imagine landscape narrative-to convey and visualize an evolving relationship of people and place. As several critics of the profession have recently decried, most saliently James Corner, media in the practice of landscape architecture when not eidetic, or imbued with a richness of sensual dimension and oneiric possible futures, runs the risk of serving as a cool instrument in the manufacturing of a bland and effectively sterile built environment (if not worse). Film surfaces today in an era of affordable home-computer editing software and international video rental as a powerful addition to both the study of landscape and the design of the future. Certainly film itself whether documentary or popular culture has been used across the country and indeed around the world to investigate and teach landscape issues from the psychological dimensions of the garden to the increasingly diverse and disparate needs for public space in the city. It is without a doubt an incredible communication tool in its capacity to condense information, appeal to multiple learning needs (auditory, visual, textual etc) and to travel liberally through time and space. This paper will focus on the use of film as an active agent in design, from stages of landing and grounding (to borrow Girot's now colloquial four traces) through to processes of finding and ultimately founding, and perhaps beyond as the media offers to returning and sharing. Case studies from Auburn's MLA program which has required film production in the last couple years and is pursuing partnerships with local film artists and instructors, as well as other programs will be evaluated to determine both the potentials and pitfalls of using film to support landscape architecture thesis work and how this emerging technology is affecting the future and quality of the practice.

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DIGITAL MEDIA AND THE HYPERNARRATIVE LANDSCAPE, RE-IMAGINING

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CHAMPAIGN

The purpose of this essay is to spark the curiosity of those designers who are graphically adept and philosophically bashful in their approach to project illustration. It is a reminder that philosophers and theorists like Henri Bergson, Gilles Deleuze, Paul Virilio, and Sanford Kwinter have cumulatively illuminated a path for shifting the designer's representational graphic paradigm. Indeed, some of their more well-known theoretical constructs may be aptly used by designers as metaphors for making when grappling with an urban field's temporal phasing or implied simultaneity. It is possible that this complexity can be captured in digital scenario-making as suggestively as block patterns or planting palettes.

There is long, conscientious tradition prescribed for architects and landscape architects to produce exquisite graphic portrayals of unbuilt environments. Meticulous and highly accomplished draftsmanship has been a requisite mark of excellence and virtuosity, often considered to show the extent of the designer's vision. Regardless of the demonstrable mastery found in those finely-worked drawings, traditional illustrative works truncate authentic, real-time realities – rendering mere caricatures of singular, inert moments of future urban fields. Tragically, the development of digital tools has done little to advance this narrow focus in architectural illustration – defining dynamism with pre-programmed fly-throughs or rotating objects animated on endless loops. The real advantage offered by digital production methods is not gained through introspectively fetishizing a design with increasingly arcane and hermetic precision, but rather in attuning design to a more blurry manifestation akin to the world we know: where assembled layers of history, culture, climate, phenomenology, temporality, geometry and ecology are perceived all at once.

The value of such inquiry is in the potential for tapping the dimensionally limitless digital environment for the design process. In an era of process-based projects influenced by long-term phasing, succession and bioremediation, landscape architects must develop definitive methods of representing the dynamics of

development and its subsequent uses. Further, for complex landscape proposals to continue gaining constituency, landscape architects must characterize these proposals through the production of imagery characteristic of images consumed in the wider cultural field.

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DIGITAL MEDIA IN LANDSCAPE ARCHITECTURE - EMERGING CHALLENGES IN TEACHING AND PRACTICE

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Digital media promises instant and unprecedented access to data and information, along with visualization tools and distribution around the globe. It is transforming the long established practice and teaching models of our discipline. The drawing boards, pens, pencils and other traditional tools are being rapidly complemented, if not totally replaced, with compact computers, scanners, digital cameras, flash drives and other electronic gadgets with ever faster speeds and packed with larger memory chips in a dazzling array of software.

Professional offices are faced with the challenges of providing training along with constant upgrading of computer networks in order to function and survive in meeting the demands of the professional realm. The academic programs, packed with required courses and many with a large faculty from the pre-tech period, are faced with keeping pace with the computer savvy student population and their employment prospects. This paper is intended to study and analyze the roles played by academics and professionals in the selection of types and uses of digital media in our discipline.

Through research, the authors will address the following questions:

1. What are the most commonly used set of soft wares used in professional offices and academic programs?
2. How is the use of technology changing the teaching, learning and practice of landscape architecture and what are the challenges being faced in incorporating technology?
3. Is there a reasonable model for incorporating digital media in landscape architecture programs?

The answers to these questions will be based on personnel experiences of the authors with academic and practice credentials. This will be complemented

with further literature research and case studies of selected professional offices and academic programs and interviews with experts involved in exploring the relationship of technology with design and planning.

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LOW IMPACT DEVELOPMENT AND CONSERVATION PLANNING: BRIDGING THE GAP BETWEEN AGRICULTURAL CONSERVATION AND URBAN ENCROACHMENT

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Parallel research into conservation practice is being conducted by two sets of researchers that seldom interact: agricultural researchers and the designers of urbanizing areas. The exchange of information between disciplines is especially important as agricultural area continues to be converted to urban space. It is possible that with the establishment of agricultural conservation practice, the transfer of information and data would inform the design of new urban and suburban spaces. The purpose of this paper is to discuss the similarities and differences in two fields of research and to present the results of collaborative research into a decision support tool that would benefit planners of all stripes. A tool is being developed by researchers from Mississippi State University from the Forest and Wildlife Research Center, the Department of Landscape Architecture and the Department of Civil Engineering that integrates hydrologic modelling (HSPF) and Best Management Practice (BMP) implementation, called Latis (Wilkerson et al. 2006). FarmLatis represents an agricultural extension of the Latis decision support system. Latis and FarmLatis are intended to help developers and conservation planners implement Low Impact Development (LIDs) and conservation planning strategies into their site designs. The application of hydrological modelling is a natural extension of these planning processes. The modelling process can assist in determining the different design alternatives for a specific site and assess their effectiveness in maintaining and improving water quality. FarmLatis and Latis use modelling tools which predict the time-varying runoff and water quality of stormwater. Three sites located at Mississippi State University are being modelled and monitored. Field verification of FarmLatis will enable the researchers to evaluate the appropriateness of

the hydrologic model chosen for the tool as well as to evaluate the parameters and coefficients used within the model. The results also describe the measured effectiveness of a common Best Management Practice, the vegetated swale. Research by Landscape Architects and affiliated disciplines into the design components of Low Impact Design and Conservation Practice will inform future decisions implementing the numerous combinations of BMPs for water quality.

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RONALD REAGAN WAS RIGHT!: SOME TREE SPECIES CONTRIBUTE TO SMOG: BIOGENIC HYDROCARBON EMISSIONS AND TROPOSPHERIC OZONE IMPACT OF THIRTEEN TREE SPECIES

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Increasing concern for global climate change has raised our awareness of the importance of understanding the sources of atmospheric hydrocarbons and tropospheric ozone which arise from both anthropogenic and biogenic sources. Anthropogenic sources include fossil fuel combustion, waste fuel spills, and industry and are well researched and well understood. Less understood is the contribution made by biogenic sources in the natural biosphere, including plants and bodies of water. Some studies have shown that biogenically-emitted hydrocarbon amounts may equal or exceed anthropogenic emissions (Fehsenfeld et al 1992). Not all emitted substrates are reactive, but volatile organic compounds (VOCs) emitted by deciduous (primarily isoprene) and coniferous (primarily monoterpenes) forests can act as significant precursors for ground level ozone formation (Lloyd et al 1983, Trainer et al 1987) if Nitrogen Oxide (NO) levels are elevated such as in or near urban centers where there are high automobile concentrations..

This research measured the hydrocarbon emission (isoprene and monoterpenes) and tropospheric ozone contribution of urban street tree species in Southern Ontario. The emission rates of different hydrocarbons vary depending on the compound, environmental

factors such as light levels or temperature, and plant species. Monoterpene emissions may be temperature dependent and isoprene emissions are the light and temperature dependent regardless of plant species (Guenther et al 1993), which creates greater smog impacts in sunny, hot climates such as Los Angeles CA, Atlanta GA, and the greater Washington DC area..

In this study, field measurements of VOC emissions were made and normalized, in order to determine the emission rates of monoterpenes and isoprene at standardized light and temperature values for tree species commonly used in landscape design. A leaf cuvette was used to collect three air samples for each of thirteen species, which were then analyzed for isoprene, monoterpenes and other VOC concentrations. Canister samples were analyzed by GC-FID using a cryo-preconcentration system at the Centre for Atmospheric Chemistry laboratories of York University to give VOC identification and concentrations. A rating system was developed to describe the ozone-forming potential for these species, and others studied in the literature, to describe their hydrocarbon emission and ground-level ozone forming potential based on their isoprene and monoterpene emissions and published reaction rates for these compounds. In this study, Willow (*Salix x blanca* Anders.) was a high emitter of isoprene. Silver maple (*Acer saccharinum* L.), and Austrian pine (*Pinus nigra* Arnold.) were moderate emitters of monoterpenes. Ten other species studies were not of concern. When the rating system was applied to the data on hydrocarbon emissions of other species obtained by other researchers, all Willow species ranked as high emitters in addition to Scots pine (*Pinus sylvestris*), Trembling aspen (*Populus tremuloides*), Eastern cottonwood (*Populus deltoides*), and Red oak (*Quercus rubra*). Southern species such as Black tupelo and American sycamore are also high emitters based on the application of the rating system to existing data.

These results have significant implications for the selection of street tree species in urban settings under a climate of increased concern for air quality and global

climate change. In areas with high concentrations of automobile emissions, species with high hydrocarbon emissions and ground-level ozone forming potential are contra-indicated as urban tree selections and should be avoided by landscape architects and urban designers..

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ENVIRONMENTAL SECURITY: A POSSIBLE PERSPECTIVE FOR LANDSCAPE PLANNING

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This presentation considers the concept of “environmental security” and its possible relationships with landscape planning toward the goal of ecological sustainability.

It is uncontroversial to say that security is a fundamental priority for individuals and communities. Yet, security is also a contested notion. Rather than denote some more or less fixed set of concerns, security structures thought in terms of mediations between something that is to be protected and something that is perceived as a hazard. Defining these opposing referents raises questions about how values are established, shared, and maintained. Further, it must also be recognized that securing one interest may make other interests more vulnerable to harm. Hence, security relationships are complex. Throughout the twentieth century, the predominant security focus was “national security”—the protection of a nation-state’s sovereignty and territorial integrity. However, near the end of the Cold War it was suggested that more comprehensive security might be achieved by prioritizing other referents to safeguard the environment—understood as ecosystem services—is one such referent.

Today, environmental security is discussed in fields including international relations, law, and peace studies, and it is increasingly deliberated within government agencies. Points of debate include how the composition of coupled social-ecological systems mitigate or intensify vulnerabilities and how environmental degradation can contribute to conflict. Positions range from the opinion that environmental security can provide a basis for sustainable development to warnings of militarized environmental management.

Given the knowledge-base of landscape planning, should—or, how might—its scholars and practitioners contribute to the broad conversation on environmental security? And, how might a security-focus contribute to landscape planning? Interdisciplinary discussion may allow for more comprehensive engagement with stakeholders and policy makers to create resilient

ecosystems and robust communities. However, it should be recognized that the discourse of security can be totalizing, and pursuing this line of thought may come at the loss of other professional aims.

This first part of this talk will provide a summary of ideas that support the conceptualization of environmental security. The second part will use this foundation to consider the security implications of climate change and watershed management-flood control policy.

Environmental security links the social construction of space with the material needs of communities. As a possible new perspective for landscape planning, it presents opportunities for collaboration, but raises challenges in terms of analytics and rhetoric. This talk will chart this developing intellectual and professional territory.

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PLANNING GREEN NETWORK FOR SEOUL METROPOLITAN AREA USING BIRD SURVEY

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Urban avifauna suffers from the fragmentation of its habitats which strongly decrease its mobility. Since MacArthur and Wilson, many researches found that the metapopulation dynamics among fragmented habitats is a function of distances from the source habitat, i.e., farther away from the source habitat, less number of individuals. Urban area is not ocean, but rather contains numerous green spaces that provide foods and shelters albeit to much less extent than natural counterparts. This suggests that the resistance of urban area against movement of birds depends not only on the distance among undisturbed habitats, but also on the ecological quality of developed areas. In this study, we examined the spatial distribution of urban avifauna to predict its potential dispersal paths within the urban area. We then identify the disturbed areas that should be prioritized for restoration to establish citywide green network.

The study site is Gangdong-gu, one of 25 administrative districts in City of Seoul, Korea. The study site is highly urbanized but entrenched by relative well preserved areas. Great Tit *Parus major* was surveyed twice, during breeding (April) and non-breeding (January) seasons, for an entire study area (24.3km²) using line transect method. Biotope - one of land use classification systems based on ecological status, such as existing vegetation types and human land uses - was also classified. Network analysis was conducted to find the potential dispersal path among locations at which *P. major* were observed. The number of *P. major* individual was counted for each biotope type to measure the inhabitability of each biotope in which *P.*

major was encountered during dispersal. Cost distance - the distance weighted by inverse of inhabitability - is computed for all possible paths between every location at which *P. major* was observed and the shortest cost distance was chosen for the potential dispersal paths.

The result confirms findings of previous studies. The number of *P. major* individuals was negatively associated with distance from the source habitats. The network analysis further shows that *P. major* uses less disturbed areas for dispersal path. As expected, there is almost no path via commercial areas while more paths via residential areas with relatively more vegetated spaces. Based on these findings, a green network map was provided for the Gangdong-gu to maximize the ecological connectivity. We recommend that a planner should consider the existing land use context while allocating scarce land resources to conserve the urban ecosystems.

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A DISTANT VIEW: ANALYZING EASTERN AMERICAN PERCEPTIONS OF THE AMERICAN GREAT PLAINS

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This paper investigates Eastern American perceptions of the American Great Plains landscape. Over the last two to three generations few Americans have had firsthand experiences with agricultural landscapes and understand the origins of food. People use the land more but think less about it. The Plains has provided meat and grain to easterners since the late 19th century: first by the railroad, and also more recently by truck. Distance between cities and farms incites delusions of ample food supplies and obscures environmental harm. Since the Dust Bowl in the 1930s Plains agriculture has relied heavily on external resources – fuel, pesticides, herbicides, fertilizers, loans, and government-funded subsidies – all while exploiting the soil and a limited supply of groundwater. There are few residents to monitor and care for the land; communities are disappearing. Almost all of the forty five percent of the United States having less than 6 people per square mile lying west of the 98th meridian. Advertising copywriters, the media, politicians, and agricultural corporations are partly responsible for perpetuating a bucolic image of the Plains and “idealizing ruralism.” As consumers of Plains agriculture, we too are accountable. “Social progress,” “clarity of thought,” and a comprehensive understanding of the Plains ecosystem are consequently prevented. Interviews conducted with students, faculty, and staff in the department of landscape architecture and horticulture at Temple University Ambler in Pennsylvania elicited perceptions of the Great Plains landscape. On three separate occasions participants were given questionnaires inquiring of the perceived appearance and use of the Plains landscape: (1) existing perceptions based on memory and experience; (2) after being shown advertisements and images of the Great Plains found in popular media; and (3) after being shown photographs from my travels throughout Nebraska and Kansas. This study suggests that the Great Plains has become invisible to Americans in the Eastern United States. Memory and experience fail to provide enough information about the Plains to critically analyze agricultural practices. Advertisements and images drawn from popular media both reaffirm preconceived perceptions and also provide some insight into the present state of the Plains landscape. Photographs from travels throughout Nebraska and

Kansas contrast memory, experience, and popular images, thus challenging interviewees to alter perceptions and actions as a consumer. A collective detachment from the landscape prevents us from seeing as individuals and sustaining land that provides food, and ultimately our continued survival.

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LIVING THE RURAL DREAM: THE CHANGING COUNTRYSIDE AND NON-FARM RURAL LANDOWNERS

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Development in North America is likely to continue, impacting on our natural resources, landscape character, and environmental quality. Belief in the inherent value of a healthy natural environment is leading increasing numbers of people to live in rural areas (Ilbery, 1998). These rural areas are undergoing non-farm population growth as a result of various factors including changing lifestyle preferences, an aging population, and technological innovations which allow exurbanites to commute (Bunce, 1982, Davis, 1990, Bascom, 2000). Non-farm rural landowners own an increasing proportion of our rural land, but often have little knowledge or experience with land management, though they tend to be very interested in stewardship and conservation issues. This research investigated the rural non-farm landowner and attempts to describe their characteristics and explore the key themes and patterns which inform their landscape perceptions and priorities for action. It involved five preliminary focus groups with farm and non-farm landowners owning land in rural, urbanizing rural, and urbanized rural areas, and four final focus groups. The research also included a survey of 944 landowners.

Study results suggest that the number and proportion of retirees and professions in rural areas are increasing, and residents are more likely to live on or near their properties than in the past. Average property size has decreased, and education levels are increasing. The results highlight the importance of specific landscape types and features including topography, trees, wildlife and heritage architecture. Key aspects of landscape decision-making include the desire to influence or impact on their land, the need for visual or tangible results, concerns about aesthetic qualities, and the recreational and personal restorative benefits of conservation activities. These results provide information which will assist with the development of new initiatives, support the continuation of successful programs, and enable the tracking and assessment of new and continuing conservation and stewardship initiatives.

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CONSTRUCTING THE COUNTRYSIDE: AFFECTIVE AND AESTHETIC CONSIDERATIONS FOR LANDSCAPE PLANNING OF RURAL LANDSCAPES IN SOUTHERN ONTARIO

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Vernacular conceptualizations of rural landscapes are mitigated by culture, region, gender, education and ownership. Vernacular understanding of 'rurality' impacts on the value and importance assigned to critical landscapes and the human actions and decisions which determine land use and planning patterns. In periods of transition and landscape stress such as rapid urban/suburbanization, rural residents engage in cultural creation of landscape icons along a wilderness-rural-urban continuum. Additionally, the emotive and experiential factors and meaning associated with this iconography have a significant impact on individual and societal land use decisions. Individual decision making about rural environments is therefore impacted by both affective and aesthetic factors.

This research utilized surveys, interviews and focus groups to research the attachment of rural farm and rural non-farm landowners to their environment between 1997 and 2006. This research indicates that understanding rural residents' view of the landscape is most impacted by the respondents' status as farmers or non-farm rural residents. In the political and social environment of creeping urbanization and exploitive threats to the integrity of the rural environment, non-exploitive natural capital increases in value and becomes an important consideration in the creation of social capital for rural residents.

This paper examines the differences and similarities between farm and non-farm rural understanding and mental conception of the countryside. This research provides planners and policy makers with a critical understanding of the vernacular view of the rural

landscape and the emotive value intrinsic in the rural landscape. In understanding the circumstances in which natural capital becomes evident and important in the decision making processes of rural stakeholders, landscape planners can better understand both the content and the context of the rural landscape.

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EXAMINING THE RELATIONSHIP BETWEEN AESTHETIC QUALITIES OF THE BUILT ENVIRONMENT & HEALTH STATUS IN RURAL PENNSYLVANIA

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Obesity is epidemic in America, and nearly one in four Pennsylvanians qualify as obese. The inability of individual level variables to explain rising obesity combined with the low success rate of individual behavioral interventions to deter rising obesity has prompted researchers to explore active living environments. In the past decade, studies have linked objective features of the built environment and active living/health status of individuals. Residents who engage in walking generally have a lower body mass index (BMI) than those who do not, and a neighborhood with a high walkability rating is a positive indicator of whether residents engage in walking. In combination with this, perception of the built environment plays a significant role in the decision-making process associated with healthy living behaviors; however, few studies have focused specifically on the role aesthetics play. Furthermore, research linking the built environment and healthy living has primarily focused on urban settings. Zelinsky (1977) identified key attributes found across the PCA (composed predominantly of census defined rural counties) that include compactness/density, mixed-land use, prevalence of street trees, and minimal building setbacks—all characteristics of walkable communities. Despite walkable characteristics, there is an inconsistency between the physical attributes of the built environment and health status of PCA residents, specifically high BMI.

This study examines the relationship between objective features and aesthetic qualities of the built environment at the neighborhood scale and health status of residents of small towns within the PCA. GIS data has been used to compute the objective features of the built environment utilizing the valid and reliable walkability index developed by Frank et al (2006). A refined audit instrument has been utilized to collect data on the aesthetic variables of the built environment at the neighborhood scale. Health data in the form of BMI has been used for this study.

Analysis of the collected information contributes to a deeper understanding of the role of aesthetics in the relationship between built environment factors and active living behavior of residents of PCA towns. By making use of the naturally existing situation of PCA small towns, this study provides information on the relationship between aesthetic factors of the built environment and active living, and in the process deepens our understanding of active living. Outcomes from this study will help to guide intervention-oriented studies in understanding the relationship between built environment factors and active living.

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EXPLORING THE RELEVANCE OF TRADITIONAL GARDEN DESIGN ON CONTEMPORARY URBAN OPEN SPACE IN CHINA

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The dominance of Western traditions of landscape architecture applied in non-Western settings has been questioned for the past twenty years. As people in China have questioned this approach research has been conducted that explores the variations between traditional Chinese design and that from the West. One of the more influential papers, by Wu (1999), concluded that there are vast differences between Chinese and Western designs in the five variables that she examined—the percentage area devoted to water, rock, pavement, buildings, and planting. Wu concluded that the Chinese models are so different from what is required in the modern city that it would be difficult to incorporate Chinese models into the modern landscape. The alternative study methods and different case study types proposed by this paper resulted in findings showing a greater overlap between traditional Chinese and modern Western designs. This led to differing conclusions and recommendations about how traditional sites can be utilized as inspiration for modern Chinese urban landscapes.

Utilizing Wu's five landscape factors, we investigated the relationship between traditional Chinese landscapes and those built in the late 20th century using two different methods of analysis. In the first analysis, we utilized a different set of sites. Where Wu had used the scholar's gardens as her traditional examples, we used the large rural palace grounds of the Chinese emperors and nobility, since these "summer palaces" were designed to accommodate large numbers of courtiers and staff in a way similar to a modern public park. In the second analysis, we investigated the percentage area allocated to each of the five variables, using eye-level, overview photographs, rather than the plans upon which Wu had based her measurements. From our visits to traditional sites, we believed that use of plans resulted in an overestimation of areas covered in pavement or buildings, in terms of human experience of the landscape.

The finding demonstrated that the percents of coverage for the five variables in traditional gardens,

as represented in summer palaces, and modern public parks and plazas are much closer to each other than Wu had found. Thus, while there are significant differences between traditional Chinese landscapes and modern Western-inspired ones in terms of symmetry and some materials, they are much more similar than previously concluded, requiring less modification in design approach than Wu had proposed. Our presentation will close by suggesting some key elements and features derived from traditional landscapes that have relevance to modern designs in China.

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**CONCURRENT SESSIONS II
WEDNESDAY, JANUARY 14TH, 2009
3:00PM - 4:30PM**

COLLABORATIVE THINKING: JOINT LANDSCAPE ARCHITECTURE AND ARCHITECTURE STUDIOS

LYNN PAXSON
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CARL ROGERS
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While the concept of Architects and Landscape Architects working together is certainly nothing new and neither is the idea of cross or inter-disciplinary education, it seems to be more often discussed in the abstract than implemented in practice. This panel will foster a discussion of educators who are interested in, or have experimented with design studios involving architecture and landscape architecture students learning together. Paolo Freire's model of integration and direct experience offers a foundation to collaborative learning as it employs the transition from a closed experience, the expert designer, to a collective experience, the participant of design. In the context of the two design disciplines, integrating design methods of each identifies similarities and differences between the design of a landscape and the design of a building. More importantly, administering collaboration between architecture and landscape architecture raises challenges to meet specific discipline requirements and to work together in a participatory group environment.

We will begin the discussion by presenting a 'case study' experience and then involve the audience in a discussion geared to helping faculty share their best practices, concens, and cautionary tales. The 'case study' we will present involves third year students. Our architecture department designates the fall of the third year as the studio in which we formally introduce and concentrate on issues of site and landscape, particularly in a non-urban context, to our students. In the landscape architecture department, the fall semester of third year introduces students to site planning at a medium scale (100 acres) and focuses on understanding relationships between various natural and cultural systems. In the fall of 2007 we undertook to convince the other four faculty involved in teaching this year level not to do some small collaborative efforts over the course of the semester but to fold the students together into a joint studio experience. In the end we were able to achieve this level of interaction only with part of the architecture students. There were many strengths and weaknesses uncovered in doing

this and lessons learned by both students and faculty. Many faculty and administrators were not keen on this proposal, which of course also colored the student's perception of this experiment. However, in the end a majority of students, faculty, as well as administrators agreed that the work and student presentations indicated that this was a valuable and productive learning experience. We will have the opportunity to repeat the experience, incorporating the lessons learned, in the fall of 2008 and this information will also be presented.

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POST-PEAK OIL PEDAGOGY

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KENNETH MCCOWN
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BOB SCARFO
WASHINGTON STATE UNIVERSITY, SPOKANE

Post-peak oil planning studio projects, employing scenarios and community participation, are gaining momentum in numerous universities' landscape architecture curricula. This presentation explores contributions and implications of this emerging trend.

Post-peak oil planning is emerging as a prominent subset of scenario-based planning, appropriate in what Hawthorne (2007) dubs our current era of "survivalist regionalism." If "Hubbert's Peak" is accepted (Heinberg 2005), where oil production is expected to peak near the present time and become exponentially costly thereafter, then transforming development patterns and density in cheap-oil-dependent urban areas becomes critically important to reduce potential for crisis in socio-ecological systems. Post-peak oil planning is a vehicle for addressing critical issues many communities are now grappling with: climate change, habitat preservation, water availability and quality, and food supply.

Faculty members involved in several graduate and undergraduate landscape architecture studios in the US are independently undertaking post-peak oil planning projects with students, combining community participation and scenario-based methods. Each sees post-peak-oil planning as an integrative process that spotlights community design as the critical agent for change, in contrast to approaches relying largely upon supplying energy alternatives to resolve issues. Studio projects involve analysis of vulnerable systems, scenarios for projecting probable and potential futures, and phased design and planning strategies incorporating novelty and surprise. In the cases examined, communities are involved with the studio planning process, creating an enriched learning environment embedded in local context.

Panelists will describe studio case studies and explore them for similarities, distinctions, and articulate the significance of this growing body of studio work for landscape architecture curricula and profession.

Pedagogical implications emerge from these case studies for discussion: first, increasing emphasis on temporal factors such as scenarios, phasing, and accelerated community implementation strategies; developing assessment tools to measure benefits to the community and to student learning; and beneficially integrating urban theory and interdisciplinary perspectives, particularly science and research, into community-based studio work.

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COLLAGE: THE PRACTICAL WAY TO REVEAL HIDDEN MEMORY

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MARYAM FARHADI
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This panel introduces the method to challenge architects along with cognizing themselves. A challenge familiarizes an individual with the hidden corners of his material and spiritual life, and leads him toward the creation of spaces. To achieve this goal we should have a reference to our own hidden memory in order to discover the rich and lively spaces which are blended with the very existence of human.

Collage derived from the French word, *coller*, means to glue is a work of art. It makes an assemblage of different parts to create a new whole. This Technique was first used in China around 200 BC. Cubist painter, Pablo Picasso, was the first person who used it for artistic purpose and after that Le Corbusier was akin to collage. Collage as a theoretical concept only became widely discussed after the publication of *Collage City* by Colin Rowe and Fred Koetter in 1978. Two main subjects encourage partners to offer their professor's thirty years experience in education by entitling Collage as a design method: professional education is not considered in universities for more than one century. Moreover, on experts' believes, the design process in landscape architecture, objective-subjective themes, is differ from architecture one. In order to Dr. Adibi perception, it makes the right cerebral hemisphere, the place of imagination, active and revivals the images of the students' hidden memory.

The design process is not an instructive and pre-determined process, but it is the product of the subjective and objective activity with a complicated mechanism of both creative and logical actions.

Before starting collage you should always think deeply and analyze the ideal spaces of the offered project, but you shouldn't plan a scenario concerning different parts of one whole. Many journals will be leafed and different resources will be overviewed. Desirable pictures will be separated and kept in a file. Tools are these pictures, needles, a paper in A3 format, and a broad foamie. The designer will initiate in choosing from among the selected pictures. The first picture plays an important role in the work because it implies the feeling of the designer toward the subject. You can imagine the numerous works created based on the designers' personalities. Other pieces of collage are then chosen and put together on a paper with a proper cut. This action won't limit the creation of new concepts. Transparency and composition are two key points, and enriching the abstract feature is the vital characteristic in creating spaces.

By focus on the method, these ultimate purposes are followed: Melting of relatively frozen minds, upgrading the power of imagination and creation of the mind, promoting the sight and more scrutinized analysis of the spaces.

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A CULTURAL LANDSCAPE PERSPECTIVE: ASSESSING THE POTENTIAL FOR A TRANSDISCIPLINARY FRAMEWORK FOR TEACHING LANDSCAPE ARCHITECTURE

DR. THAISA WAY
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JEFFREY D. BLANKENSHIP
SUNY-ESF

BRICE MARYMAN
SVR DESIGN

KATHRYN ROGERS MERLINO
UNIVERSITY OF WASHINGTON

Throughout the history of the profession numerous texts proscribing the framework of the discipline have stated that the practice of landscape architecture is the product of a dialectic between art and science. But what about the humanities? Modes of thinking associated with the arts (formal and material) and sciences (ecological and biological) are familiar in landscape architecture pedagogy; however, theories and methods associated with the humanities are less central to the way we teach. Arguably, these ways of thinking should all be represented. But what approach could allow for such complexity? Might a cultural landscape studies approach offer an alternative to the focus on design as an art and a science, instead suggesting that design is a transdisciplinary practice? Might such a perspective offer an alternative framework for the pedagogy and practice of design?

Outline of Session:

- Cultural Landscape Studies in the Design Program, Dr. Thaisa Way, University of Washington, Seattle
- Reading Landscape: The Cultural Landscape Idea In Landscape Magazine: Jeffrey Blankenship, SUNY-ESF, Syracuse
- Cultural Landscapes 2.0: Infrastructures or User-Generated Content in Contemporary Design Practice, Brice Maryman, SVR Design Company, Seattle
- A Cultural Landscape View of Architecture, Kathryn Rogers Merlino, UW Seattle
- Invited Respondent, Arnold Alanen, University of Wisconsin
- Moderated questions from audience

Brief Synopsis of Individual Contributions (abstracts available upon request):

Cultural Landscape Studies in the Design Program, Dr. Thaisa Way

To understand the potential of a cultural landscape approach it is imperative to understand from where it has come. The introduction will consider the lineage of cultural landscape studies within the landscape architecture discipline as well as some of the ways in which cultural landscape studies have been incorporated into design programs. In particular, the focus will be on how cultural landscapes have been taught as separate course material, as a distinct method of investigation, and as a evaluative framework for landscape preservation studies. With a foundational framework established, the panel will begin to explore alternative readings and applications of potential cultural landscape perspectives.

Reading Landscape: The Cultural Landscape Idea In Landscape Magazine, Jeffrey Blankenship

This paper discusses Landscape magazine during J.B. Jackson's tenure as editor from 1951 to 1968, and its role in transforming the cultural landscape idea from a controversial theory in human geography to a multidisciplinary concern that added complexity and texture to the meaning of landscape in design and planning.

Cultural Landscapes 2.0: Infrastructures for User-Generated Content in Contemporary Design Practice, Brice Maryman

Landscape architecture has always been a synthetic and reflective act. From its earliest days, the discipline has been concerned with larger social movements and upheavals. By embracing this legacy and applying its lessons to today's decentralized, audience driven content generation, contemporary landscape architects may find new modes of practice that transcend narrow definitions of the profession to provide an unapologetically democratic forms of practice that freely borrow from broader cultural currents to create deeply mnemonic places by trusting the audience to be an active agent in the creation of place.

A Cultural Landscape View of Architecture, Kathryn Rogers Merlino

Architecture and Landscape architecture have had a long history of coexisting within academic frameworks without fully realizing design potentials. Using cultural landscape studies as a tool for critical thinking within both disciplines a new understanding of place making emerges. Pedagogical transformations in how we think about teaching cultural landscape studies frame an understanding of both vernacular and high style environments at scales both urban and rural. The praxis of environmental design is altered from within and to begin with, rather than ending with, an understanding of a transdisciplinary approach to our disciplines.

Moderated Discussion

To realize the potential of a cultural landscape perspective, alternative futures are imagined that might draw on the concept as a paradigm within which we teach, learn, understand, and practice landscape architecture. Landscape architecture within this paradigm is potentially described as a praxis positioned between, across, and beyond disciplines such as ecology, art, environmental psychology, history, city planning, or architecture. Dr. Way will launch a larger discussion by moderating questions and inquiries in to how cultural landscape studies might frame, inform, shape, and perhaps even define future design pedagogies.

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DESIGN AND PLANNING FOR SUSTAINABLE HURRICANE PREPAREDNESS AND RECOVERY

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In the past few years the effects of hurricanes on human settlements have appeared to increase. The dramatic hurricanes, Rita and Katrina of 2005 and the Indonesian Tsunami created an international awareness of the effects of environmental change, poor community design, and failure to plan for even large heavily populated centers. In hurricane prone areas this alert was even more profound, since the loss of life in Katrina and Indonesia was significant. Even communities that had believed that they were prepared felt a new vulnerability. As a result of this, many landscape architects began working in areas related to pre-hurricane land use planning, improved site design for hurricane prone areas, and mitigation of devastation brought to the most vulnerable groups in society. Evidence built up in economic, social and equitable sustainability.

This session is to be a venue for some of the various types of work that have been done over the past three and a half years in hurricane preparedness and recovery. A brief summary of the three presentations that are to make up much of this session follows. The presentations will be followed by a panel discussion with audience questions about the key issues for communities to consider in their preparedness and recovery preparations. Although the specific topic under discussion is hurricanes, many of the issues and strategies discussed have application to a variety of hazardous situations.

Post hurricane mitigation and sustainable design in Key West

Studio and urban design research for the island

community of Key West resulted in a series of design strategies for city-wide post hurricane recovery. The research-based design outcomes included reconceptualising the role of civic space, a range of housing sequence strategies for pre and post hurricane conditions and a meaningful look at sustainable off-the-grid living in the island's geography.

Recovery with dignity became the focus of a 2-day participatory planning and design summit held in Key West that explored a "what if" Category 3 direct hit. The Summit included presentations and an exhibition from an urban design studio supported by sustainability, health design and hurricane recovery experts on the first day. Citizens, officials, designers and researchers took a close look at Key West health, culture, infrastructure, housing, children/elderly and sustainable resources on the second day. The outcome of the Summit led to community action groups, and a return to the drawing boards for a rethinking of the design at the city, neighbourhood and street scales.

The grass-roots method embraced the adaptability and resilience of the site-specific community, environmental and economic conditions. Sustainable technologies that worked with the community were demonstrated with two subsequent projects. These provided the community with examples in the design of affordable housing for first responders (people who were going to stay with their family and help with recovery immediately after an event) and a redesign of local street standards to act as a staging area for recovery.

The Problems of Public Housing and Its Residents in Hurricane Prone and Damaged Areas

As we are all aware, environmental problems typically hit children, the elderly and the poor the hardest. This avoidable truth is certainly true for hurricane damaged public housing. In many cases the housing is older, have been built the heydays of progressive community design for the poor—the 1930s and the 1960s, and often has been poorly maintained so that problems with roofs, doors, and windows already exist. In some cases this condition is deliberate, in that housing authorities planning to eventually replace a older buildings do not wish to put any more money into them.

This presentation will focus on two projects that looked at damaged public housing sites, one in Beaumont, Texas and the other in New Orleans, Louisiana. In each case the author and students were called upon to offer site planning suggestions for site reuse or redevelopment. In one case two plan alternatives were actually drawn up—one for a completely redeveloped site and the other that retained some of the less damaged units. In the other case the decision was made after the class was involved to only explore redevelopment options. While the physical designs that were developed will be shown the focus of the presentation will be on how the housing authorities viewed the hurricane damage and the opportunities it presented in contrast to the ways in which prior residents viewed these issues. The problems of trying to address the needs of the end-user client versus those of the named client will be discussed.

Sustainable Post-Disaster Housing Reconstruction in India
On 26 December 2004, an earthquake with a magnitude of M=9.0 struck northern Sumatra in Indonesia and triggered a series of devastating tsunamis along the coasts of most landmasses bordering the Indian Ocean, killing more than 225,000 people in eleven countries, and inundating coastal communities with waves up to 30 meters (100 feet). It was one of the deadliest natural disasters in history. Indonesia, Sri Lanka, India, and Thailand were hardest hit. The Nagapattinam district of southern India where over 6,000 lives were lost, 196,000 people displaced, and over 28,000 housed in relief camps, was selected as our study site for the summer or 2005.

Our field study team surveyed 1000 households focusing on pre-impact housing conditions, associated damages to the housing fabric, immediate post-impact emergency response, aid received, and short-term post-impact disaster recovery tasks of housing, economic redevelopment, and integration of hazard mitigation into the recovery effort. These results will be presented so that designers can better understand the effect of housing conditions and the impact of coastal zone regulations on emergency response and mitigation.

Ultimately, a Post Occupancy Evaluation (POE) in seven coastal hamlets of southern India that is specific to

the residents' reflections of their living environment (within the home and outside in their neighborhoods) before the tsunami in 2004, six months after the tsunami in summer of 2005 and three years out in the summer of 2008. These findings will contribute valuable information and insights to those of us designing sustainable outdoor spaces in flood, hurricane, and tsunami prone regions.

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GROWING THE PROFESSION: THE CELA INITIATIVE

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The profession of landscape architecture has been cited by the US Department of Labor as a top growth profession with an expected increase of 16% through 2016. (<http://www.bls.gov/oco/ocos039>). Despite the rosy employment outlook, there is concern within the discipline that supply is inadequate to meet future demand. A White Paper (April 2007) prepared for the ASLA Council on Education (COE) notes that the total numbers of graduates grew only slightly between 1991-2004-- at about 2.5% per year. Such slim growth will not accommodate an expanding job market. Indeed, according to Carpenter's (1999) prediction, 2% growth is needed just to replace professional retirees in the early 21st century. Orland (2006) points out that very few high school graduates apply to landscape architecture programs. Thus, the discipline is confronted by a dilemma, first expressed anecdotally by practitioners and beginning to be borne out by data, that educational programs need to grow. The Council on Education, (COE), states: "(T)he profession needs to be increasing both the pool and quality of applicants, and finding ways to create more seats in programs without compromising current standards for quality of instruction (White Paper on Growing the Profession, April 2007, p.2)."

The COE goals will require a number of strategies to be met. Some strategies, such as the ASLA 2008 initiative encouraging professionals to reach out to K-12 students, will be spearheaded by practitioners. Others, such as expanding landscape architecture programs will be led by the Council of Educators in Landscape Architecture (CELA). The spectrum of strategies must be accomplished in concert and be fully supported by the sister organizations.

This year, the CELA board worked with its members and the Landscape Architectural Accreditation Board (LAAB) to revise accreditation standards. The CELA

objective was to promote language to support establishing new programs without penalizing existing programs. The board felt that strong standards and specific language favor long term benefits to programs (and the profession): through ensuring adequate faculty numbers; good student/faculty ratios; and high quality facilities. This position was digitally vetted among members, and energetically discussed. Overwhelming support for stronger standards resulted from the discussion as the revisions are viewed as key lines of defense for threatened programs and as support for emerging programs.

This panel will discuss the proposed revisions from the perspective of emerging and existing undergraduate programs, established programs, and the LAAB. It promises to be a stimulating discussion.

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**CONCURRENT SESSIONS III
THURSDAY, JANUARY 15TH, 2009
8:00AM - 9:30AM**

MISTAKES, CONFIDENCE AND THE CREATIVE PROCESS

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Validating the steps in the design process creates awareness of the act and builds confidence. Mistakes are part of the learning process. Adventures first, explanations later –the act before the theory is an approach that provides a chance to reflect on the theory through the design act.

Track: Design Education and Pedagogy

This paper will look at first year design teaching, in particular a first year semester one, Design Fundamentals course at the University of NSW in the Landscape Architecture programme. I will discuss and show examples of studio work focusing on design processes, reacting to difficult projects and building knowledge in a fashion that builds confidence in design. These projects and design approaches are based on empirical teaching methods, an approach supported by French landscape architect, Christophe Girot.

Many of my studio projects rely on 'live edits', starting with a full page and using design decision making to select what is retained by nominating what is to be erased, the edit. This approach perverts the unfaltering gaze of a blank canvass and provides an active platform for the design process with a wide range tangents and options present. This approach to design is supported by the 'altered book' project where, instead of keeping a sketch book, in semester one students use an existing book, employing palimpsest to overlay and alter, extending and abstracting ideas across pages of a secondhand hard cover book. This art book type project demands an engagement with the subject matter and provides a less 'precious' foundation material as the work being altered is not their own. Students are engaged in text and model making exercises where a word or piece of text is contemplated on and then reacted to in model form; this leap into three dimensional expressions creates an immediate result, allowing the room to rapidly fill with objects and ideas that were not previously present. Through critical peer review and comparison of this body of work the students' confidence grows.

My teaching method also explores the concept of

accidental design where by some constraints are placed around the design act and the creative process is based in interpretation. My approach to teaching is non-linear and this provides opportunities for overlap and experimentation. Theory, where necessary, is used after the design act to better evaluate what has happened, this may or may not validate the process.

Case studies:

Instructional sculptures after the Austrian artist Erwin Wurm

- Body in space, environment instruction.

Altered book - Altering an existing book with collage, paint, cutting, stitching, folding or otherwise augmenting

City Shards Maps and Model Text project

- The individual in the built environment
- Placing your self within the scheme.
- Landscape narratives

Science Square Project

- Synaesthesia and the editing process of design generators

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DEVELOPING AWARENESS FOR PRODUCTIVE CREATIVITY

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Design education is a place where creativity and spontaneity should guide exploration and serve as a basis for learning. As design educators, one of our main goals is to create creative and responsible designers. This paper presents recent research on the metacognitive and visualization aspects of creativity. It documents the impact of design teaching based on metacognitive skill development and the impact of alternative design visualization methods on design thinking. In addition, this paper builds off of past research on the nature of problem solving in an over constrained and complex environment.

In 1979 the systems analyst C.W. Churchman coined this term “wicked problems” to describe problems that have multiple or no “right” answers and force one to choose what to solve and what to ignore. Designing the landscape is a classic wicked problem and because of this has intrinsic characteristics. Students need to understand that design problems are value defined and value driven and that there is no one starting point.

In order to approach design problems in this manner students must build and support an understanding and awareness of the cognitive processes related to creative thinking and the impact of visualization methods on design results. Metacognition, the ability to be aware of, attend to, and use information about their own cognitive processes serve designers for a lifetime and transcends changes in design styles, materials, construction methods, and technology. This paper presents research on the short and long term results of studio teaching strategies specifically linked to metacognitive skill development and the potential impact of visualization media on design outcomes. The research has demonstrated that students’ creative thinking abilities are enhanced through specific metacognitive skill development interventions and that their perception of space and scale shifts with the mode of representation.

The goal of this ongoing research effort is to rethink design teaching so that students develop the ability to be more creative in generating solutions and more accurate in seeing results.

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THE COOLING OF 'THE ART OF LANDSCAPE ARCHITECTURE'

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The phrase 'landscape architecture involves the art and science of....' (Newton 1971) has long been included in most definitions of our profession and practice. This study questions our faithfulness to our trademark 'partnership', long and successfully serving our penultimate client, society. The prowess guaranteed by infusing our design work with the 'spirit and gift of art' (Henri 1923) must be upheld as our methodological constitution. Purposeful symbiosis, igniting the marriage of art and science in problem solving, has consistently resulted in lasting, insightful, and serviceable landscape design outcomes - packaged in discovery, delight, and inspiration (Vitruvius, by Morgan 1914). The knit of 'art' in the 'science' clothes our projects in lasting beauty, fuels them with rich expression and meaning, shapes them into innovative resolution, and stages them with enduring vitality - fresh to the core (de Sausmarez 1964).

This author holds that landscape architectural education and its practice, of late, has been compromising truthful resolution in design by affording 'the science' dominance, resulting in weakened contributions from 'the art'. Dominant political, economic, and environmental forces form overwhelming and compelling design education and practice emphases, and rightfully so. This presentation will reinforce the benefits of and demonstrate curricular techniques for maintaining a healthy and vital marriage between art and science in design education and practice.

Methods:

The author recently was a four-month faculty-in-residence in a multi-disciplinary and multi-office design and planning firm. During this visit, the author developed and administered workshop modules and experimental quick-study design discovery procedures endeavouring to elevate the 'art' contributions in real-client billable projects. These exercises included:

1. Use of creative writing exercises to stimulate inventive site analyses and project-based design conceptualization (Potteiger and Purinton 1998).

2. Use of natural science descriptors of site conditions as basis for qualitative narratives, enabling the site to 'voice' its vision of design form.

3. Use of subjective 'emotive' descriptors to energize diagramming, enabling discovery of potential design forms from qualitative spring-boards (de Sausmarez 1964).

4. Use of expressionist drawing methods in the discovery, exposing, and illustration of the sub-surface design 'parti'- the project's 'artful core'.

5. Use of topographic, soils, and other natural systems mapping and data in discovering site design patterns, ordering systems, and geometries resident in the site's "soul".

Findings and Importance:

Deliberate engagement of 'art' as a thinking and design discovery process, in concert with objective, functional, and science responsive determinants, produces richer outcomes uniquely suited to the problem, free of 'template-suppressing' project resolution. The author will share visual examples of these quick and generative 'art-boost' exercises and their contribution to design outcomes.

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THE TORRANCE TEST OF CREATIVITY IN LANDSCAPE ARCHITECTURE EDUCATION

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The landscape architecture profession emphasizes sustainability, conservation, and environmental planning. With this ecological intent, however, educators are called to simultaneously reinforce creativity among students (Marusic, 2002). How do we measure creativity so that we recognize the levels at which students are at? And how do we nurture creative environments? These are important questions for educators, especially as we define landscape architecture as the integration of science and art.

The literature on creativity in design education reveals three major publications. Specific to landscape architecture is a study involving interviews with seven reputable practitioners about their creative processes and personality traits (Maslyn, 2002). Another paper expresses a strong call to make engineering education more creative by providing new and innovative projects using LEGO parts (Stouffer, et.al., 2004). The most rigorous study used standardized measures of personality traits and correlated these tests with architects' scores on a 7-scale creativity index (Hall and Mackinnon, 1969). The results showed that creative architects tend to have a keen awareness of self and are more open to their feelings and emotions than less creative practitioners.

The following goals will be accomplished in the proposed paper:

1. To demonstrate the usefulness of the Torrance test of creativity in providing baseline assessments of students' creativity levels;
2. To explore creative factors (e.g., diverse experiences, use of creative outlets,

etc...) that students bring to the educational environment;

3. To find out if the Torrance test is an adequate measure of students' work quality; and
4. To discuss a framework that educators can use to enhance creative settings and projects.

Methods:

Used extensively around the world, the Torrance Test is a standardized tool to test intelligence. The proposed paper focuses on the test and its educational application. The methods consist of the following:

1. Seventy five LA students were assigned a design project of a the downtown district in a small rural town.
2. Three landscape architect professors scored each of the students' work according to Torrance's creative areas (i.e., Novelty, Elaboration, Resolution, etc...)
3. The same scoring framework was used by student peers who also rated the submitted work.
4. Statistical correlations were conducted to test whether the students' Torrance scores were consistent with professors' and peer ratings of their work.

Main Findings:

Generally, the Torrance Test of Creativity is an adequate measure of work quality, however, educators must critically examine their projects to ensure that creativity is indeed fostered.

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OUTDOOR ENVIRONMENTS FOR CHILDREN WITH AUTISTIC BEHAVIORS

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This study examines how children who exhibit autistic behaviors interact with the physical outdoor environment, whether the affordances provided by the environment are recognized and enjoyed by them, and whether these places influence behavioral change (Gibson, 1997; Heft, 1988; Loveland, 2001). The findings of this study reveal how children with autism experience the physical outdoor environment in ways that differ from children who do not exhibit autistic behaviors. Further, it reveals characteristics about the environment that can reduce such behaviors, and has benefit for designers and people in behavioral fields of research and practice.

While little work has been done that studies outdoor environments for children with autistic behaviors, many aspects of autism research provide clues for investigation in this area. First, children's problems with sensory issues clearly points to the physical environment as a locus for study (Grandin, 2005; Schaaf, 1997). Second, these studies reveal that children with autism perceive of their world in ways that differ from those of "neuro-typical" children (Grandin, 2005; Jackson, 2002). Third, therapies that employ play as a way to expand social skill, communication and imagination experience can also involve the playground and other outdoor environments. Where the playground has been proclaimed the setting for children to develop socially among peers, its importance is even more powerful regarding the social skill development of children with autistic behaviors (Spitzer, 2008; Chandler, 1997; Moore and Wong, 1997).

In order to learn about these outdoor environments, the researcher interviewed children, diagnosed with autism, who are between the ages of 9 and 18, in their favorite outdoor places using open-ended questions about the place, such as what makes it special, what activities the child typically engages in while there, and how the place makes the child feel. The study is intended to be situated within the body of children's place literature, which is rich with descriptions, activities and emotions revealed by children during free play (Hart, 1979; Moore, 1986; Korpela, 1992; van Andel, 1990, and others). This literature provides a

methodology that supports the collaborative nature of the researcher and subject. The researcher also interviewed the children's parents to learn more about their children's behavioral characteristics, places where the children typically play, and the places where they spend their most quality time. These interviews with the parents also reveal the affordances that parents attempt to provide for their children to enable them to better engage in life.

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UNIVERSITY CAMPUS FABRIC: HOW CAMPUS OPEN SPACES SUPPORT STUDENTS' STUDYING BEHAVIORS

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Campus landscapes are an important part of academic life. Campus landscapes are responsible for molding a visitor's first impressions of the academic setting and significantly contribute to a student's decision to enroll and study at a particular college or university. It is also argued that campus landscapes can and should serve as a viable component to an institution's teaching mission. While the literature is rich with examples discussing campus architecture and historic campus forms, information relating campus design to teaching and learning is less evident. The purpose of this paper is to fill this information gap. Specifically, this paper will discuss how campus open spaces and associated amenities support and limit students' studying behaviors at two university campuses: The University of Georgia, Athens and The University of Hawaii, Manoa. As wireless internet technology expands learning opportunities into the outdoors, how should campus spaces be designed to take advantage of this learning opportunity? What would they look like and how would they function? Answers to these questions come from data gathered through behavior mapping studies of existing campus open spaces and questionnaire surveys. Particular themes related to outdoor learning were observed in the results. The collaborative research conducted on the two campuses indicates that learning outdoors is on the rise within the current student population characterized as the 'net generation'. The results also identify design features including 1) vegetation, 2) architectural edges and 3) landscape elements that either contribute or obstruct studying efforts. Results of this study will be useful to inform future campus planning efforts aimed at promoting outdoor learning by relating the needs of students to the design of campus open space. In a larger context, this study promotes the idea that well designed campuses can foster a spirit of collegiality and scholarly exchange of ideas, which further extends the university's broad mission to educate society.

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HOUSEHOLD FOOD SECURITY, DIET AND COMMUNITY NUTRITION ENVIRONMENT OF PUBLIC HOUSING RESIDENTS IN HARRISBURG, PA

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Obesity has risen significantly over the past two decades with 30% of American adults of age 20 and older being obese. Minority low-income groups are a special at risk group with respect to obesity and obesity related diseases like chronic heart disease and Type II Diabetes. Research on individual level factors/ behaviors have not yielded promising results with regard to changing this increase in the incidence of obesity in the population and has led to examination of environmental correlates of obesity. Research indicates that obesity is significantly influenced by the social and built environment that impacts an individual's access to affordable, healthful food and activity-friendly communities.

In an earlier study we examined the role of physical activity and nutrition in the lives of female residents of three public housing sites in Harrisburg and investigated their perceived barriers to physical activity and healthy nutritional practices. This study is a follow up study which explores: 1) the relationship between household food security, food intake patterns and Body Mass Index (BMI), and 2) the relationship between BMI/ food intake and the community nutrition environment with respect to family public housing sites in the city of Harrisburg, Pennsylvania.

Household food security status, BMI, and food intake pattern data were collected through a telephone survey using Computer Assisted Telephone Interview methodology. Eighty-four participants consented and completed the telephone survey. Community nutrition environment data was collected through the Nutrition Environment Measures Survey (NEMS) for stores and restaurants.

Data collection has been completed and data analysis is ongoing. Preliminary analysis indicates that public housing residents have a poor diet: very high in fat content, and insufficient amount of fruits, vegetables and fiber. At the same time the public housing residents live in a neighborhood with no grocery

stores. Convenience stores, corner stores and gas stations serve as the food outlets for this population at the neighborhood level. Several restaurants (fast food and sit down) are also located at the neighborhood level of the public housing sites. In summary, affordable healthy food is a scarce commodity for the residents of these neighborhoods. Low auto ownership rates, poor public transportation networks, and presence of young children in the family combined with the poor access to affordable healthy food makes healthy eating a difficult proposition for this community.

This research provides a better understanding of the impact of the community food environment on household food security and quality of diet and suggests interventions that have the potential to improve the health of public housing residents through changes in the community nutrition environment.

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LEARNING THE LANDSCAPE: WAYFINDING AND LANDSCAPE KNOWLEDGE AS PORTRAYED IN COGNITIVE MAPPING EXERCISES FOR NOVICE AND EXPERT USERS

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This study examined the process of learning landscapes, and cognitive understanding of landscapes. Two groups of students (one novice or seldom visitors to a landscape, and one expert users), were asked to construct cognitive maps of the landscape of a local botanical garden. Novice users showed evidence of Tversky's process of 'cognitive collage', in which pieces of the landscape were intelligible and coherent, while gaps existed between locales. As the novice group visited the site more frequently, their cognitive maps reflected a process of 'collage collection' in which pieces of wayfinding information became aggregated. In this process, even expert visitors showed gaps in knowledge of the landscape. Lynch postulated a five part model for wayfinding in urban settings, but our study indicates in natural settings with significant amounts of detail (botanic gardens), these differentiations begin to break down. Users evidences significant detail knowledge of small areas of the site, and accumulated 'collage pieces' to create a larger understanding after multiple visits. This study has implications for site design and signage to improve user understanding of the landscape, and provides theoretical insights into the process of human understanding and 'learning' about the landscapes we inhabit.

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EVALUATING METHODS FOR DEVELOPING A VISION AS THEY APPLY TO SMALL LANDSCAPE ARCHITECTURE FIRMS

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There are many parts to strategic planning. One part of the strategic planning process is the creation of a vision. There are various processes used to facilitate visionary thinking in the business world. The literature in landscape architecture is limited on this subject creating a need for systematic review of business and futurist literature. The purpose of the study is to analyze the various visioning methods in the business community and apply to small landscape architecture firms to help them develop their vision for the future. Maccoby indicates us that once we have found our purpose, our vision, it crystallizes our strengths, our passion flames up, bringing our talents and skills to life (Maccoby 2003.) The literature from the business community stresses the importance of visioning as a management and leadership tool. The visioning methods in the business literature range from simple five step methods for creating vision statements to long drawn out processes for developing future scenarios (See such as Miller, 1998; Nanus, 1992, Ronis, 2007.)

Qualitative research methods were used for this thesis. Broadly accepted models for visioning from the business community were analyzed and the key steps were summarized and categorized. Interviews were then conducted with the principals of a select group of small landscape architecture firms in order to gain insight into how they currently address the future and visioning. Their comments generated revised ideas, methods and key questions for visioning in the small landscape architecture firm. These steps from the interviews were combined with the key steps found in the business literature to generate a new model specifically for landscape architecture businesses. The new model was sent out to the same principals for their review. The comments from the principals were then applied to the model in order to revise and finalize a new visioning model created for landscape architecture professionals.

As a result a model is developed for creating a vision in small landscape architecture firms. This model is to determine future directions, alliances, training, technologies and personnel needs for the future. The model is a tool for the small landscape architecture firm to achieve its goals for the future.

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A MARKET SURVEY OF THE PERCEPTION AND ADOPTION OF LOW IMPACT DEVELOPMENT METHODOLOGIES IN THE FISH RIVER WATERSHED

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Low impact development (LID) is a stormwater management technique which emphasizes on-site treatment and infiltration of stormwater runoff as opposed to conventional stormwater measures. LID is a relatively new concept which began in Prince George's County, Maryland in the early 1990's. Despite its concept nearly twenty years ago and its gain in popularity throughout the country, LID is still not a widely used practice for managing stormwater runoff – particularly in the Southeastern United States. In 2006, the National Oceanic and Atmospheric Administrations' (NOAA) Office of Oceanic and Atmospheric Research authorized the creation of the Northern Gulf Institute (NGI), a collaboration of five research institutions, created to support research relevant to the Northern Gulf of Mexico region. Research themes include Ecosystem Management, Geospatial Data Integration and Visualization, Climate Effects on Regional Ecosystems, and Coastal Hazards. The initiative is led by Mississippi State University and includes the University of Southern Mississippi, Louisiana State University, Florida State University, and the Dauphin Island Sea Lab. The study described in this paper, which is partially funded by the NGI, focuses on the Fish River watershed located adjacent to the Gulf of Mexico in Alabama.

This paper presents the initial results of a market survey conducted by faculty and graduate students from the Department of Landscape Architecture at Mississippi State University aimed at assessing the adoption of LID techniques throughout the design industry. The initial phase of this study developed a questionnaire to address design and consulting firms' perception and adoption of LID. Topics of investigation included familiarity with LID, retrofit applicability, natural versus engineered systems, utilization of hydrologic modeling tools, LID marketability, client understanding of LID, and cost feasibility. The inclusive series of questions was formatted in a web-based survey designed to be taken in fifteen minutes or less. Participation requests were sent via e-mail to design

and consulting firms who currently practice, or have previously practiced, within the Fish River watershed. Responses were compiled, compared, and analyzed based on the design market's perception of LID as an alternative technique to stormwater management. The results of the survey will be used to guide future research into outreach opportunities, technological advancement, and to enhance the adoption of LID in the development industry.

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GRADE EASY

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Digital Terrain Modelling (DTM) has grown up and is today integrated in every CAD Program. GPS-Dozers are also appearing on landscape construction sites. The author argues that digital grading is the way to go and has to be part of every site grading and surveying class taught in a Landscape Architecture Program.

Grading belongs to the core courses of every accredited Landscape Architecture Program in the U.S.A. Students are trained in the manipulation of spot elevations and contour lines via exercises, which vary between schools but all of them train the students in efficient "learning by doing" way. Textbooks like „Grade Easy“ by Richard Untermann and other well illustrated books cover the issue in depth.

Although grading is also an important task in Europe and good examples of professional grading can be found in many places, the tradition of teaching grading as a separate course does not exist. In Germany for example grading is taught as part of surveying. Students learn how to use surveying equipment and how to create contours out of it. Textbooks mainly cover engineering aspect of earth movement and other geotechnical issues. The learning of grading happens "on the job" during internships at Landscape Architectural offices.

Both approaches have advantages and disadvantages. They represent different Landscape Architectural cultures. New developments in the area of Information Technology (IT), dealing with grading, become a challenge for both "schools": - GPS receivers are integrated in the latest generation of smart phones. Soon every mobile will be able to receive GPS data and send information about location and elevation to a computer.

- The surveying industry developed digital tacheometer for builders, a target group, which needs surveying information but only has a core surveying understanding. Suddenly sophisticated digital surveying instruments become affordable for a Landscape Architecture Department.

- The imported point clouds, surveyed with a digital tacheometer, are not just rows of data but can be transferred via USB or Bluetooth to civil engineering programs for creating Digital Terrain Models (DTM) in Landscape Architecture.

- Cardboard Models are one way for terrain studies and presentations. In professional practice computer programs and plotters have taken over naturally based on digital terrain models.

- On large construction projects, specialized landscape and civil contractors today use 3D GPS dozer technology. One basic requirement, however, is that the designer provides the contractor with a digital terrain model

At HSR University of Applied Sciences Rapperswil in Switzerland, grading is taught using both the U.S. "grade easy" and the European surveying approach. With a solid background in manipulating contour lines by hand, and a good understanding of easy to use surveying equipment for non-surveyors (first semester), the landscape architecture students at HSR are intensely exposed to digital grading in their second semester. The digital grading course includes following aspects:

- import of point clouds
- triangulation of points, contours and breaklines
- theory of TIN (Triangulated Irregular Network)
- using point commands for site design
- volume calculations
- roadway alignment

Parallel to their learning about digital grading HSR students have to do a site design project. Here they apply their Know How on digital grading. The students have to locate a building, parking spaces, terraces, paths, etc. and grade all of it into an existing landscape. Very helpful are the DTM point commands. By quickly creating a DTM during the site design phase, the proposed contours show mistakes in the model and help the students to improve their grading.

Today grading should be taught in an analog and a digital way. Digital surveying is no longer a field only for surveyors, the same as DTM's are no longer an area for CAD specialists. Grade easy has to go digital.

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A GRASS ROOTS APPROACH TO GROWING SUSTAINABLE PRACTICES

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Landscape architecture has historically held sustainability as a cornerstone of its design process. The profession has looked to natural systems for inspiration, defining its expression through site analysis, and refining it in conceptual and final designs. Successful projects are those that have achieved sustainability by establishing a balance with all the systems involved (James, Lahti, 2004).

Assumptions regarding a student's understanding, and personal relationship with the natural environment needs to be questioned. For many students entering landscape architecture, exposure to sustainability has been shaped peripherally by media exposure, with minimal comprehension of the network of systems involved. There is a growing disconnection between current generations and the natural world around them, with a lack of physical contact to the systems that it comprises. Their sphere of exposure to different environments has continually diminished over the last century (Louv, 2005). Many do not share the same experiences with nature as previous generations, and therefore have not ascribed value to the natural resources around them. They have not gone camping, or hiking, or to visit national parks. This is exemplified by recent student's comments when presented with the opportunity to go on field trips to various national parks. The student's comments included "I don't want to go, because my car will get dirty" (on the unpaved roads in the park), and "I don't want to go because its too cold", and "isn't there a gas station here, (at the park) we didn't fill up before coming".

Through recent course implementation of an Ecology Integrated Learning Course, students were introduced to an existing natural system on campus. An undisturbed portion of a riparian corridor that bisects the campus was selected, and students conducted a qualitative, longitudinal, phenomenological study of the natural system. The study lasted an entire quarter and students spent 25% of their class time in direct contact with the ecological system. They employed a variety of methodology including verse, sketch, and photography to document their findings. Finally, they edited and

compiled their results, which were published in book form. The remainder of class time was spent exploring sustainable interventions and practices related to protection of the riparian corridor including storm water management, and erosion control techniques. These skills were additionally applied to ongoing design projects in other related studios.

Since the time of Aristotle, the concept of learn by doing has been an accepted component of our educational system. Exposure to natural systems can facilitate student's appreciation of their inherent beauty and complexity (Moore/Wong, 1997). With this knowledge, the paradigm of sustainability can become an integral component in a student's design process. Opportunities and methodologies to foster and encourage an appreciation and commitment to natural systems need to be incorporated into curriculums to overcome a mounting nature deficit.

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CULTURAL IMPLICATIONS OF GLOBAL CLIMATE CHANGE

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Recently, the United Nations Educational, Scientific and Cultural Organization, UNESCO, completed a report titled "Case Studies on Climate Change and World Heritage," focused on the potential physical effects of global climate change on World Heritage Sites (Colette, 2007). Although it provided evidence of physical damage associated with global climate change on World Heritage Sites, potential social and economic effects were only briefly mentioned. These effects are of particular concern due to the close relationship between coastal communities and heritage sites and the adverse influences of the effects. Possible influences include loss of tourism and decline in population, loss of funding, and loss of household traditions including festivals, history, and indigenous knowledge.

Current policies and physical precautions include harnessing natural processes to counter sea level rise, monitoring of sites and increased effects associated with global climate change, satellite surveying techniques, risk preparedness and the design of protected areas to allow for adaptation. UNESCO has addressed the need for continual development and implementation of appropriate management responses for protection of heritage sites. They continue to monitor the impacts of global climate change, raise awareness and use the World Heritage network as a tool for best management practices (Colette, 2007).

Nowhere in the world is the fragile balance between heritage sites and community more apparent than in the blustery Orcadian landscape, where, for the past century, there has been severe population and economic decline. Because of this, communities are directly tied to their heritage sites, something I experienced firsthand during a previous visit.

To address these issues, my research turns to Orkney Scotland, an archipelago of islands north of mainland Scotland. Orkney is ideal for the research because it is a historical and isolated island community with hundreds of miles of coastline, environmental variation

between islands and numerous threatened heritage sites. Using GIS, I will first model the potential physical effects of coastal erosion. Second, I will identify or interpret social and economic effects that global climate change may have. Finally, using a mixed planning method, I hope to develop solutions that will plan for, and protect the islands from global climate change.

Despite working in Orkney, the ideas and potential results of the research reach far beyond the islands. The fact that one hundred million people live within one meter of mean sea level (Zhang, 2004) makes this study particularly important for providing data on threats posed in low lying areas.

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DEMOCRATIC VALUES AND THE LANDSCAPE

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This paper posits that the nexus of the public and the private provide insight into the democratic values of the society, and that this nexus has evolved from the class separation inherent in the turn of the century designs, through a more inclusive and less classist populism, back into the present super-separation exemplified by a proliferation of physical barriers. The stretch of beach in front the historic Hotel Del Coronado in California typifies this evolution, and is used as a case study. In the short space of less than a mile of beachfront, four different types of public/private nexus have come to expression, over time. Each type expresses the inherent attitudes and values toward 'the public' interaction with 'the private' that is current with the society at the time. The history of each type of public/private nexus along the public beach is explored through the examination of the design process and social circumstances that existed at that time.

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A HISTORIOGRAPHIC ANALYSIS OF THE LANDSCAPE AND BUILT FORMS OF AMERICAN ETHNOBURBS

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This paper is a historiographic analysis of the current understanding of ethnoburbs, or suburbs with a predominance of ethnic minorities. Its focus is the social, political, and economic forces that have shaped the ethnoburban landscape and its built forms over time.

Principle texts on the suburban history have largely ignored the role that these ethnoburbs and ethnic minorities in general, have played in shaping suburban form (Fishman, 1987; Jackson, 1985; Stilgoe, 1988). Instead, the American suburban narrative is largely about the white middle-class. Kruse and Sugrue (2006) point out however, that the early existence of concentrated ethnic settlements in suburban developments at the turn of the century 19th century. Knowledge of these settlements has been informed by a limited number of recent accounts of particular group histories that often overlook the broader American ethnoburban phenomenon, and its landscape and built forms (Fong, 1994; Nicholaides and Wiese, 2006; Arreola, 1988, 2004; Wiese, 2004)

This paper analyzes the available literature on ethnoburbs with a focus on questions related to their spatial forms, including: What are the predominant types of ethnoburban landscapes and built forms that have existed throughout American history? What key social, economic, and political forces have influenced these forms? And, how do ethnoburban and white middle-class suburban spatial forms compare?

This review indicates that different factors have driven minorities and white Americans to the suburbs and influenced their landscape and built forms. Early ethnic suburban settlements emerged predominantly among established American minority groups and largely out of concerns regarding work, jobs, and affordable housing, which along with segregation gave rise to unique building types and cultural landscapes. In contrast, early white middle-class suburban spaces were informed more by romantic notions of the pastoral landscape, domesticity, rural life, and desires for class and ethnic homogeneity. More recently, ethnoburbs are emerging primarily among middle-

class immigrants, whose congregation has resulted in landscapes attuned to their particular social and cultural values, but also more heavily influenced by white middle-class norms than in the past (Fong, 1994; Li, 1998).

This review counters the dominant suburban narrative's neglect of the contribution of ethnic minorities to the contemporary form of the suburban landscape. It suggests a need for greater historiographic analysis to inform a more inclusive landscape history, which views the suburbs as a place of struggle and contest, as minorities have worked to assert their rights to a place and space in the American landscape.

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REDEFINING NATIONAL REGISTER OF HISTORIC PLACES BOUNDARIES WITH THE CULTURAL LANDSCAPE REPORT IN BRYCE CANYON NATIONAL PARK

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This paper examines the process used at The University of Arizona, School of Landscape Architecture, College of Architecture and Landscape Architecture to complete a Cultural Landscape Report (CLR) for historic Lodge and National Park Service (NPS) Housing districts of Bryce Canyon National Park. Both districts are listed on the National Register of Historic Places (National Register); however landscape features surrounding the historic buildings were not included in the National Register boundaries. As a result, historic integrity has been compromised on a landscape scale by non-supporting development. Furthermore, existing interpretation misses opportunities to discuss forest evolution, ecological systems, views, and topography as contributing and character defining features. In Bryce Canyon, the CLR process may result in a recommendation to expand the National Register boundaries within these districts to ensure balance between contributing natural and man-made features as well as landscape scale protection (Cowley et al. 2008). This finding is an important development in an ongoing discussion regarding the integration of natural systems and landscape ecological health with historic and culturally significant structures (Birnbaum 2007, Boyle et al. 2008).

The method for this study follows *A Guide to Cultural Landscape Reports: Contents, Process and Techniques* (Page et al. 1998). According to the NPS guide, the CLR's landscape scale assessment is broken into two parts: Site History, Existing Conditions, Analysis and Evaluation (Part 1); and Treatment (Part 2). Part 1 provides documentation of the evolution of the landscape within the context of the human interaction by examining a variety of landscape characteristics present historically as well as in the current condition. These include natural and cultural systems and elements, patterns of land use, ecological change and human experience. This history is used to determine a period of significance (based upon the National Register Criteria), then the existing condition is analyzed comparatively. The results of this

analysis combined with Park management objectives and NPS planning documents inform treatment recommendations in Part 2.

As shown in the Bryce Canyon CLR, these treatment recommendations can include expansion of National Register boundaries. Although this method was codified specifically for use within the NPS, this paper will discuss the possibilities this method holds for landscape preservation through integration of ecological health and cultural integrity with examination that stresses the importance of defining historic boundaries inclusive of natural systems and the structures they house.

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LEADERSHIP IN ENVIRONMENTAL STEWARDSHIP THROUGH SERVICE LEARNING

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“Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it’s the only thing that ever has.”

- Margaret Mead

“Service-learning motivates students. Suddenly there is a connection between what the teacher is saying and the world outside the classroom.”

- Senator John Glenn

(The John Glen Institute for Public Service and Public Policy, Chair, National Commission on Service-Learning)

“Be the change you want to see in this world.”

- Gandhi

Facing the ever increasing threat of global warming and other climatic challenges, the world today needs leadership in environmental stewardship more than ever. The leadership in environmental stewardship or in any field or arena does not happen overnight. Leadership knowledge, skills, and abilities (KSA) are learned through a continuous, pedagogically organized, and committed practice alike the professional KSA in landscape architecture. If we are serious about our commitment, as the professionals those claim to have environmental stewardship as its motto or call, then we need to do a much better job of educating and preparing our students in both the leadership and the profession. Service-learning is one of the pedagogical vehicles that offer one of the best opportunities to accomplish both without compromising the primary objectives of either goal. Service-learning offers the opportunity for today’s young people and tomorrow’s leaders to learn, while addressing local and regional needs. Hands-on experiences reinforce learning in the classroom, promoting civic responsibility and showing that citizens working together are a powerful source.

Discussion

Since the mid-1990’s, service-learning has spread rapidly throughout communities, K-12 institutions, and colleges and universities in the U.S.A (Compact, 2001). A report, entitled “Learning in Deed” from the National Commission on Service-Learning (Fiske, 2001) quoted National Center for Education Statistics

(NCES) estimates that in the 2000-2001 academic year, more than 13 million school students were involved in service and service-learning. NCES also found that between 1984 and 1997, the number of K-12 students involved in service-learning programs rose from 900,000 to over 12.6 million while the proportion of high school students participating in service-learning grew from 2 percent to 25 percent during the same time period. A similar increase has also been observed with the service-learning in the colleges and universities in the U.S.A.

Although the curricula in landscape architecture have always had projects and case studies in their communities, the most of these studies were not organized and/or recognized as service-learning efforts both for pedagogical and organizational reasons. Lack of an organized public participation though identification of a community partner, and service-learning pedagogy oriented course syllabus and project statements requirements including but not limited to not having a reflective component as a part of course or project were among some of the reasons for not earning the recognition of service and outreach efforts as service-learning contributions. However, more landscape architecture programs taking advantage of the service-learning opportunities and support provided by their universities as service-learning has become an important factor in assessment of academic and scholarly productivity and effectiveness of the programs as well as faculty in the U.S.A.

Service-learning in developing countries has another important dimension. Especially in countries where landscape architectural education is relatively new, and therefore; there are not sufficient numbers of professionals to contribute utilizing students in landscape architecture to provide community service for their communities (and nations) can contribute greatly toward protection of public safety, health, and welfare and thus provide a positive example of environmental stewardship. Moreover, there have been examples of service-learning project applications in landscape architectural programs (as well as other disciplines) the U.S.A. that are combined with the studies abroad programs in developing countries which has no landscape architectural programs or landscape architects as professionals.

Proposal

This paper presentation will contrast service-learning

examples in landscape architectural curricula from the U.S.A. and Turkey. The presentation will discuss similarities and differences through selected service-learning examples under following categories:

- Orientation and focus of the landscape architectural curricula.
- Role and contribution of service-learning in landscape architecture.
- How service-learning projects, case studies, and/or experiences may be chosen to relate to six pedagogical categories of service-learning.
- The professional opportunities and challenges in terms of education and practice in their respective locations.
- Potential role of service-learning in landscape architecture through international collaborative service-learning projects and studies.

Service-learning

Service-learning is a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities (Eyler and Giles, 1999; Stanton, 1990). Even though there are many different interpretations of service-learning as well as different objectives and contexts, we can say that there is a core concept upon which all seem to agree:

Service-learning combines service objectives with learning objectives with the intent that the activity changes both the recipient and the provider of the service. This is accomplished by combining service tasks with structured opportunities that link the task to self-reflection, self-discovery, and the acquisition and comprehension of values, skills, and knowledge content.

Service-learning may also reflect on participants' personal and career interests in science, the environment, public policy or other related areas. Thus, we see that service-learning combines SERVICE with LEARNING in intentional ways. There are many illustrations of how the combination is transforming to both community and students. This is not to say that volunteer activities without a learning component are less important than service-learning, but that the two approaches are fundamentally different activities with different objectives. Both are valued components of a national effort to increase citizen involvement in community service, and at every age (NCSL, 1990).

Significance

Although service-learning is not a new concept and there are an accumulating number of scholarly endeavors studying its uses, pedagogical and community benefits, there seems to be fewer scholarly endeavors studying its applications in landscape architectural curricula. This presentation is offered to provide a platform to bring about such studies and initiate a scholarly forum for exchange of ideas and data toward development of a reliable, replicable, and defensible pedagogical basis for development of leadership and professional KSA in landscape architecture through service-learning.

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ENHANCING CREATIVITY IN HIGHER EDUCATION-MEXICO

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To meet the information age challenges, many educators from different fields suggest the cultivation of deliberate efforts to enhance creative outputs. The experts emphasize that the central purpose of education should be to produce the cognitive skills of productive thinking, thus preparing students for the effective and personally rewarding use of the mind with whatever problems they may have to deal. Creativity is a form of behavior that can be learned and therefore can be taught.

The purpose of this study was to investigate the feasibility of improving creative thinking in a different culture and language. A workshop of 2 days duration was conducted at several different colleges at the University of Guanajuato Mexico. The challenge was to introduce the Osborne-Parnes Creative Problem-Solving process and other activities associated with creativity through a translator. Using a translator minimizes the direct content between the facilitator and his/her verbal and non-verbal behavior.

Torrance tests of creative thinking were used for pre- and post-testing to determine the effectiveness of the creative training. Torrance tests of creativity include four batteries of test activities, two verbal and two figural. These batteries are called the "Torrance Tests of Creative Thinking, Verbal Form A, and Figural Form B." Both batteries can be used from kindergarten through graduate school. Years of research have shown that these figural forms tests can be used throughout educational range. Test results revealed that there were statistically significant differences between the pre- and post-tests and that training was effective.

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COOPERATIVE EDUCATION: THE MENTOR/MENTEE RELATIONSHIP

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Cooperative education experiences produce some amazing results even in the absence of formalized tutoring or instruction. The magic of informal mentoring is uncovered in this paper. The mentor/mentee (protégé) relationship is rewarding for both participants and with some encouragement, can be enhanced.

This paper sheds some light on the relationship between mentor and mentee in a cooperative education setting. Based on a survey of many acting mentors and their protégés, this report establishes a series of best practices. These practices may be used to establish outcomes of the students. They may also be used to guide the conduct of professional landscape architects who are asked to 'cooperate' in the education of actively learning landscape architecture students.

Landscape architecture education has a long tradition in recognizing the value of internships, whether formal or informal. Most schools of landscape architecture require at least a summer internship and several schools encourage or require longer or multiple office experiences.

Given the assumption that the internship is a valuable learning experience, is it a necessary part of the formal education of landscape architects? Is the experience an intuitive mentor/mentee arrangement or should it be orchestrated. Should there be a prescribed curriculum for the conduct of the work-integrated learning experience?

The author has extensive experience in one internship program and has done research on others. The results of a survey of landscape architecture interns and professional mentors/employers will be presented.

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FACILITATING WATER QUALITY IMPROVEMENTS THROUGH RIPARIAN CORRIDORS ON RURAL LANDS

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A critical evaluation of water quality on rural lands can identify creative solutions to problems in an effort to better facilitate water quality improvements through riparian corridors.

Since the agricultural and industrial revolution began, the rate of ecological destruction has far exceeded the rate of ecological repair (Rana, 1998). Sedimentation and excess nutrients are two of the most significant causes of degradation and are both commonly associated with agricultural land use (Federal Interagency Stream Restoration Working Group [U.S.], 1998). Agriculture may arguably be considered as having the most significant impact in the form of non-point source pollution on rivers and streams as compared to other land uses (Smith, Alexander et al. 1987). Most riparian lands are under private ownership, especially in the eastern portion of the United States, and commonly occur on rural lands under agricultural production (NRC, 2002). The creation and preservation of these corridors is vital for the protection of water quality in addition to the numerous other beneficial functions provided by riparian areas. Protecting water quality and ecological integrity in agricultural watersheds in the United States depends significantly on private landowners' decisions about how they manage their land (Baudry, 1993). Watershed characteristics that were considered in this study of water quality included natural and cultural resources such as land use, land cover, hydrology, and soils. Land use and land cover were considered in historical and current perspectives including a comparison study of a series of aerial photographs. Through the use of Geographic Information Systems (GIS), data were analyzed to locate causes of water quality impairments. This method identified specific locations prone to erosion due to a variety of disturbances, sensitivity of riparian areas, and susceptibility of hydrologic modifications, as well as fragmented habitat connectivity. Analysis was performed at the site scale to assess the site in relation to the entire watershed. On the site scale, analysis was done to determine how the site relates to

the entire watershed. This identified the potential of the site to serve as a model for county-wide efforts to improve water quality from non-point sources. Within the site factors that were considered include geology, soils, topography, hydrology, floodplains, and wetlands. The results of the study offered a critical evaluation of existing programs in place to address water quality on rural lands. Alternative approaches allowed new perspectives into identifying and prioritizing water quality issues combining available resources and creating new resources.

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BRIDGING THE GAP BETWEEN SCIENCE AND DESIGN: A TRANSDISCIPLINARY APPROACH

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Gaps exist among science, people, policy and design for better water management and watershed health. Communities need an integrated way to deal with human water needs and uses that also protects the integrity of its abundant and valuable natural resources. This paper speaks to the first year findings of a broadly integrative trans-disciplinary project that represents the integration of eight departments of five schools within a university that addresses water quality, quantity, policy and design within a specified river basin. A thorough understanding of watershed conditions and trends, including scientific, policy and design components, are used to develop alternatives for achieving sustainable water management, watershed protection and design for quality living.

The National Research Council study (NRC, 1999) emphasizes the integration of environmental, economic, and social aspects (including planning and design), with particular attention to linkages, for overcoming barriers to sustainable management of water resources. This recognition has led to collaboration across large, multidisciplinary teams, development of tools to support complex decision-making processes, and involvement of stakeholders. Literature suggests that there is a substantial increase in multidisciplinary research. For instance, Fohrer et al. (2002) developed an integrated framework consisting of three GIS-based models from the fields of agricultural economy, ecology, and hydrology for the evaluation of ecological and economical sustainability land use / land cover (LULC) change. In the American Journal of Community Psychology, Daniel Stokols (2006) presented a conceptual framework for trans-disciplinary action research. This framework includes aspects of geographical scale, analytical scope and organizational scope which have all been carefully considered in the design of this project.

Methods used to date include the compiling of historical watershed data, land use and land cover data, planning and zoning policy and design trends. Case studies were also examined. Socioeconomic drivers of the land use change have been identified along with water quality, climate and ecological data. Results include the identification of data gaps and the analysis

of alternative scenarios for planning, development and design.

A truly integrated and multidisciplinary approach to research combines state-of-the-art from various scientific, social and design disciplines with people and policy for coordinated development and management of water, land and related resources that maximizes economic, social and ecosystem welfares. Successful approaches developed through this project will find broad application throughout the targeted watershed and beyond.

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URBAN GREEN INFRASTRUCTURE, PUBLIC HEALTH, AND LOCAL GOVERNMENT: LESSONS LEARNED FROM LONG-TERM ENGAGEMENT WITH ONE AMERICAN CITY

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American cities are increasingly concerned with quality of life issues as they compete with other cities for the so-called creative class and new economy industries. Urban green space, greenways, walkability, and bikeability are viewed as key components of quality of life, and this broad umbrella also can be extended to consider issues like active living, ecosystem services, and the need for access to nature. Unlike much of academic research which separates ecological health from public health, urban planning strategies seek to be more holistic in the planning of open space and neighborhoods. Implementation is often the sticking point, as political agendas and departmental silos are resistant to new ideas.

This paper presents the lessons learned about implementation over eight years of applied research and outreach in the City of Roanoke, Virginia during which concepts of urban green infrastructure and active living were explored and integrated into various plans adopted by the Roanoke City Council. A series of projects conducted through landscape architecture studios, as masters' theses, and as planning outreach by the author culminated with the development of a citywide Pathways to Healthy Neighborhoods Plan this year. The series of projects demonstrates some of the opportunities and challenges presented when university faculty seek to test new ideas in landscape planning and design through active engagement with power brokers and others in a local government context.

Small cities like Roanoke (with a population slightly less than 100,000 in the city and just under 300,000 in the metropolitan area) are inherently attractive for testing physical planning and design ideas meant to improve quality of life and health of the urban environment. Their small size can improve the likelihood of implementation, especially if the local government has progressive elected officials and local leaders as Roanoke does. Results from the planning studies done

there should have applicability in many other cities of comparable size.

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USING ECOLOGICAL THEORY TO GUIDE URBAN PLANTING DESIGN IN LIGHT OF CLIMATE CHANGE

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Landscape architects face the challenge of designing and accommodating urban nature under the unpredictable changes brought by global climate change. The responsibility to support urban ecosystems and the well being of people living in them offers an unprecedented opportunity for ecological designers. Under global warming, a shift in plant growth zones in North America has already been established. As plant species find new locations for ecological optima, urban ecosystems will adjust. Our aesthetic experience of seasonality and local ecosystem features will have to adapt accordingly. To conserve a sense of place for urban dwellers means managing the change of scene that will happen as other species move on, move in, or die off. Here I consider an approach for adaptation to climate change that supports ecosystem health and protects human sense of place during times of transition. I developed a set of design criteria for planting recommendations in urban areas based on ecological theory. The concepts of plasticity, structural diversity, niche complementarity, and functional redundancy form the foundation for a unified approach to designing for biodiversity and sense of place under changing climate.

Application of theory was initiated by the development of a database for two categories of commercially available plants in Michigan – native species and non-invasive non-natives. The spreadsheet includes phenological, ecological and aesthetic variables for over 350 species. Ecologically-based design criteria were developed and applied under conditions typically encountered in the production of planting plans for urban settings. Discussion of the results includes comment on the challenges and opportunities involved in applying ecological theory to design of the built environment. Challenges include reliability of data sources, the lack of monitoring data on the success of nature-building strategies, and the breadth of knowledge required to make even a small number of design decisions. On the positive side, this approach allows existing gardens to be adapted as time & resources permit. It is amenable to partnership with the community as collaborators for information transfer (citizen science) and installation of urban

nature. Finally, this approach does not interfere with the art of design.

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THE PLANT COMMUNITIES OF THE TRAIL OF TEARS: OVERCOMING RELOCATION AND REESTABLISHING A CONNECTION TO PLACE

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Much has been written documenting the historical and political events that lead up to the forced removal of the Cherokee Indians from their homeland, as well as the continued political struggles that the Cherokee Nation faced in Indian Territory. Surprisingly, not much has been written about the role of the landscape, and the plant communities found within it, in establishing or maintaining cultural identity and traditions among the Cherokee Nation. A few passing sentences are mixed into published historical accounts. "When we go back to the homeland, in the Appalachians, without question a melancholy and penetrating feeling arises in our hearts when we enter the Smoky Mountains." "They were unacquainted with the amount of rainfall and the best times to plant in the new climate. It took years to become familiar with the rainfall, soil and climate in this new region. They also faced new epidemics... Herbal remedies they had learned to use in the East did not grow in the Southwest."

Research for this paper has included a variety of methods. Library research in the fields of Native American studies, ethnobotany and landscape architecture provides an academic basis for the work. A two-week field course conducted in the spring of 2008 by the author and 18 landscape architecture and biology students will provide an opportunity to observe and experience these places firsthand and record observations and reflections through sketches, paintings, writing and vegetative sampling. Discussions and with representatives from the Cherokee Nation will provide a perspective that we are not capable of achieving ourselves.

Findings to date are that many of the plant species that the Cherokees relied on for traditional food, medicine, fibre, dye and ceremonial uses either do not naturally occur in Oklahoma or require significantly different growing practices. Climate and growing conditions are significantly different between the Southern Appalachians and northeastern Oklahoma. Newly arrived Cherokees in 1839 overcame these obstacles by transferring knowledge that could be transferred, incorporating local knowledge into their practices, and

substituting different plants and practices for those that were no longer possible. The successful adaptation of the Cherokee Nation to a new place can serve as a model for transient populations throughout the world as people seek to re-establish a connection to place.

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TIENDAS ON MAIN STREET: MEXICAN-AMERICAN LANDSCAPES IN SMALL MIDWESTERN CITIES

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This paper examines the breadth and diversity of landscapes inhabited by Mexican-Americans in the non-metro Midwest. The Latina/o population of the United States has grown dramatically in recent decades, potentially changing the social and cultural context of the built environment and the use of residential, commercial, and public space. Despite this increasing prominence, little existing literature addresses the interaction of Mexican-Americans, the largest Latina/o group, and the built environment. This lack of study is acute concerning “new destinations” for immigrants, such as the Midwest. I addressed this gap in a previous phase of this research, qualitatively studying the form, function, and aesthetics of the physical landscapes, from city to housescape scale, of several small Midwestern cities with considerable Mexican-American populations. Analysis of this data showed the landscapes illustrated five types: Established Communities, Two-Tiered Communities, and three related types of New Communities. These landscape types break new ground in this undertheorized topic, but the remaining lack of knowledge about their frequency and distribution limits their usefulness for landscape architecture. This paper directly addresses this issue, by applying the landscape types to all cities within Ohio, Indiana, and Michigan.

Methods include the use of key social, economic, and demographic factors to create a quantitative instrument that identifies these landscape types within the 826 small cities in these three states. I randomly selected half of the sample cities to create this instrument, verified it with the remaining half, and statistically confirmed its results. I also tested correlations between non-spatial and landscape characteristics.

The main findings were confirmation of the universality of these Midwestern Mexican-American landscape types, identification of their primary sub-regions, and documentation of their relative rarity. The three related New Communities types were the most common, the Established Communities were common in certain sub-regions, and the Two-Tiered Communities were the rarest and most dispersed. Population trends, economic

health, and percentage of immigrants were statistically significant predictors of the different landscape types. Implications for landscape architectural work in similar Midwestern cities include changing use of front yards, adaptive reuse of older retail areas, and revitalization of modest residential areas.

The importance of this research rests upon its implications for the assumptions made by landscape architects concerning public use of the built environment. These assumptions, especially the impact of changing demographics on neighborhood design and revitalization, may become rapidly outdated as this region of the United States becomes more diverse.

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MASTERPLAN FOR THE LAC COURTE OREILLES OJIBWE COMMUNITY COLLEGE: AN ADVENTURE IN CULTURAL SUSTAINABILITY AND THE BUILT ENVIRONMENT

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The design of this masterplan included more cultural consideration than I have encountered in a career of sensitive site design. The lessons learned are symbolic of the design evolution of our current practice and educational structure.

The purpose of this paper is to illuminate an area of sustainable practice that is often ignored for lack of application. This design opportunity was for the masterplan for a culturally significant site, with profound implications for the students and members of the Ojibwa community at Lac Courte Oreilles. The buildings, as Churchill told us, "build us." What was being communicated to the people of this small Indian nation was not considerate of their sensibilities. Rather than focus design of culturally significant elements, the past designers had reflected their own values on the buildings and site. This design process was transformative for me, as it became an exploration of the values and principles of design as seen through the eyes of a First Nation client. The product status quo was and is not good enough, and, while economically justifiable, not ethical to produce. This presentation explodes the myth of value neutral design. As Landscape Architects we are injecting values regarding health, safety, and welfare, as mandated by our license to practice. In this significant project it became obvious that our values must attempt to include the subtle, often non-communicated values of indigenous people.

The results of the work are presented in graphic form, with anecdotes from the tribal reviewers and project designer. The summary of results include: exploration of atypical building technologies, consideration of design rhythm and forms that are foreign to typical design solution, and education opportunities for students found within the work at hand.

The importance of this study and project are the satisfaction of design sensibilities that sustain cultures apart from that of the project designer. This paper explores the subtleties of exploration into forms that are outside the designer's typical array of tools.

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BENEATH THE CANOPY: DECIPHERING THE NARRATIVE OF THE ANCIENT MAYA FOREST

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The purposes of this paper are to document, analyze, and describe the 2,000 plus years of human history that led to the form and structure of the modern tropical forest of the Ancient Maya heartland and to demonstrate how modern geospatial technologies and field research have contributed to this new understanding of the tropical forest. Contrary to popular conceptions about the collapse of the Ancient Maya, this paper clarifies the settlement and sustained history of the Maya within the tropical forest. Guided by Pierce Lewis' axioms for reading the landscape, I first document the temporal and spatial dimensions of human settlement ecology relying on primary field observations and soil studies from Caracol, Belize and Tikal, Guatemala. Second, I describe and summarize recent research investigating the temporal and spatial dimensions of the tropical forest, e.g. regional pollen data. Third, I demonstrate how advanced geospatial technologies, primarily remote sensing and spatial modelling through GIS can be used to better understand and model the co-evolution of the forest as related to past human action.

Through analysis of the environment, including forest structure and soil studies, I conclude that direct and indirect human action from 500 BC to AD 1000 contributes to the form and distribution of the modern forest. Moreover, I offer that the timing of measured environmental change suggests that the Classic Period, i.e. the political and cultural height of Mayan civilization, was marked by sustained landscape management. Further, I suggest that the subsequent collapse was not simply a result of environmental degradation and deforestation.

On its own, this research adds to a critical discussion of Ancient Maya cultural history and landscape archaeology. More broadly, the paper offers a framework for investigating the social and cultural dimensions of sustainability. Finally, the paper introduces the modern political and economic patterns of deforestation in the region to emphasize the role of landscape as an artefact of human behaviour and to compare the spatial and temporal scale of modern deforestation, with that of the Classic Maya.

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DEVELOPING STREETScape PATTERNS FOR TUCSON, ARIZONA

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Aesthetics and human comfort often suffer on city streets as planners attempt to adequately address their transportation needs related to vehicular traffic. The need to address pedestrian comfort on these public corridors is especially prevalent in the Southwest where additional care must be given to balance aesthetic principles with environmental challenges and restraints.

Presenting designers of these spaces with a more systematic analysis and design approach based on “patterns” rather than rigid guidelines can begin to define the streetscapes that create more comfortable and pedestrian-friendly corridors. This process focuses on recognition and definition of streetscapes as urban systems and their associated components.

In this study, the research goals included: 1) exploration and use of a Pattern Language as an analysis and design approach to streetscapes, 2) identification of relevant streetscape patterns for secondary streets through literature review, 3) evaluation of existing physical conditions within the scope of those patterns, and 4) assessment of identified streets in the Southwest that have applied more progressive patterns in streetscape design. Results directed field research that focused on identification of opportunities for streetscape enhancements, and other retrofits that will improve the visual quality and usability of Tucson’s secondary streets by pedestrians. The results of this research are graphically represented in applications to arid urban streetscapes within the city of Tucson, Arizona with supporting documentation. This work will be disseminated as a field guide designed to be accessible to a wide audience, including city planners and designers of Tucson. It is our intent that the research process is applicable to other communities experiencing similar limitations and environmental constraints.

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THE MISSISSIPPI TOWN SQUARE AS A PATCH IN THE MATRIX: A LANDSCAPE ECOLOGY AND CONTEXT-SENSITIVE SOLUTIONS APPROACH TO INFORMING POLICY FOR MAIN STREET REGENERATION

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MICHAEL SEYMOUR
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In a paper presented at the 2007 Annual Meeting of the Conference of Educators in Landscape Architecture (CELA), authors Seymour, Rogers and Schauwecker presented a paper that explored the history of town squares in Mississippi, including their scale, form and context, in an effort to reveal aspects of the relationship between land and community and how these historic spaces might be preserved. A question that arose in the minds of the researchers, and attendees of the panel discussion, was what might be done in terms of policy to preserve the architectural integrity of these places while also restoring their economic vitality.

In many cases the town square form ends abruptly, causing it to act as an isolated “patch” within the larger community matrix in terms of both form and function. The resulting patch is unique in terms of its economy, spatial quality, and internal vehicular and pedestrian circulation. While its spatial quality often remains intact, its function can be compromised by accommodations for vehicular circulation to the surrounding community, or “matrix.” This compromises the function of what was once the center of a town and, in most cases, a county and/or region. Whether intentional or not, the isolation of the town squares resulted from policy decisions. Policy solutions are necessary for the regeneration of these historic spaces as community and economic centers or cores.

Using the concept underlying Richard T.T. Forman’s (1995) landscape mosaic approach to the ecology of landscapes and regions, this paper considers the town square as a patch that is distinct from its surrounding area in terms of both form and function. It then turns to policy and design solutions to reconnect the town square, in terms of both form and function, to the larger community through the use of corridors that are reflective of the context sensitive solution

approach (ITE, 2006) to street design. While the paper uses examples of specific Mississippi town squares, its application is relevant beyond the state and region.

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THE URBAN DESIGN IN ITALY: LAKE OF COMO GREENWAY

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The lake of Como is one of the most beautiful place in the northern Italy. The western coast of the lake, north of the city of Como, is rich in elements of interest, witness of the past: Roman findings (I-II century), Romanesque churches (XIII-XIV century.), villas and gardens (XVIII-XIX century) and rationalist buildings (XX).

The area is crossed by numerous historical trails and aim of this work was to plan, design and build a greenway dedicated to a non-motorized traffic, connecting people (tourists and residents) with landscape resources and centres of life (public offices, sport and recreational facilities, etc.).

The study was organized in four phases:

- the analysis phase involved collecting information regarding landscape resources and existing trails and collecting it within a GIS;
- the objective of the planning phase was the identification of the greenway: a 10 km trail from Colonno to Cadenabbia across 7 municipalities;
- the design phase involved the definition of design criteria, the choices for constructive materials and signs. The design criteria included "landscape compatibility", conservation of historical pavements, safety, accessibility and comfort for users,
- the promotion phase included the publication of web site (www.greenwaydellago.it) and the publication of brochures

The "greenways del Lago" was build in 2007 and it is used by tourists and inhabitants.

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**CONCURRENT SESSIONS IV
THURSDAY, JANUARY 15TH, 2009
1:45PM - 3:15PM**

EMERGING PROFESSIONAL CONCERNS IN THE TEACHING AND WRITING OF FRANK A. WAUGH BETWEEN 1921 AND 1932

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The purpose of this paper is to learn more about the evolving professional concerns of one of the educational pioneers, Frank A. Waugh, who founded the Department of Landscape Gardening in 1902 (with its first class in 1903) at the Massachusetts Agricultural College, later the Massachusetts State College in 1931, now the University of Massachusetts. By comparing and contrasting selected writings of Frank A. Waugh to his course syllabi this paper will examine emerging concerns expressed by a selection of articles on the subject of water between 1921 and 1932. Through an examination of selected writings specifically related to water in conjunction with a study of his course syllabi, a shift in Waugh's approach to the study of the landscape can be evidenced in the decade between 1920's and 1930's. In the introduction to the new 2007 edition of the *Book of Landscape Gardening* after a meticulous and careful study of the changing editions of this volume from its original in 1899, revised in 1912, and expanded in 1926, Linda Flint McClelland notes that Waugh first articulated the formal approach to design with a poetic sense before evolving to more of a natural style with an eventual advocacy for landscape conservation by the 30's. Observing his work evolving in horticulture, shifting then to an interest in rural countryside planning (Crewe, 2003) with his active membership in the American Civic Association, to a concern for natural resources, land use planning, and landscape conservation, an understanding of the influences upon Waugh and his influence upon the profession is still emerging. McClelland suggests an important turning point in his work with a trilogy of three articles in *Landscape Architecture* from 1931 and 1932. A similar shift in Waugh's attitude towards teaching can be observed evolving in a sequence of articles about water beginning in 1921. By this time Waugh had served as a captain in the army working in the Sanitary Corps at its hospital in New Haven in occupational therapy (in 1919). He consulted for the U.S. Forest Service on engineering and planning. In 1921 Waugh is still referring to the profession as landscape gardening when he writes about the sister art of music. In this article when he writes about form, he is drawing analogies between the formal and informal between the two arts. How students of landscape gardening can acquire a more effective understanding of design principles from a study of

music, particularly from a study of form and theme, or motive as he prefers to call it, is the focus of the article. Waugh offers examples of three different types of water from the "overawing" Niagara, to a charming small brook to a placid lake to illustrate different characteristic emotional responses a designer can "secure." In a 1925 article when Waugh references both landscape gardening and landscape architecture, he extols the virtues of a rushing brook with its natural song, inspiring him to join in to create a harmonious "duet" with his D-sharp pitched flute. He expresses favoritism for moving water to capture the American exuberant spirit in contrast to the flat water "in a marble basin" better suited for an implied European taste. Waugh suggests that running water can provide a source for powerful design themes that can inspire spirit, the emphasis on his writing here. He relates the form of water to the expression of "the feelings of American life" in this writing. His work develops concerns for the land as a national natural resource; he becomes an active member in the American Society of Landscape Architecture. By 1932 as Waugh references landscape architecture (no longer referring to landscape gardening), he briefly alludes to the "singing music" of running water and its beauty in passing. When he writes about form here, he develops a studied and quantitative approach to water with an emphasis on its physiography. Formulas for measuring erosion and deposition in relationship to velocity are the subject. By comparing and contrasting selected writings to a study of available course syllabi in the archives at UMass Special Collections insights will be sought about a pioneer educator at an important time of transition. Relatively little has been studied about Waugh to date perhaps as Robin Karson suggests because his work was expressed prolifically in writing and teaching rather than in built works. With the reprinting of one of his classic works the opportunity to delve more deeply into his works in writing and education to understand his contributions to the profession is now timely.

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THE EDUCATION OF JANE SILVERSTEIN RIES AT THE LOWTHORPE SCHOOL OF LANDSCAPE ARCHITECTURE FOR WOMEN IN GROTON, MASSACHUSETTS, 1928-1932

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Upon her death in 2005, the extensive papers of landscape architect Jane Silverstein Ries (1909-2005) were bequeathed to the Western History Collection of the Denver Public Library. Within those papers were class notes and assignments Ries completed while attending the Lowthorpe School of Landscape Architecture for Women in Groton, Massachusetts from October 1928 through May of 1932. The Lowthorpe School was operating within a unique educational milieu, approximately 40 miles outside of Boston. Harvard University's landscape architecture program did not admit women at the time. However, the Cambridge School of Domestic Architecture and Landscape Architecture, a school unofficially associated with Harvard, offered professional training to women. All three schools shared similar curriculum as well as some instructors, yet Lowthorpe was unique in that it emphasized instilling a horticultural knowledge to their students that exceeded either of the other two schools. Ries utilized this initial Lowthorpe training to build a practice that spanned more than 50 years in the Denver metropolitan area. She became one of the most prolific and prominent practitioners on the Front Range. Ries was posthumously awarded the American Society of Landscape Architects Medal in 2005, the highest honor the society bestows. She is the third woman in history to receive such an honor since the award's inception in 1971.

Even though Ries and the Lowthorpe School were influential in their respective regions, they share a similar affliction—little scholarly work exists about either. This paper will highlight some of the key findings from the 2008 MLA thesis of a similar title. Utilizing Lowthorpe archival material housed at the Rhode Island School of Design and Ries ephemera housed at the Denver Public Library, the thesis examined Ries's assignments in detail. The pedagogical lens through which her student work was assessed was mainly derived from the school's core curriculum, contemporaneous instructor writings on teaching and various written histories of Lowthorpe, Cambridge and Harvard.

An in depth examination of a specific student's work may reflect that individual's capabilities and failings and may not be completely representative of the school's pedagogical strengths and weaknesses. However, this exploration can provide insight into the individual's responsiveness to pedagogy as well as illuminate historical teaching methodologies in a detailed manner. It could also hopefully facilitate future scholarship about Lowthorpe and/or Jane Silverstein Ries, two topics that deserve further academic attention.

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AN ADAPTIVE COURSE IN AN EVOLVING CURRICULUM: TWO PLUS DECADES OF THE LANDSCAPE SYSTEMS STUDIO

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This paper documents and analyzes changing approaches and methods for teaching landscape architecture students to think and design at scales larger than the site and to integrate ecological and social systems concepts with those studies. To this end the paper presents a reflective and analytical discussion of a regional landscape studio within the Penn State University Landscape Architecture curriculum as this course has changed over time. Despite numerous curriculum changes in two decades, the studio remains principally dedicated to guiding our students to think critically and integrate data about human ecology and human-nature relationships on a landscape scale. But the challenges, approach and process to teaching this studio have changed significantly. For example, early challenges focused on the ability of students to acquire and process accurate regional data; now we face the challenge of teaching students to identify valuable information from hundreds of downloadable datasets and develop geographic information system-based analyses that provide the foundation for ecologically-informed design at landscape and regional scales. Technological advances have added the challenge of introducing conceptual and methodological tools in a manner such that one set of tools does not suffer at the expense of the other.

Through a reflective and chronological analysis of past experiences, observations and syllabi, in this paper we compare and contrast the changing aspects of the landscape systems studio in the Penn State curriculum. We explore why the studio persists thematically and also evaluate the present and potential future issues associated with course delivery. The paper provides one case study on the changing structure of this topical studio. More importantly, the paper allows us to reflect on past approaches and open a discussion about the emerging challenge of developing technical skills that also serve to increase the conceptual ecological

understanding at landscape and regional scales essential for today's landscape architects.

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ENGAGING THE FUTURE: A MODEL FOR A MULTILEVEL LEARNING COMMUNITY THROUGH UNIVERSITY OUTREACH OR ENGAGEMENT

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HOOMAN KOLIJJ
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Purpose: This paper provides a theoretical framework and case study for a learning model that engages students in a multi-level, studio, learning environment to work on community outreach projects. The intent is to demonstrate more effective ways of student learning through the structure of the studio and university outreach or service learning.

Methods: This paper utilizes a review of the literature from two areas to build a model for a multi-level studio learning community and provides a case study of an application of that model. The paper draws on design education literature and on action-research literature to developing a model for a unique environment for learning and research. Theories of both learning communities and service learning are examined in constructing the model. While the educational benefits of creating learning communities is well established, this paper takes it a step further in considering how students at different levels in the curriculum can form a viable learning community. In a learning community students learn from each other, as well as the instructor. When student are all at the same level the learning occurs primarily through mutual sharing and exploration. A multi-level learning community, involving Ph.D. students, master's students and undergraduate students, creates greater opportunities for learning, not only through mutual sharing and exploration, but from multiple student teacher relationships that form between members of the community. Lower level student benefit from the knowledge of more experienced students and higher level students benefit from the expectation that they will take on leadership and educational roles within the learning community. The educational model requires that students take an active role in setting the educational objectives of the studio; and promotes a sense of collaboration, leadership, and professionalism.

This is combined with service learning principles

in which students actively engage in a real project and with a real community client. Student must set learning objectives, interact with the client, set the project objectives and develop strategies for accomplishing those objectives.

The paper describes an educational case study, the successful implementation of a multilevel learning community studio in the Landscape Architecture Program at Virginia Tech. The paper discusses the associated theories followed by examples from the case study.

The paper concludes by identifying key educational benefits and limitations of this type of studio learning environment. It also describes how this type of learning environment can benefit outreach or service learning projects. Lastly, the paper identifies key considerations in sitting up a multi-level learning community within a studio.

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MEASURING THE PARTICIPATORY DYNAMIC IN SERVICE LEARNING AND PARAMETERS OF SUCCESS: WHAT VALUE IS THE CLIENT'S EVALUATION VERSUS THE INSTRUCTORS?

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There are many different interpretations of service-learning, however most agree that the strength in the program is its ability to combine service and learning objectives where the activity changes both the provider and recipient (Learn and Serve Clearinghouse).

Experienced educators understand the significance of understanding how students integrate community service to professional service (Long and Heydt, 2001; Picciano, 1998). Often this combination of objectives combines into a win/win scenario for the provider and recipient; however, students can receive mixed signals based on who is evaluating them. This paper supports similar findings found in Julie Hatcher's article which recognized that experiences in service learning can create controversy, and if this is not reflected upon, it can be counter productive (Hatcher/Bringle 1997).

Earnest Boyer challenges higher education to produce students for a life as responsible citizens rather than solely for a specific career (Boyer 1994). Academic communities can engage these students in communities, particularly professional schools for example with clinicals, internships, field experiences, practica, and even student teaching (Bringle/Hatcher 1996). Whereas these opportunities can be provided, a part of the academic exercise in service learning is its post evaluation. An evaluation of process and outcomes from service learning can be demonstrated through reflective post evaluation.

The study is descriptive and analytical. Qualitative methods of inquiry, including reflective analysis at two levels, the individual and group were used. The researcher solicited students and public participants from three separate studio projects to participate in post evaluation of the service-learning component. Distinctive themes of service learning outcomes were measured using classroom assessment techniques (Angelo 1993) with these themes: Group Participation, Concept Mapping, Goal Setting, Clarification of Values, Civic Participation, and Contribution. The findings reveal varied interpretation of success depending on level of expertise. Faculty evaluations of intended outcomes were often varied from the clients perception of intended outcomes. These differences

generally sent mixed-signals to the student participants.

The study suggests that public evaluation of service-learning often over-simplifies academic learning goals, and misrepresents a professional based service-learning experience. It is important that professional evaluators are part of the public participatory process to ensure academic integrity.

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http://www.servicelearning.org/what_is_service-learning/service-learning_is/index.php 4/18/2008
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ILLUMINATING THE TERRAIN OF COMMUNITY ENGAGEMENT IN LANDSCAPE ARCHITECTURE EDUCATION: 20 PROGRAMS IN THE UNITED STATES AND CANADA

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“Illuminating the Terrain of Community Engagement in Landscape Architecture Education” is an exploratory study of how Landscape Architecture (LA) programs in the United States and Canada approach community engagement around the issues of land-use and community design.

Community-based design is in line with the scholarship of engagement which combines community issues with teaching, research and/or service compatible with the institution’s mission (Scholarship of Engagement, 2006). From an engagement perspective, communities are the cornerstone of engaged activity, yet, how to work with communities effectively is difficult (Bruckardt et. al., 2006). From a design perspective developing and maintaining unique community identities is at risk in the current development culture of chain stores, cookie cutter housing and sameness. This may be the most daunting challenge of design today (Beatley, 2004). From a community-based participation research perspective, practitioners and academics are calling for more and better evaluation but the limited available work makes improvement difficult (Chess, 2000). The study is targeted at accredited LA programs with formal community engagement initiatives. An initial inquiry was sent to 53 LA programs and 23 (43%) self-identified as having a formal engagement process. The profile is derived from the twenty programs who agreed to participate in a telephone interview survey, giving an 87% response rate (20 of 23). The interviews ranged from 45 to 90 minutes in length.

The terrain is organized into six sections: overview of engagement and history, administration, engagement process, products, impact, effectiveness and assessment. The types of engagement described are as diverse as the landscape architectural profession itself. What binds us together is an intense enthusiasm and ethic for quality student learning, with real-world projects

and fostering professional development through community service.

The perception of engagement activities as less scholarly or rigorous than traditional research is still an issue in many universities. The weaknesses are attributed to lack of consensus or clarity in how engaged scholarship is defined, assessed and documented (Finkelstein, 2001). A study goal is to articulate what we do and how we do it so that we may foster dialog for sharing, learning and growth. Landscape Architecture programs would appear to have an opportunity to blend together student learning, community service and scholarship in a manner that addresses the needs of students, faculty and communities. Feedback from the 20 interviews documents the potential while also pointing out apparent disconnects.

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TOWARD PARTICIPATORY WATERSHED STEWARDSHIP THEORY AND TYPOLOGIES

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Human involvement has an active role in play in the management of urban nature and urban watersheds. This involvement is characterized by organizational approaches and individual approaches to care-taking. Until now, landscape architects and environmental planners have focused on the role of design in stewardship and on studying the impacts of urbanization. With the new concept of watershed stewardship, the outcome is not about working landscapes and sustainable yields. Instead, the outcome of stewardship centers on the link between the individual and community care of the landscape, ecology, and community spaces.

Stewardship today is used for an almost overwhelming number of uses and applications but one meaning that remains consistent is that the act of stewardship still relates to caring for the land. The original concept referred to a person's role in the landscape as a care-taker rather than a landowner. Scarfo (1988) writes that the word steward has the same etymology as pig keeper and comments that the first steward was not a property owner, but the individual responsible for an estate's grounds, game, and livestock. The word steward originally meant "land custodian; the person responsible for protecting and managing livestock and land" to sustain the yield for the owner (Scarfo, 1988). Secular uses, including environmental and business applications, as well as religious uses have shaped the theory and practice of stewardship (Wunderlich, 2004).

Participation shapes watershed stewardship in two ways. The first is how participation contributes a sense of perceived ownership to a place. Volunteers, depending on the degree of the participation, and residents have different types of ownership—legal ownership, de facto ownership, as well as a Leopoldian sense of ownership that connotes place attachment and responsibility for a place (Leopold, 1949). Volunteers involved in hands-on stewardship activities such as creating habitat or monitoring habitat become more attached and committed to taking care of a place than a resident who is not involved in these activities.

This research first develops a theoretical framework of stewardship as an ethic, a strategy, and an outcome.

This paper then examines the different types of participatory watershed stewardship programs, practices, and landscapes and reflects upon the values and outcomes of each. Participatory watershed stewardship is an expanding concept that in particular is changing from individual approaches on private working landscapes—an approach that shifts the focus from individual, private landowner responsibility—to participatory approaches as well as individual ones on public, urban landscapes and watersheds.

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REMNANTS OF MEDIEVAL FIELD PATTERNS: SPATIO-TEMPORAL CHANGES AND CONSERVATION PRINCIPLES

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This paper studies the remnants of medieval pluzina, a typical Central European historical field pattern, dating back to the 13th or 14th century A.D.

In medieval Czech, the word pluzina meant the crop fields, meadows, pastures and roads belonging to one village. Today, pluzinas are visible as patterns of long, narrow fields, separated and defined by hedgerows. The model of sustainable landscape design, pluzina hedgerows enhance the landscape's connectivity, increase its biodiversity and act as erosion control features. Moreover, pluzinas are very attractive parts of farming landscapes, similar to the bocage landscapes found e.g. in Northern England, Scotland or Brittany. These patterns are therefore an interesting subject not only to historians, but also to ecologists and landscape architects. However, during the last 150 years, the majority of these landscape structures have vanished, owing either to the intensification of agriculture, or the abandoning of pluzina to gradually change back into a forest.

As this is the first comprehensive study of pluzinas in the Czech Republic, it was necessary to first carry out a regional survey to gain base data and a basis for comparison (the Pilsen Region, SouthWestern Bohemia, 7,561 km²). In this survey, aerial photographs, historic maps and GIS tools were used to study the total area, level of preservation and types.

Following this analysis, the best preserved and most representative pluzinas were chosen for case studies. These case studies examine the spatio-temporal changes in the last 150 years of the hedgerows (changes in their width, density) and changes in the land use of the agricultural land. Equally important was collecting supporting data describing the landscapes in which they were found and testing it, using the Minimal Adequate Models based on ANOVA to determine the effects of environmental and socio-economic driving forces relevant to the vanishing or preserving of a pluzina.

Between the years 1950 and 2005, 341 of 483 hedgerows disappeared in the study areas, while the total length of the hedgerows decreased by 71%. At the same time, the average hedgerow width increased from 7.2 m in 1950 to 13.1 m in 2005. The study further tests the influence of three natural factors (natural soil fertility, slope gradient and aspect) and of historical (1950) and current (2005) land uses on the disappearance of hedgerows. The most significant factor is the current land use in adjacent areas, with grassland being by far the most supportive.

Based on these findings, guidelines were defined for legal protection of pluzina landscapes, as well as methodological guidelines for their adequate management. Also discussed are specific tools of landscape planning which can be applied to promote the conservation and restoration of these valuable landscape patterns.

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REMEDIATING CONTAMINATION/REVEALING WASTE: ASSESSING AMERICA'S POST-INDUSTRIAL LANDSCAPE CONDITION

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Exhausted landfills, finished mines, manufactured wastelands, contaminated and derelict industrial sites litter the American landscape. Often away from public view, these areas, also known as post-industrial sites or brownfields, have become sacrificial: polluted and unaesthetic, they are the product of resource misuse and over consumption. Dirty, unproductive, devoid of biological diversity, harmful to human health, these sites are inherently cultural, for without them, our way of life would perish. Highly underappreciated, these landscapes are the source of water, metals, electricity, building materials and food and they are the resting place of our refuse. We now must ask what to do with such sites after initial use has expired.

Post-industrial design has been explored by landscape architects such as Peter Latz, designer of Duisburg Nord; Georges Hargreaves, designer of Byxbee Landfill; and Alan Berger, director of the Project for Reclamation Excellence at Harvard University. While several extraordinary projects have been completed that uniquely address site contamination, adaptively reuse industrial forms, recycle otherwise wasted landscapes, and alter public perception, the scope of America's post-industrial landscape condition and the role landscape architects can assume in transforming wastelands has not been fully realized.

To understand the scope of current and future work in this field, the author examines America's post-industrial condition, exploring sites throughout the South, Mid-Atlantic, Midwest, and Northeast regions of the United States, as well as the Canadian province of Ontario. Sixteen sites were studied in depth by means of a literature review, interviews with designers, walking each sites and photography. Sites included those abandoned by industry and now in need of remediation and adaptive landscape reuse; those in the process of transformation, such as Fresh Kills Landfill; and post-industrial landscapes that have been remediated, recycled and are now enjoyed by a visiting public.

The author reviews the sixteen sites using eco-revelatory design criteria of revealing history, ecology,

remediation and culture. Sites that expose patterns of resource extraction, production, distribution, consumption, and disposal to the visiting public, rather than obscuring the site's recent past, are commended by the author and their success analyzed. The designer of the post-industrial landscape has the opportunity to not only transform industrial wastelands into healthy, productive, public spaces, but also to design for what Robert Thayer termed 'landscape legibility.' Landscape architects have the opportunity to foster greater knowledge of America's industrial practices and land use mismanagement by designing post-industrial landscapes to be both didactic and engaging.

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PHOTOGRAPHY & PEDAGOGY: THE STUDY COLLECTION OF P.H. ELWOOD AT IOWA STATE COLLEGE

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Although the close relationship between landscape architecture and painting is historically recognized and well-defined (Crandell, 111-140), the field's relationship to photography is much less well-documented, a surprising fact, given the rapid adoption of the camera by professionals. As early as 1886 Charles Eliot decided that landscape photographs could be "a snare and a delusion" and commented that any landscape architect desiring "photographic memoranda of landscape must be his own photographer" (Eliot, 205). Since that time, landscape architects from Charles Platt to Gertrude Jekyll to Alan Ward have followed suit in using the camera to depict landscapes of their own and others' making (Ward, Tankard). However, little scholarly work has examined how photography has influenced the content and methodology of landscape architectural design

To begin to address this question, this paper investigates the idea of the "study collection:" a set of glass plate slides and photographic images commonly created by landscape architecture departments in the first half of the 19th century. While the creation and use of such collections has been documented for other visual fields, such as art history, their use in landscape architecture has not been definitively studied (Leighton, Schwartz and Ryan). By examining one such landscape architecture collection, created by P.H. Elwood and Iowa State College (ISC) faculty in the years 1925-1933, primarily to document landscapes visited on a series of trips to landscapes and gardens in Europe, Asia, North America and northern Africa, the author hopes to shed light on the way photography (as process) and photographs (as objects) were used to simultaneously document existing landscapes and inspire new landscape design.

The ISC collection, which included photographs, negatives, hand-coloured glass plate slides, and 16 mm films, was a carefully composed selection of images, which were then further catalogued from a library and pedagogical standpoint for use in courses ranging from drawing to landscape architecture history to design studio. This presentation not only documents the collection's creation, organization, and use, but

more importantly, draws connections between the content of the collection and students' academic work (such as ISU students' responses to the "Landscape Exchange Problems" of 1925-1940) as well as the built work of graduated ISC students. It is hoped that the examination of such issues will aid in a better understanding of the way conceptual and formal ideas from historical sites and precedents were understood, transmitted, and re-presented in new design, particularly through the medium of photography.

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RECLAIMING LANDSCAPE

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“At the start of the 21st century, landscape architecture is a troubled profession, more distinguished by what it lacks than the qualities that it actually possesses. It has no historiography, no formal theory, no definition, direction, or focus.”

- Alexander Trevi

The focus of this research is to develop the groundwork for a textbook in contemporary landscape architecture design theory.

At the turn of the new millennium, the identity of landscape architecture as both an academic and professional practice has come under scrutiny. This ‘crisis of representation’ that exists within the discipline has a number of root causes. Considering the expansion of the profession in recent years, largely in a scientific and ecological analysis capacity, Landscape Architecture has been unresponsive to develop a formalized theory to unify these disparate activities and incorporate them robustly into a critical design discourse. Similarly, with the growth of sustainable design and planning, landscape lags far behind architecture in creating a “substantiality index” such as LEED. The irony being that landscape architecture was largely responsible for founding the ecological design movement some forty years ago. Landscape Architecture has failed to produce a critical discourse in which to advance both teaching and practice. Universities and colleges remain overtly conservative with respects to maintaining a dialogue with other aligned professions such as architecture, Land Art, New Media, and advances in materials engineering. Landscape architecture remains a publicly misunderstood profession, as evidenced by American Society of Landscape Architects website and as well a number of landscape programs websites that deem it necessary to describe “What is Landscape?” What evidence of recent theory that has been produced has emerged from appropriations of architectural theory, cultural studies and geography, as well as critique borrowed from land and environmental art. Lastly, landscape architecture has failed to develop as an experimental field, and trails in comparison with aligned design disciplines such those mentioned above. The product of the research will, in the near term (Fall 2008), result in publications and conference papers. Video taped interviews with practicing landscape

architects and academics will be transcribed. An in depth literature search will examine each current aspect related to the topic of landscape theory. The culmination of this project will be transcribed to book form, to include an interactive DVD that will include excerpts of taped interviews, documentation of recent design competitions and notable contemporary landscape projects.

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DE-CONSTRUCTING THE COUNTRYSIDE: THE RURAL IDYLL IN AN ERA OF LANDSCAPE CHANGE

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Ex-urban flight is an increasing phenomenon in North America. While concerns for the economies of housing (Barrett 1994), safety (Barrett 1994, Little and Austin 1996, Valentine 1997, and Dahms and McComb 1999), and close-knit communities (Barrett 1994, Houlton and Short 1995, Dahms 1998) motivate many ex-urbanites, romanticized images of rural life - a rural idyll - pervade discussions of living in the country. This nostalgia for the qualities of the pastoral ideal (or *gemeinschaft* as theorized by Tonnies 1887) in contrast to the evils of the city (exemplified in *gesellschaft* by Tonnies 1887) has become a driving force in the migration of population in the early twenty-first century.

The evolution of the rural idyll can be traced to the late nineteenth century - to an era which began to recognize the lost merits of a traditional agrarian society. The twentieth century saw waves of post-industrial nostalgia for the lost agrarian past in the United States, Britain and parts of Canada. Each wave was accompanied by a degree of exurban migration to rural areas, the greatest of which occurred in the late 1960s/1970s and in the late 1990s (Foot 2004). The ex-urban migration of the late 1990s and on were motivated by nostalgia for a "past way of life remembered as purer, simpler and closer to nature" (Valentine 1997 p. 137).

Based on an on-going study of non-farm rural residents in Ontario Canada, and the state of Mississippi, this study illustrates the pervasiveness of the pastoral ideal in offering stability, a sense of belonging and an escape from the evils and dangers of the city. However, in areas of significant ex-urban migration such as southern Ontario, the movement of population into rural areas destroys the very character of the rural environment that exurbanites seek. Open space,

privacy, lack of traffic, safety and low human to land ratio are all threatened by exodus to the countryside. Exurban residents bring a series of expectations into their new environment: expectation of service - garbage collection, cable or satellite TV, internet access, corner stores, medical services,

- expectations of amenity - theatre, activity, schools
- expectations of pastoral idyll - no intrusion from pesticide spraying, manure spreading, industrial agriculture etc.

This study examines the nostalgia driven vision of the polarities between urban and rural life as indicated in surveys and interviews of rural farm, and rural non-farm landowners. Exurban residents are relocating in search of a common ideal based on the rural idyll, or pastoral vision of rural life. The intrusion of urban attitudes and demands into rural communities results in dissonance. The processes of acculturation and diffusion are the attempts by newcomers to bring consonance between the two conflicting realities, the success of which is dependent on factors such as the exurbanites' positions in the community power structures (political, cultural or professional) and the resilience of rural subjective norms. The complexity of this rural-urban tension inherent in the counter-urbanization movement is a significant factor in our understanding of societal norms in the landscape of rural life.

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10 DEGREES OF SEPARATION, 10 DEGREES OF HOME

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We all have a phenomenological sense of the general characteristics of our local cultural landscape. Many of us feel a strong sense of attachment and at times nostalgia for our “home landscape” (Tuan 1974, Sopher 1979, Jackson 1966) Some of us may even physically long for particular home landscapes. Although it often proves difficult to truly and clearly articulate what makes home home. This project explores a method for examining the cultural landscape qualities of home through creating photographic catalogs along two lines of constructed measurement – the 35th and 45th parallels. These lines trace the home landscapes of the author, and serve as a consistent set of points along a line for photographic examination.

Though imaginary, invisible and of human construction the 35th and 45th parallels have become guides, trails, conjunctions and meetings of many significant physical and social events. Mainstreets, wagon trails and borders trace these lines. National monuments, cultural icons, towns large and small and nuclear warheads dwell along these lines. The photographic and physical exploration of these parallels will reveal and examine the meaning of such events along these lines in relationship to the meaning of home.

The author will present these landscapes through a collection of photographic grids. By creating grids, the author reveals the pervasive patterns of these landscapes. The grid formations, through simple in technique, achieve two kinds of visual representation: abstraction and detail. The grid-making process both highlights particular unique details and abstracts general pervasive patterns. The strategy of grid-making allows the viewer to see multiple visual and physical relationships that cannot be revealed by a single photograph, or even a succession of single images, yet still allows the single image to maintain its unique autonomy, unlike collage.

With this examination the author begins to unpack the meaning of home and its close association with cultural landscape patterns. The 35th and 45th parallels serve as lines along which to compare and contrast pervasive

landscape patterns. By engaging in this comparison the poignant and significant characteristics of each of these landscapes becomes sharper, more meaningful. When standing in contrast the meaning and components of “home” become more significantly and clearly defined.

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DRAWING AS ARCHITECTURAL SCHOLARSHIP

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The nature of “research” in architecture remains controversial and is currently much debated. While the main stream of what is considered legitimate research in architecture has been for some time guided by the methods of the natural and the social sciences, it remains questionable whether this approach can address the explorations of imagery and visual representation which are vital to design.

This paper regards architectural drawing as a vital contemplative and investigative tool that produces critical knowledge. As such, it must be regarded as a legitimate mode of architectural research.

I begin by briefly introducing key philosophical perspectives which suggest that the world of images is essential to architecture. I argue that drawing is both a means of implementing accumulated architectural knowledge, and a source of new understandings.

Residing at the very heart of architecture, drawing makes visible the invisible as we conceive future buildings and landscapes.

Then, examining the nature of architectural drawing itself, I discuss the role of imagination and dreaming in the creation of architectural drawings. These matters are discussed both in terms of the drawings of noted architects such as Carlo Scarpa, Massimo Scolari, and Daniel Libeskind and in terms of my own published and unpublished architectural drawings. I conclude with some suggestions for drawing exercises which both help to articulate the imaginative dimensions of architecture and demonstrate the invisible that is absent from other modes of architectural scholarship.

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SPATIAL TECHNOLOGIES AND CONTEXT SENSITIVE SOLUTIONS: THE USE OF GEOGRAPHIC INFORMATION SYSTEMS AND VISUALIZATION TECHNOLOGY TO BETTER INTEGRATE COMMUNITY CONTEXT INTO THE TRANSPORTATION PLANNING PROCESS

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Transportation projects have considerable impacts on the environments in which they traverse. From a community perspective, new transportation construction and transportation improvement projects can be beneficial if done correctly; however, proper planning and respect for the surrounding context has proved difficult to integrate into the current transportation planning process.

As part of a larger study in which researchers are utilizing spatial technologies to improve the completion of the safety and efficiency portions of the National Environmental Policy Act (NEPA) process, it is becoming apparent that the same technologies can be utilized to improve the NEPA process as it relates to local communities, the environment and the needs of the affected citizenry. With context sensitive solutions as a guiding framework of a planning process, not only is vehicle traffic and safety made more efficient, but the surrounding context is understood and the community, walkability and quality of life are becoming equally important.

In order to streamline these concepts into the planning phase of the transportation planning process, spatial technologies were utilized to help not only quantify affected environments but to assess quality and rapidly display alternatives and the effects of these alternatives on the context. To integrate context sensitive solutions, the research team looked at the three following questions: 1) How do you analyze the context of potential transportation planning project areas; 2) How can smart growth principles be integrated into the transportation planning process; and 3) How can technology aid in this integration?

To evaluate project areas, Smart Growth America principles were incorporated into an attribute matrix within a geographic information system, and with feature recognition, an area can be showcased based on its physical attributes. Multiple road cross sections, design standards, and other documentation exist that show methods of enhancing existing roads, and the matrix proved to be valuable in selecting areas that maximize the benefits of these context-sensitive solution improvements. In addition, it is equally important to make this process transparent so that the affected citizenry can comment on the ideas as well as see the theories behind transportation planning decisions.

This study found that graphic representations made possible by current visualization tools and geographic information systems not only helped integrated community and quality of life aspects into the transportation planning process, but also was vital in the facilitation of the public participatory process and overall success of the project.

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HISTORICAL INVENTORY AND ANALYSIS OF THE RIPARIAN VEGETATION CORRIDORS IN THE BLACK VERMILLION WATERSHED, KANSAS

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DR. TIM D. KEANE
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The purpose of the investigation was to inventory and analyze riparian corridor vegetation changes throughout the Black Vermillion watershed from approximately 1857 through 2006. Three sub-watersheds were studied; North Fork, Irish Creek and Black Vermillion Main Stem. The research questions were addressed using a variety of techniques and tools including aerial photography, basic GIS, and vegetation survey techniques. Territory of Kansas survey maps and notes taken in 1857 were used as baseline reference conditions concerning corridor width and woody species present in the riparian corridors. Our inventory and analysis of the riparian vegetation change over time and adjacent land cover will aid in understanding the ecology of riparian corridors and are important to stream and riparian ecosystem rehabilitation.

Riparian corridor vegetation is an important variable when evaluating water quality, quantity and stream channel stability. Healthy riparian corridors have been shown to significantly (80-90%) reduce the amount of nutrient and sediment pollution entering a stream from upland areas (Naiman & Decamps, 1997; Riley, 1998). Research also suggests that healthy riparian corridor vegetation lessens erosion rates through direct protection and creates a soil/root matrix that strengthens the banks (Gordon, et al., 2004; Pollen, 2007).

Woody riparian corridors increased in width throughout the watershed from 1857 until about 1956 (probably due to a decrease in prescribed burning), which is the pre-channelization period for this watershed. After channelization (late 1960's & early 1970's, NRCS), average corridor widths dropped significantly as the stream was shortened a total of 15.8 miles (USCOE, 1998). Most often, the land cover change in this watershed was converted from native, tallgrass prairie to cultivated cropland or pasture. Woody species composition has changed over time from established mature woodland to more of a pioneer successional stage.

The findings of this study can influence design for natural habitat rehabilitation purposes. Design decisions for land rehabilitation purposes should consider reference conditions (historic), and to understand reference conditions we must study the history of land use and land change (Egan & Howell, 2001). This study provides a template for understanding the history of land use and land use change of riparian corridors in Midwestern, agricultural landscapes.

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GEOMORPHIC STREAM STABILITY ASSESSMENT, PREDICTION AND VALIDATION

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In this paper we present our work in geomorphic stream stability assessment, prediction, and validation in two watersheds in Kansas. The common concern in these agricultural watersheds is accelerated erosion and associated sediment pollution. Here we also discuss the educational and outreach aspects of our river research program.

In the past two years we have measured and mapped a total of fourteen stream reaches (average 1500' in length) in the watersheds of the Little Arkansas and the Black Vermillion rivers in Kansas. Each stream reach had monitoring equipment installed and was monumented to allow for annual re-survey. Baseline measures of these monitored reaches include stream channel dimensions, pattern, and profile allowing stream classification (Rosgen, 1996). Additional parameters were measured or predicted according to USEPA, WARSSS(2006) (Watershed Assessment for River Stability and Sediment Supply) protocol in order to show departure from stable or reference conditions, to reveal current stream state, and to predict future trend(s) for the stream channels.

These USDA, CSREES (Cooperative State, Research, Education and Extension Service) funded projects are aimed at measurement and subsequent modeling of sediment sources, transport, and deposition within the watersheds noted both of which contain rivers that have been drastically modified to facilitate agriculture. The particular concern of the geomorphic stream channel assessment work is to predict and validate, through measurement, the sediment contributions of stream banks and beds. Measurements of bank/lateral migration (via erosion pins) and bed scour/degradation (via scour chains) will yield sediment sizes and volumes contributed by the monitored reaches on an annual basis. These measures will be combined with model-predicted sediment yield from overland flow and ephemeral gullies to produce a comprehensive sediment budget for targeted watersheds.

This presentation briefly recounts measurement methods, including longitudinal profiles, cross-sections of riffles and pools, lateral migration/bank erosion study sites, pattern measures such as sinuosity and radius of curvature, predictions of bank erosion and near-bank stress rates (Rosgen, 2001) as well as sediment competence and capacity. Long term goals for prediction, measurement, and validation of streambank erosion tables/curves for Midwestern streams and rivers that allow rapid, accurate prediction of annual sediment contributions from stream channels are addressed. Finally, the educational and outreach opportunities allowed by this research are discussed.

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EFFICACY OF BOUNDARY DESIGNS FOR THE LONG-TERM PROTECTION OF PERI-URBAN WOODLAND VALUES FROM ADJACENT RESIDENTIAL LAND USES

W. MCWILLIAM PH.D

Studies have recorded evidence of human impacts within peri-urban forest edges associated with adjacent residential land uses (Brander 2004; Young and Thackston 1999; Sauvajot, Buechner, Kamradt & Schonewald, 1998; Matlack, 1993; Moran 1984; Friesen, Eagles and MacKay, 1995). However, little is known about residential encroachment activities, boundary designs or their efficacy for protecting forested natural areas from these activities. This paper presents the results of research that describes and analyses the residential encroachment activities occurring in the peri-urban forests of six municipalities within Southern Ontario, the boundary designs for protecting these forests from these activities, and their relative effectiveness.

Using a mixed method approach, the research incorporates qualitative and quantitative data collection to answer these questions. Social surveys of key informants within six Southern Ontario municipalities identify boundary-related designs for protecting municipal natural areas from residential encroachment activities. Field studies in 40 forests within these municipalities used unobtrusive measurements of encroachment behaviour to describe encroachment activities under ten boundary designs. The two research methods, together with a literature review, were used to determine design effectiveness.

Twenty different types of encroachment were recorded in over 94% of sites. The mean maximum extent of encroachment into the forest from the forest border was 16.4 metres, with a maximum extent of 49 metres, and 95% of encroachment lying within 34 metres. Boundary treatments that served as barriers to resident entry into the forest edge reduced the incidence of some types of activities, and the extent of total encroachment, relative to designs that facilitated access to the edge. However, none of the boundary designs was effective in eliminating encroachment traces, and some types of encroachment were not significantly reduced. The results indicate that some types of encroachment activities can be reduced, but not eliminated, through property line focused boundary designs that serve as barriers to resident entry into, and encourage community monitoring of, forest edges. Other types of encroachment are not

reduced significantly, and require wider treatments, such as strip or coarser-scaled buffers that serve to segregate edge resident activities from sensitive forest edges.

This research is important to landscape architects and planners that seek to protect the vital social and ecological functions of urban natural systems. The principal goal of Ontario's natural heritage policies is to protect, for the long term, those forms and functions of significant natural systems identified at the point of designation (OMH, 2005). There are few studies that determine whether in fact this goal is being achieved.

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LOW IMPACT DEVELOPMENT FOR PROTECTING URBAN RIPARIAN ECOSYSTEM: EVALUATION OF WATERSHED PROTECTION ORDINANCE IN CITY OF AUSTIN, TEXAS

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MING-HAN LI
TEXAS A&M UNIVERSITY

Urbanization threatens the riparian ecosystems because impervious surface decreases groundwater recharge, groundwater levels, and baseflow of the stream during non-storm periods. This suggests that the urban riparian zone becomes more vulnerable for the invasion of alien xerophytes, such as saltcedar *Tamarix sp.*, rapidly spreading along streams in U.S. Southwest. LID is a site design strategy to maintain predevelopment hydrology through various design techniques. Thus, it is expected to mitigate the adverse impact of urbanization on riparian ecosystems.

The City of Austin, Texas has a long history of the LID application. The cornerstone event is the Save Our Springs (SOS) ordinance of 1992, adopting the principle of non-degradation for the development on watersheds hydraulically connected to the Barton Springs. Currently, Austin divides its territory into 5 watershed protection zones and regulates them with different levels of impervious cover limit, stormwater best management practices (BMPs), and the riparian buffer width, which makes Austin an interesting case for examining the effect of LID. We hypothesize that 1) The riparian zones developed with conventional strategies become drier and dominated more by invasive xerophytes, and 2) the SOS ordinance mitigates these adverse impacts.

Study sites are 14 riparian zones (7 in SOS, 7 in non-SOS watershed zones) within Austin Metropolitan area at which U.S. Geological Survey (USGS) has monitored the daily stream discharge before the SOS ordinance was enacted. SOS and non-SOS sites are paired based on pre-SOS hydraulic patterns to control for the natural variations. Autoregressive moving average (ARMA) model with Box Jenkins methodology is built to identify the hydraulic patterns, i.e., how watersheds respond to rainfalls. Watersheds are delineated for each study site and impervious cover percentage is classified from Landsat satellite images taken before (1987) and after (2004) the SOS ordinance using support vector machine algorithm. All tree and shrub

species are identified in 10m wide 20m long plots along the streamlines at USGS water gages. Then, cover percentages of invasive xerophytes are measured and compared between SOS and non-SOS pairs

Despite the well known ecosystem services of riparian zones, little research has been conducted on urban riparian ecosystems. Today's riparian plant communities in Austin are the results of long term impacts of urbanization and LID application. Therefore, postevaluation of Austin's watershed regulations can provide valuable implications for landscape planners who want to adopt the LID based design.

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GLOBALIZATION AND LANDSCAPE CHANGE IN TEHRAN, IRAN: THE PEDAGOGY OF CROSS-CULTURAL INTERNATIONAL LANDSCAPE ARCHITECTURE EDUCATION

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Recent scholarship in landscape architecture evaluates and defines contemporary international education in landscape architecture among the CELA participating universities (Hewitt and Nassar 2005), with specific emphasis on its pedagogical and curricular aspects. A significant body of scholarly literature concerning international education in other disciplines addresses broader contextual approaches, such as critical regionalism, and globalization. (Callan 2000; Haug and Race 1998; Shoorman 1999). While a considerable subset of the scholarly literature that examines globalization and international education specifically addresses pedagogy in conditions of cultural and political conflict (Olson and Kroeger 2001), no scholarly literature has addressed these issues in landscape architecture design education.

The paper presents the findings from surveys and personal interviews related to international cross-cultural seminars and field work on globalization and landscape change between an American University and the University of Tehran. The purpose of the seminars was to evaluate the effects of globalization on the landscape of Tehran, and to examine the curricular and pedagogical issues related to cross-cultural education under broader conditions of cultural and political conflict. As a result of travel restrictions imposed by national governments, the seminars were divided into two sections, one in Tehran and one in the United States. The American section provided the literature reviews, literature summaries and evaluation topics for the field work in Tehran. The Iranian section provided the field work and analysis of significant landscape changes in Tehran during the last five decades.

Significant findings from the research related to pedagogy suggest that: 1) barriers to communication

that traditionally reduce teaching effectiveness in contexts with little cultural and political conflict can improve teaching effectiveness and psychological security within contexts of cultural and political conflict, 2) non-official communication assumes greater roles in such contexts, 3) student participation in such seminars provide a sense of altruistic accomplishment and cross-cultural understanding, and 4) implicit threats to visa and employment opportunities provide significant barriers to communication, publication and dissemination of findings.

Specific findings related to globalization and landscape change in Tehran suggest: 1) resistance to modernization concepts has been relatively consistent over the last fifty years; 2) nevertheless global technological and economic change has prompted significant change to the landscape of Tehran, including loss of traditional urban/village forms like the city wall, streets with water channels, and heritage trees that contribute to local identity; 3) the loss of traditional forms has been exacerbated by extensive, rapid growth with new forms of streets, residential blocks, and industrial areas. The paper elaborates course structure and logistics, its curricular, pedagogical, and international education goals, and provides comparisons between the course findings and those cited in the scholarly literature.

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DO THE LANDSCAPE ARCHITECTURE BODY OF KNOWLEDGE FINDINGS PROVIDE A USEFUL INTERNATIONAL BENCHMARK FOR LANDSCAPE ARCHITECTURE DEGREE PROGRAMS?

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When degree programs are reviewed, the process needs to have objective benchmarks against which the program is assessed. Otherwise the review will be merely a reaction to identified problems, or it will be the result of individual lecturer's or the institution's wants. While this might not be a bad method of review for a Landscape Architecture degree, the resultant program risks becoming purely reactionary and, as a result, is unlikely to provide appropriately trained graduates for the profession. A professionally accredited degree needs to take heed of advice given to it by the profession.

The 2004 Landscape Architecture Body of Knowledge (LABOK) Report published by ASLA establishes a standard set of knowledge and skills against which landscape architects, and programs that train landscape architects, can be measured. Since it is the result of extensive consultation with the profession, it provides an objective benchmark for Landscape Architecture degree programs.

A major review of the landscape architecture program at the University of New South Wales in 2006/7 included a study into the correlation between the program and the findings in the LABOK report. Two analytical methods were used. The first method tabulated the knowledge and skills included in every course (subject) in the program against the recommended LABOK knowledge and skills. The second method converted these correlations to a score so that direct percentage comparisons could be drawn. These comparisons revealed substantial similarities between the LABOK report and the program, but highlighted some distinct differences, both in the emphasis given to each of the nine knowledge and skill domains, as well as numerous omissions. It also identified assumptions underlying the LABOK study.

The results from the LABOK analysis were then applied to the program in more detail. This entailed linking the LABOK results with the professional

accreditation requirements for the program, in the form of expected student graduation benchmarks. The LABOK information was able to be embodied into individual courses by breaking down the graduation benchmarks to a progression of intermediate benchmarks.

This paper details a process of analysing the LABOK findings, using them to re-evaluate an existing degree program in Australia, and developing assessable benchmarks from this evaluation.

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INDIVIDUAL EXCHANGE OR ORGANIZED STUDY ABROAD: A CROSS CULTURAL COMPARISON OF CROSS CULTURAL APPROACHES.

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The perception of landscapes is rooted in cultural context and landscape design approaches reflect cultural values. This is one reason why international study opportunities are extremely important for education in landscape architecture. These programs both provide cultural experience and enhance student capability of critical reflection of their own culture. An assessment of international education in contemporary Landscape Architecture education showed that 96% percent of programs participating in the survey offered international education (Hewitt and Nassar 2005).

This paper compares two general approaches to international experience integrated in landscape architecture programs:

- Student exchange programs send individual students abroad into regular LA programs of partner institutions. This approach is exemplified by ERASMUS, the European student exchange agreement. A major obstacle of this direct exchange is the integration of the international experience into the curriculum of the home institution. For example, the ERASMUS program introduced a European Credit Transfer System (ECTS) that allows a comparison of the time a student spends in a particular class. However, it does not include a comparison of the course content in reference to the curriculum.
- Study Abroad Programs send students with faculty provide abroad within the framework of home institution courses. The approach is common in many US Study Abroad Programs. At some US schools it is even a mandatory part of the program. However, the students do not experience the same level of submersion into a new culture as they do in exchange programs.

A comparison of these two approaches informs to a wider discussion about of the role of international study within curricula. First, clear definition of learning objectives and the assessment of these objectives for international study, such as thinking critically of one's own cultural context, must be developed. Second, the tradeoffs between individual student exchanges

and travelling courses need more study to evaluate their impact on student understanding. (That is, when programs are taught in a foreign country where students spend a significant amount of time in a different culture, the international experience is very much filtered through American faculty teaching the course.) Finally, the impact of American schools' tendency to transform the course structure from a studio project to seminar courses for international study must be considered (Hewitt and Nassar 2005). This paper fosters a discussion about role and practical implementation of a Study Abroad in landscape architecture curricula.

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LANDSCAPES FOR HIGH DENSITIES: ECOLOGICALLY SENSITIVE STRATEGIES FOR LANDSCAPE ARCHITECTS

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Visions of idealized nature have powerfully shaped urban and suburban spaces in the United States since the mid-nineteenth century. In their work on suburbs, for instance, Girling and Helphand (1994) argue that naturalistic models have formed the fundamental building block of settled society, with public desires for privacy, status, aesthetic and personal expression and recreation resulting in random expansiveness. Key elements of such landscapes have conventionally been manicured and shrubbed gardens, winding paths, and ample swaths of lawn.

Since the 1970s, environmental pressures have brought forth criticisms of such development, questioning the commuting distances involved, infrastructure costs, pollution, traffic congestion, and loss of community (Beatley, Manning 1997; Duany et al., 2000). A number of landscape architects have contributed to this criticism of conventionally natural-looking landscapes. In 1977, Robert Thayer championed the more "messy" landscape around California's Village Homes which encourages home-grown produce and climate control (Thayer, 1977). In later works Thayer has advocated landscapes sensitive to innovative technology, while James Corner has championed Landscape Urbanism to acknowledge industrial sites and technology (Corner, 1999).

This paper examines the landscapes of a different approach to ecologically sensitive design in suburban areas, notably high density developments aiming to save energy and land. Case studies are based on site analysis, archival research and personal interviews, and include the restored waterfront projects of Stockholm's Hammarby Sjostad, the Sydney Olympic Park, and Vancouver's False Creek. They also include landscapes around major transportation corridors in the case of Singapore and Almere, Holland. For landscape architects, key challenges have included fragile landscapes near heavy populations, accommodating recreation and freedom of public movement in restricted spaces, and often the visual dominance of large-scale structures. Overall, solutions

have challenged traditional views of nature as restorative for humans.

Worsening fuel shortages, climate change and pollution are calling for such radical adjustments in ways of thinking about landscape design, leaving urban infill and inner city brownfield development ecologically preferable to conventional suburban development. While landscape architects can draw on a rich history of solutions within the U.S., from Jens Jensen's prairie parks in Chicago to an array of recent projects tackling threatened sites, they would do well to draw on such alternative, international approaches to landscape design and planning based less on romantic and idealized nature, but more on sustainable preservation.

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ECOTONES: MITIGATING NEW YORK CITY'S CONTENTIOUS SITES

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Mayor Michael R. Bloomberg announced on Earth Day, 2007 a comprehensive sustainability plan for New York City's future. One of the greatest challenges of plaNYC 2030 is how to reduce the city's greenhouse footprint, while accommodating a population growth of nearly one million. Achieving these goals will require significant improvements in the city's infrastructure and environment; the role of Landscape Architects in shaping the urban fabric of NYC has never been greater. The following design proposals demonstrate the multivalent skills of Landscape Architects: designing beautiful, meaningful places while resolving social, cultural and ecological problems. Collaborating with numerous government, regulatory agencies and other design professionals these skills are tested on some of the most challenged sites of our city: the urban ecotone.

Ecotones are defined as transition zones between adjacent ecological communities. In urban ecosystems they emerge as contentious sites located between disparate or opposing forces, where industry meets the river, where community uses and industrial uses collide, where public and private interests merge. The residual effects of fragmentation form urban ecotones; slivers of land, severed as a result of infrastructure and building development; and the fallow lands: abandoned and neglected. As spaces between, urban ecotones have the potential to function as critical cultural and ecological mitigators. The following projects demonstrate the potential of using sustainable practices to mediate these conflicts, specifically, the collecting, cleansing, and reclaiming of water.

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CITY SINK: INTEGRATING CARBON SEQUESTRATION INTO URBAN LANDSCAPES

DENISE HOFFMAN BRANDT
THE CITY COLLEGE OF NEW YORK

The 2001 Kyoto Protocol initiated consideration of criteria for establishing carbon sinks, defined as "...any process, activity or mechanism which removes a greenhouse gas...from the atmosphere". Preservation of existing carbon reservoirs became a fundamental concern in addressing climate change. Kyoto's recommendations triggered carbon offset schemes, wherein global corporate enterprises responsible for massive carbon dispersal co-opted land from rainforest communities to "balance" the effect of their environmental practices. This mechanism displaces reclamation processes away from the affluent societies responsible for degraded environmental conditions onto society's with limited resources to assert their rights to property or adapt to the effects of climate change. If the rhetoric of "green" is to evolve from fashion to ecological practice, urban societies must take responsibility for their consumption and emissions.

The presentation will be timely in its contribution to the thinking about sustainability that frames MillionTrees, the public/private initiatives to plant a million new trees in both New York City and Los Angeles over the next decade – turning our streets into urban parkland. The MillionTrees programs emphasize clean air, cooling of streets, sidewalks, and homes in summer, and increased property values associated with 'greener' neighbourhoods. The program rhetoric presents trees as emblems of healthy, productive environments in lieu of encouraging a realistic, nuanced, public understanding of the interrelationship of human practices with complex environmental processes. Cultural conversion of trees to totemic objects undermines society's ability to see the ecological value of the forest – or the meadow, wetland and bog. Reframing urban planting with an operative environmental program, as opposed to deploying planting as scenographic device, will combat the perception that cities are un-natural and reciprocally, that nature is un-urban.

A key consideration that should affect our spatial practices to reduce atmospheric carbon concentration levels is that 75% of terrestrial carbon is sequestered

in soil, and carbon storage is generally more stable in soil than in plant material. Tilling and cultivation of temperate soils reduces soil carbon by an average of 30%. Re-vegetation of degraded land with grasses, legumes shrubs and trees increases carbon stocks in soil with low organic content and provides eco-system and land use benefits. These factors have compelling implications for urban territory. When we imagine the positive effects of planting a million trees on a street or in park land, consideration for how those trees are deployed, embedded and managed for optimal ecological action should be of primary importance.

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**CONCURRENT SESSIONS V
THURSDAY, JANUARY 15TH, 2009
3:45PM - 5:45PM**

MAKING A DIFFERENCE: SOCIAL JUSTICE, HUMAN RIGHTS AND CIVIC ENGAGEMENT IN A LANDSCAPE ARCHITECTURE STUDIO

S. J. MULLEY
CAL POLY POMONA

A.O.WILCOX
CAL POLY POMONA

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In 2008, two landscape architecture faculty decided to partner in teaching a collaborative studio in which students engaged with the ideas of social justice, human rights and the role of landscape architects in creating systems which might support disenfranchised populations. The course, entitled *An Inescapable Privilege*, examined three underserved communities: a homeless encampment, a colonias in Tijuana, and a migrant worker settlement in California.

Students were given an attitudinal pretest at the beginning of the course, and were required to submit journals for each week of the course. At the end of the semester, student journals were returned as a packages, and students were asked to meta-cognitively process their 10 week journal entries. On the last day, students were given a post-test to track their attitudinal changes.

Results indicate this course was significant in its ability to transform the values and attitudes of the students who took part, and in the shift in attitude toward the role of landscape architecture and landscape architects in social justice.

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A NON-TRADITIONAL APPROACH TO TEACHING SOCIAL AND ENVIRONMENTAL ETHICS

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This paper will describe and analyze the results from a study abroad program in community-based ecotourism designed to help students understand and provide real-world context for the ASLA code of environmental ethics. It provides a framework for combining an experiential, hands-on setting for the study of various sources of social and environmental standards for community-based ecotourism and the ASLA code of Environmental Ethics. The analysis of the program utilizes qualitative techniques to determine the progress the participants make toward the development of their own personal social and environmental ethic.

In the summer of 2007 and 2008, two groups of 12 landscape architecture students traveled to the Yucatan Peninsula of Mexico to study community based ecotourism. The study abroad program included visits to environmental, historic and cultural sites throughout the region as well as various ecotourism venues. Students also meet with guest speakers in the fields of tourism, anthropology and conservation. The program concluded with a design studio for rural Mayan communities that were developing low-impact tourism programs. Students developed programs and design solutions that incorporated ideas learned during their travels and studies into community based ecotourism programs.

As a requirement of the study abroad program, students kept journals in which they wrote essays in response to pre- and post- reflection prompts. The students also wrote in response to activities that compared and contrasted various ecotourism principles with the ASLA Code of Environmental Ethics. Examples from the trip and the design studio were used to help illustrate the comparisons and provide a real-world context to the activities. At the conclusion of the trip, the journals were collected and analyzed utilizing the qualitative techniques described by Boyd, et al (2006). Various themes were identified to determine changes in the students' interests

and attitudes. The student's writings were further analyzed within the Taxonomy of the Affective Domain (Krathwohl, 1964) to document the level at which the students were reflecting on their experience.

The results of the study indicate a greater awareness of the students to the importance of design and how it can affect society and the environment. Another important theme is an increased awareness of the students to landscape architecture's role in conservation as stewards, authorities and decision makers.

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PORTALS OF EDUCATION: THE IMPORTANCE OF SERVICE LEARNING PROJECTS IN LANDSCAPE ARCHITECTURE

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The purpose of this research is to highlight the alternative instructional method of service learning in landscape architecture curriculum. Service learning is a powerful framework for student learning and landscape architecture is a diverse profession which requires a multi-faceted educational approach, including community based outreach projects. These concepts of service learning have been successfully instituted in a graduate level design course at the University of Oklahoma in which landscape architecture students and faculty work directly with local communities throughout the state addressing urban design issues. These projects meet the education requirements of the design course in addition to furthering the missions of the University of Oklahoma, the College of Architecture, and the Division of Landscape Architecture. In addition, the participating students are provided with a real world project that will assist them in their professional pursuits in the profession.

There are numerous publications in the areas of service learning and the benefits of such educational systems; however, there is very little current literature that relates service learning projects directly to education in landscape architecture. The methods that will be used for this study will be threefold. First, questionnaires will be sent to students that have participated in past service learning projects to decipher if these projects were useful, constructive to their overall education, and if these projects have helped the students in their professional practice post graduation. Secondly, interviews will be conducted with community representatives that worked with the graduate design studio during each project. The purpose of these interviews will be to evaluate if these service learning projects were successful, and how so. Lastly, a review of service learning projects in landscape architecture programs throughout the United States will be analyzed to ascertain the level of importance that schools are placing on service learning projects.

The main findings from this research will be for schools to understand if service learning projects should have a higher emphasis and priority in their overall landscape architecture curriculum. If this is the case, solutions as

to how to accomplish these goals will be introduced and analyzed so that landscape architectural programs will have a template which they can follow to start up such programs. Additionally, an evaluation process will be discussed so schools that introduce or already have service learning projects will be able to evaluate their overall success.

The overall importance of this research will show possible alternative and additional educational opportunities that are available for landscape architecture schools that will enrich the students' experience and assist local communities in need.

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BUILDING DRAWING AND GRAPHIC SKILLS IN STUDENTS TRAINED IN A LEFT-BRAINED SYSTEM

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Students entering the field of landscape architecture have a range of exposure to drawing and graphic techniques. Some students are comfortable and experienced in translating ideas and images to graphic representations, yet many students have been trained to capture ideas with a limited set of symbols that potentially inhibit them from developing more fluid forms of expression. Sometimes the ability to draw is considered “talent,” which can discourage people who lack drawing skills to attempt to improve. Arguably, the ability to draw can be likened to learning a foreign language – difficult initially, but highly learnable when presented in a manner that encourages students to overcome hidden obstacles.

Landscape designers employ numerous techniques to represent ideas graphically. Some of these techniques involve using symbols, while others focus on translating visual information into evocative drawings. The writings of Betty Edwards explore the connection between drawing and brain hemisphere activity, and suggest that the ability to translate what the eyes see into lines on a paper is facilitated by activity in the right hemisphere of the brain. Many educational settings that students experience favor left-hemisphere activity, and this can handicap otherwise intelligent and motivated students seeking to improve their drawing skills. Edward’s approach to drawing instruction seeks methods allowing students to access right-hemisphere activity more easily. While Edward’s techniques enable many people to create drawings that appear more “photo-realistic,” they can be time consuming and are not always the best approach to specific design graphic applications. By contrast, author Chip Sullivan’s writings are targeted at a landscape design audience. Although his techniques cover a range of applications pertinent to design drawings, his approach is not as methodical as Edward’s approach. In part, Sullivan employs drawing and sketching as forms of creative thinking that allow and encourage a separation from careful scientific observation of a subject.

This paper reviews existing approaches to drawing and design graphic instruction with the goal of synthesizing elements to create an introductory drawing curriculum

that inspires beginning students to gain confidence in graphic communication. Balancing accurate representation with creative and time-efficient techniques requires a variety of approaches. This paper will document the creation and adjustment of a semester-long curriculum aimed at students new to applied graphic communication. This study is important to help design educators effectively utilize elements of existing graphic instruction approaches, particularly in an environment where graphics are considered integral to the design process.

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CAPTURING A SENSE OF PLACE THROUGH SKETCHING AND EXPERIENCE IN STREAM RESTORATION

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This presentation explores the possibility of using drawing as a tool to integrate the discourse between stream restorationists and professional designers involved in water related design projects. The author argues that drawing may bring new knowledge and richness to capture the essence of a place which in turn, could improve the design solutions and facilitate communication amongst peers and with the general public.

Drawing in the landscape creates an awareness of place that is a distinct form of information gathering and of understanding the landscape (Lavoie 2005) that complements scientific data for stream restoration. The act of awareness in drawing involves our imaginative perception of landscapes: an act of visual, physical and cultural (as well as professional) relationship to the land. (Lavoie 2005)

Thus, drawing is a unique re-construction of one's perception, a critical aspect of how one proceeds with visual research (Lavoie 2005) and in the art of restoring riparian landscapes. A drawing may show the essence of beauty (topography, water, plant associations...) as well as the essence of problems in the watershed (overgrazing, channel incision...). In this sense, drawing is more than a tool.

For stream restorationists, the process of 'gathering information' at different scales by drawing from a reference site may not only help to replicate the essence of a place for its ecosystem value but also to understand and 'internalize' the ecological structure and aesthetic dimensions of the stream landscape. An expression of professional and cultural values, drawing has the potential to inform the public and the stake holders about how professional perceptions of the water related projects can influence design. Drawing can become the common language for scientists and other professionals to communicate to the general public.

This presentation will include some of the author's sketches as well as those from resource scientists to show the qualities of the river. The drawing examples

(by memory and by observation) will highlight and compare the concerns observed by different professionals and scientists—geologists, biologists, watershed scientists, technical writers, etc. For example, a fluvio-geomorphologist's drawings may show how sediment transportation and stream flow affect channel alignment, stream bank cross-section and other design considerations. A fish biologist's drawings may illustrate water movement as it forms pool and riffle habitats. These drawings are relational and add value to the technical calculations and computer design models needed to implement design ideas. The author believes that drawing can help communicate the synergy between art and science in stream restoration.

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PLANTS AND PLACE EXPRESSION: USING MUSIC TO TEACH AN EMPATHETIC APPROACH TO PLANTING DESIGN

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The relationship between music and form has long been contemplated. (Walters 1999, 12) (Dooley 2000, 20-23). Design programs begin the studio sequence with abstract exercises using the arts, and often music to help students develop an understanding of elements of art, principles of design, and sense of place. Often, students do not carry these lessons of abstraction forward through the design curriculum. This is particularly apparent in the planting design studio, where students fail to link plant attributes to a broader concept. More careful observation of the material is necessary in order to understand use and design potential. As a living design material, plants must be given unique consideration for meaningful use in design (Womack 2007, 92). The purpose of this paper is to identify a studio approach that imparts a greater sensitivity to plants and their design use.

Student interview and course evaluation responses suggest an inability to assess the artistic and design qualities of plants without guidance. Students may acknowledge a superficial understanding of plants as providers of movement, light/shadow, texture, color, mass/void, and human scale, but the connection between material selection and formation of a sense of place is lost. This paper hypothesizes that the beginning planting designer must return to abstract ideas of design in order to build a fuller understanding of plants as a design material, and planting design as central to creation of sense of place.

Methods of assessment include interviews, student course evaluations, and a questionnaire. The studio sequence utilizes music in a two-phase project. Music is intricately connected with right brain processing, creative skills development, and an effective tool in the design classroom (Schach 1989, 80-81). Students are first asked to listen to musical selections chosen by the instructor, based on rhythmic, tonal, and harmonic patterns that create various emotional and cognitive responses. The students are then asked to select an individual plant that embodies the forms, colors, textures, and spatial movement of the music. In the second phase students develop a three dimensional design expressing the musical piece.

Results indicate multiple benefits including an increase in observational skills, broadened plant palettes, deeper awareness of inherent design characteristics, sensitivity to community and ecology, and contribution to sense of place. This is ongoing research and results will continue to be collected. This study is significant, as landscape architects must more sensitively connect people, plants, and environment.

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A PROCESS FOR DESIGNING EXTRAORDINARY MIXED PLANTINGS—AN ARCHITECTURAL AND HORTICULTURAL APPROACH TO PLANTING DESIGN

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The purpose is to teach new visualization techniques of planting design to create extraordinary mixed bed compositions that are effective 365 days a year. Basic and advanced concepts are covered including how to: recognize the various types and uses of mixed bed plantings; design using plant characteristics—form, color and texture; structure and compose mixed bed plantings; develop layered planting compositions; visualize plants in elevation and plan view; and select plants appropriate to specific design criteria and environmental conditions.

The background describing the context of this session can be summarized in that it sprang from Scarfone's teaching. Students in his classes at Longwood Gardens and The School of the Chicago Botanic Garden praised Scarfone for his course manuals and clear methods of presenting the subject. Students encouraged him to write a book because he understood how to breakdown and clearly explain complex planting design principles. The students wanted a detailed book on planting design because none had existed that thoroughly elaborated on the subject in an organized step-by-step process.

New methods of designing with plants specifically in mixed plantings are revealed. An innovative yet simple sequentially layered design approach and building-block techniques illustrate how to create layered compositions that sustain multi-seasonal interest.

Scarfone's main findings include the following: the development of a clear, logical layered design process where a planting composition is gradually built upon layer by layer; describing and illustrating why and how choosing plants should be the last step in the design process and that individual plants should not be the determining factor in creating an overall design; and the fundamental concept behind the success of the planting composition is to ensure interest throughout the six seasonal periods.

Having lectured on the book's topics at national professional conferences and at botanical gardens

and institutions, Scarfone has made an impact. Professional Planting Design has been adopted by The George Washington University as a textbook for its planting design course. Attendees of his lectures and workshops consistently have given him high marks on his knowledge and enthusiastic teaching. When he spoke about the book's topics at American Society of Landscape Architect's 2007 National Conference, Scarfone had about 340 attendees and the book sold out at the sales booth. Professional Planting Design earned a 2007 Merit Award from American Society of Landscape Architects Maryland/Potomac Chapters and has received positive book reviews in publications such as Landscape Architecture magazine.

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LOOKING BACK AT LEARNING FROM LAS VEGAS

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In the year 1972, the authors; Robert Venturi, Denise Scott Brown, and Steven Izenour, published a book entitled, *Learning from Las Vegas: The Forgotten Symbolism of Architectural Form*. The authors describe, through case study methodology, the commercial use and application of architectural icons and symbols in the city of Las Vegas, Nevada, U.S. At the time of its publication, a healthy discussion among peers to re-evaluate the aesthetic application and use of architecture icons as a form of cultural consumption for the masses was generated, a topic of discussion that transcended even more in today's global economy. The use of architecture as a billboard to visually promote and persuade the public to buy an item has been a well known procedure used by commercial advertisers. This form of architectural advertisement might look like a creation of the twentieth first century; but its origins can be traced to the Roman Empire's use of the Arch of Triumph to promote the power of the citizens of the Eternal City. Architecture, through time, has become and evolved into more than a shelter but as a communication device as well. This evolution has turned architectural icons into a form of propaganda to attract the masses through association of cultural symbolism. The cultural symbolism attributed to the buildings style has shaped and revolutionized the architectural definition of space, and the icon has become a persuasive source of form and order among designers.

Las Vegas, a city in a constant state of flux, is always in the search for new ways to attract the masses, and cultural landscapes are becoming the new source of form and order. Architectural icons are not enough, but the new Las Vegas is transforming itself into a gallery-exhibition of world iconic landscapes. Mega hotels such as; New York-New York, The Venetian, Caesar's Palace, The Luxor, Paris, Mirage, Treasure Island, Bellagio, among many others, are examples of this new form of architecture becoming a landscape. The cultural symbolism attributed to the landscapes has shaped, revolutionized, and created a new form of architecture truly unique to Las Vegas. Thru a more thorough examination of scholastic research, peer review data, and case study theoretical framework; this paper

will strive to decode and place the use of cultural landscapes as a form of architectural consumerism within the context of a photo documentation analysis. This work is a cultural examination of the use of the symbolism of landscapes as an architectural form.

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MODERNIST LANDSCAPE ARCHITECTURE AND THE WORK OF CORNELIA HAHN OBERLANDER

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The purpose of this paper is to expand knowledge in the area of modernist landscape architecture by analyzing the work of one of Canada's most prolific landscape architects, Cornelia Hahn Oberlander. Since coming to Vancouver in the 1950s, she has designed numerous parks, urban plazas, playgrounds, and rooftop gardens. In particular I will discuss her studies at Harvard University under the influence of Walter Gropius, her arrival in 1953 to Vancouver, which at the time was transforming itself into an a major urban center, and the building of her landscape architecture practice. The method for this study involves focused interviews with Oberlander and historical analyses of the modernist period in landscape architecture.

As part of this account I will emphasize three key movements in modernist landscape architecture history that intersect with Oberlander's life. The first movement concerns revisions to landscape architectural education in North America, which include the introduction of basic design courses, collaborations among different disciplines, and projects for actual clients. Oberlander's has continued these approaches in her practice, particularly collaboration; working with some of North America's most distinguished architects, engineers, artists, and scientists. The second movement concerns the development of more socially-minded projects that address all people in society. Vancouver's version of modernism has been noted for its more European interpretation of the modernist agenda compared with the United States. With its mild climate and late development as a Canadian city, she arrived in Vancouver at a time when modernist landscape architecture was being realized in numerous civic projects between the 1950s and 1970s, many involving Oberlander. The third movement examines the gender-related aspects of modernist landscape design and Oberlander's career. By establishing one of the few modernist practices founded and run by a woman working on major public projects, Oberlander's career provides a much needed history in landscape architecture. While North American modernism is distinguished by the rise of women in professional careers, like landscape architecture, only a handful of

histories concerning female modernist landscape architects have been explored.

This study is important because within the field of landscape architecture our historical understanding of modernist landscape architecture has just begun. Unfortunately, this lack of knowledge has had consequences outside the academic community. Numerous modernist landscapes have been destroyed in recent decades, inciting some historians to charge that the greatest preservation challenge today is protecting modern landscapes.

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HUMANIZED NATURALISM: THE LANDSCAPE DESIGN OF RICHARD NEUTRA

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Central Theme

This paper examines Richard Neutra's landscape design. Neutra integrated landscape into architecture to ameliorate the impact of urban conditions on human physiology. For Neutra, the environment evolved faster than man's physiology; design resolved this schism for human comfort.

Context

This paper examines Richard Neutra's landscape architectural work and its synthesis with architecture. His modernism integrated technology, physiology, architecture and landscape. For Neutra, physiology was tuned to Nature, where our neurological systems evolved. Our new (in evolutionary time-scale) environments of cities and man-made landscapes irritated sensory systems. Neutra ameliorated negative sensory conditions and augmented natural stimuli to heighten sensibilities through the arrangement of materials and systems on sites and in city planning. He considered climate, light, movement, color, texture and form as they related to the conscious perceptions and unconscious awareness of individuals.

This paper will detail the evolution of Neutra's experiences from growing up in Vienna with Sigmund Freud and the influence of the Vienna circle to his own home in Los Angeles, where he researched ideas on the design and planning of landscape. Included in this presentation will be the restoration of his home to explain his landscape ideas. His forgotten contributions in planning and landscape architecture teach about the importance of designing from a landscape sensibility, from the scale of the residential lot, up to the regional scale. His attention and understanding of integrated design of architecture and landscape as it relates to psychology and physiology teach contemporary solutions.

Method of Inquiry

The method of inquiry is immersion. The author lived in an environment designed by Neutra with access to his house, library and archives. This includes literature reviews from primary and secondary resources, interviews with family members and scholars, and perceptual experiences over years within the

Neutra residence to examine the implications of his theoretical writings. The Neutra house explicates ideas represented through diagrams, movies, photographs and drawings as they relate to season, movement, perception, color and climate.

Findings and Conclusions

Examining Richard Neutra's landscape design work expands our views of landscape architecture. Most literature discusses Neutra's landscape in decorative or visual terms, neglecting his attention to integrated design between people and their environment, and from outside to inside; no substantial scholarship. This paper will discuss his landscape ideas as he referred to them in terms of 'humanized naturalism.' Neutra's theoretical platform for design was human health and happiness, staging his design actions upon this tenet. Neutra's work marries what we now consider to be social justice issues with sustainability issues leaving him as a relevant contemporary landscape theorist that anticipates works yet to come for our profession.

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THE CELESTIAL GARDENS: ARCHITECTURE UPON SYMBOLISM AND REPRESENTATION

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This study examines Islamic gardens as constructs of symbolic elements and representations of Paradisal images. Furthermore, it regards the notions of “garden” and “building,” in the Islamic tradition, complementary and inseparable. In this view, Islamic garden is considered as unified construct of architecture and landscape.

Islamic gardens have largely been studied in respect to their divine origin and symbolic character. Much attention is also given to the physical study and architectural constituents of the gardens (e.g. pavilion, entrance, and water architecture); however, the ontological association between the garden and its architectural elements requires further debate. A re-consideration of these elements reveals the significant role of architecture in the creation of Islamic gardens.

To accomplish the study, I begin by tracing the meaning of the terms “garden” and “architecture” to their origins in the context of Islamic culture. For this purpose, I use “Textual Philology” method to interpret Koranic scripts and the ancient Persian and Arabic languages to promote an accurate understanding of the garden and architecture and of their symbolism. By referring to key theological perspectives associated with the creation of Islamic gardens, I discuss “Chahar Bagh” (Four Garden) symbolism and its relevance to the design of the garden. Then, I argue how Koranic garden and architecture share a common ground.

I also employ “Interpretive –Historical Research” method to investigate selected cases. Emphasis is given to Persian gardens and the traditional architecture of Iran through the study of the literature as well as the first-hand experience of the author. Key architectural and landscape elements in the Islamic gardens are introduced and their essential role in understanding of the garden is discussed in detail. I also discuss the ways in which architecture and landscape elements coincide to represent Islamic gardens as a unified existence. These matters are discussed both in terms of their symbolic and physical construct. In the end, I will discuss the patterns of “Bagh-dar-Khaneh”

(Garden-in-House) and “Khaneh-dar-Bagh” (House-in-Garden) and their mirroring role in completing each other’s meaning. I conclude with examining the mutual presence of Islamic garden and building in one another.

The study improves a cohesive understanding of Islamic architecture and garden. It will also promote a deeper understanding of built environments in the Islamic tradition in which garden and architecture are considered interdependent. Lastly, the study develops a qualitative approach valuable to studies of this type.

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THE SURPRISING ABSENCE OF THE ANCIENT FOUR-SQUARE GARDEN IN WESTERN GARDEN HISTORY

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This paper presents the surprising conclusion that there is currently no evidence for geometric four-square gardens in ancient Europe, the Mediterranean, nor the Near East, prior to the fifth century AD. The earliest known examples date to Sigiriya, Sri Lanka in the 5th c.A.D., and to early Islamic gardens of Spain and Morocco in the 8th c.A.D.

At the heart of Western garden history is the tradition of the four square garden, expressing the four rivers of Eden (Genesis 2:4-3:26), the four quarters of the earth (Persian), and the four elements of earth, wind, fire and water (Greek). The garden and the city, share a common ancestry in this tradition, in the Roman establishment of the *cardo* and *decumanus*. Nonetheless, the only quadripartite forms in ancient gardens are cruciform pools and fountains, the focus of a view, but not permitting movement.

Wilhelmina Jashemski, excavator of the gardens of Pompeii, once remarked upon the absence of this form of garden in the examples she had studied throughout the Empire. This paper by her collaborator on the project follows up on this casual observation, drawing upon a fifteen year project under her direction to assemble every known garden from the Roman world of the 3rd c. BC to the Byzantine era (c. 6th c. AD.) Earlier examples have also been researched for this paper, and even Stronach's proposal for a first *charbagh* at Pasargadae is seen to be in doubt. No idealized four-square gardens have emerged thus far in the hundreds of sites gathered from Britain to North Africa, from Spain to Mesopotamia.

From these examples, we see that geometry was the basis of garden design in antiquity. Ancient garden designers could easily have designed a four-square layout, but they did not. The paper presents some common types of gardens and forms that may, in the future, become regarded as the iconic forms of ancient design: e.g., the Peripatetic garden, in which one strolled around a garden looking in, or the long axial garden with its visual, but not traversable, cross-axes.

This talk shares the surprise at this extraordinary

absence, one that invites us to re-examine our most deeply held images of Judeo-Christian gardens, as well as to reflect upon our educations as landscape architects, to consider the meaning of the new forms emerging from the archaeological evidence. It asks us as designers, to promote the presentation of ancient gardens in new ways, specific to the sites at which they are found, rather than as icons of a remote symbolic past.

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MEMORY LINES: THE MAPPING OF CENTRAL NEW YORK

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Modeled on the Roman practice of centuriation, the DeWitt survey—called the new Military Tract—comprised some 1.75 million acres to be paid to Revolutionary War soldiers for their services. It extended from Lake Ontario southward to the ends of Seneca and Cayuga lakes and from Seneca Lake as its westward boundary to the eastward boundary of present-day Onondaga County. As Curt Meine and others have argued, the survey system practiced by DeWitt is rooted, not in an understanding of earth's natural systems, but in Euclidean geometry and Cartesian coordinates grafted (that is, plotted) upon terrain to effect “the efficient distribution of lands whose indigenous peoples had been dispossessed of their tenure,” a project meant to correct “the inequities of European land tenure and a stabilizing keel for the embarking democracy.” (Meine 1997) Laid out over 230 years ago in rigidly geometrical 6-square mile tracts, the grid has persisted as an organizing framework for central New York, despite those continually changing modifications and regional orientations that have often obscured its legibility. (Schein 1989)

My project has involved two kinds of inquiry. First, my students and I have geo-referenced Simeon De Witt's 1790 township maps and superimposed them onto current infrared satellite imagery. We've thus been able to see which original survey lines have emerged gradually as plowed fields, fences, roads, tree lines and similar phenomena. Aerial photographer Alex MacLean has joined us to document these effects from the air, and we've launched a related photographic project on the ground.

The second kind of inquiry is hermeneutical. As my students and I retrace the lines (and by implications the footsteps) of the early surveyors, we ourselves enact a ritualistic kind of “going back over the ground,” an imaginative process that Brooks suggests lies at the heart of narrative, of making experience transmissible. But what narrative(s) do we tell? A beginning point well may be unearthing the subterranean logic of plot that runs through such diverse meanings as: (a) a piece of ground or land and/or the act of dividing land; (b) an illegal scheme, ruse, or conspiracy; (c) the allocation of points on a graph or marking a course; and (d) the dramatic arc of narrative. (Brooks 1992) For it's

at this symbolic juncture that we find imbricated the literal terrain of upstate New York and its distribution; the “conspiracy of interests” that led to Iroquois dispossession (Hauptman 199); the mechanics of the DeWitt survey itself, undertaken by map, chain and boot; the foundation narratives the new nation would deploy to justify conquest (Nye 2004); and our own narrative efforts to make meaning from the persistent, visible evidence of a line.

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THE POST-MODERN ANALYTIQUE

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The analytique is a beaux arts approach to teaching design principles through the analysis and representation of built work. The term analytique refers to the product of a student's study: a carefully composed and drawn expression of the subject, emphasizing the relationship of parts to the whole, and of details to overall proportions (Harbeson 1926).

As an instructional project, the analytique was popular during the early 20th Century, during the height of the Beaux Arts influence on architecture. The analytique has not fallen out of use, but is now less common than more informal presentations of analytical drawings.

We used the goals of the traditional analytique combined with contemporary digital technology to produce products that reflect the nature of current practice in landscape architecture: pluralistic, diverse interpretations of order with tendencies toward eclecticism. We first presented the students with examples of historic analytiques (Harbeson 1927) and of digital collages by contemporary designers (Sullivan 2004). Each student was then assigned a designer from the late 20th or early 21st Centuries. Students chose the degree to which their final products exhibit a 'machine' or hand-drawn aesthetic. Compositional strategies varied depending upon the character of the assigned designer's work.

The strength of the analytique lies in its rigor as a two-dimensional composition problem. Current graphic software, in particular Adobe Photoshop, makes envisioning compositional alternatives easier and more plastic than traditional sketching. Examples of student work will be used to illustrate the outcome of this project: a post-modern analytique.

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LANDSCAPES OF FANTASY, DEVELOPING REPRESENTATION TECHNIQUES THROUGH LITERARY NARRATIVE

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Pedagogy focusing on landscape representation addresses two facets in student learning; technical skills and the implementation of innovative methodologies. This paper explores the introduction of literary narrative and imagination as a subject to shift the contextual framework for digital representation instruction. Literature provides a descriptive model that imagines landscape within a larger narrative framework that drives story, character, and environment.

The Louisiana State University, Robert Reich, School of Landscape Architecture advanced digital representation seminar and lab tackles a number of representational issues that are both technical and imaginative. The course has been taught in two ways, with the introduction of a literary novel as an encompassing framework and with separate passages that drive individual projects. Examining both methods allows for a comparison of student involvement, comprehension, and development of technical skills.

Students are introduced to a series of projects focusing on the imagined environment described within literature, an example would be the world of Red Mars, as described by the author Kim Stanley Robinson. The courses focus on the "...dematerialization of the architectural (or landscape) object, giving rise to increasing attention to process and context." (Tierney) This examination involves the representation of landscape through a series of exercises that explore device, surface, environment (atmosphere), motion, and process. The students are introduced to techniques derived from historical methods and contemporary visual effects production.

This methodology produces a cohesive framework that students use to guide the construction of each representation process. The representation of specific elements of the landscape is situated within the literature's narrative. The narrative begins to produce a holistic approach to representational processes that is independent of known landscapes. As students are pushed beyond their known world they are asked to

re-imagine these landscape components in a new light.

"...the perspective image, both through the device of framing and momentary view, is negatively described as a depleted drawing without situation in place." (Clarke) This work is important as a methodology to introduce complex representation systems that go beyond the pictorial. Students recognize the role of each representational element and its context within complex systems and the larger environment.

- The purpose of the paper
- Background describing the context and/or existing literature
- Method(s) used for the study
- Main findings
- Importance of the study.

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ENHANCING DESIGN AND ENGINEERING WORKFLOWS: TEACHING & LEARNING MADE BETTER WITH DIGITAL PEN-BASED TECHNIQUES

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Purpose

The best way to communicate design ideas is to draw them. The traditional method of pencil on paper is as fundamental and relevant today as it has been for ages. So fundamental are those methods that digital technologies have advanced accordingly, perhaps even in celebration of them. This paper presentation will show and describe how digital pen-based technologies of a convertible Tablet PC and a SMART Board™ interactive white board were [individually and together] used to teach undergraduate and graduate landscape architectural design and engineering courses.

Background, Methods, and Findings

In the context of this endeavor, digital pen-based technologies functioned to augment the strengths of typical, traditional classroom and studio workflows. Those typical workflows included hand and digital drawing, scanning, image editing, digital and print output, content delivery, design/progress reviews, project evaluation, and note-taking. Featured throughout the presentation will be the processes and outcomes of applying the SMART Board™, Tablet PC, and relevant software to understanding and solving common site grading and site design problems. The resulting benefits & findings are many and significant. They include, but are not limited to, the following:

- Facilitated easier, cleaner delivery of lectures
- Engaged the instructor and students in classroom teaching, participation, and learning
- Energized and streamlined landscape architectural design and engineering pedagogies
- Practically seamless transition from pencil & paper to digital pen-based methods
- Effectively documented lectures and design reviews
- Interactive classroom demonstrations effectively jumpstarted studio productivity
- Helped initiate the design process (e.g., diagramming, sketching, concept/form development)
- Facilitated digital pin-ups & design reviews, including marking and saving written & drawn comments
- Made teaching and learning more fun than

traditional lectures

- Reduced paper consumption
- Digital pen-based technologies are not exempt from criticism. Along with these positives come some limitations, which will be also shared.

Significance

This presentation will also demonstrate how we can and should be among the greatest beneficiaries of using digital pen-based technologies to enhance and transform traditional landscape architecture pedagogy. As landscape architecture educators, it is critically important to keep pace with digital advancements that improve our teaching efficiency & effectiveness, while engaging our increasingly multi-tasking, gadget-oriented, digital native learners. We must have the willingness to explore, learn, integrate, and adopt effective digital methods as they appear sensible, easy to use, and a relatively seamless integration into daily practice. The Tablet PC and SMART Board™ responded to that call quite nicely.

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EXPLORATION OF HAND RENDERING AND ITS EFFECT ON PERCEPTION OF LANDSCAPE

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This project will contribute to the ongoing debate about how landscape architecture students learn to “see” by drawing in a variety of media. Drawing is a method of observing and expressing the unique qualities inherent in every landscape. It has been used for centuries to study landscapes and continues to be a valuable tool in understanding landscapes. This fall in Rome I would like to explore how my representation of place changes with media.

Specifically, I would like to study, how use of different media may convey different qualities of a site? In particular, how do charcoal, fountain pen, graphite, watercolor, and pastel affect how a layered and complex site in Rome is rendered? In conjunction with hand-written notes, I feel that I may begin to determine how the unique qualities of a multilayered site may be observed and conveyed. Drawing is a form of observation and that has the potential to exhibit characteristics of place that are not easily explained in words.

This media study will explore variation in drawing as a form of studying unique landscape qualities by producing a series of renderings made while abroad in Rome, Italy. The procedure is to use five forms of media plus a photograph to create a visual matrix with five dates on one axis and the six media on the other. The renderings and images of this matrix are compared to handwritten notes, detailing observations of people, sounds, mood, etc, and conclusions made with regard to rendering process, and perception of site. This project contributes the opinion of a current student of landscape architecture to the discussion of how landscape architecture students are taught to perceive and convey landscapes.

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WHOSE LANDSCAPE?: RACIAL IMPLICATIONS TO AESTHETIC PREFERENCE IN THE LANDSCAPE

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This study interviewed black residents of Mississippi to determine their aesthetic preferences in their residential landscapes and housing. Vernacular residential landscapes were documented and recorded, and were used as a discussion point for interviews. In addition, visual preference studies were performed with equivalent groups of both white and African American residents to determine if generalizable design guidelines could be developed for residential design and planning. The results of this multi-method study indicate significant differences in the aesthetic preferences of samples of the white and black population of Mississippi and Alabama.

Landscapes hold meanings both mediated and determined within their physical form. Schein (2006), Duncan (2003), and Sibley (1995). The hegemonic imposition of dominantly white aesthetic standards in opposition to the, until now, unspoken preferences of poor black vernacular culture has serious implications for landscape design and planning in an era of significant landscape reconstruction throughout the deep South. At the scale of individual residences, clear and wildly disparate preferences are evident in respondents of different races in a comparison of the aesthetics of community landscapes. In photo-preference studies similar to those performed by Nassauer, Kaplan and Kaplan, and Ryan, widely different responses were evident when the data was analyzed by race.

In landscape aesthetics, the question must be asked - whose landscape are we constructing? Careful study of the aesthetic preferences of stakeholder groups can

inform reconstruction efforts and allow us to negotiate disparate aesthetic realities which are grounded in long-standing cultural truths.

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ASSESSING PUBLIC PREFERENCES FOR AN URBAN AUTOMATED TRANSPORTATION SYSTEM: RATING DEPENDENCY ON RESPONDENT SOCIO-DEMOGRAPHIC CHARACTERISTICS

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A study has been conducted to capture public preferences for urban scenes which include the Personal Rapid Transit (PRT) system in Morgantown, WV. This paper will explore the linkages between socio-demographic characteristics of the population sample and preferences for environmental and design characteristics of the PRT and its surrounding urban context. It has been shown that perception of visual aesthetic quality is strongly related to cultural, social, and psychological factors influencing the mind and senses of the viewer (Lothian, 1999), and that preferences can greatly vary among groups with different interests (Elke et al., 2007) due to the attachment of different levels of importance to the same landscape features. Very few studies have been conducted on visual preferences for automated transportation (e.g. Cook et al., 2004). In particular, public perceptions of automated transportation systems within an urban landscape have not been fully explored.

We employed a perception-based landscape assessment technique (Hull et al., 1987; Daniel, 2001) to measure preferences for distinct elements characterizing urban scenes along the automated transportation tracks. These scenes were categorized through the identification of a set of environmental attributes defining the urban context and design attributes of the section of the automated transportation infrastructure included in the scene. A survey including a questionnaire on socio-demographic data and pictures portraying the urban scenes was administered to a population sample which included the general community (i.e. residents and visitors) and the academic community of Morgantown (i.e. staff,

faculty, and students). Perceptions were captured using a rank ordering process of most and least preferred scenes on presented panels. Data was analyzed using correlation and regression analysis.

Findings include the understanding of shared preferences across population groups and of variation of preferences for specific attributes among groups. Findings also indicated which attributes determined an overall more consistent response and which greatly varied, possibly depending on personal inclinations and beliefs. The results provide insight into the relationship between social-demographic elements and preferences for environmental and design elements, as well as design considerations about the transportation system and general planning suggestions for urban areas adjacent to tracks and stations. The implications of this work provide advancements in the field of perceptual research through the testing of landscape evaluation approaches in an urban environment.

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MUNICIPAL WATER CONSERVATION PRACTICES OF TEXAS CITIES — A REVIEW OF IRRIGATION ORDINANCES AND FEASIBLE TECHNIQUES

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Securing water supplies has been one of the challenges many city officials are facing. From Arizona to Nevada to Florida, the looming water shortage spans the country. In Orange County, California, due to the water crisis wastewater is turning into drinking water at high costs. Texas, though blessed with many natural water resources, municipalities are increasingly looking into conservation programs and strategies as one option to increase the reliability of water supplies.

Landscape irrigation consumes over 50 percent of outdoor water use (Kaiser, 2004). Intuitively, the most significant amount of water to be saved would come from changes in landscapes. Previous studies, however, showed landscape irrigation programs had the lowest participation in Texas cities, compared to other water conservation programs (Kaiser, 2004). Therefore, there is a great potential for municipalities to conserve water by implementing water-saving irrigation ordinances. Conserving water by stringent irrigation ordinances has become a typical practice in areas where water resource security is a big concern. This practice, however, has not yet been popular in Texas where water is still relatively available. However, with climate change and perpetual drought being predicted by scientists for Texas, it is important for municipalities to develop sustainable water conservation ordinances to curb water consumption more effectively and avoid water crisis years before the problems become apparent.

Five Texas cities (Austin, Dallas, El Paso, Frisco and San Antonio) with exemplary water conservation policies are selected for review, especially irrigation ordinances. Six contemporary sustainable irrigation techniques (drip, gray water, rainwater harvesting, subsurface, and xeriscape) are discussed as well as their potential opportunities and barriers to be implemented in Texas cities.

This paper discusses a policy rationale for water conservation and identifies existing water conservation

ordinances especially focusing on irrigation. The paper concludes with recommendations of specific policy initiatives to enhance existing water conservation programs and irrigation techniques, especially useful for regions with semi-arid climates similar to those in Texas.

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'TOILET TO TAP': PERCEPTIONS OF WATER QUALITY AND WATER SCARCITY AMONG SAN DIEGO RESIDENTS

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This study surveyed and interviewed residents of San Diego to determine their knowledge level, interest and willingness to engage in conservation behavior in water issues. Following the techniques of Australia's TravelSmart initiative (Salzman, 2008), this study applies a similar model of community interaction to determine best practices in stewardship and conservation interventions. In planning a water conservation campaign that includes "opportunity, information and incentives", this study sets the stage for further interaction with respondents who indicated a willingness to engage in dialogue on the issue. Water conservation and stewardship is of primary importance for California in this era of climate change. Determination of the factors which will influence user behavior is critical, and this study indicates the beginnings of a campaign 'individually dialogue marketed' to the users will improve the chances of behavior change.

A further insight from this study is the preference of users for 'natural' systems of water filtration – constructed wetlands and wetland treatment facilities for recycled water, rather than 'industrial' water processing facilities. This preference for natural systems to reclaim water into the water source stream has implications for the design of water treatment systems, and the educational capability of constructed wetlands.

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PEDAGOGY BY DESIGN: “ARTFUL RAINWATER” THAT ENGAGES AND EDUCATES

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Intent – The purpose of this paper is to show how landscapes can educate the public about the importance of rain as a resource through “artful rainwater design” (ARD). Through systematic analysis of 20 award-winning designs, this study presents specific objectives and design techniques useful to transform stormwater management into an educational experience. The paper concludes by discussing future education possibilities of ARD and areas for future research.

Background – Opportunities for ARD result in part from new regulations that require thousands of municipalities to create and implement better stormwater management programs. Designers committed to land stewardship see such regulations as an important step forward, while creative design firms realize the benefits to be gained by transforming stormwater management into site amenity. One important facet of this ARD approach is its educational potential: revelatory stormwater management systems provide the opportunity to enlighten visitors and heighten their sensitivity to rainwater issues ranging from the hydrological cycle to environmentally responsible stormwater treatment strategies.

Method – Information was gathered about each project using websites, published literature, and conversations with designers, followed by site visits to analyze each design. Project documentation was organized, reviewed, and analyzed using grounded theory methods to glean specific observed educational attributes in each project related directly to the stormwater management design.

Findings – Within this study, the ARD educational goal was defined as “creating conditions to learn about rainwater and/or stormwater runoff-related issues.” Case study analysis revealed 3 categories of educational objectives useful to ARD: providing ideas to learn, ways to learn, and context for learning. The study then identified a range of categories within each objective (“ideas to learn” can include, for example, the hydrologic cycle, historical water condition, stormwater treatment types, riparian plants, etc., while

“context for learning” can include visibility of the treatment system, opportunity to interact with the system, etc.). The designs were then re-analyzed to glean a set of design techniques to achieve the ARD educational objectives. The study derives exciting and practical goals, objectives, and specific design techniques to educate visitors about rainwater. **Importance of the study** – This paper demonstrates that new stormwater management techniques can use rainwater to create amenities that enhance a site’s educational impact by adopting an ARD strategy. Additionally the paper presents specific techniques to address stormwater management in environmentally responsible ways while creating expressive landscapes of rich experience that educate people about stormwater.

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ASSESSING SUSTAINABLE DESIGN PRACTICES IN NEIGHBORHOODS OF TUCSON, ARIZONA

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The purpose of this study was to address two fundamental questions as they relate to sustainability in neighborhood designs: Have the designs of our neighborhoods become more or less sustainable over time? And, what effect, if any, has increased reliance on technologies, such as automobiles and climate control had on the design of our communities?

Within urban areas, design practices considered sustainable are sometimes employed to balance the needs of human and natural ecosystems. Interestingly, older communities appear to reflect these practices more than younger developments, incorporating tightly clustered, multi-use development patterns, water harvesting and use of vegetation for shading structures to overcome climate and travel limitations. During the twentieth century, technology advancements and changes in development patterns have contributed to a decreased emphasis on these practices. These technological advances have led to a "reductionist mechanical world" (Silberstein and Maser 2000), and harmful development patterns that have resulted in ecological destruction and degradation. Sustainable development practices are seen as one way to holistically integrate societal pressures while preserving ecological integrity and economic justice (Kline 1993, WCED 1987).

This study assessed neighborhoods of similar types and varying ages in Tucson, AZ to determine what trends toward or away from sustainable design practices exist in the area. Neighborhoods were chosen as the basic study unit because the responsibility of implementing sustainable design typically falls on local municipalities and most development occurs at this scale (Perks and Van Vliet 1993). Given the broad interpretation of sustainable design practices, the study focused on five categories of ecological design indicators to evaluate neighborhood designs as they relate to sustainability: 1) air quality, 2) water quality, 3) energy use, 4) spatial arrangement, and 5) vegetation. Standardized values were assigned to these indicators, allowing a method to rank the neighborhoods in terms of the presence of

ecological design criteria. Results of this study indicated that newer neighborhoods in Tucson exhibited fewer indicators of ecological design than did older neighborhoods, suggesting that ecological concerns may have played a diminishing role in the design of Tucson neighborhoods over time.

This study provides a valuable tool in assessing the presence of ecological design at a neighborhood scale. In addition, it provides design implications and guidelines that can influence community designs to effectively implement sustainable practices within new neighborhoods and developments.

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GOLF COURSE ARCHITECTS' PERCEPTION OF FACTORS INFLUENCING CHANGING GOLF COURSE DESIGN

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This research study surveyed 171 golf course architects in early 2006 to determine their perception of the changes in golf course design over the past four decades, and their attribution of influencing factors. The survey utilized short answer, open-ended and Likert scale questions to determine what changes have been observed by the members of American Society of Golf Course Architects (ASGCA) and their opinion of the factors which influenced these changes.

Results were wide-ranging and varied. A majority of respondents noted increased length of play, partially attributable to improved technology of clubs and balls. Many respondents also noted bigger courses with more holes as a change in design. In addition, increased width of fairways was noted, due to greater concern for safety and liability. The influence of television on the expected aesthetics of courses was noted by many respondents, as was the 'environmental movement' as a factor in increased demand for 'sustainable' or sustainable appearing design. In addition, the influence of star players on design was noted.

Respondents did not feel that increasing numbers of women, minorities or children had a significant impact on course design, nor did they feel the aging population had a significant impact to this point. There was little support for design changes resulting from design for a range of abilities as a major change. However, costs, liability, and client demands ranked as the most common response to factors influencing design, followed closely by environmental regulations and maintenance needs.

Respondents ranged from 93 to 26 years of age, and practiced in all areas of North America. The majority of respondents were employed in firms of 6 designers

or less. One striking response was the consistency of perception that golf design had been 'co-opted' by signature designers; golf course architects not employed by a 'big-name' firm saw ever decreasing

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STORIES OF STEWARDSHIP: EMPLOYING SOCIAL NETWORK ANALYSIS TO UNDERSTAND THE FORMATION OF SUSTAINABLE SOCIAL CAPITAL

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Purpose: This study employs a modified version of Respondent Driven Sampling (RDS) to examine the extent to which landscape stewardship and environmental awareness are shared and fostered through storytelling among the social network of a sample of landscape architects, to: 1) identify instances in which landscape architects share stewardship experiences through storytelling, 2) understand the frequency and impact these stories and experiences have on the storyteller, the listener and other members of their social network; and 3) suggest ways that RDS may enhance our understanding of how storytelling fosters landscape stewardship among members of the populous.

Background: Recently, a newspaper shared the story of a woman who, after attending a lecture on landscape architecture about water conserving planting design, returned home intent on removing the grassy turf from her yard. That experience was so significant that she began to tell her own stewardship story to friends and acquaintances. The landscape architect who shared the story initiated a chain reaction, as information passed from one person to the next within the social network. Assuming the form of social capital, stories become prevalent in local knowledge; providing, often intangible, benefits to those who share their story as well as those who listen. As stories are shared, they often generate awareness and bolster knowledge of environmental issues and inspire some recipients to participate in civic duties and engage in landscape stewardship.

Methods: RDS was first employed to recruit participants from communities of injection drug users and men who have sex with men as a means of understanding, treating and preventing substance abuse and the spread of HIV/AIDS. A type of snowball sampling, RDS is founded on the premise that hidden populations are more accessible through their own peers. Although the study discussed here does not

involve traditionally defined hidden populations, the identities and whereabouts of members of individual social networks are generally unknown. RDS is unique in that it relies on naturally occurring social networks to guide participant recruitment and, in doing so, promotes participatory research that engages participants in the research process.

Findings: Nine individuals, recruited by four landscape architects, described how their connection and subsequent narrative with the landscape architects contributed to their understanding of the profession and their appreciation of the landscape. The study provided evidence of the formulation and reinvestment of sustainable social capital and a role for RDS in bolstering our understanding of the importance of social networks.

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BEYOND SAFETY AND COMFORT: TESTING PERCEIVED AESTHETIC QUALITY AS A MEASURE OF WALKABILITY

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Growing concern over high rates of chronic disease associated with physical inactivity has sparked renewed interest in the link between health and community form. An increasing amount of multi-disciplinary research has focused on elements of community form that contribute to walkability - the ease with which pedestrians can move through their environment. However, there has been little inquiry into the role that aesthetic perceptions might play in influencing a person's decision to walk. This study tested a method of exploring the subtle psychosocial associations that people make with their physical environment, and how these may affect a person's desire to walk.

Four neighborhoods in the metropolitan Sacramento, California, area were evaluated with respect to community- and neighborhood-scale factors that previous research has identified as determinants of walking behavior. This evaluation provided background for a visual preference survey designed to measure individual's aesthetic perceptions of the physical characteristics that may influence walkability.

Survey participants rated a series of images of four types of pedestrian environments on a set of cognitive, affective, and synthetic dimensions of aesthetic response. They also answered a brief questionnaire regarding their relationship to their neighborhood, activity patterns, and attitudes towards walking. Participants then rated a second set of images of the four walking environments on how desirable each scene appeared for walking, the measure of preference for this survey.

Physical characteristics of street width, tree canopy, presence of cars, garages as dominant architectural features, porches, sidewalks/paths separated from traffic, and the presence of other aesthetic amenities (such as water) were analyzed with respect to both the aesthetic response ratings and desirability for walking ratings. Models of preference indicated that tree canopy, separation from traffic, a lack of cars, and presence of other amenities were associated with perceived walkability. Aesthetic dimensions associated with desirable walking environments included relaxingness, pleasantness, and comfort.

Neither correlation analyses nor linear regression analyses indicated that cognitive dimensions of aesthetic response, such as complexity, were important determinants of walkability.

The survey suggests that affective response is an important aspect of aesthetic perceptions of walking environments. Designers can utilize insights into aesthetic perceptions to enhance walkability by recognizing that it is the interrelationship between physical characteristics that generates positive affective responses. Developing performance criteria based on the interrelationship of these physical characteristics may help achieve desired aesthetic responses, and can help prevent reliance on formulaic design that does not truly support pedestrians' needs.

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THE DEVELOPMENT AND TESTING OF THE ACADEMIC INFORMATION SYSTEM SURVEY

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The Academic Information System (AIS) is a database for academic administrators and educators in landscape architecture programs which are members of the Council of Educators in Landscape Architecture (CELA), an international organization based in the United States. The system and its associated survey are designed to provide administrators with the ability to store and organize a variety of data on the way in which they prepare individuals to become landscape architects. The system also enables these educators to compare and contrast their institution with groups of other institutions. The goal of the system's creators is to establish the most complete database possible to help these educators accomplish their missions.

In order to develop this database a survey was written to collect information from all academic administrators of landscape architecture schools which are members of CELA. This survey was developed over the course of 2006 and 2007 by a team organized by CELA. In 2007 the team incorporated the survey into CELA's website. During the winter of 2007-2008 the survey was tested by ten academic administrators from various universities throughout CELA's eight regions. Following editing and refinement the survey was made available for all academic administrators of CELA schools.

This paper examines the need for a database system that academic administrators, educators, students and other appropriate user groups can use. It examines other organizations which collect data on landscape architecture schools, how these organizations obtain their data, and how they use them. The paper also suggests why certain processes are insufficient. It then describes the process by which the new AIS system was developed by CELA. The paper continues with

an analysis on how this system functioned with a test group and concludes with ideas on how to proceed with utilizing this new system in the future.

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**CONCURRENT SESSIONS VI
FRIDAY, JANUARY 16TH, 2009
8:00AM - 9:30AM**

FEEDBACK: AN EXAMINATION OF STUDENT PREFERENCE IN DESIGN STUDIO COURSES

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SHANNON CHANCE
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While the efficacy of the traditional design jury has been a topic of debate for decades, it remains the prevailing method of providing feedback to students of all levels and design disciplines. Studies have shown that many students find the formal design jury to be ineffectual in promoting student learning, demotivating, confusing and frequently boring (Anthony 1991, Frederickson 1990, Webster 2007). In addition, students, faculty and practitioners often disagree about the goals of the jury process and its role in improving design work in the studio (Anthony 1991). Finally, it has even been suggested that the design jury tradition may bare some responsibility for "driving away many qualified women and people of color" (Ibid.).

While a number of studies have investigated aspects of the design jury, little research has been conducted into the many alternative or supplemental forms of feedback available to design educators. This presentation will explore an array of techniques that the authors have employed in design studio courses (which include techniques suggested by students in Webster's 2007 article in the *Journal of Architectural Education*). These include written and verbal forms of feedback, peer and self evaluations, feedback provided during the design process and variations in the jury format. The benefits and limitations of each of the techniques will be explored through presentation of the results of two web-based surveys of students.

The student surveys were conducted department-wide at the Mississippi State University Department of Landscape Architecture and at the Hampton University Department of Architecture. The surveys consisted of a series of Likert-scaled and open ended questions focused on determining the students' perceptions of the educational and motivational value of each technique. Students were also asked to rank the various techniques in order of preference and explain why they found the techniques helpful or not.

Responses from the two universities varied, although

a clear preference for one-on-one forms of evaluation was evident. Students indicated that this form of feedback resulted in less pressure, embarrassment and ambiguity. This raises a number of questions relative to student preparation for professional practice which will be explored in the presentation and open for discussion. The authors' experiences in using the various techniques will be used to provide a faculty perspective on the research results. It is hoped that this presentation will aid design educators in making informed decisions in regard to evaluation techniques and foster a dialogue regarding the best practices for providing constructive, efficient, and encouraging feedback.

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E-HISTORY: THE ROLE OF VIRTUAL GLOBE MODELS AND THE CLASSROOM PERFORMANCE SYSTEM IN ACTIVE LEARNING

MICHAEL W. SEYMOUR
MISSISSIPPI STATE UNIVERSITY

This presentation explores the merits of two relatively new technologies in increasing engagement, interactivity and understanding in landscape architecture courses in general and landscape history classes specifically. The availability and ease of interface manipulation of virtual globe models such as Google Earth and Live Search Maps has made possible a broader and more in-depth experience for students. When combined with the Classroom Performance System (CPS), these tools have the potential to strongly promote active learning, which has been demonstrated to increase student comprehension (Prince 2004). This paper will examine the benefits and limitations of these tools through the author's experience and the results of an anonymous, post-course survey of students.

The potential benefits of using virtual globe models in the exploration of landscape history are many. Students are able to quickly manipulate and interact with the models and the array of data available for most important historic sites. This information includes three dimensional buildings, landscape and topography models, user posted videos and images, and bird's eye site photographs. These resources not only provide a more a well-rounded documentation of an historic landscape than previously available, but also foster a level of spatial understanding that is considerably superior. The opportunity to post image overlays further enhances the experience by providing the ability to study the evolution and preservation of those historic landscapes that have been dramatically altered.

The Classroom Performance System (CPS) is a set of tools that allows the instructor to anonymously survey students and receive immediate on-screen feedback during a PowerPoint presentation. The system can be used to pose multiple choice, numeric, and Likert-scaled questions, take attendance, and randomly select students all through the use of a small hand-held radio frequency device. CPS provides the opportunity to immediately measure understanding as well as promote student attentiveness through active involvement.

Research has shown that active learning has the potential to increase student comprehension (Prince 2004). The purpose of this study is to determine the contribution of these two technologies in creating an active learning environment focused upon critical and creative thinking and holistic understanding of the landscape. It is hoped that this presentation will aid design educators in the appropriate application of these tools through a demonstration of their use, detailed discussion of the author's experience with the two technologies and the results of the post-course student survey.

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NO MERE “EDUTAINMENT”: VIDEO GAMING AND LANDSCAPE ARCHITECTURE PEDAGOGY

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The purpose of this presentation is to reflect on the digital world of current students, the role of digital games in this world, and the potential that playing and building video games hold for learning about design in landscape architecture.

While not all students today are “digital natives,” most move around digital worlds with remarkable ease. They network socially through Facebook and MySpace, live virtually in Second Life, text message in their own language, have little fear when testing unfamiliar computer programs, and intuitively negotiate their way through complex video games.

Some games, such as simulation games like SimCity, are touted for their potential in education. And, in fact, it is not difficult to see connections between the models created in SketchUp and the virtual worlds created in SimCity. Similarly, the value of “gaming” is apparent in geo-caching to learn about global positioning, or in using Legos to build a board game. But is there genuine pedagogical value in using video games, or building them, to learn about design? Or is this approach simply “edutainment” at its worst?

One leader in this conversation is James Paul Gee, author of *What Video Games Have to Tell Us about Learning and Literacy* (2001). His work highlights the value of games in the educational process, in both theory and practice. Another prominent author, Sherry Turkle, has approached this topic from another perspective, studying the relationship humans have with their digital selves. Her findings are documented in *The Second Self: Computers and the Human Spirit* (2005), in which she explores the psychology of our relationship with technology. Gee and Turkle outline compelling thoughts on the impact and value of this technology, as well as the influence that digital technology and games have upon the ways we learn and utilize technology.

If we accept their premise that digital technology and games have such an influence, the question follows:

What value do video games hold in teaching landscape design? In this presentation we will explore this question by: 1) identifying the potential of game creation to teach landscape design content through the lenses of Gee and Turkle’s works, and 2) assessing what Ball State University landscape architecture students learned as they built the educational video game *Navigating Nature* (2007 ASLA Honor Award). These perspectives will be placed within the context of familiar simulation games (e.g., *SimCity*) and popular on-line trends (e.g., multi-user games).

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SURREALIST GARDENS: THE UNCANNY AS A MODEL FOR A PEDAGOGY OF PERFORMANCE

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Purpose: As co-instructors of a graduate Landscape Architecture studio at Louisiana State University in Spring 2008, the authors introduced themes of the “uncanny” and “surrealist gardens” using a pedagogy of performance. This paper describes that studio, its teaching methods, and the intentions embedded within the principles of performance and transference.

Background: Psychoanalysis and surrealism share a critical moment in intellectual history. Both developed ideas that were later suppressed, and both ideas held significant potential for design education. These were (1) the Freudian (re-)discovery of “the uncanny” and (2) Raymond Roussel’s techniques of literary construction, known as the *procédé*. Roussel’s novel, *Locus Solus*, specified a surrealist Garden that, despite its provocative agenda, made no significant impact on landscape architecture’s practices or pedagogy apart from, perhaps, Gabriel Guévrékian’s gardens designed between 1925 and 1928. The ideas of the uncanny and the *procédé*, however, intersect in a number of ways that suggest new teaching methods based on broader conceptions of the idea of the studio.

Study Methods: The studio required a transfer of authority from faculty to students. Studio members initiated a design-build type of installation whose value was to be established publicly. The studio began by investigating “hidden landscape dimensions” by inventing fictional instruments, maps, and inventor personalities. Applied to the LSU campus, this exercise uncovered fragments of a design that was obscured by subsequent revisions. Fiction and history combined in the studio’s construction of a narrative as a program for a Surrealist Garden built within the marginal spaces of the Art School complex.

Main Findings: Roussel’s *procédé* and Freud’s uncanny demonstrate the importance of three themes potentially significant for all landscape architecture investigations: anamorphosis (concealment), “partial objects” (pivots between actual and projected qualities of the landscape), and “anacoluthon” (a trope of

temporal structure). The procedure of transference, additionally, accomplishes both esthetic and professional goals that are traditional within programs of Landscape Architecture.

Importance of the Study: Before the Surrealist Garden studio, no project at LSU had incorporated performance or used design-build as installation art. The autonomy of the studio led to more accountability and heightened awareness of the significance of broader views of the history of art, even for strictly pragmatic contexts. The techniques of the *procédé*, the uncanny thematic, and the pedagogical strategy of transference call for broader investigation and application.

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ENGAGING FIRST PROFESSIONAL DEGREE STUDENTS IN THE CREATIVE PROCESS

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Can basic design be taught as a prescribed method?

Teaching the first introductory design course to landscape architecture students in a first professional graduate degree program presents a number of challenges. The program is geared to those with undergraduate degrees in other disciplines, from the sciences, to business, to the arts; their age range and maturity levels vary; and their work experiences are diverse. Some students, especially those with more artistic backgrounds, adapt rapidly to the challenges of studio projects. Others, especially those from science or engineering backgrounds, struggle to access their creative capabilities. The instructor is challenged to reach all levels of abilities and understanding.

After several design problems, students who are frustrated with their lack of success and the critical comments they have received may start to blame the instructor for not teaching them. They want to be told "how to" do it. Explanations of traditionally accepted design pedagogy are insufficient answers for some – especially those looking for easy answers and not asking probing questions. They want the equivalent of a Lowe's garden book series on how to build a deck, plant a tree, arrange a flower pot without accepting the struggle of the creative design process.

This instructor has been forced to ask herself a range of questions beginning with, "How do I reach these students?"; to "Where did I get my own teaching (and design) process?"; to "What teaching pedagogies address teaching design process?"; to "How does my teaching process, gleaned from remembering my own instruction, from observing other teachers, from the practice of teaching, and from my own intuition, stack up against what is written about design pedagogy?"

This paper will describe my own journey in understanding teaching philosophy - by researching five sources from the literature of design pedagogy, by outlining learning objectives, by compiling questionnaires from students, and by critically evaluating student work. Introducing a design vocabulary and devising a studio project sequence is

only the beginning in communication of design process and evolution.

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YESTERMORROW SCHOOL: A STUDY IN ECOLOGICAL DESIGN PEDAGOGY

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According to Sobel (2004) “authentic learning engages, educates, encourages, and enthuses, instead of rote learning, real education encourages spontaneity, insight, and reflection. Its aim has always been whole persons who are capable of thinking critically and living with compassion, energy, and high purpose.” Furthermore, David Orr (2002) recognized that “the design of buildings and landscape is thought to have little or nothing to do with the process of learning or the quality of scholarship that occurs in a particular place. But in fact, buildings and landscape reflect a hidden curriculum that powerfully influences the learning process.” The Yestermorrow Design/Build School in Warren, Vermont has for thirty years now, addressed design in a fundamentally different construct than that of traditional schools of design. According to John Connell, the school's founder, “the goal of the school was to get architects, contractors, and builders on the same page” (Ives 2007). Collaboration was a founding principle of the school. The combination of this philosophy and a campus that has evolved to include examples of designs done by students in the very buildings they live, learn, build, and reflect in, has led to a unique educational setting. Instructors at the school use details and techniques from the buildings and surrounding grounds to teach with what Sterling (2001) calls an Ecological View of Education. Sterling lists core values such as “participation in all dimensions of the sustainability transition – social, economic, and environmental, inclusion and value of all people, integrative understanding, faith in people, and ecological sustainability” as part of the educational paradigm of the Ecological view in comparison with “selection or exclusion, competition, standardization, faith in the system, and modernity” in what he describes as the “Mechanistic worldview of Western civilization.” Curriculum, evaluation and assessment, management, and community are all also part of the process of determining the philosophy of design teaching. The school has utilized collaboration to build bridges into the communities of Warren and Waitsfield, getting residents to take part in the design and construction of local projects such as the Warren elementary

school playground and the bandstand for the Waitsfield farmers market; the visible projects in town helping fund projects on the main campus. This study looks at the teaching philosophy of the Yestermorrow Design/Build School and how this pedagogy promotes an ecological worldview rather than the mechanistic worldview promoted by the majority of western educational systems.

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COMMUNICATING INNOVATIVE ECOLOGIC, ECONOMIC & SOCIAL SUSTAINABILITY FOR THE DAMAGED LANDSCAPE

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This paper presents student visualization and communication of innovative, sustainable ways to rebuild a town destroyed by a May 2007 tornado. The student work builds upon the community's vision for recovery in the tornado's aftermath, which was initially described in words rather than visualizations. The community's words described the desire to have a new sustainable town. For the reconstruction of a small town, sustainability has broader implications than the generally accepted definition of reduced environmental impact, conscientious resource use, and the preservation of human well-being. Ensuring the viability of the community - its economy, institutions, and infrastructure - is of vital importance. While all student projects addressed issues of sustainable building practices, several projects also address economic viability and growth issues by enhancing existing community resources, or creating new ones.

Rather than just presenting the student visualization projects, the paper is broken into six parts. The first two parts introduce the context to which the student work responds: first, the setting of post-tornado Greensburg, Kansas, and second, the processes that allowed citizen input toward whole-town design and reconstruction. Parts three, four and five begin by presenting design questions articulated as the students responded to citizen input and rebuilding needs. The design questions focus on the following three topics or conversations: 1.) What decisions must be made to ensure ecologically sustainable building practices are included in the reconstruction, 2.) How can the built work best demonstrate ecologically sustainable building practices in a way that visually educates visitors, and 3.) How should broad implications of sustainability, i.e., those related to economic and social viability, be incorporated in the design and reconstruction efforts.

As each of the three above questions or topics is presented, the paper discusses existing literature that helped articulate appropriate responses to the design questions. Various methods students utilized for the study are described. Then, student main findings and project visualizations that address one of the three

questions are presented. Next, the paper shares initial reflections on the importance of the study, and the three questions-turned-conversations that were communicated to the town. The paper concludes with lessons learned and additional conversations that could have been addressed.

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“WATER, WATER EVERYWHERE”: PERCEPTIONS OF THE AESTHETICS AND PRODUCTIVITY OF WATER AMONG STUDENTS IN FOUR ACADEMIC MAJORS

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Water plays an increasingly important role in the imagination and reality of California (Brody et al 2004, Greco 2003). This study surveyed students in four different majors in order to determine any differences in perception of the aesthetics and function (productivity) of water in each of ten scenes. In addition, students were asked to answer a series of questions about water use and the role of water in the California landscape.

Responses to the aesthetic quality of water were heavily influenced by the character of the water portrayed in the survey. These results are supported by the research of Nasar et al (2003) on the character of water and its impact on aesthetic perception. In our study however, responses to water in the landscape were further influenced by academic major. Landscape architects significantly preferred ‘natural’ water scenes rather than ‘designed’ water. This response was slightly modified by gender. In general the other three groups of students indicated much less marked differentiation between ‘natural’ and ‘designed’ water features. In addition, landscape architects responded much more negatively to agricultural use of water than the other groups.

This research has significance for the design of water features and productive landscapes in California. Students of landscape architecture indicated significantly different responses than other students of the same age, education level and gender mix, indicating a significant difference between future designers and their potential clients. In addition, the distinct preference for natural forms of water has implications for design and the urban waterways.

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TEACHING ABUNDANCE IN THE CONTEXT OF SCARCITY

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One of the most fascinating responses on the part of an all-white cohort of MLA students from the University of Pretoria, South Africa upon visiting the neighboring black township of Mamelodi was a realization that the pervasive feeling in the air was one of survivance, a vibrant act of resistance, a dynamic and colorful feat of sustainability. The black/white fear that the students carried was primarily their own burden, and despite the poverty and hardship, and indeed deprivation particularly in the outlying informal settlements, the overall *genius loci* was one of pride, a desirable contrast to the barbed-wire protected empty streets of the upper and middle class neighborhoods of the city. The question that this article will explore regarding the teaching of sustainability, which has been shown by several authors to require an inclusive, participatory model of design as well as designed spaces that support a vital civic life, is the issue of teaching these principles in the context of sterile and often still racist suburbia found in the American deep south and across the states as readily as the young democracy of post-apartheid South Africa. The classroom and the studio become sites and venues of exchange, catalysts of dialogue across difference, and potentially change by design. And while this work requires boundary crossing that might in fact be critical to the future of the profession, it is often glossed over in the charrette model if introduced at all during a three year degree program. This article argues for a more aggressive look at cross-cultural exchange especially in places like Auburn Alabama, where the town itself still abides the physical and psychological infrastructure of segregation. Design-build outreach projects offer one model that has a history of success on many levels. However one of the most potentially dangerous pedagogical outcomes of this service-based learning is that relations of power are perpetuated rather than overturned. This article will focus rather on the engagement of students in the study and design of public space and the role of democratic meeting grounds in to which all enter on equal footing, within the larger context of advancing sustainability.

Anishanabe author Gerald Vizenor has coined the word survivance, which includes resistance in survival.

“Survivance,” he writes, “means a native sense of presence, the motion of sovereignty and the will to resist dominance.” The definition that this article will build on is from CS Holling’s article “Understanding the Complexity of Economic, Ecological and Social Systems,” “Sustainability is the capacity to create, test, and maintain adaptive capability. Other authors include: Roger Talbot and Gian Carlo Magnoli, “Reinventing the City: Public Spaces in the Global Era Social Sustainability and the Planning of Public Space: Lessons from the City of Edinburgh”

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FUNCTIONALITY ASSESSMENT OF STORMWATER BMPS BASED ON PLANT COMMUNITY COMPOSITION; A CASE STUDY OF CACHE VALLEY, UTAH

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Water quality and the spread of invasive species are growing concerns in the western United States. Regional programs annually spend millions of taxpayers' dollars in an effort to control and remove invasive species (Pimentel 2000). However, some federally and locally mandated on-site structural stormwater best management practices (BMPs) actually harbor these species.

Many municipalities are now required by law to implement on-site structural stormwater BMPs to meet water quality objectives (US EPA 2006). Some of the most commonly employed structural BMPs in northern Utah include stormwater retention and detention ponds, wetlands, grass swales and bio-retention units. These structural BMPs perform their water quality objectives; however, invasive weed species, such as purple loosestrife (*Lythrum salicaria*) and reed canarygrass (*Phalaris arundinacea*), invade structural stormwater BMPs and out-compete wetland species originally planted to remove pollutants (Whitson, et al. 1992). The seeds of these invasive species are then carried downstream and/or are dispersed by wind. This, coupled with inadequate site management, repeatedly results in the spread of invasive species to downstream environments, increases their insidious range, and adversely impacts the functionality of natural wetlands and riparian areas.

The research study assessed wetland functionality of existing on-site structural BMPs on both public and private sites larger than five acres in Logan, North Logan and Providence, Utah based on plant community composition. A team of investigators visited selected sites to document existing conditions, and describe and score the existing plant communities using an adapted Utah Department of Transportation Wetland Functional Assessment Method. The assessment method has been reviewed by United State Fish and Wildlife Services, Utah Division of Wildlife Resources and has been approved by the United States Army Corps of Engineers. The protocol was modified to specifically assess structural stormwater BMP functionality based on existing plant community

composition through the use of randomly placed transects and visual estimation of all vegetative species.

The research resulted in a compilation of a representative sample list of stormwater BMPs in Logan, North Logan, and Providence, Utah and their vegetative functional assessment ratings. Additionally, the sites were plotted in a Geographic Information System (GIS) program along with their location within the watershed and in relationship to downstream water-bodies. Preliminary data has confirmed that some BMPs harbor a large percentage of invasive species. This paper summarizes the compiled list, GIS map, and preliminary data, and illustrates the extent of invasive vegetation lurking in these otherwise effective water retaining systems. It also provides insight to the downstream potential dangers regarding invasive vegetation potentially harbored BMPs.

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IDENTIFYING BEST MANAGEMENT PRACTICES THAT PROMOTE PHYSICAL ACTIVITY, HEALTH, AND SITE SUSTAINABILITY ON COMMUNITY-BASED DESIGN BUILD SCHOOLYARDS

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The purpose of this paper is to increase public awareness and to bring further needed attention of educators and practitioners to the importance of promoting community design builds and community place attachment. In addition, this research provides science-based information that will assist practitioners and educators in developing and modifying facilities and programs to better meet the leisure and psychological needs of children and community members. Methods, data, and preliminary findings will be available for use by other researchers, and all materials and resources will be shared for adaptation by anyone interested. The research proposed here utilizes a mixed-methods design to identify best management practices based on program successes that promote physical activity, health, and site sustainability on Learning Landscapes, a district-wide public school community-based initiative. To date 50 schoolyard sites in Denver have been transformed with significant community involvement. The goals of this initiatives are to 1) strengthen neighbourhoods and communities, 2) improve physical conditions to promote safe and healthy behaviour, 3) provide opportunities for place-based service learning, and 4) minimize facility maintenance costs by increasing community stewardship.

Community connections to design build schoolyards are being explored in an effort to identify experiences that promote life-long commitments to the sustainability and active use of these sites. A better understanding of how users relate to schoolyards will help inform policies and design solutions aimed at developing conditions that maximize place attachment, long-term sustainability, and healthy activities. More research is needed to advance the social-psychological understanding of community design builds and the community attachment process, the factors that influence the formation of attachments, and how these attachments influence attitudes toward land management policies and participation in the planning process.

Findings will directly benefit educators and professionals engaged with such initiatives; help to define an important link between community design builds, community health, service learning, and sustainability; contribute to the scholarly literature in the field; and provide insight into best management practices currently employed at one of the largest public initiatives of this kind.

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RESPONSIVE ENVIRONMENTS, INTERACTIVE LANDSCAPES

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Public landscapes are increasingly monitored, sensed, and optimized based on real-time or time-shifted data. Surveillance systems monitor activity, motion detectors control traffic lights, and lights activate at dusk and deactivate at dawn. These simple interactions optimize infrastructure by simplifying and regulating the environment through predictable phenomena. New technologies and applications provide a medium to develop increasingly complex infrastructure that express a site's physical, cultural, and social characteristics. This paper examines a series of interactive installations and landscapes that alter our perception of normal phenomenological cues.

“At its fundamental, interaction concerns transactions of information between two systems (for example between two people, between two machines, or between a person and a machine). The key however is that these transactions should be in some sense circular otherwise it is merely reaction.” (Hague) Landscape is inherently a responsive environment, responding to site phenomena and evolving over time. Landscapes provide a broad range of responses and interactions that occur at varying scales complicating the relationship between micro and macro phenomena and further distorting the definition of interaction in landscapes.

Architecture provides a clearer relationship between device and interaction and using Hague's definition we can assume that a cyclical relationship between user and device will typically develop rich interactions. A clarification of interactivity in built landscapes requires a definition that goes beyond interaction specifically but also considers the multiple scalar components of landscape phenomena. This approach focuses on four interaction models that specifically address the multiple scales inherent in landscape projects. These models can be defined as; one to one, one to two, displaced region, and displaced time. Each model is defined by a current case study in order to understand its relevance and effect on physical, cultural, and social systems.

Symbiosis between humans and environment, whether urban or rural, are frequently mediated through device

infrastructures. As technologies expand it is important that landscape architects provide a role in the development of interactive or responsive infrastructure in order to shape site experience. This research aims to further investigate the complex intersection of infrastructure and environment through responsive and interactive landscapes and a defined model specific to landscape architecture.

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INTERDISCIPLINARY APPROACHES TO EDUCATION OF LANDSCAPE ARCHITECTURE STUDENTS: A CASE STUDY

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Preparing landscape architecture professionals for the team-based professional environments that exist in the workplace today requires an understanding of the opportunities and constraints of interdisciplinary education. Several models of early interdisciplinary education are discussed in relation to a well funded upper-level research-oriented project approach involving undergraduate landscape architecture and civil engineering students over a three-year period.

While a few universities have focused on a strong multi-disciplinary educational approach (Newell, 1992) undergraduate landscape architecture students typically learn little about constructive interaction with allied disciplines until they have left the university setting. However, there is strong evidence of early interdisciplinary experiences, especially within the many facets of colleges of engineering, that have influenced increased undergraduate retention rates and improved the first year learning experience with some long-term understanding of allied disciplines.

Perhaps a less well known approach is a core of jointly-conducted research experiences for balanced interdisciplinary teams of undergraduates as exemplified in integrated math and biological sciences projects funded by the National Science Foundation. (<http://www.nsf.gov/pubs/2008/nsf08510/nsf08510.htm>)

The major goal of this project was to develop a model for supporting a multidisciplinary research, planning and design process that engaged landscape architecture and civil engineering students with community stakeholders including the Arkansas Department of Transportation to support economic development in the Arkansas Delta. The project site in West Memphis, is a vital "gateway" overpass intersection between the Great River Road along the Mississippi River and I-40/I-55, one of the busiest transportation corridors in the southeast U.S. In addition to fostering the interdisciplinary approach, research project objectives were to:

1. Create and present several student-generated options that address safety, cost, and visual enhancement while facilitating a more pedestrian-

and cyclist-friendly environment around the rapidly urbanizing target interchange.

2. Evaluate participation and response from project stakeholders and community members to several potential designs including a roundabout.
3. Package data and documentation to assist West Memphis in proceeding with implementation of the redesign, including identification of funding opportunities and other resources.
4. Refine the model for state-wide community use relative to holistic transportation development at the rural-to-urban interface.

A Mack Blackwell Rural Transportation Center research grant of \$50,000 was awarded to the author to work with upper level landscape architecture studios and senior civil engineering students at a university near the site. Though the project was quite successful and led directly to the community of West Memphis recently receiving a \$350,000 National Scenic Byways Discretionary Grant for intersection improvements, the interdisciplinary approach and process was not without particular project complications. The paper shares a concise history of project process at different levels of stakeholder involvement, summarizes student presentations, and offers several observations and suggestions regarding this approach to research-oriented interdisciplinary education for landscape architecture students collaborating with students in allied professions.

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CRITICAL PRACTICE, CASE APPLICATION TO URBAN DESIGN

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This paper concerns the application of theory in design implementing the idea of a critical practice as defined by Elizabeth Meyer. (Meyer 1991, 156) Using any one theory is like using one eye, it's difficult to get perspective. As design in landscape architecture becomes more complicated in terms of the factors we consider in our approach or in the way we represent the conceptual and material elements of a design it becomes more important to bring a multiplicity of theories to bear.

This study was guided by a framework illustrating the use of theory in the development of a personal design process. The framework is in the form of a three dimensional diagram that articulates the interconnections and impacts of different theoretical constructs. Strands of theory are organized, as Swaffield suggests, into three categories- instrumental, analytical and hermeneutic. (Swaffield 2002, 3) Contiguity highlights the opportunity for reconsideration of information promoting perspective, facilitating synthesis and leading to more informed decision making. As these threads of theory are pulled through the framework they are woven together to form the fabric of the design.

The process is tested through application to an urban design project. Reflection and feedback are used to refine the framework. The presentation will consist of an explanation of the framework and process illustrated by process diagrams that show how design decisions were affected by application of theory.

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EDUCATIONAL IMPLICATIONS OF THE DESIGNER'S EMERGING ROLE IN A COLLABORATIVE KNOWLEDGE APPLICATION PROCESS: A SHIFT IN EMPHASIS FROM FORM MAKING TO SYSTEMS MANAGEMENT

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The purpose of this paper is to establish dialogue regarding a shift in education from the development of skill in form making to leadership in collaborative knowledge application process.

As the role of the landscape architect grows and expands in response to the demands of complex development projects, the emphasis in design education needs also to change. The prevailing emphasis in design education supports the form and place making abilities of students in their quest to create appropriate landscape places. Practitioners involved in comprehensive landscape development projects, however, are increasingly engaged in collaborative design initiatives where both knowledge and design responsibilities are a shared responsibility. Traditional, issue-oriented design education, with its emphasis on problem solving – for natural factors, human factors, sustainability, communication, and implementation – has appropriately addressed the role of designer as form maker. For landscape architects engaged primarily as interdisciplinary collaborators there is a lack of preparation for the leadership role in knowledge application process where practitioners from diverse disciplines integrate expertise to manage comprehensive landscape systems. For this design approach, where critical landscape subsystems are integrally managed to influence comprehensive system outcomes, there is limited direct preparation from the academy. Developing leadership in this area is critical since landscapes beyond the site scale are increasingly planned and designed as ongoing processes rather than relatively static places with individualistic design expression.

This paper addresses some of the critical issues involved in this type of education and the need to devote increased attention to systematic knowledge application and decision making as a means of influencing landscape system outcomes. The author argues that the central area of expertise for landscape architecture is knowledge application process and that

it requires greater emphasis in university research and teaching.

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TEACHING AND ASSESSING LEARNING OUTCOME BY INCLUDING PARALLEL CONTENT STREAMS AND DESIGN PROBLEMS IN THE DESIGN THEORY COURSE

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Teaching design theory has been a challenge in our department. For years, it had been taught as a part of landscape architecture history and later, as a separate course. In Fall 2006, I challenged myself to build this theory course to be comprehensive, relevant (to design in landscape architecture, architecture and planning), and highly engaging to our students. This paper will examine the newly redesigned course, its special features, and related design activities to reinforce a greater insight. Following are some of the highlights.

The course was divided into three parallel streams: 1) building the philosophical basis that lay behind the design theories as underpinnings, 2) the coverage of the multitude of design theories, and 3) the exploration of theories through hands-on design activities. In building the philosophical basis, the students were introduced to important milestones of philosophical development and their genesis in the light of sciences and arts. This made the discussions on various design theories a lot more meaningful in the context of both time and space.

In addition to assessing students' knowledge of the theories through a midterm test, I assigned them a multi-part project. After dividing the class into ten teams, I asked each team to choose a design theory from a suggested (but not limited to) list of twenty theories and then to do an in-depth research about the protagonists of that theory and analyze their work. Additionally, each team selected a site and a program, and used them to design a solution by applying the theory that they had investigated. They finally presented it to the entire class for scrutiny and discussion.

It proved to be a highly insightful with relevant learning experience and a better assessment for the learning outcome.

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CREATING CONNECTION TO PLACE: USING LOCAL LANDSCAPE TRADITION TO REDEFINE THE IDENTITY OF CHANDIGARH, INDIA

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This paper investigates the relationship between the identity of a city and its landscape. In particular, it explores how creating a unified and comprehensive landscape can transform the regional, cultural and social identity of Chandigarh, India, which is the only planning proposal of Le Corbusier ever to be constructed. Besides lacking an overall landscape plan, the design was also questionable for ignoring contextual connections and references to its regional and geographical context. Highlighting these issues of ambiguous identity and cultural detachment, this paper argues that an appropriate remedy for these problems is the creation of an integrated and coherent landscape plan for the city. It further illustrates how a landscape design rooted in historical local traditions of nature stewardship can eliminate concerns about alienness and transform the image of the city by serving as a tangible link between the city and its cultural heritage.

Background:

Beginning with Modernism's perception of the landscape within planning theory, the paper examines the complex identity of Chandigarh, with its geographical, cultural and political dimensions, in addition to the ecological implications of the lack of a sustainable natural environment. Subsequently, it explores the extensive historical tradition of nature guardianship in India, and proposes a new landscape that would be a part of this continuing process.

Methods used for the study:

The research process was initiated with an extended stay in Chandigarh, with the intent of experiencing the landscape as it currently exists, along with evaluating its impact on the life of the average citizen. Onsite observation was supplemented with interviews with city planners and discussions with residents to gather a precise impression of the natural environment. Further information and historical background was obtained by archival research and review of published sources.

Main findings:

In its present form, the landscape of Chandigarh is an unsatisfactory urban natural environment. Although

much effort was expended in planning the city, the applied landscape was essentially an afterthought, arising from a philosophical perception of trees as useful merely for decorative value. The resulting landscape is, consequently, functionally inadequate as well as ecologically inappropriate. Creating a comprehensive landscape plan for the city will create a viable natural environment, while the utilization of local landscape principles and native species will undermine the perception of Chandigarh as a foreign construct, instead bolstering its image as an Indian city.

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LANDSCAPE FORM AND THE AESTHETICS OF THRIFT

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Landscape theorists are increasingly examining the interface between ecological necessity and artistic and aesthetic dimensions of contemporary landscape practice. Yet, battle lines remain drawn between 'eco-processists' and 'art-form-alists'. In this paper I propose and outline an aesthetic approach to contemporary landscape architecture practice which addresses this divide: The aesthetics of thrift. Treating the landscape discipline as a craft based on thorough material and scientific knowledge of the landscape medium, the approach synthesises environmental and ecological concerns and practices with an apposite aesthetic theory influenced by Pragmatism, Japanese aesthetics, and a re-working of modernist artistic paradigms. Six aesthetic principles—precision, economy of means, 'living lightly on the land' (Halprin 1969), eco-functionalism, elementalism, and interplay—are applied as criteria for judging the aesthetic merits of landscape and as means to teach students of landscape to make critical judgements in developing, conserving and integrating landscape form. Responding to ecologist's claims to landscape as process, the aesthetics of thrift approaches landscape forms as elemental, temporal trajectories. The six principles are elucidated firstly through case study of professional landscape architecture and secondly as structure and criteria for design studio project in education.

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COMMUNICATING A FOREST MANAGEMENT PLAN FOR THE ALPORT VALLEY (PEAK DISTRICT NATIONAL PARK UK) TO STAKEHOLDERS THROUGH STATIC AND DYNAMIC VISUALISATIONS

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Planning and design proposals are still mostly communicated with abstracted information of our three-dimensional environment. However, the integration of advanced 3D visualisation technologies into the planning process is increasingly becoming recognized as an effective and informative means of communication (Bishop & Lange 2005, Lange & Hehl-Lange 2005). The current state of the art in terms of 3D landscape visualisation is to use predominantly still images, assuming a static observer. However, humans experience their daily environment in motion. Similarly our visual experience is a dynamic one (Gibson 1986). Research looking at static and dynamic representations has so far been focusing on photographs and traditional videos of existing situations of the landscape (Vining & Orland 1989, Heft & Nasar 2000).

The presented research concentrates on the question whether there is a difference in evaluating static scenes compared with movement through a virtual landscape. Therefore static images, a pre-recorded walkthrough along an animation path and free navigation in a 3D stereo environment will be explored and assessed through stakeholder involvement in an immersive environment facility. The so-called Reflex Studio is an immersive virtual reality (VR) facility with a 3 m x 2,5 m big screen that provides viewers with the freedom to roam in the virtual landscape using devices such as joysticks and crystal eyes glasses.

For the comparison of the three different presentation modes a workshop will be conducted. The workshop will include a structured survey with a short questionnaire followed by a semi-structured part with the possibility to navigate through the virtual landscape model to get feedback from the stakeholder.

The case study site is the Alport Valley in the Peak District National Park, UK. Between the 1930s and

1982 the Alport Valley was planted mainly with non-native conifers. UK forest policies nowadays are promoting semi-native woodland. The National Trust produced together with the Forestry Commission a management plan, in which all relevant stakeholders participated. The plan is to gradually replace the existing coniferous plantations during the next several decades by new native deciduous woodlands.

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PUTTING POWER TOOLS IN THEIR PLACE: NEW OBJECTIVES FOR TEACHING COMPUTER APPLICATIONS

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Tools and technology have always influenced design, but with advancements in technology come the danger of losing skills and knowledge no longer required by a new toolset that facilitates adequate production prior to complete exploration of form and function. The purpose of this paper is to explore a new set of objectives in teaching computer applications (the 'power tools' of design communication) with the goal of making landscape architecture students aware of technology's place in the design process and its effect on design intelligence.

Students often make design decisions influenced by the capabilities, limitations, or their personal mastery of a tool. When machine tools become design influencers, design intelligence is affected. Spontaneous generation of hand-sketched ideas is inhibited and the record of fleeting ideas or revisions does not exist. The judgment required for making certain design decisions when hand drafting becomes dispensable. Design students today have a noticeably more intuitive and successful interface with the computer than students of years past, and it is now conceivable that students could graduate lacking a certain design intelligence gained from making the connections and discovering the physical properties of materials.

As students master computer applications they shift attention away from design exploration and lose their ability to generate and capture inspiration (Richards 2007.) Fry (2004) believes that design intelligence, or the foundation of judgment within the design process, is weakened by advances in production technology.

In my computer courses I divert focus away from using the computer as a design tool, emphasizing problem solving and adaptability with the realization that the toolsets continually evolve with new software packages and 'upgrades.' I stress where the software best fits in the design process and present the limitations of the tools so that students will be less enamored by their capabilities.

Each mark produced by a designer represents change to a physical site. Was the decision making process

supporting this mark influenced by the toolset? Certainly, in some measure. The need for teaching computer applications is reality – we are as enveloped in technology as we are in our physical environment. Understanding technology's effect on creativity and modifying the objectives of the computer curriculum may be a positive step in producing designers who can keep power tools in their place.

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RE-IMAGING SUBURBIA- AN INVESTIGATION INTO THE CHANGING CONFIGURATION OF AUSTRALIAN SUBURBAN LANDSCAPES USING HIGH RESOLUTION SATELLITE IMAGERY.

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The use of high resolution satellite imagery in landscape ecology has allowed highly complex systems to be analysed. This research has contributed to our understanding of the dynamic nature of suburban landscapes and how they adapt to changes resulting from development. This paper reports on an ongoing study into the use of high resolution satellite imagery to investigate community attitudes to suburban landscape change resulting from redevelopment. It demonstrates how this technology can be used both as a tool for community engagement and teaching.

In 2003 a bush fire destroyed over three hundred houses on the south western edge of Canberra, and over ninety percent of the houses have since been rebuilt. In 2007, five landscape architecture students and a graphic design student used high resolution satellite imagery to develop a digital and poster presentation to be displayed at a community field day. The aim of the presentation was to engage residents of the area in a conversation about how the fire and the subsequent reconstruction had changed the suburban landscape. Students then examined the changes to individual lots by tracking the development of new houses using development application records from the local planning authority and Google Earth. The changes to the configuration of the lots were published in a report to the local planning authority.

This study showed that high resolution satellite imagery and Google earth are providing new tools for engaging participants in conversations about the suburban landscape, and examines their perception of landscape change resulting from development. The report indicates that changes in the scale of housing reflect anecdotal evidence that new homes are taking advantage of the planning codes to build much bigger houses than those they replaced. This type of development is profoundly changing the configuration of the lots, creating linear landscape spaces and replacing back yards.

The study demonstrates that the application of Google Earth in particular allows Landscape Architects to engage both the community and the planning authority in a discussion about the landscape impact of development in suburbia. It argues the case for a landscape planning approach to developing policies for meeting housing demand in existing suburbs. It also emphasises the teaching and learning opportunities for Landscape Architecture students when addressing complex issues relating to perception of, and change to suburban landscapes caused by redevelopment.

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THE VEILED LANDSCAPE OF SERVICE: REMOVING, SCREENING, AND MASKING WORKER HOUSING IN JACKSON HOLE, WYOMING

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RECAST / SARAH SABISTON ARCHITECTURE

Jackson Hole is a posh destination tourist resort located in Wyoming at the eastern foot of the majestic Teton Mountains. During the past quarter century, a carefully crafted and managed, “scenography”—a socially constructed aesthetic image of wilderness and refinement—has emerged as the backbone of the area’s recreational economy. Local leaders have a powerful political and economic incentive for maintaining an artifice—an uncontested playground—that is desired almost as much as nature itself. Visitors and second-home residents enjoy both the adventures of the rugged sporting life and the amenities of a resort destination. It comes as no surprise that the planning and architectural professions serve the image, which is framed within the discourse of “contextual (both historical and environmental) appropriateness.” Exclusive housing developments designed in the rustic style abound, but the cost in social terms is high, for workers in the service industries that support and physically maintain the genteel setting are largely omitted from the equation. Service workers are an important part of Jackson Hole, but remain mostly in the shadows of the landscape.

The intent of this paper is, first, to expose the contradictions within the Jackson Hole landscape and then to show how design professionals in ways that they often do not realize put into practice scenographic “rules.” By looking specifically at architecture and planning as service industries in their own right, I will argue that through the strategies of removing (separating by distance), screening (partitioning), and masking (disguising), local and global design practices support the existing ideology of Jackson Hole as a place of authenticity and refuge, while concomitantly veiling the presence of service workers who are needed, but nevertheless camouflaged in the contemporary cultural landscape of Jackson Hole.

The design professions can benefit from this knowledge to resist, consciously or unconsciously, their tendency to support the normative practices that maintain certain relationships of power. Such an approach to the tourist and service worker

landscape has significance in two areas: first, it moves beyond merely identifying the presence of the service population as a categorical group to looking at the spaces they create for themselves and the invisible spaces that are developed for them by others and second, the study has implications for architects, landscape architects, and planners within the discourse and practices of political action through social cohesion and community design.

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RECLAIMING THE WASTELANDS OF COAL: CRITICAL EVALUATION OF A SERVICE/LEARNING DESIGN STUDIO

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The purpose of this paper is to critically evaluate the results of a service/learning design studio that addressed the reclamation of a waste-coal site in Western Pennsylvania for multiple uses. The background and history of surface coal mining in Pennsylvania will be briefly reviewed and a detailed report of the studio project will be presented including the regulatory climate, private sector client portrait, student design process, and critical review of student projects. The site is directly adjacent to the Blacklick Creek near Indiana, PA and acidic runoff from the waste coal contributes to the pollution of the creek. The site also includes a renowned regional rails-to-trails facility – The Ghost Town Trail – and a historic charcoal iron furnace from an earlier industrial period. Waste coal, a previously undesired by-product, is now utilized by modern co-generation facilities to produce electricity. The private company that owns the site plans to extract the waste coal and reclaim the site. Through a process of site and program analysis and design, fourth and fifth year landscape architecture students explored options to incorporate recreational and interpretive amenities, employ novel methods of reclamation, and plan for the long-term sustainability of the site. The results reveal the both the limitations of the students' technical knowledge, and the creative range of their ideas. Critical evaluation of the studio suggests that conducting similar, technically challenging service-learning studio projects in the future will require substantial additional instruction in federal and state regulations and technical tutoring in geo-technical and geo-chemical processes. But the scope of the problem throughout eastern bituminous coal region from Pennsylvania to Alabama and the dearth of landscape architects engaged in reclamation suggests that to neglect educational and professional opportunities would be regrettable. The recent bipartisan reauthorization of the federal Surface Mining Control and Reclamation Act (SMCRA 2006) legislation that will provide new funding opportunities for coal field reclamation is another powerful incentive to continue these efforts.

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USING SERVICE-LEARNING TO ENHANCE BROWNFIELD TRANSFORMATION

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In recent years designing the redevelopment of brownfields became a new topic and integral part of the education in landscape architecture. This paper explores how design studios are enhancing the goals of education through service learning experience that includes design and scholarship objectives.

Robert Diamond (2006), President of The National Academy for Academic Leadership argues that activities like design should be considered scholarly if they meet the following criteria: (1) they require a high level of discipline-related expertise; (2) they are conducted in a scholarly manner with clear goals; (3) they require adequate preparation and appropriate methodology; (4) their results are appropriately documented and disseminated; (5) the work has significance beyond the individual context; and (6) it is reviewed with reflective critique.

In light of these considerations,

- (1) An interdisciplinary group of researchers, professors and students participated in a design studio in landscape architecture focused on the transformation of a former brownfield site in North Charleston, USA to a new university campus landscape.
- (2) The scholarly intent and design goals were to develop plans for Clemson University's Restoration Institute (CURI), whose mission was to drive economic growth by creating and developing environmentally sustainable technologies and restoration industries. Founded on the notion that 94 cents of every construction dollar in North America is spent on repairing or reviving existing infrastructure and landscapes, the Restoration Institute promises to address one of the most lucrative sectors of 21st century economies. CURI's primary focus areas include: Renewable Energy, Restoration Ecology, Advanced Materials, Processes and Systems, Healthy Communities and Buildings, Historic Preservation and Materials Conservation.
- (3) In preparation for their design proposals for the new campus they conducted research and field work concerning, recreation, historic preservation, nature conservation, and the environmental, economic and social diversity of North Charleston. Studio methodology included scenario planning for multi-

dimensional open space, ecological and hydrological dynamics, pollution and contamination remediation, and the abandonment of the site.

(4) While planning for a campus on the former Navy Yard a major dissemination effort was directed at the community. Professors, students and researcher's in Landscape Architecture offered a public design workshop in North Charleston that documented community ideas and visions, whose results were the basis for further student design proposals.

(5) The results of the further student design proposals and the charrette were incorporated within a report and disseminated to researchers in the field, University to agency officials, the University Board of Trustees, and to North Charleston city officials.

(6) The studio report also offered reflection and critique for the CURI mandate "to create, develop and foster restoration industries and environmentally sustainable technologies while developing a knowledge-based export-oriented industry cluster in the Lowcountry, positioning South Carolina as the premier home of restoration knowledge and expertise." (Barker 2008)

The incorporation of this service learning components in the design studio added a significant and new learning component to the class. It aimed at broadening the learning experience of the students and gained via direct interaction with clients and the values cultivated via community engagement. The students in the design studio were not only exposed to a real-world project, but they obtained a broad experience and understanding of the diversity of environmental sustainability, and were prepared to deal with the diverse and complex issues relating to the built environment. The design studio illustrated how a research-driven studio might serve as an effective base for the synthesis, integration and transformation of knowledge through teaching.

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TOOLS FOR TEACHING STEWARDSHIP: DEVELOPING EFFECTIVE MATERIALS TO SUPPORT LANDOWNER CONSERVATION EFFORTS

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Communicating with landowners is a challenge at the heart of effective stewardship programs. All too often, landowners are willing to initiate changes on their land, but lack the guidance or basic tools to implement needed change. Members of a Stewardship Alliance identified a need for educational materials on stewardship issues and an assessment of current conservation behaviours. The project involved the creation and distribution of an introductory stewardship handbook for rural landowners and an assessment using a self-administered questionnaire sent to the landowners and the consulting professionals who worked with them on a regular basis.

Respondents were involved in a broad range of activities dominated by tree planting programs / forest management, naturalization, and shoreline initiatives. One of the key results was the distinction between information considered most helpful for the landowners by the professionals, and that considered most helpful by the landowners themselves. The result would suggest that landowner priorities are being misjudged by the professionals, and that programs may need to be refocused to address priorities other than water-related issues. The responses may also reflect a dominant interest in recreational resources and development on the part of the landowner, which is being neglected in favour of education and planning by conservation professionals.

These results would suggest that there is a conflict between the priorities of landowners and those of conservation professionals. Landowners define land conservation as the conversion of agricultural land to naturalized or wooded areas, and considered education the key component in land preservation. As such, existing landowner programs should be assessed for utility based on actual landowner priorities rather than conservation professionals' perception of landowner priorities. Stewardship programs should encompass

water resource management as a component of recreational resources to encourage interest in water-related issues. Furthermore, programs should educate landowners on the value of agricultural land, meadows, prairies and savannahs as natural areas, and validate local and indigenous knowledge about landscape forms and processes as a first step in promoting positive farm / non-farm relationships.

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SENSE OF PLACE AND NEW URBANISM: TOWARDS A HOLISTIC UNDERSTANDING OF PLACE AND FORM

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New Urbanism is an all-encompassing term that refers to an increasingly popular set of design tenets that draw upon traditional urban forms in the creation or redevelopment of residential communities. Although design professionals are increasingly adopting these design tenets in the creation of new communities, there is no research that either supports or rejects New Urbanism's underlying assumption that neotraditional design tenets are capable of fostering a "sense of place." This assumption is essentially a normative claim that presumes the principles of the New Urbanism can have a measurably positive effect on sense of place (Kelbaugh 2002; Congress for the New Urbanism 2000).

This research project employs an existential-phenomenological approach to understand two specific people-place relationships. The project first explores how a "sense of place" arises for residents of a neotraditional neighborhood located in Blacksburg, Virginia. The methodology then investigates the influence of physical form in the development of a sense of place.

Analysis indicates that social interaction in the form of un-structured chance encounters with neighbors heavily influences the transformation of mere space into place. Further analysis indicates that such encounters are not directly related to density. Rather, the spatial quality, the relationship between the built and un-built environment and the design of the public/private realm emerge as key factors in encouraging such residential experiences. The results are discussed in the context of the New Urbanism design tenets.

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MONUMENTAL PEDESTRIAN ICONS: REFLECTING PLACE, CITY & CONTEXT

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The dominance and reliance on vehicular transportation in many cities challenges the nature of pedestrian infrastructure capable of countering the ever-expanding scale and influence of vehicular needs. Whereas the pedestrian experience has often been subordinated to the needs of vehicular infrastructure, this paper explores projects whose emphasis is in expressing a monumentality of the pedestrian experience.

In these projects, the urban experience is transformed so as to privilege the pedestrian via dramatic and iconic environments and structures. In so doing, these spaces inhabit an interesting genre that elevates pedestrian spaces to the level of monument or urban icon, rather than inhabit a subservient or ancillary role to the car.

Beginning with Roberto Burle Marx's Copacabana sidewalks and continuing to commissions and competitions that have led to projects like Columbus Circle in New York and to a proposal for the Miami Monument that took the form of a solar-operated pedestrian drawbridge, among others, examples of sculptural pedestrian environments will be examined.

The projects presented in this paper represent civic initiatives that were meant to, often literally, elevate the pedestrian experience and to change the competitive dialogue between cars and pedestrians. They have often become critically acclaimed and intensively used environments for people, often praised for their simple dictums that serve to connect the city with its inhabitants via their legible monumentality.

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URBANISM RECONSIDERED: RETHINKING THE URBAN DESERT SUSTAINABLE DESIGN APPROACHES FOR PHOENIX

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In only fifty years, the Phoenix metropolitan area has expanded from a small desert town into one of the largest urban areas in the United States. Today, it has one of the fastest rates of growth in the nation with an annual rate of 4.5%. This area has grown during a period in urban development that largely ignored local topography, climate, culture, and history. The result has been a sprawling metropolitan area with an ever increasing ecological footprint and a standardized urban design and infrastructure that works against its environmental setting rather than with it. Currently, the city of Phoenix is going through a process of urban revitalization with an increasing demand for urban living and commerce. This research explores sustainable urban design and its potential applications in the metropolitan Phoenix area through an investigation of the Dutch model. The Dutch have successfully dealt with sustainable urban design approaches and their practices represent an unusual learning opportunity for Phoenix. The Netherlands' experience suggests three strategies/themes for rendering Phoenix a more sustainable urban form. These include the strategic planning and development of urban extensions, compact infill, and modernizing infrastructure.

In the quest to find ways to improve the urban condition, getting the design and quality of the urban fabric right are crucial conditions for creating more sustainable communities. The right quality of urban fabric means that we must create well-designed places that put people first and make efficient use of the available space and environmental resources. Well-designed places require critical and multifaceted policy, analysis, and designs, taking into account the land, history, society and economics. In addition, well-designed places are urban interventions that have to be able to respond to current forces that make it difficult to achieve high-quality design such as population migration and growth and rapid urbanization. In order to address these complex issues, we must search new ideas and fresh thinking that can restore and improve degraded communities, rather than utilizing old and obsolete formulas to design our urban areas.

The purpose of this research is to examine current sustainable urban design approaches and strategies in the Randstad region of the Netherlands. Very little is currently known about the transfer of knowledge through the exploration of best practices in the fields of planning and urban design. The primary body of knowledge in planning and urban design is contained in the written and visual documentation of case studies (Francis 2003). According to some authors, case studies serve as the collective record of the advancement and development of knowledge in urban design (Coupland 1997; Beatley 2000; Francis 2003).

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URBAN DESIGN AND THE BOTTOM LINE – OPTIMIZING “THE RETURN ON PERCEPTION”

DENNIS JERKE
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The leadership opportunity for Landscape Architects to influence the image and quality of life in the ten largest urban areas in the U.S and on future infrastructure improvements is unprecedented in our profession. This presentation and discussion will address the need for urban design in the ten megapolitan areas that will contain 70% of the US Population in the next 40 years. It also addresses the impact we can have on the \$1.6 trillion infrastructure deficit in the U.S. The program also discusses the value created by good design and a holistic approach to urban design that includes four levels of image systems.

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**CONCURRENT SESSIONS VII
SATURDAY, JANUARY 17TH, 2009
8:30AM - 10:00AM**

TEACHING AND LEARNING FROM EXPERIENCE: A STUDY OF CELA AWARD WINNING EDUCATORS AND THEIR PEDAGOGIC APPROACHES TO DESIGN STUDIO

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The landscape architecture professoriate is changing from experienced, well-established educators to a group largely composed of less experienced, junior faculty and adjunct instructors. This compositional shift is occurring due to the increasing number of faculty retirements coupled with additional faculty positions created by new and expanding professional programs. While new faculty often bring fresh ideas and energy, they tend to lack the knowledge and skills of their more experienced counterparts. Therefore, new faculty benefit from the "scholarship of teaching," studies and interactions aimed at developing the knowledge, skill, mind, character, or ability of others (Boyer 1990). This study contributes to the existing scholarship of teaching in landscape architecture by presenting junior faculty and other interested design educators with an informative view into the pedagogic approaches of highly-experienced, award-winning design educators. The goal of the study is to use interviews as a basis for developing a set of heuristic guidelines for design studio teaching.

The study uses semi-structured interviews with ten landscape architecture faculty members as a basis for answering the research questions. Interviews address issues such as project selection, learning goals, time management, instructional strategies, assessment, and project grading. Glaser and Strauss (1967) open-coding system was used to analyze the interviews and identify relevant findings. In addition, current literature in education and cognitive psychology provides the findings with a theoretical context.

The study findings indicate that experienced studio professors are patient, allowing students to take risks and explore design alternatives. Many experienced professors see themselves as guides, facilitating learning without controlling it. The literature suggests that when teachers act as design guides or coaches, they optimize learning, particularly in problem-based learning environments like design studios (Savery and Duffy 1999; Schön 1983). Additional findings shed light on issues ranging from instructional design to studio management.

study reveals the range of pedagogic approaches in landscape architecture design teaching, including their theoretical underpinnings and practical applications. Second, it helps less experienced faculty members understand how to improve their own studio teaching by relying on the experience of award-winning landscape architecture educators. Finally, the study serves to document the teaching experiences of experienced educators before they retire, thereby collecting and disseminating this knowledge to future generations. Overall, conference participants, regardless of their experience level, will find this presentation highly beneficial, informative, and perhaps even surprising.

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This study is significant for several reasons. First, the

GROUP WORK AND TEAM SKILLS: FACULTY RESPONSIBILITIES IN THE PEDAGOGICAL PROCESS OF TEAM BUILDING

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The ability to function as an efficient, collaborative and productive team member is increasingly important in the practice of Landscape Architecture. Too often, our students graduate disenchanted and stressed by their experiences of group work within their academic experience (Steiner 1972, Mulley 1998). This paper examines the issues of group dynamics and team performance within student teams, and identifies methods through which faculty can improve the group experience for students in their classrooms. In the late 1980s faculty who were dissatisfied with teaching university students by simply lecturing began using collaborative learning techniques such as group work to better engage students in the learning process (Gamson 1994). The pedagogical theory which supported this change from 'information delivery' to 'knowledge discovery' is based on the concept that students learn in many ways and emphasises the difference in the types of learning accomplished by the different methods of teaching. The increasing prevalence of 'student centred learning' postulates that teaching should be directed toward the transformation of student passivity into active learning through inquiry with others in a supportive atmosphere (Katz and Henry 1988). Lectures and rote memorization encourage a pattern of 'surface learning', characterized by a focus on unconnected facts. Problem-based learning and team work is designed to encourage 'deep learning', where the student works to make sense of what was learned by integrating and analysing information. Deep learning leads to the formation of internalized constructs (Gibbs 1993).

The shift in emphasis from the teacher student relationship to the student-student relationship as a learning modality has created a new commitment

to collaborative inquiry and both a view of the class as a group, and the use of group activities in the classroom (Johnson and Johnson 1994, Gibbs 1993). For some, teaching is seen as group facilitation and group leadership rather than one way transmission of knowledge (Billson & Tiberius 1991). However, very few faculty have received formal training for their teaching roles and fewer still have been trained in the use of groups. As a result, "if they use groups at all, they employ strategies that are often so narrow in scope that the results are self-limiting and may even be self-defeating" (Michaelsen and Black 1994, p. 65). Instructors often assume that the act of assigning a set of individuals to work together automatically means that they will function as a team without regard for the research which shows that becoming a team is a process, not an event. Unless instructors facilitate the transformation of groups into teams, their success in using small groups is likely to be limited. Faculty awareness of small group processes can enhance student participation levels, increase individual and group motivation, stimulate enthusiasm and facilitate communication in the classroom (Billson, 1994).

Group projects provide students with valuable opportunities for interaction with their peers and for learning and practicing the team processes which will inform many of their later working experiences. However, student group dynamics are fraught with issues and pitfalls for the unwary faculty member. The student experience of team projects is often negatively impacted by the problems which arise in group performance in the classroom. This paper identifies the issues which commonly arise in group projects, discusses the faculty role in mitigating these issues, provides strategies for anticipating problems with the group assignments and addresses techniques to best manage group interactions. With proper planning, faculty can effectively guide students through issues such as group conflict, social loafing or 'free riders', productivity losses, and co-operative vs collaborative work patterns. This presentation will provide faculty with a tool kit of techniques and materials to better manage this valuable teaching format.

While the 'team experience' need not necessarily be enjoyable to create learning opportunities, teaching

landscape architects effective team skills is increasingly important in the movement toward more collaborative practice. Since landscape architects are uniquely placed to function effectively as team leaders and facilitators in inter-professional projects, they must be provided with the learning tools to develop these skills during their professional education.

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INTEGRATING SERVICE LEARNING INTO THE CORE DESIGN CURRICULUM: STRENGTHENING DESIGN PROCESS UNDERSTANDING

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Community based service learning projects have become an integral part of the SUNY ESF Department of Landscape Architecture's junior year foundation studio. This approach is part of the Department's response to Boyer and Mitgang's call for an "enriched" mission centered in community service that "connects the schools and the profession to changing social contexts" (1996). Students are introduced to participatory practices and collaborative communication techniques while also learning and applying the content that has traditionally been presented in this studio - methods of inventory and analysis, developing a program, establishing goals, and developing and exploring conceptual design.

The questions arise as to how the studio addresses the challenges described by Doble and Aeschbacher (2006), including the need to develop strategies to balance the community process with the development and evaluation of design skills, and to be responsible and thoughtful in resituating students' design activity and education from the controlled environment of a theoretical studio problem to the complex and sometimes challenging situations presented by a real community project.

The paper describes the collaborative process and structure that has developed between the studio faculty and the department's Center for Community Design Research. The process allows for the selection of projects that are appropriate to the studio goals and address the goals of the community partners that have requested design assistance. The study uses qualitative research methodology in the form of interviews with faculty that have participated in the studio both before and after the introduction of the community projects, interviews with students, including those still in the program as well as those that have graduated and are working in the professions, and student reflections that are submitted and reviewed several times over the course of the semester.

Findings from the student reflections indicate an increased awareness and respect for knowledge of "people in place". Also, many report that they are questioning and exploring their future role as design professionals working in communities given the processes they are exposed to through these projects, in contrast to their preconceptions about expert versus community roles (Schneekloth and Shibley, 1995). Over time, faculty have seen significant changes in students' understanding of the iterative nature of the design process, the integration of different data sources and the development of vision and program. The challenge continues to be helping students manage the complexity of synthesizing and presenting their ideas in a clear, thoughtful design that considers all of the natural and social factors that have been gathered and shared.

This study provides insight into approaches and methods in participatory practices introduced and applied in association with traditional design process skills that have been developed, tested and refined in this foundation studio over a period of six years.

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STRUCTURAL SOIL AND PERMEABLE PAVEMENTS: PARTNER TECHNOLOGIES FOR THE URBAN ENVIRONMENT

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Two design and environmental technologies, porous pavements and structural soils, when used together, simultaneously accommodate intense urban use, make long-lived trees viable, and restore urban watersheds. Both of these technologies had scientific tests and on-the-ground experience in all regions of the country. The availability of these contemporary technologies causes designers to pay increased attention to pavements as multi-functional structures, embodying a combination of readily available design elements. Used together, they create structurally durable pavements, reservoirs for stormwater attenuation and treatment, and viable media for tree establishment and growth in areas that are least hospitable to tree growth and that most need trees' microclimate effects. In addition, turf parking areas combined with structural soil has been shown to transform the way we think about conventional infrastructure, ecological services and reduction in the urban heat island effect.

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SLEEPING BEAUTY: MASTER PLAN RESEARCH FOR A SUSTAINABLE ENVIRONMENTAL EDUCATION CENTER FOR NORTHERN UTAH

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Purpose and Background: This Phase II Master Plan for an Environmental Education Center (EEC) follows the Phase I End-Uses Analysis and Feasibility report presented at CELA 2006. The Logan City/Cache County, Utah landfill will reach full capacity by 2023 (HDR, Inc. and Zimmerman and Associates 2003). The approximately 2,000-acre study area has serious environmental impact implications yet offers positive opportunities for alternative sustainable end-uses, including open space (Johnson 1996), passive and active recreation (Logsdon 1989), wildlife habitat conservation (Meade 1992), and community environmental education center (Logsdon 1989; Krinke 2002). The study area includes the landfill, nearby sewage lagoons, constructed wetlands, proposed mitigation wetlands, and effluent polishing wetlands along with associated vehicular, pedestrian, and rail corridors. Traditionally landfills have been considered the province of civil engineering, with purely functional solid waste sequestration the preferred end-use. In most cases, these landscapes have been “out of sight, out of mind”. With rapidly expanding populations in the intermountain west, the urban edge is encroaching on wildlands as well as rural residential neighborhoods and commercial industrial districts. Once far-removed physically and visually, landfills and related facilities are now on the fringe or in some cases in the midst of these communities.

Methods: This research employs methods of literature and case-study review, community involvement, university/public/private partnerships, and professional master planning. The goal is to identify and address the opportunities and constraints for alternative end-use development of this community sanitary solid waste landfill as an Environmental Education Center.

Main Findings (Master Plan): The presentation will illustrate in detail the EEC facilities and activities. These include education about, and interpretation of, natural systems and related human management; active and passive recreation; wildlife habitat establishment, conservation, and observation opportunities; temporary art installations; methane gas monitoring and demonstration harvesting; alternative source energy production, and others. “Discovery” educational experiences are provided for visitors of all ages including spontaneous experience of wildlife and habitat, energy and water conservation strategies in the proposed visitors center building, and “cut-away” views of the deposition of decades of solid waste, among many others.

Importance: This work addresses sustainability, environmental protection, site and master planning for environmental education, disturbed land reclamation and rehabilitation, wildlife habitat restoration, the wildland/urban interface as well as urban sprawl, university/public/private partnerships, alternative energy development, and energy conservation. The result is a focused yet flexible master plan that involves innovative and novel approaches to environmental education, environmental restoration and re-use, and sustainability.

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RE-FOUNDING SPACE: PLANTING DESIGN AS A MINIMALIST STRATEGY

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Considering the range of design interventions possible under the rubric of landscape architecture, planting design can be described as a minimal intervention that can both improve site sustainability and create a 'sense of place.' Vegetation schemes as a design strategy are relatively inexpensive. Their rewards in terms of place-making can be instantaneous and bold, or they can be successive and subtle.

Comparative religion scholar Mircea Eliade has noted the human need to 'found' space in order to define and differentiate places (1959). In order to feel like a 'place,' an environment must be both legible and imageable (Lynch, 1960). To create imageability, landscape architects can draw upon recognized spatial and natural archetypes (Messervy, 1995).

This paper uses a comparative case study of two sites, one an acclaimed design by Latz+Partner in Duisburg, Germany, the other designed by the author and recently established in the Midwestern United States, to examine the use of planting design to accomplish both ecological and image goals.

Latz +Partner's Duisburg Nord Park uses planting design for phytoremediation, to create spaces for people, and to reinvent the image of a former industrial site. The prairie establishment at Johnson County Transit Center, designed by the author and her associates, uses native plants for stormwater management and to 're-found' a suburban site.

This paper offers landscape architects both practical and conceptual strategies for creating imageable, sustainable sites.

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IMPROVING LANDSCAPE ARCHITECTURAL PROBLEM SOLVING: INTEGRATING GISCIENCE AND TECHNOLOGY EDUCATIONAL OBJECTIVES IN LANDSCAPE ARCHITECTURE CURRICULA

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Generally, the profession of landscape architecture is involved in understanding, designing and, or, implementing relationships between social and natural systems within a spatial-temporal context. The Landscape Architecture Body of Knowledge Study (LABOK) outlines core competencies of the profession and the fundamental body of knowledge expected from graduates of accredited degree programs with a 2003 survey of professionals. The report states (p. 12), "...this information may be used to make curricula determinations, to guide the development of continuing education activities, and to continue strong requirements for licensure through the regulatory bodies." Table 13 (p. 15) summarizes core areas of professional practice required of first professional degree students to include: II-Natural and Cultural Systems (Land Information Sources, Natural Site Conditions and Ecosystems), III- Design and Planning Theories (Creativity and Process including Design Theory and Problem-Solving Strategies, Aesthetic Principles of Design, Natural Factors such as Ecological Relationships, Influence of Context on Design, Planning, and Management Decisions), VI-Site Design and Engineering (Accessibility Regulations, Elements of Vehicular and Pedestrian Circulation Systems and Design Requirements, Grading, Drainage and Stormwater Treatment) and VIII-Communication (The Roles of Visual Communication, Graphic presentation techniques, Systems and symbols).

Foundational texts (McHarg 1992; Lynch 1984; Simonds 1997) illustrate many of the core areas of knowledge identified in LABOK illuminating connections between social (cultural) and natural systems across scales and through time. Early works are expanded in current literature (Randolph 2004; Sipes 2007; Steiner 2000; Thompson 1997; Van der Ryn 2007) on ecological design and planning to include dynamic processes within and between natural and social systems, and reference GIS (Geographic Information Systems) as

valuable tools in addressing dynamic spatial temporal challenges. GIS for Landscape Architects (Hanna 1999), GIS in Site Design (Hanna 1998), and Digital Land (Sipes 2007) provide examples of the efficacy of GIS in landscape architectural problem solving.

Like LABOK, the Geographic Information Science & Technology Body of Knowledge (DiBiase 2007, 113) (GIS&TBOK) outlines educational objectives for a professional in GIScience and serves as a resource for course and curriculum planning for academic and professional programs. The GIS&TBOK contains ten knowledge areas, 73 units, 329 topics, and over 1,600 formal educational objectives designed as a basis for comparing educational programs, achieving professional certification, program accreditation, and articulation agreements.

This study presents key areas of intersection and overlap between LABOK and GIS&TBOK studies, and provides a framework for integration of GIS&T educational objectives within first professional landscape architecture degree curriculums based on a case study of the Kansas State University first professional master's curriculum.

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THE END OF THE “SUPERSTAR”: THE RISE OF INTERDISCIPLINARY DESIGN APPROACH AND WHY IT PRODUCES BETTER PROFESSIONALS

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The paper is the reflection of a Landscape Architecture Masters student's search for interdisciplinary design projects. The writer argues the approach of the “superstar” landscape architect is ending, being replaced by an integrated design approach in response to current environmental trends. A review of existing literature has made clear the demand for an interdisciplinary approach to design education.

The author concludes the skills, knowledge, and design experience gained through working in interdisciplinary teams produces better professionals. There is a need for landscape architecture programs to foster cross-disciplinary work and encourage students' to work in a team, communicate, and explain the value of the landscape architecture profession to other disciplines. She concludes, better design results from an integrated design approach.

Participant observation and review of three case studies at Cornell University; Solar Decathlon, Nairobi Studio, and CU GREEN, will demonstrate the value of adding interdisciplinary projects to a landscape architecture curriculum. The benefits of working in a multi-disciplined group include a heightened awareness of the individual in the design process, a method for communicating with design professionals, development of problem solving techniques, and the ability to defuse difficult situations.

The design process of architects, engineers, and landscape architects varies greatly. However, when working as a team a hybrid approach to design manifests itself as a challenging engagement through balancing the expertise of each individual while solving the design problem successfully.

The designs from a multi-disciplined team offers a more balanced approach that often result in more realistic solutions. Additionally it creates a climate in which future professionals become more sensitized to different disciplines. However, accommodating ideas from a multi-disciplined team often results in compromised design details (at the individual discipline level).

Several factors are necessary to encourage interdisciplinary approaches: a supportive faculty, curriculum flexibility, campus and department wide support, and a range of associated disciplines on campus. Currently landscape architecture departments foster the individual approach, where working independently or with a small group of landscape architecture students is standard. This hinders the student's ability to learn a holistic approach to design and to understand the breadth of the design professions.

By integrating interdisciplinary design into the curriculum such innovations have the potential to move the focus from design on the landscape to examining the processes and systems of a concept and it's larger impact on the environment. This leads to stronger professionals and fosters a more realistic approach to design.

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REDESIGN OF LUXOR, EGYPT: THE PEDAGOGY OF INTERDISCIPLINARY CROSS-CULTURAL INTERNATIONAL STUDIOS IN LANDSCAPE ARCHITECTURE EDUCATION

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Recent scholarship concerning pedagogical characteristics of cross-cultural landscape architecture studio education has assessed communication across cultural, geographic and technological barriers, differences between design cultures and approaches, complementarities of cross-cultural learning, (Huo, Kinoshita, Ono, 2005) as well as "trans-cultural learning." (Chang, 2005) Recent scholarship concerning pedagogy of international interdisciplinary design studios addresses student assessment of cultural knowledge acquisition, intercultural navigation, and student perceptions of enriched personal and professional experience. (Bull 2004; Myers, Hill, Harwood, 2005; Hewitt, Nassar, 2005)

This paper examines the pedagogical characteristics of interdisciplinary cross-cultural international landscape architecture education through an assessment of students' educational experience in two consecutive cross cultural international interdisciplinary urban design studios between an American University and a Department of Architecture at an Egyptian University in Cairo. The urban design studios addressed two different urban design projects of relatively similar scope and scale; the first concerning the redesign of the city of Luxor, Egypt in 2007, and the second concerning the redesign of the urban areas at the foot of the pyramids of Giza, in 2008.

Two consecutive studios combined American third year landscape architecture students, graduate landscape architecture and planning students with Egyptian fifth year architecture students. In each studio, students were surveyed with identical instruments at the end of the analysis phase, at the end of the master plan phase and at the conclusion of the studio. The surveys were intended to provide data concerning interdisciplinary, cross-cultural, international studio education related to studio educational goals, student personal growth,

student expectations, international education goals, student professional growth and cultural knowledge acquisition, culture shock, language barriers, digital versus face to face communication and class room logistics.

While the survey results confirm findings in the scholarly literature that suggest significantly high levels of perceived personal growth and cultural understanding in such studios, the present study also suggests high levels of cross-disciplinary communication based on shared general design knowledge, and lower levels of acquired knowledge related to shared analytical methods between both groups of students. Significant differences between American and Egyptian students' response suggest that American students were generally more positive about most aspects of the educational experience, while Egyptian students were specifically more positive about completion of work objectives, and confidence built from the studio process. Specifically, the paper elaborates upon course structure and logistics, curricular, pedagogical, and international education goals, and provides comparisons between the course findings and findings cited in the scholarly literature.

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POSITIONING DESIGN-DIRECTED RESEARCH WITHIN THE DISCIPLINE OF LANDSCAPE ARCHITECTURE

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For landscape architecture, the potential richness of design as a research methodology, and not simply a subject for study, remains untapped. Current academic research in landscape architecture tends to deploy the methodologies of other disciplines to investigate its own processes, products and contexts. As a result landscape architecture has largely overlooked the academic possibility of the designerly dimension inherent in the discipline as being the distinctive research methodology it brings to multi-disciplinary inquiries.

The impetus for this paper comes from Paul Carter's call to creatively interrogate intersecting fields, utilising design-directed research approaches as a means of identifying 'imaginative breakthroughs'. While a traditional programme of research within landscape architecture might adopt methods such as data analysis through quantitative or qualitative approaches, discourse analysis, or a comparative evaluation of differences through a case study approach, what Carter advocates is inherently designerly at the very point of method itself. The research therefore identifies that a critical characteristic of designerly thinking is a drive to synthesis and hybridisation or what Burroughs and Gysin term the 'third mind'. To this end a research strategy has been adopted that might allow multiple and diverse qualities associated with landscopic contexts to be teased out and later recombined. As a means to illustrate a design-directed research methodological approach this paper presents material developed during the author's recent doctoral research into the redesign of wilderness as a phenomenological landscape. It identifies reasons why the discipline of landscape architecture has mainly ignored wilderness as a creative context in which to operate. It also finds gaps in research approaches of other non-design disciplines including those based in aesthetics, environmental history and leisure studies. Further it identifies in both sets of reasons what opportunities within wilderness' current ideations might exist for the landscape architect.

Through self-critique the potency of a programme of design-directed inquiry is demonstrated. This paper

demonstrates the application of design-directed research in a hitherto untapped context, and through this reveals new knowledge about both the context and the method deployed. It notes how design has been enlisted to extend the formal, diagrammatic and conceptual dimensions of wilderness, New Zealand's conservation estate, and a phenomenological expression of landscape. Further this research demonstrates the potential for further work that could enable design-directed research methods to be more widely adopted in ways that might also extend landscape architecture's contribution beyond the design arena into broader, collaborative and multi-disciplinary domains.

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BEYOND THE CODES: AN EXPANDED FRAMEWORK FOR ETHICAL PRACTICE

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An important dimension of Landscape Architecture education and practice is to consider what it means to engage in ethical practice. What determines ethical practice? In the US, the American Society of Landscape Architects (ASLA) outlines two sets of ethical codes: a code of professional ethics and a code of environmental ethics. The former includes statements of members' responsibilities to obey laws and conduct practice honestly, and provides rules for resolving complaints. Issues of false advertising, full disclosure, monetary compensation, collegiality and confidentiality are also addressed. Unlike other allied professions (e.g. architecture, engineering, planning) the ASLA also has a distinct code of environmental ethics, which addresses the responsibility of landscape architects to enhance and restore the integrity of the landscape for all living things. This set of codes includes standards for supporting official environmental policy statements of the ASLA, acting responsibly in regard to the health of natural systems, and supporting public health and welfare.

These codes necessarily provide general rules of conduct that serve as a basis for sanction against improper conduct, yet they have their own shortcomings and raise their own questions. For example, what is the public good? How is this determined and by whom? Such codes also lead us to believe that if we are in compliance with the regulations we are engaging in ethical practice. But is that all there is to ethical practice? Are the codes adequate, or do they instead provide a moral minimum? As Florman (1987) argues, ethics is not merely a set of guild rules. So is adherence to the codes all it takes to be an ethical practitioner? This paper considers this question and seeks to expand our notion of ethical practice through an examination of classic (Aristotle, Kant) and contemporary ethical theories (feminist ethic of care, e.g. Held, 1995), writings on professionalism and professional ideals (Flores, 1988), and theories from psychology on meaningful work (Martin, 2000), motivation, and social constructivist notions of the self (Gardner et al, 2001; May 1996). Together this literature offers opportunity for an expanded and enriched understanding of ethical

practice. An expanded framework for ethical practice can help us educate more deeply ethical practitioners who are better equipped to find and develop a moral compass that can serve them where the codes leave us short.

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DISCURSIVE PLACES: DESIGN, DIVERSITY AND THE DEATH OF DIFFERENCE

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The discipline of Landscape Architecture has been attempting to address situations of radical, often traumatic and sometimes sudden place change for some time. The responses vary from memorializing events to the redesign of postindustrial landscapes to scenarios for the recovery of post-disaster landscapes. The issue of how to understand and respond to the wishes and needs of communities affected by such processes of change is a key challenge in such situations. In landscape architectural practice, as well as in education, traditional methods of site analysis are frequently combined with participatory and collaborative processes to develop appropriate scenarios and designs that are accepted by communities.

This paper focuses on a critical investigation of the theoretical foundations and methodological issues of participatory / collaborative planning and design processes, using the author's and University of Colorado Denver Landscape Architecture graduate students continuous involvement in the recovery attempts in the Lower 9th Ward in New Orleans since the Spring of 2006 as a point of departure and connecting it to other post-disaster landscapes and brownfield reclamation projects.

The design and planning responses to post-Katrina New Orleans as well as the ensuing service learning projects largely lack in relating to the particulars of both place and community. Recovery projects were mostly driven by a focus on the physical/ecological aspects of site analysis, avoided issues of cultural, economic and other inequalities and contestations, and mostly used participatory processes only to legitimize their findings.

The author submits that while these projects are well intentioned and within the best traditions of landscape architecture, their critical failure is rooted in reductive, positivist-modernist paradigms that render all people (and by association all communities) similar in terms of basic needs. This approach not only fails to respond to locally specific needs and concerns, it also makes the designer vulnerable to become inadvertently complicit in perpetuating patterns of discrimination.

An alternative theoretical framework, based on post-colonialist theory and the concepts of spatial construction and occupation within hegemonial cultures and economies put forward by e.g. Levebvre, Harvey and Soja, and incorporating de Certeau's concept of "spatial tactics" can empower disenfranchised communities to become informed participants in the planning and design processes that decide about the future of the places they are living in and a part of. This framework suggests how landscape architecture education and practice can respond to retain ecological, cultural and economic relevance and reclaim landscape as an agent of cultural, economic and ecological change.

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CRITICAL URBANISM: THEORY AND PRACTICE

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Human settlements are born at the crossroads of religion, politics, economics, and environment. Cities, towns, villages, and hamlets allow for human interactions and transactions to take place in an ordered, stable, and protected environment. In their physical form, human settlements represent a social compact, or collective agreement, among its inhabitants to live and work together to improve the human condition beyond that of an isolated individual or kinship clan. Bartlett Giamatti, in his book *Take Time for Paradise*, suggests that a city is a collection of disparate families that agree to a fiction that they are as close in blood ties of kinship as they actually are in physical proximity (Giamatti, 1989).

Thus, “proximity” substitutes for blood relationships in urban settlement patterns. This spatial association generates a shared or common interest in inhabiting a place, creating an explicit human geography of dwelling, patterned as urban structure, articulated in urban spaces and forms, and performed in rituals and inhabitory practices.

In *Forest: The Shadow of Civilization*, Robert Pogue Harrison quotes Gambattista Vico as saying: “This was the order of human institutions: first the forest, after that the huts, then the villages, next the cities, and finally the academies” (Harrison, 1992). Harrison goes on to state that where the primeval forest had already colonized the earth, the first families had to clear the trees to create a sacred ground for the family. This opening an oculus in the forest canopy was the first act of appropriation that created space for a civil society to flourish.

This oculus or locus –this open eye in the forest— was the first civic clearing, the first landscape of collective human occupation. The civic clearing was the container that allowed humans to gather the inseparable whole of artifacts, artifice, and nature into new social and spatial orders. This process of clearing, gathering, ordering and connecting are four essential processes that enable humans to “dwelling collectively” in a place.

The Roman encampment, the Medieval European landscape, and the American Puritan village are three landscape types that used similar methods of inauguration and development, setting forth the relationship between objects in space, ordering human activity, connecting the settlement with the cosmos, and endowing the physical world with meaning. These landscapes indicate that city-founding is an explicit act of planning, design, and building that enables collective human dwelling.

These three settlement types will be explored to illustrate the ideas of Giamatti, Harrison, Heidegger, Simel, Rykwert, and Arendt that the acts of appropriation and inauguration are essential design processes necessary to establish a critical urban practice.

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MAKING CRITICAL UNCERTAINTIES MEANINGFUL FOR LAND USE DECISIONS: A TEST OF SCENARIO METHODOLOGY

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This presentation describes a test of scenario methodology involving the use of critical uncertainties—conditions that are difficult to predict, but which could significantly impact the success of current plans. The research asked what is more useful to decision-makers: Understanding possible sets of events which could produce situations characterized by critical uncertainties? Or, understanding what might follow if the critical uncertainties were to materialize? The former allows for an understanding of the means of change; the latter allows for an understanding of the significance of change. Having both perspectives is desirable, but given limited resources, does the decision-making process suffer if only scenarios of one type are pursued?

A Delphi-based methodology was used by ten landscape managers to identify a “Surprise Free Future” and critical uncertainties that could destabilize current trends. This group was then sub-divided into teams of five to develop scenarios: sub-group A used the critical uncertainties as ending points and mapped occurrences that could bridge the present with the future; sub-group B used the critical uncertainties as starting-points and mapped occurrences that could follow.

A post-process survey identified: (1) Does the work of one subgroup (one scenario type) or the other lead to representations of the future that are perceived as more coherent and comprehensible? (2) Does one process of the other lead to scenarios that are perceived as more plausible? (3) Does one process or the other lead to a set of scenarios which are perceived to better capture the range of salient aspects related to the planning and management issues of the organization? or of the larger community in which the organization rests? (4) Does one process of the other influence the perception of the expected future as measured by an assessment of general optimism (or pessimism)?

The results, in part, showed differences of perception between the sub-groups. Sub-group A had a greater sense that its scenarios were logically consistent and

that their set was more comprehensive relative to current land management concerns. The scenarios created by sub-group B tended to direct the alternatives back to the Surprise Free future which was developed before the subdivision of groups.

Although formal scenario techniques have been used to understand the impacts of possible environmental change since the 1970s, many aspects of scenario use remain theoretically underdeveloped and empirically untested. This work contributes to the understanding how scenarios can be made more effective for land use decisions.

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CULTURAL LANDSCAPE CONSERVATION AND LANDSCAPE FUTURES: SYNTHESIZING PERSPECTIVES OF IDENTITY AND CHANGE

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This presentation considers relationships between landscape and identity as a way to synthesize the perspectives of cultural landscape conservationists and landscape futurists, two groups that outwardly maintain different assumptions about change. We argue that meaningful understanding of the landscape and successful place-making require a mode of inquiry that considers both persistence and innovation in the landscape.

The central tension between cultural landscape conservation and landscape futures can be characterized as the choice between maximizing stability versus maximizing the range of possible alternatives. Choosing (or favoring) one position over the other has implications in terms of both the management of the landscape as material condition and the interpretation of the landscape as symbol. More significantly, because the practical uses and metaphoric readings of site contribute to individual and communal identity, this choice (or favoring) triggers ontological concerns: To what degree is identity based on the landscape that has been as opposed to the landscape that is allowed or that might be? As such, balancing conservationist and futurist positions can be intellectually difficult and emotionally charged.

We acknowledge conceptual differences between conservationist and futurist positions as they are conventionally presented; however, we also suggest the fundamental relationships between landscape and identity can provide a way to characterize, compare, and align these opposing views. First, we review the literature on the role of landscape in the constitution of identity. Second, using this material as a lens for investigation, we examine the general use of images of the past and the future for constructing, sustaining, or modifying identities. Particular consideration is given to the institutionalization of the production of these images following World War II. Third, we examine contemporary approaches to identify and prioritize aspects of the past and the future for landscape planning and design. We contend that it is

through shared assumptions related to identity that are embedded within these methodologies—including models of representation, process, and evaluation—that a more holistic conceptualization of purposeful landscape change might be based.

Because notions of both stability and possibility are important for how we understand landscapes and define ourselves, it is necessary for planners and designers to consider both images of the past and of the future when proposing change. By focusing on methods rather than abstract principles, we avoid the stalemate that comes with restating established polemics and, instead, offer a structural and functional basis for integrating perceptions of conservationists and futurists.

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INFORMED DESIGN, THE BEAVER CREEK GREEN INFRASTRUCTURE PLAN

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ANDREW WUNDERLICH
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This presentation introduces a knowledge-informed, analysis-driven, synthetic, and creative landscape design approach to spatial planning. The Beaver Creek Watershed Green Infrastructure Plan serves to illustrate aspects of this approach (see attachments). In the Beaver Creek investigation the authors, team members, consultants, and sponsors sought to produce replicable methods with potential for transfer to other watershed planning contexts. Emphasis was on designing an approach that was relatively quick and inexpensive to apply and compatible with professional practices, software, and planning data and common to municipal and regional planning and development.

Background + Method Notes

The principal investigators on the Beaver Creek Watershed study team are design-oriented professionals, and it should be regarded as a predesign methodology supported by GIS database analysis, not an innovation in information analysis technique. The investigation is organized according to classic design process method of Document, Analyze, Generate, Synthesize, and Design. Analysis of the Beaver Creek watershed landscape is organized to support design of three network systems: Settlement, Open-Space, and Water that synthesize to form the integrated Green Network. The Settlement system is further distinguished by a development spectrum for conserved land, a general density pattern for development, and networks of open-space and soft transit that bring residents into intimate daily contact with the ecological realm.

Findings

While we sought to create replicable methods, as we progressed through this project the authors realized that approach may have universal aspects, but strategy selection is regional. Selection and creation of analyses in the Beaver Creek plan were heavily influenced by the underlying geomorphology, hydrology, and habitat,

and that much like bio-climatic approaches a set of types applicable by defined region. Further we realized that the quality of results is directly linked to quality of knowledge in an information-rich design or planning process. Put simply it is not the quantity of knowledge that determines quality of the planning product, but the quality and relevance of collective knowledge, expertise, data, and design patterns brought to the planning process. In Beaver Creek we were fortunate in being able to draw on the resources of TVA, the University of Tennessee and local residents, and an inventive research team.

Importance

The appeal of this approach lies in the attempt to apply both rational analysis and qualitative speculation rigorously to design of complex landscape patterns, and to base our proposals and analysis on sound approaches that can be replicated, on reliable data, and on explicit decision methods. Further value lies in the emphasis on the interrelated health and quality of life sought for human, animal, and plant communities that share a watershed.

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PLACETELLING AT THE DUBAI CREEK

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Dubai, one of the world's fastest growing cities, has created at breath taking speed one of the world's largest waterfront developments: much to the detriment of its ecology, multi-billion dollar projects are forming off its coast the enormous human-made islands. The city's tourism trade is one of the largest sectors of its economy and has gathered much international standing amongst those travelers wishing to partake of its high luxury Arabian ambience. At the heart of old Dubai are the districts that straddle the original creek which harbors the original context that has made the city's ancient reputation as the most notorious port on the Arabian Sea. The contrast between the old and new Dubai is what attracts many of the tourists to its port center. Yet the new globalism narratives being set in place are at odds with the sustainability of the authentic experience that the Dubai Creek has to offer. An exploration of the place names around the creek point to a past intimacy between a sustainable landscape and local culture. They also tell a story (Potteiger 1998) that could inform how these tourist sites can retain their valuable resource of authenticity.

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FORM, FLOW AND FEEL: LANDSCAPE COMPONENTS, GEOMETRIES AND THEIR POTENTIAL USE IN PLACEMAKING

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Despite its multiple definitions, the concept of genius loci is so central to the landscape architecture design process that it is one of the features identified during site inventory and analysis. According to Berleant (2003), identifying the genius loci at the start of the design process is key to what he calls trivalent design- design that considers and provides for the ecology, community, and aesthetics of a site. This requires appreciating the project site as a place and understanding the components of its "placeness." In other words, understanding its sense of place. This project aimed to identify and describe the elements that make up Downtown Raleigh's place via three methods: literature review of place and sense of place theories, interviews with experts on downtown Raleigh, and surveys of lay citizens using user-employed photography. In analyzing the data from the latter two methods, the research examined (1) the various places and qualities that make downtown Raleigh special, (2) the spatial arrangement and distribution of those places, (3) the reasons people identify places as special, and (4) the components of the special places and qualities.

Results of the research suggest that there are certain components required for place, while others enhance a sense of place. Requirements include: sensory response; physical activity; aesthetics; meaning; physical identity; coherence; and, permanence. Enhancers include: tradition; metaphors; similarity to other known places; experience over time; control over form; attachment; and, satisfaction. A metatheory of place geometry involving "points", "planes" and "spaces" was developed from the expert lay citizen responses. Results highlight the differences between the favored places of experts and those of lay citizens. In particular, experts focused on plane- and space-based places, while lay citizens also recognized point-based places. The experiences citizens describe in these places suggest an application for the theory which could encourage pedestrian movement. Strategic placement

of these geometric places in a larger meso-scale landscape can connect a series of separate experiences into a singular specific place-based urban identity.

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SUSTAINABLE IRRIGATION AND DRAINAGE DESIGN: EAST AND WEST

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J.L. WESCOAT JR.,
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Societies and their landscape architects face challenges of sustaining water systems in humid and arid regions of the world. This panel develops a comparative framework for water planning and design, followed by discussion.

Anne Whiston Spirn: "The Conquest of Arid America"
The National Reclamation Act of 1902 authorized the federal government to plan and construct "irrigation works for the storage, diversion, and development of waters." This public investment made possible "The Conquest of Arid America." To farmers in the West, water has supported their way of life. To Las Vegas and Phoenix, water is what they must have to grow. The examples of two irrigation districts (in eastern Oregon and southern California) illustrate the conflicts over water rights in the American West and challenges they pose for landscape planning.

D. Fairchild Ruggles: "Historical Perspectives on Irrigation in Medieval and Modern Islam"
Cultivation of the Islamic Mediterranean landscape depended on careful management to obtain, store, and distribute water throughout the year. Simple devices were used to raise water from low points of origin or to bring it from distant sources to the point of consumption. These strategies required an understanding of topography, mechanics, architecture, and social organization, and they were usually interconnected, multiple, and flexible. These historical responses to arid landscapes provide lessons for sustainability in the modern world.

David Kovacic: "Ecological Drainage Design in the Midwestern U.S."
European settlers of the U.S. Midwest considered wetlands a menace to health and development. The

Swampland Act of 1850 and the Drainage District Improvement Act of 1919 granted midwestern states the right to reclaim flooded lands, which increased agricultural land by 30% while reducing wetlands by 80-90%. Midwestern drainage systems are the principal cause of hypoxia in the Gulf of Mexico. Ecological research indicates managed re-establishment of wetlands may be required to mitigate agricultural drainage problems.

James Wescoat: "Sustainable Irrigation and Drainage Systems in South Asia and the U.S."

The 21st century will bring innovations from Asia to the U.S. in new ways that build on earlier periods, e.g., when Islamic irrigation methods reached the southwest via Spain and South Asian irrigation influenced development of California's Central Valley. The current wave of innovations from South Asia includes rainwater harvesting and irrigation institutions. This presentation focuses on international paths and processes of sustainable irrigation design.

Discussion will focus on the value--and limits--of comparative inquiry in sustainable landscape planning and design.

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**CONCURRENT SESSIONS VIII
SATURDAY, JANUARY 17TH, 2009
10:30AM - 12:00PM**

FIRE AND SCENERY 1988-2008: TWENTY YEARS OF REPEAT PHOTOGRAPHY AFTER THE YELLOWSTONE WILDFIRES

JOHN C. ELLSWORTH
UTAH STATE UNIVERSITY

Purpose:

This research explores the relationship of Yellowstone's scenery and wildfire. Scenery is the most important visitor experience and the first resource cited in the National Park Service's (NPS) 1916 organic act.

Approach:

Since 1988, the author has photographed the aftermath of the Yellowstone wildfires. Photographs were taken from over 300 points. Approximately fifty "typical" Yellowstone scenes were selected for annual repeat photography, illustrating how the fires affected the Yellowstone scenery short-term, how some areas have "recovered" scenically (others not), and how repeat photography can monitor the recovery of Yellowstone's scenic resources long-term.

This on-going research was first reported at the IAWF conference in 1995, only seven years after the wildfires. The results and implications of twenty years of research are reported here.

Implications:

Basic research questions include,

- What are the short- and long-term effect of wildfire on Yellowstone's scenic resources?
- How do the short- and long-term effects differ and should management address these differences?
- Should the NPS develop a system for conserving scenery, what would be its components, and how would it address the paradox of visitor experience versus conservation of scenery and ecosystems?
- How successful is short- and long-term repeat photography for understanding the relationship of scenery and fire, and what lessons have been learned over the twenty year course of this research?

Conclusions and Recommendations:

Ecosystem and scenery recovery are not the same. Fire is necessary in the ecosystem, fire management actions will affect scenery, therefore their relationship must be better understood. Research, such as reported here, is one step in that direction.

The photographs document Yellowstone's ecological recovery, but more importantly for this research illustrate the wildfires' impacts on the Park's scenery. Image analysis reveals several interesting factors in the relationship of fire and scenery. Short-term, many people find the "devastation" disturbing yet undeniably fascinating. Scenes of primarily foreground landscape reveal additional aspects of the scenic resource impacts. The mosaic effect offers the most visual variety in middleground and background scenes. Slope is a major factor in scenic resource recovery. Additional implications are reported.

Repeat photography has been used as a research tool before, however there is no known research of this study's scope and duration related to the impacts of public land wildfire on scenic resources, and the short- and long-term recovery of those resources. This research has significant implications for NPS fire management policy as well as for other state and federal land management agencies.

Professor John C. Ellsworth, FASLA, licensed landscape architect

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MEANING IN LANDSCAPE ARCHITECTURE: LOOKING BACKWARD AND FORWARD

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JANE GILLETTE
JOURNALIST / FORMER EDITOR OF LANDFORUM

SUSAN HERRINGTON
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A thread of writings in *Landscape Journal*, beginning in 1988 with Laurie Olin's "Form, Meaning, and Expression in Landscape Architecture," has grappled with the subject of meaning in landscape architecture. In 1995, Marc Treib published "Must Landscapes Mean?: Approaches to Significance in Recent Landscape Architecture;" this was followed in 2005 by Jane Gillette's "Can Gardens Mean?," and most recently by Susan Herrington's "Gardens Can Mean," which appeared in 2007. While each of these writings commented upon its predecessor(s) in some way, in other ways each took a somewhat oblique path from what had come before. Given that the full run of these publications now spans 20 years, it seems timely to review the subject of meaning in landscape, the methods by which the authors pursued their study, and a discussion of their ideas on the subject as they stand today.

Each of the panelists would reread the four texts in preparation for the discussion and would prepare a short presentation of no more than 10 minutes. From that point on, there would be an open discussion, including the participation of the audience whose questions and comments would be welcome. The discussion topics related to meaning would include: the nature of meaning in landscape architecture; the production of meaning (maker vs. receiver); defining significance in landscape architecture (for example, significant form); words versus form and space; and the dynamic nature of meaning in terms of its construction.

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EXPLORING CAMPUSES AS VALUABLE OPEN SPACE: OPPORTUNITIES FOR TEACHING, RESEARCH, AND OUTREACH

MARGARET LIVINGSTON
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ANDY KAUFMAN
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DAVID SPOONER
UNIVERSITY OF GEORGIA, ATHENS

DAVID MYERS
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College campuses are increasingly evaluated for their open space opportunities as urban needs for green infrastructure continue to grow. This panel focuses on studies being done on campuses that focus on various user needs and how their results relate to design, management, and planning of these spaces. Margaret Livingston will discuss evaluation of the University of Arizona campus, Tucson, as potential urban wildlife habitat. Study methods focused on assessment of vegetation attributes and outcomes include: 1) an interpretive tour of campus illustrating design guidelines for habitat development, 2) websites for the Campus Arboretum webpage that provide information on urban habitat needs, and 3) recommendations to improve the potential habitat on campus. Andy Kaufman will discuss how the University of Hawaii is improving the Manoa campus landscape by incorporating three programs: 1) Adopt-A-Landscape, 2) Campus Walking Map & Website, and 3) a historic architecture and landscape grant from the Getty Foundation. These three volunteer programs are being initiated to help improve the physical and aesthetic qualities of the campus. David Spooner will discuss how campus open spaces support students' studying behaviors. As wireless internet technology reaches into the outdoors, the "net generation" of students increasingly using campus open spaces as learning environments. Three years of research conducted on the campus of University of Georgia indicates that learning outdoors is on the rise and specific design features including 1) vegetation, 2) architectural edges and 3) landscape elements that either contribute or obstruct studying efforts. David Myers will discuss efforts recently undertaken to establish the University of Maryland as a campus arboretum reflecting the University's education, research and service mission. The development of: 1) landscape typologies, 2) a

tree inventory and 3) class-based research of campus green space are discussed. The process and the major components and considerations of the master plan for the arboretum are presented. It is intended that this panel presentation serve as a model for research methods applicable to other campus communities attempting to identify the various opportunities of their open spaces; including human and wildlife habitat, outdoor learning experiences, and relationships among user needs and campus design.

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UNFULFILLED PROMISES: FROM IVY TO STATE UNIVERSITY, LANDSCAPE ARCHITECTURE PROGRAMS

MADIS PIHLAK
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STEPHEN ERVIN
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For the past twenty years emerging digital media tools have been offering increasingly sophisticated means for teaching and practicing landscape architecture. Personal observation at a large State school and a prestigious Ivy League school reveal less than active involvement by landscape architecture faculty. An unpublished national web survey by the lead author of this paper discovered token digital courses in Autocad, Photoshop and ArcGIS. Two universities had no evidence of a digital media focused class.

Background

One author of this paper organized a Design IT Summit 02/08. This same author co-authored a seminal book on the three dimensional digital modeling of the landscape. Both authors have been involved in the early network wiring of digital design studios in the late 1980s.

Method(s) used for the study

- Participant Observation
- Web Survey 06
- Participants, Design IT Summit GSD 08

Main findings

- Experimentation with emerging digital media has slowed within departments of landscape architecture.
- Architects are more willing to experiment with emerging digital media.

Innovation within the AEC industry will continue to impact landscape architecture. Such environmental rating systems as LEED and Building Information Modeling (BIM) are just the start of environmental ranking systems.

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**CONCURRENT SESSIONS IX
SATURDAY, JANUARY 17TH, 2009
1:45PM - 3:15PM**

TEACHING CREATIVE REGIONAL SEEING IN THE DESIGN STUDIO: RATIONALE AND STUDIO PROJECTS

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Bechhoefer (1991) has stated that “the ability to ‘read’ an environmental context is the particular analytic skill that an architecture program in regionalism should teach” (p. 283). This paper will discuss reasons for teaching landscape architects to creatively see and to become passionate about diverse regional contexts and show examples of studio projects that focus on seeing and interpreting graphically the regional context of a major metropolitan area.

Tuan (1974), coined the term ‘topophilia’ which translates as the ‘love of place’. The aim of the studio work in regionalism illustrated is to create this type of passion for diverse regional contexts. Once this type of communion is attained in a given location, it becomes progressively easier to find the emotional connection to a wide variety of ecosystems and cultural features.

The student studies the local region as aesthetically qualified material that is engaged by the design process producing new creative solutions for designs that embrace regional aesthetics. The type of sensitivity engendered through a study of regional forms and elements helps to prevent the designer from believing that there is no usable regional context, particularly in areas that have dissipated cultural expressions caused by rapid development. Rather, a sincere search is undertaken for each project with an open mind to uncover regional influences that may have been previously unknown to the designer or even to the inhabitants of an area. The student begins to develop a complex web of cross referential and mutually reinforcing design ideas. These ideas make the designer less susceptible to an offhand condemnation of a regional style because it is not in concert with the “taste” or preconceived design ideal of the designer. The philosopher, Paul Ricoeur, warns that it is never easy to be tolerant of a variety of places and landscape styles while still remaining true to our own design identity. Ricoeur (1965) believes that regional communication with people from cultures that are different than ones own is possible “by the means of sympathy and imagination” (52). He compares this ability to the way we relate to characters in drama or literature. The “individuality that is the essential quality

of a place” (Relph 1981) is taught as an ever unfolding resource for creative solutions for fitting form to context.

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ANALYZING THE CITY: LINKING PHYSICAL AND PSYCHOLOGICAL CONTACT IN EXPANDING OUR KNOWLEDGE OF URBAN ENVIRONMENTS

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The task of evaluating and establishing methods for analyzing and designing the city has been explored and approached by authors throughout the history and development of cities. Since the Industrial Era, authors like C. Sitte, F.L. Olmsted, K. Lynch, C. Alexander, L. Halprin, G. Cullen, and R. Venturi have examined the city with differing methods of formal analysis and documentation. The increased interest in Landscape Urbanism has prompted research and questions around the general understanding of cities and place in design.

The complexities of urban settings today require the use of technology and data to assist the designer in handling a variety of issues, including sociological, psychological, ecological, political, cultural, and economics. Easily accessible data documented in scientific research or developed with the help of current technology has led to the detachment of the designer with the physical place. The richness of quantitative data and the availability of technology in the application of analysis and design leave designers in a perplexing situation. A more objective and technically-based evaluation and design of place tends to be emphasized more than a primal, subjective, cognitive-based experience. The dilemma is further enhanced by the era in which we live, which reinforces the disengagement of the mind and body from the physical environment and limits our use of sensorial investigations and on-site interaction with landscape.

This essay wishes to explore methods and theory between an epistemologically balanced perspective and a purely objective approach to studying cities and place. Achieving that balance requires alternative methods of linking physical and psychological contact in expanding our knowledge of urban environments. This essay addresses how designers can be taught to utilize a deeper level of questioning about the intrinsic elements of the city not usually addressed through quantitative methods, yet needed in understanding the settings for which they design. The Author builds on place theory and literature to explain the exploration

and the viability of various experiences for sensitizing students to the city. The comments and activities discussed have been developed through literature research and urban design studios in Prague and Raleigh, NC.

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THE COMMUNITY AGRICULTURE DESIGN STUDIO AS A MEANS TO TEACH PRIMARY SPATIAL ORDERING

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Students who successfully “buy in” to a studio design project more quickly develop their design skills and more easily explore innovative design thinking. This paper will discuss the benefits of engaging in an agriculturally based community design project for an introductory design studio. Through designing places that immediately help a community grow food, and working with the primary spatial concepts derived from agricultural patterns, new students engage more quickly and meaningfully in the understanding of basic spatial design in landscape architecture.

Agricultural patterns are the foundation of the design language in landscape architecture. From cloister gardens and Palladian Villas to Olmstedian pastoralism and the great American lawn, humans have designed landscape spaces by manipulating and abstracting basic agricultural patterns. The field, windbreak, hedgerow, irrigation channel and orchard are all utilitarian agricultural patterns that have been directly translated into primary design forms in landscape architecture.

Designing in the agricultural patterning idiom helps students more quickly understand site based scalar relationships, the impact of design at multiple scales, landscape systems issues, and cultural contexts. For example, students immediately encounter predetermined and standardized issues of scale and dimensioning connected to the pragmatic issues of management, maintenance and production. The scale of spaces is more quickly grasped by introductory design students as they come to visually understand, for example, what an acre looks like, or the necessary bed dimensions for a particular crop species. Water use issues for agriculture require the students to engage in “up stream” and “down stream” thinking and address basic issues of irrigation and topography. Additionally, the connection between eating locally grown food and designing to facilitate that eating is a strong and immediate one.

Choosing the right community agriculture project is key. Some positive characteristics to look for are: a flexible and open minded community group; a site that is located in a community the students can relate to; a scale of project that is appropriate for introductory

students; a community that is open to working with a university affiliated group.

When engaging in a community design project at an introductory design level, there are unique or especially pronounced communication strategies that one must be aware of. Some of these strategies include: clear and frequent communication about the abilities and design products the community can expect from introductory students; honest discussion about the “messy” nature of community process; clear and honest discussion about balancing client needs with student learning objectives; striking a balance between experimental design exploration and more traditional design solutions.

The author believes that by engaging introductory design students in the issues of community agriculture students more quickly and immediately begin to see the interconnectedness of all design choices. Through understanding community needs for growing food (economic, social and cultural), students learn that their design choices can positively impact a community and region. Even at the introductory level students learn that their designs should and do matter for the larger community.

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TRANSCENDING PUBLIC WORKSHOPS AND THE TRADITIONAL SERVICE LEARNING MODEL: COLLABORATIVE TEACHING METHODOLOGY FOR LARGE SCALE PROJECTS INVOLVING LANDSCAPE ARCHITECTURE STUDENTS, FACULTY AND

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This paper depicts a model of public/private educational collaboration that transcends the traditional service learning model by engaging contemporary professional practice while continuing the academic traditional of experimentation. While the current service learning model provides valuable experience interacting with the public, it provides students with only part of the exposure to the professional's experience that is a prerequisite to engage in consequential contemporary practice. It does not address the role of expert professionals and subjects students to public and political pressures they cannot counter or truly evaluate. The collaborative model was evaluated during the URI Junior Landscape Architecture Studio, Spring 2007 via its project "Transit Alternatives for Southeast New England". Co-taught by a university professor and a principle from Sasaki Associates, students worked at scales ranging from the region to the bus stop. The public process was maintained via consultation with city and state officials who impressed upon students the need to understand and respect values of the neighborhoods in which they worked. Current transit technologies and theory were imparted by the professional, conveying the firm's current work in a manner that textbooks cannot. The drive to move beyond what the politicians, public, and professionals assumed were the only proper options was fueled by the professor.

The authors will describe the successes, challenges and frustrations associated with this high visibility project. The students' designs and ultimate report exceeded expectations, going beyond their achievements in previous service learning studios where they learned basic skills in outreach and facilitation. The authors will compare student outcomes between this case study using the collaborative service learning model and the same students using the traditional service

learning model the previous semester. Challenges erupt from this model of collaboration because the different practitioners cause cognitive dissonance in students' minds. Students who are used to meeting mechanized standards of performance have difficulty and show resistance to serving these different masters. This juxtaposition challenges students to meet the varied real-world needs of clients while refusing to abandon ideas grounded in sustainability, social justice, and sublime design. The particular project referenced in this paper resulted is a premier learning experience for the students and an award winning project for their portfolios. While there is still more work to be done to validate this model's success as a standard method of teaching, early results show it raises the bar on depth and quality of student output.

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IS THERE SOMETHING BETTER THAN LEED? ALTERNATIVE WAYS TO EVALUATE SUSTAINABILITY AND THEIR EFFECTS ON CAMPUS DESIGN

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Campuses across the country have made sustainability a priority goal in new building projects. The common metric used to attain this goal is the LEED credit-point process. While points can be earned for site related elements, significant portions of this rating system are applied only to the internal processes of the structures themselves. While the focus on buildings is warranted given the significant amount of embodied energy intrinsic in their construction and operation, this also has the potential to deemphasize a critical component of traditional campus planning – the campus grounds. As the appearance of the grounds has a significant impact on enrollment and student, faculty and staff contentment, planning for non-building related sustainable initiatives needs to be fully incorporated into the campus planning process and made a critical part of the sustainability goals of the institution.

Part of the solution may come in how sustainability is defined and measured. Several emerging techniques are being developed that may begin to help balance building and site design, including The Sustainable Sites Initiative and the Association for the Advancement of Sustainability in Higher Education (AASHE) STARS program. However the continued emphasis on subjective point based systems may give an inaccurate picture of overall improvements in sustainability due to the omission of potentially beneficial sustainable initiatives. To address this, additional techniques from other sciences may prove useful. This includes EMERGY analysis, an environmental science technique where all inputs and byproducts of a process, be it a building or a site related initiative, can be evaluated to determine an actual change in sustainability.

This technique has potential as a planning tool, and has been applied to the conceptual master plan being developed at the SUNY College of Environmental Science and Forestry as it seeks to convert a typical 1960's era campus into a holistically designed sustainable environment. The preliminary results indicate that a master plan that focuses on both building and site can lead to a significant improvement

in sustainability when compared to existing conditions, and the results of the analysis will be useful for developing phasing plans and prioritizing improvements.

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SILVER BULLET OR GREEN TOUPEE? THE SUSTAINABILITY OF VEGETATIVE ROOF SYSTEMS

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Green roofs are icons of sustainability providing an abundance of environmental services to cities and offering a sensible exposure of nature for the biophilic urban dweller (Peck et al 1999; Dunnett and Kingsbury 2004). Yet, this study shows vegetative roof systems are fairly unsustainable because they are constructed with non-renewable imported resources. Therefore, this paper presents the original findings, compares them with other constructed landscapes, and makes recommendations for conceptualization, application and innovation.

New findings using emergy analysis, a form of environmental accounting which can quantify sustainability, indicate that vegetative roof systems operate with high environmental loads and consequently, use very low levels of renewable resources. High environmental loads are due to the dependence of imported materials such as substrate, labor, and membranes. These make the systems operate with a relatively low level of sustainability. However, compared with other constructed landscapes, such as a conventional lawn, vegetative roof systems operate with more sustainability through productivity efficiencies. Therefore, a focus on environmental services is proposed to aid the technology rather than general sustainability goals.

This study used emergy analysis to quantify and compare the sustainability of three different vegetative roof systems. The study assessed and compared an agricultural roof garden, a shallow substrate ecoroof, and a deep substrate ecoroof for flows of energy required for the production of biomass. Four indices were calculated: fraction renewable, emergy yield ratio (EYR), environmental loading ratio (ELR) and emergy sustainability index (ESI) (Brown and Ulgiati 1997). The indices were used to quantify and compare the environmental impacts and respective benefits of the three roof systems. The agricultural roof garden (ESI = 0.124), was the most sustainable of the three, followed by the shallow substrate ecoroof (ESI = 0.09) and lastly the deep substrate ecoroof (ESI = 0.04). Each system used a low percentage of renewable resources (agriculture 10%, extensive 7%, intensive 4%). All three

systems were more sustainable than conventional landscapes, urban gardens and a city while being less sustainable than various agricultural practices (Beck et al 2001). The dominance of non-renewable inputs limits the sustainability of vegetative roof systems. This study identifies the greatest non-renewable inputs and makes recommendations to improve the sustainability of the technology.

This study also discusses the larger issue of the conceptualization of green roofs. Some professionals and communities are already categorizing these systems as necessary green infrastructure. With this information, academics and designers can optimize the conceptualization of the technology to best direct innovation and application.

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CLIMATE NEUTRALITY IN THE CONTEXT OF SUBURBIA: EVALUATING GREENHOUSE GAS REDUCTION AND MITIGATION STRATEGIES FOR SUBURBAN ACTIVITY

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Local communities and institutions are taking proactive steps to reduce greenhouse gas (GHG) emissions and combat climate change in response to inaction at higher levels of government (Engert, 2007; Knuth, 2007). There is no shortage of creative ideas for reducing emissions ranging from renewable energy production to improved mass transit, but how can local communities and activity centers develop plans that maximize reductions, minimize costs, and meet other objectives such as cultural acceptability or administrative feasibility? This is particularly challenging for existing suburban activity centers, such as office parks, universities and other institutions, as they must work with existing infrastructure that is not often conducive to alternative transportation or efficiency improvements.

This research tests the efficacy of a series of capital and operational strategies intended to reduce or mitigate GHG emissions from California State Polytechnic University, Pomona (CPP), located in the eastern edge of Los Angeles County. Although the most direct use of this information is by other universities contemplating GHG reduction strategies, the specific nature of CPP's emissions and geographic context have implications for other suburban activities centers. Our evaluation method estimates the cost effectiveness of capital and operating GHG reduction strategies, using estimation models in combination with the Clean Air-Cool Planet greenhouse gas inventory model, as well as their evaluation towards meeting qualitative objectives. Operating strategies such as on-line classes and alternative scheduling, green energy purchases, alternative maintenance schemes, and parking pricing/carpool programs are found to have merit. Greater results are achieved when they are combined with cost effective capital investments such as on-campus or nearby housing. Other efforts, such as carbon sequestration through landscape plantings are found to have little significant impact in mitigating emissions. Despite considerable potential at local level, concerted state and Federal action is urgently needed because local areas can achieve only a portion

of the reductions deemed essential by climate change scientists

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INTEGRATIVE SUSTAINABLE DESIGN CURRICULUM MODELS

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In a 2002 survey, 75 percent of responding design professionals said their clients are interested in sustainable design according to the survey conducted by Metropolis Magazine. Unfortunately, 62 percent of design professionals have learned about sustainability by their own means. The survey also found that 92 and 86 percent of surveyed educators and students, respectively, expressed an interest in sustainable design. Most educators (86 percent) opined that sustainable design should be integrated into regular design courses or studios vs. stand alone courses. But faculty cited various barriers to making this happen.

Here we are six years later. How sustainable are today's curricula of design programs, i.e., landscape architecture, interior design and architecture programs? At the 2005 GreenBuild Conference, a panel of four presenters each cited a single sustainable studio experience as the norm at their respective universities. And based on a 2007 survey of all US and Canadian landscape architecture programs (conducted by the author), it still appears that most landscape architecture programs continue to offer only one or two stand-alone "sustainable" or "green" courses—very few programs appear to have fully incorporated sustainable design throughout their curricula.

But there are notable exceptions. This paper will present sustainable-based mission statements and other supporting materials, but primarily focus on outlining holistic sustainable design based course content. The case studies will come from various US and Canadian landscape architecture programs that have demonstrably incorporated sustainable design principles throughout their curricula. The author will then discuss how these examples can provide models for how sustainable design principles can be fully integrated into the curricula of other landscape architecture programs that are not there yet.

AN ASSESSMENT OF INTEGRATING 'GREEN' INTO A FIRST YEAR LANDSCAPE ARCHITECTURE STUDIO

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Over the past two decades, concerns over integrating sustainability into education are prevalent. For example, David Eagan (1992) is a proponent of higher education embracing sustainability and environmental stewardship because it "makes eminent sense in schools, colleges, and universities: places where we transmit what is important about our cultures and our world. It is an idea with powerful implications for what we value, how we live, and, notably how we educate" (pg. 67). Likewise, Sterling (2001) and Orr (1994), among others, have written on the importance of sustainable education and creating a shift towards an ecological education that is participatory, collaborative, holistic, values sense of place and local knowledge, and is process-oriented. This paper discusses the findings of a first-year design studio that integrated environmental education concepts. The course utilized a systems approach for the project sequence - from analysis of the site's ecology at the watershed scale, to a site-specific design for an ecologically designed seating space. Multiple assessment methods including a learning scale inventory, concept mapping, and a pre- and post-content skills inventory reveal the successes and shortcomings of this approach. The learning scale inventory reveals how students learn various concepts by requiring the students to rank the importance of various teaching/learning methods, i.e. lecture, readings, projects, video, or classmates with 0=none and 10=exceptionally effective. Concept mapping requires each student to map one's knowledge of a concept as a beginning design student. Comparative analyses of the pre- and post-concept maps reveal the knowledge gain of students through diagramming concepts and their relationships. The concept map assessed concepts and their relationships individually and collectively. Likewise, the content skills inventory consists of a series of questions requiring each student to rank their perceived level (0 = None; 10 = Expert) of educational growth using a pre- and post- questionnaire. The findings indicate that integrating 'green' into the design studio furthers the student's understanding of key principles and concepts. Using multiple assessment

methods shows if and how learning occurs and identifies gaps in knowledge transfer. If sustainability is to occur in landscape architecture curriculums, it must be integrated throughout. David Orr (1994) articulates education's role simply by stating, "All education is environmental education" (pg. 12). Collectively, the course approach was an attempt to further the beginning design students' understanding of key principles and concepts related to 'green' design.

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TEACHING AND LEARNING LANDSCAPE IN A DESIGN – BUILD STUDIO

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This paper will focus on the process of designing and building a Healing Garden on the Ambler Campus of Temple University, as it relates to the design – build curriculum in the Landscape Architecture program and the ecologically based, sustainable mission of the Temple University Landscape Architecture and Horticulture Department.

There is a long tradition of design – build on the 187 acre Ambler Campus of Temple University. Beginning when the campus was the home to the Pennsylvania Women's School of Horticulture (1910-1958), students were involved in the design, construction and care of the gardens and farm. This tradition continued after the campus merged with Temple University in 1958. In 1988, when the four year landscape architecture program was established under the chairmanship of John Collins, FASLA, design – build was a major component of the new curriculum in concert with a strong foundation in ecology and plant materials. Through design – build studios and student internships, a number of gardens were added to the campus from 1988 to 1998. These included the 1990 Courtyard Garden, the Formal Native Plants Garden, the Herb Garden and Sustainable Wetland Garden. Sites in inner city Philadelphia such as the Meade School and Vernon Park were also included in design – build studios as part of a community outreach effort.

The design – build studio in the Landscape Architecture curriculum at Temple University occurs in the spring semester of the junior year (LA Design Studio IV: Design Build -6sh). It 'provides individuals the opportunity to build and implement elements of their own design. Students prepare the necessary construction documentation and then actually construct their designs. Working with construction materials enables the student to learn the opportunities and limitations of these materials. This hands-on approach is vital to understanding the relationship between design and implementation processes.'*

For a number of years, the focus of the design – build studio has been primarily the design and construction

of an exhibit at the Philadelphia Flower Show. The idea to establish a Healing Garden on the Ambler Campus developed from the 2006 Philadelphia Flower Show exhibit titled 'Nature Nurtures, Mind, Body and Spirit'. The exhibit demonstrated Healing Garden and sustainable design principles, including a labyrinth within a native plant flora, and garnered two awards. After the Flower Show, there was consensus among faculty, administration and arboretum staff that it would be appropriate to create a healing garden on the Ambler Campus and to honor the memory of Ernesta Ballard within the garden. Mrs. Ballard was an alumna of the Temple University Horticulture program and had served as Director of the Pennsylvania Horticultural Society.

The Healing Garden design, construction documentation and field work was integrated across a number of studios and classes including the 2006 and 2007 Junior Design Build Studios; the 2008 Sophomore Studio; the 2007 and 2008 Planting Design class and the 2008 Soils class. Plant material and stone from the 2006, 2007 and 2008 Flower Shows were recycled in the Healing garden construction. A storm water system including rain gardens and a bio-swale was incorporated to mitigate runoff from the roof of Dixon Hall. This project has added a unique garden to the Ambler campus arboretum, a garden based on sustainable design principles incorporating a rain garden, a bio-swale, native plant palette and labyrinth.

**TU Landscape Architecture Course Catalog Description*

REFERENCES AVAILABLE FROM AUTHOR

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THE AFRICAN AMERICAN CEMETERY AS A PLACE OF CULTURAL AND ENVIRONMENTAL SUSTAINABILITY

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There exists African American geographies, places of politics and culture, in the urban environment. One of these places is the African American Cemetery. This paper will look at how Mount Auburn Cemetery in Baltimore Maryland is utilized as a place of environmental and cultural sustainability.

Peter Walker and Melanie Simo write in *Invisible Gardens* that "Among the weeds and grotesque grottoes of neglected old Italian gardens, Church also recognized limits to the intellect, for those melancholy gardens possessed underlying beauty, impossible to describe and hard to analyze - a spirit of poetry and imagination" This same spirit of poetry and imagination are found in the landscape of the Mount Auburn Cemetery in Baltimore, Maryland. Mount Auburn Cemetery is the last traditional African American graveyard in Baltimore. It was founded in 1872 and holds the remains of some 43,000 Baltimoreans. The cemetery is valuable as a place to sustain history, culture and environment. This landscape is one of the few green places left in its community and contributes to the Patapsco River Valley watershed. The preservation of this cultural and spiritual space, by its stakeholders, wards off detrimental environmental consequences that may arise if it ceased to exist.

The methodology used to explore how of the African American Cemetery, particularly Mount Auburn is utilized as a place of environmental and cultural preservation will include the following:

- Reviewing literature pertaining to the relationship of African Americans to the environment, and the design and development of African American Cemeteries including the Mount Auburn Cemetery records and history.
- Interviewing the members, church historian and pastors of Sharp Street Memorial Church, which owns the cemetery, and those who use the cemetery and members of the Community which surrounds it.
- Observation of the cemetery itself and the behavioral and environmental traces.

The African American Cemetery's place in sustaining a people's past is easy to explore and conclude. Many people important to the heritage of African Americans are buried at the Mount Auburn Cemetery in Baltimore. Findings in regards to the Cemetery as a place of environmental preservation are illusive but present. The Cemetery's less formal layout, use of native vegetation, and permeable paving are clues. For these reasons alone there are special opportunities and lessons to be learned from the rethinking of The African Cemetery. It is a living repository of our past and a space of green that expands our environmental future.

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PARKS APART: AFRICAN AMERICAN RECREATIONAL LANDSCAPES IN VIRGINIA

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Contemporary research into the history of regional, state, and national parks has left a lasting body of scholarly work. However, that body of work, focused on the traditional parks canon, presents only a partial record of our country's recreational landscape. This paper presents on-going research on an important but hidden layer of Virginia's park and recreational landscape: the African American recreational landscapes of Virginia's era of segregation.

The research has focused upon the rich body of evidence found in various archival sources including Virginia's African American newspapers including the Norfolk Journal and Guide, the Roanoke Tribune, the Richmond Planet, and Richmond's Afro American. Measured against the extant record of limited segregated facilities in state and national parks in the region, this research is revealing a vital and widespread network of African American owned and developed recreational sites including parks, amusement parks, mineral springs and camps. Presenting a second recreational landscape in the Commonwealth, this study challenges the completeness of our park histories and enriches the contemporary discourse on the social, economic, and political dimensions of our recreational landscapes.

The recreational sites identified thus far reveal insights into community spirit, entrepreneurial energy, and the richness of daily life in the Commonwealth's African American communities. Created outside the recognized canon of the park as public art, the sites have all but disappeared from our collective awareness. Abandoned soon after the insidious restrictions of segregation were lifted, to outsiders they are today places of the kind described by Charles Merewether where at first glance ". there is no evidence remaining. but rather a fracture, a discontinuity, the mark of which is obliteration, erasure, and amnesia." But they remain, for many communities, powerful places that gather memory, shared history, imagination, and community conceptions of place.

This study will add significant information to our understanding of the landscape of the Commonwealth

and challenge the completeness of those sites included in those "official" list of historic sites including publications such as *The Heritage and Culture of African Americans in Virginia: A Guide to the Sites and Virginia Landmarks of Black History: Sites on the Virginia Landmarks Register and the National Register of Historic Places.*

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SEWING HANDS, SOWING HOMES: THE NATURAL AND CULTURAL RESOURCES OF TEN AFRICAN-AMERICAN COMMUNITIES OF CHARLESTON COUNTY, SC

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In the South Carolina Low Country, descendants of enslaved Africans pursue the tradition of their ancestors, crafting coiled baskets as agricultural and household implements, items for sale, and emblems of their culture. Recognized as a vital historical and cultural tradition, over the past thirty years numerous researchers have investigated topics ranging from the African origins of the basket-making craft and its transfer to the South Atlantic coast to the political, social, and economic impacts of suburban development on basket makers and their communities. Through a grant from the South Carolina Department of Archives and History, a study of ten undocumented historic African-American communities in the Mount Pleasant area in which Low Country basket makers live(d), work(ed) and sell (sold) their wares was undertaken to identify buildings, structures and sites of historic significance.

A combination of research methods was used to provide a context for the contemporary built environment. Historic aerials from 1949 to 2006 were scanned and georeferenced in a GIS database; materials in archival repositories throughout Charleston were reviewed; interviews were conducted in each community with several elderly residents revealing a variety of social connections; individual historic property and garden surveys were conducted for nearly 1500 properties; habitats where basket materials have traditionally been collected or grown were identified and mapped along with basketstand locations and operations along key roadways. The site surveys also provided the opportunity to study the history of land use, local power relationships, past and present aspects of racism and gender dynamics, and the trajectories of ecological and social change at a turning point for basket makers and their environs.

Because of rampant development, lack of groundtruthed data, near exclusion from area planning processes, these communities are endangered by

impending development. This study's findings provide the first on-the-ground survey work for this area. Primary findings from this study include property ownership within the same family for generations, remnants of maritime forest ecology, and extant historic structures such as Rosenwald Schools, prayer houses, sharecropper homes, churches, grocery stores, juke joints, etc.

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TEACHING DESIGN COMMUNICATION AS A BYPRODUCT OF DESIGN PROCESS: AN EXPERIMENT IN CONTEXTUAL LEARNING

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Generally the design communication courses are taught as how to courses in graphic conventions and techniques in traditional and digital media so that the students can apply them in the subsequent design studios in the curriculum. The result of such an approach had been mixed and lacked connectivity and relevance to design studios.

The author devised an experiment to find an alternative and effective way to teach design communication for landscape architecture so that the students are able to comprehend the full potential of exploration, visualization and communication of design concepts. Instead of focusing only on graphic techniques, the focus of the course shifted to design and design process. The course was introduced as a design studio where these first year students who have no prior design communication skills were challenged to solve landscape architectural design problems.

First, the author introduced various algorithms of design process and discussed their pros and cons. Along with providing skeletal programs for these projects, the author gave the individual students considerable latitude in adding and modifying the program. They were also challenged to come up with their imaginary sites individually.

As the students plunged into design activities, they naturally discovered the need to learn various design communication skills to address the challenges at various stages of the design process. The author then, incrementally, introduced various design communication conventions and techniques on need basis, and taught them the appropriate use of those techniques in exploring, generating and communicating design. To visualize their site, they learned how to build the topographic model and draw the topographic base map of it. To develop design concepts, they learned diagramming spatial proximity and how to analyze and evaluate design with diagrams. As the design progressed they learned plan and section graphics, three-dimensional visualization both in traditional and

digital media, detailing, and color theory, schemes and techniques. More importantly, they learned to use all these tools to generate, explore and analyze design options, and then communicate them. The experiment proved to be very successful in teaching the relevance and appropriate use of graphic communication and visualization in design.

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THE DESIGN PROCESS DIAGRAM: REVIVING A LANDSCAPE ARCHITECTURE TRADITION

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The strong tradition of landscape architectural planning and design process diagrams has faded and, with it, one of the most valuable tools for professional and academic design communication. The RSVP cycles of Lawrence Halprin and the conceptual diagrams of offices like POD and HOK have been replaced by simple diagrams that confuse design process with project management. Review of diagrams used by a cross section of offices to communicate their planning and design processes reveals a lack of attention to visual communication of the design process in landscape architectural practice. For those offices that do use diagrams to communicate their process, the majority utilize simplistic representations of the commonly accepted steps of problem identification, inventory, analysis, programming and design development. Little definition of specific factors, the consideration of these factors and the relationships explored in their analysis and synthesis is provided. As the practice of landscape architecture has become more complex, the process is more obscure.

In many cases, project management tools such as CPM, PERT and Gantt charts have replaced design process diagrams put to such effective use by earlier practitioners of design. While it has been suggested that design process diagrams are too simplistic to represent the complex phenomenon of design (Lawson, 2006), the alternative of no visual communication of the process short changes long term development of the landscape architectural design process and keeps it veiled in mystery. A few models for the future have appeared. Offices such as Design Workshop communicate their design methodology with process diagrams expressing their collective design philosophy. Used both in-house and with clients, the diagrams serve as a road map of their progression through a project. A second model has been developed in the landscape urbanism movement. Generative diagrams of process are central to proposals by the movement's practitioners and academicians. These proposals typically are articulated by a series of interrelated diagrams, drawing connections across space and time.

Current and past student and professional practice examples of landscape architecture process diagrams are presented. A typology of planning and design process diagrams provides a framework for comparing and contrasting the range of process models and their communication. The value of these diagrams in communicating intent as well as results is emphasized.

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SHAPING WORDS: USING MIND MAPS AND LITERATURE MAPS TO VISUALIZE WRITING AND SCHOLARSHIP

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The purpose of this paper is to present two methods of using visualization skills to shape written design communication. Just as mapping a place allows new connections to be made and illuminates possibilities, mapping ideas, whether for a thesis or a design project, allows designers to record facts, draw connections and synthesize information.

Text is a critical dimension of design communication and exploration. Whether expository or analytical, written communication provides information that supports and enriches drawings and data. For a facile writer, writing can be a vehicle for synthesis and discovery. Those who struggle with writing often lack access to an important means of collecting, organizing and exploring their thoughts. The conventional practice of creating an outline is often too linear and limiting for those who think in terms of spatial relationships. Mind maps and literature maps offer ways to utilize the visual thinking skills of designers in new ways, opening paths of exploration for those who struggle with writing as well as those who bring writing skills to the effort.

Mind maps provide a means of recording, organizing and visualizing ideas, information and resources. Creating mind maps allows designers to move from initial brainstorming to highly structured written communication, building layers of information and ideas as they go. Literature maps (Cresswell, 2003) allow a mental image drawing connections between critical issues and resources. Similar to mapping a physical location, mapping literature requires identification of landmarks and paths, providing a guide to our own scholarship. Also similar to mapping a physical location, the resolution of the map determines the degree of information and assistance provided. Combined, these methods allow designers to apply design visualization skills and processes to written communication, adding a new dimension to their thinking.

Use of these two methods by landscape architecture undergraduate and graduate students is presented. Mind maps created with MindManager software will be presented demonstrating the value of the method

to advanced independent project development and documentation. Literature maps used for these same projects and for thesis development will be presented exhibiting the potential of the method in helping designers craft studies with clarity and depth.

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THE PROFESSIONAL DISCOURSE OF LANDSCAPE ARCHITECTURE: THE CASE OF OLMSTED'S CENTRAL PARK

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By examining the writings of Frederick Law Olmsted about his professional role in the design of Central Park, this paper hopes to shed a critical light on the discourses that currently shape the practice of landscape architecture.

If landscapes possess power, then so do the professionals who design them. As social products, the built works of landscape architects influence social life. But what is the nature of this power? What are its limits? And to what extent do landscape architects see themselves as socially powerful actors? By examining the writings of Frederick Law Olmsted about his professional role in the design of Central Park, this paper hopes to shed a critical light on the discourses that currently shape the practice of landscape architecture.

The scholarly and professional discourses of landscape architecture trace many of the discipline's highest values back to the father of landscape architecture, Frederick Law Olmsted. Within the discipline, Olmsted is portrayed as a socially progressive designer intent on creating humane and inclusive public spaces amid a mid-nineteenth-century urban environment marked by dramatic social, ethnic, and economic inequalities. Although this characterization of Olmsted remains a prominent feature of today's landscape architectural discourse and professional identity, a more ambivalent and certainly more complex interpretation of Olmsted's work and ideology has emerged from the research of historians. Ironically, the most striking feature of this Olmsted is his social conservatism. A review of the primary and secondary literature on the creation of Central Park indicates that Olmsted saw his role as a designer, in part, as supporting the dominant social discourses of the time. Like his upper class peers, Olmsted eyed the poor European immigrants spilling into New York City with as much suspicion as genuine sympathy. The purpose of Central Park was not only to provide a healthy physical environment for the lower classes but also to provide a morally appropriate setting in which to educate the new immigrants about

the social norms as defined by upper class society. Like all landscape architects, Olmsted was a product of his times. The question is whether, as a profession, we can reflect critically on our time, its privileged discourses, and our role in relation to them.

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COME BE DISTURBED! CULTIVATING CONSTRUCTIVE LANDSCAPES IN AN UNSETTLED AND UNSETTLING WORLD

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The emerging paradigm of DISTURBING PLACES in landscape architecture is, in parts, the response to stasis versus rebellion; conservation versus expediency; creation versus destruction.. DISTURBING PLACES is a design theory that searches for constructive potential within challenging conditions. Possibilities exist for expanded relationships with our surroundings, increased awareness of environmental processes, greater economic benefits and maintaining healthy levels of exposure to inherent risks. With the concept that nature is everything and everything is nature, the beauty of the sublime can be discerned in the cracks and fissures of everything from developments, to post-industrial sites, to sites of human tragedy. The time is ripe for a new approach to DISTURBING PLACES. The constructive potentials of disturbing places can lead to innovative redesign strategies and more reflective approaches to the resulting loss and discomfort. The fields of ecology, philosophy, design theory, and environmental psychology are building on each other to offer new ways of understanding and working with DISTURBING PLACES . These intentional uses suggest a new typology of design along a spectrum of no acceptance of disturbance to the intentional creation of disturbance. Locating designed places along this spectrum illuminates both the potential and the pitfalls of design. I have developed three main models in an attempt to provide tools to students of disturbing places. The Disturbance Interaction Matrix (DIM) plots the position of places on an axis ranging from fear to delight and another axis of no interaction to intense interaction. By conceptualizing differences in meaning assigned to disturbing places, the DIM is intended to assist in design expressions The Seven Taos categorizes designed responses to disturbances, providing a better understanding of trends in landscape architecture and of relationships between disturbance characteristics and design approaches. The Deconstructing Processes model breaks apart complex dynamics into components that allow for comparisons of otherwise complex characteristics. As societal norms evolve from simplified assumptions about processes to informed acceptance, landscapes in which DISTURBING PLACES will become more prevalent. With this growth, not knowing place will come as a breath of fresh air in

overly didactic and parsed landscapes. Fun or sad, fast or slow, soft or hard, we would have to stay alert and fully connected to these places. And we might grow in the process, working against modes of detachment and invigorating our daily experiences.

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THE SCENERY OF GRIEF

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Memorial landscapes provide sites for the private and public comprehension, commemoration, and reconciliation of events of tragedy and loss. Regardless of scale, the making of memorial spaces serves to commemorate the victims, to comfort survivors, and to make social, cultural, and political statements regarding the death event. This inquiry focuses on the smallest scale of memorial space – the roadside memorial. These small white crosses mark the sites of violent death events such as homicide, suicide, and primarily vehicular death. The gesture of erecting a marker, adorning a cross with flowers and photographs, then maintaining the site for years is the most basic of all acts of remembrance. The roadside marker “gathers the landscape” (Heidegger, 1971) creating a physical location for grief – the bright silk flowers contrast with the grit of the urban street or looming dark clouds on the horizon reflect the fragility of human existence. The capacity of the memorial to locate grief in the landscape is investigated through a phenomenological exploration of the lived-experience of grief, which the author argues, is the human experience that memorial spaces at their core are designed to address and express. Existential landscape themes are extrapolated from the inquiry on grief and applied to a case study analysis of roadside memorial sites. Finally, the implications of the landscape themes and the applicability of phenomenology as an approach to research, teaching and design of memorial sites is briefly discussed.

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ANGER AND STRESS: THE PALLIATIVE EFFECTS OF NATURE AND ABSTRACT ART

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The purpose of this paper is to investigate the possible effects of nature and/or abstract posters in an office setting on state anger and stress for both males and females. Anger has become increasingly recognized in recent decades as a major problem in the American workplace. It is common to see in the daily newspaper or on the nightly news broadcast a story about an overstressed, disgruntled employee attacking or even killing coworkers. Indeed, recent studies show that one out of four American workers is chronically angry at work (Gibson & Barsade, 1999, August), contributing to over 16,000 threats and 700 attacks in offices across the U.S. each work day (Kaufer & Mattman, 2004). Anger has also been linked to other, more insidious outcomes such as decreased productivity, increased absenteeism, ineffective work relationships, and a variety of health complaints, including anxiety, stress, depression, high blood pressure, and heart disease (Gibson & Barsade, 1999, August; Begley, 1994; Diamond, 1982; Friedman & Roseman, 1974; Neuman & Baron, 1997). We hypothesized that people who work in office environments decorated with aesthetically engaging art posters would experience less stress and anger in response to task-related frustration.

Two hundred ten college students were randomly assigned to different office conditions where abstract and nature paintings were hung on the walls. Participants performed four mild anger provoking computer tasks and then reported their levels of state anger and stress.

Results indicate that different office conditions had a significant influence on state anger and stress for males, but not females. Males experienced less state anger and stress when art posters were present.

Through mediation analysis, we found that increased proportions of nature paintings decreased state anger due to decreased levels of stress. By extending the path to anger, this research provides an important contribution to the environment and behavior research community. By documenting this systematic link in an office setting, these findings may help to create a less stressful and more peaceful workplace setting.

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APPLIED RESEARCH OF ECOLOGY AND WILDLIFE TO THE WILDHORSE RANCH LAND MANAGEMENT PROGRAM WITHIN THE CULTURAL AND ARCHITECTURAL CHARACTER OF REGIONAL RANCHING PRACTICES

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Purpose and Background:

A comprehensive analysis of the land provided insight into the intrinsic qualities of Wildhorse Ranch, its past alterations, localized ecosystems, and opportunities for future use. As ranching and agricultural properties in the western United States face increasing pressure for development, there is a significant opportunity to engage with landowners in a dialogue about balance, looking for land management solutions that are ecologically sustainable and culturally appropriate, yet supportive of on-going ranching operations. This mindset offers an opportunity to implement an effective ranch management program, restore native habitat and integrate a building program that considers the context of both the cultural and the natural landscape.

Methods:

The Ranch Management Program:

Ranchlands in this semi-arid environment have been grazed for a century. Coupled with inefficient irrigation practices, the result has led to significant disturbance and degradation to the land. An understanding of holistic ranch management, coupled with an in-depth analysis of this property, allowed us to define areas for agricultural use and made possible the restoration of native habitat.

Restoration of Native Habitat:

Water is precious in this semi-arid environment and an understanding of both current and historic water patterns allowed for restoration of lost riparian zones and development of efficient irrigation in the agricultural zone. Species occurrence data from GIS mapping provided an understanding of significant indicator species and guided decisions with regard to habitat restoration. We created cross-sections of six different water bodies, indicating the distinct characteristics and potential habitat of each to guide restoration of these channels in both design and construction.

Placemaking:

The ranch design focused on three considerations:

1) how it would be integrated within this special landscape; 2) how it would be experienced; and 3) how it would be occupied. A series of studies were explored in an effort to achieve a natural settlement, both in program allocation and site distribution. Existing and potential building locations were evaluated with an understanding of cultural building patterns in the Great Basin.

Importance:

We have studied the ecology of Wildhorse Ranch and the region to understand the natural vegetation, habitat landforms and drainage. We have observed the order and patterns of the cultural landscape. In applying this understanding, we have developed a strategy for improving the overall health of the land in its broadest context providing a lasting legacy for the ranch and the region, one that is an applicable model of balance and sustainability.

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REMOVING ROAD ACCESS AS A KEYSTONE PROCESS: A CASE STUDY OF LANDSCAPE CHANGE IN COASTAL NORTH CAROLINA

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The purpose of this paper is to investigate how access or remoteness can serve as a keystone process in the trajectory of a coastal landscape.

The Northern Currituck Banks, the last ten miles of Outer Banks in North Carolina, embody a landscape that is the legacy of an odd history of events. This area was subdivided in the late 1960s when over 3000 house lots were sold off. Canals were dug on the bay side, and bulkheads put in for small pleasure craft. The area was poised to become a sandy suburb of Virginia Beach. Then in 1973, the U.S. Fish and Wildlife Service closed the road through the Back Bay Wildlife Refuge, effectively cutting the landscape off from the North American road network. There are no paved roads on the Northern Currituck Banks. The only access is by four-wheel driving on the beach or by piloting across the shallow waters of Currituck Sound. Despite the remoteness, there are hundreds of trailers and houses tucked into the “subdivided” dunes and forests. Wire fences across the Virginia line and at the southern end contain the wild Currituck ponies that roam the dunes and beaches. In recent years, investment-back resort development is beginning to build large “rental” homes characteristic of the roaded parts of the Outer Banks. These “homes” are in sharp contrast to the trailers on stilts that have been there for forty years.

The methods used in this research include a development and administrative history, policy analysis, and visual analysis of the landscape.

The main finding of this research exposes how what was once on target to be a beachfront suburb became an arrested remnant of the Outer Banks from an earlier time. Specifically, this research shows how controlling access and remoteness to the banks is a keystone process determining the path of landscape change. This research is significant because advancing coastal sprawl may still convert this landscape of

trailers, naturalized ponies, and maritime ecosystems. The research is valuable generally as an example of using analysis of keystone processes in landscape planning.

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THE DESIGN OF 'INFRALANDSCAPES' IN HOLLAND; CULTURAL LANDSCAPES, MOBILITY AND MODERNITY

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Infralandscape' are landscapes that are directly or indirectly influence by infrastructure like roads, waterways, high tension lines for electricity and other types of infrastructure.

We live, also in Europe, in a 'culture of mobility'. Moving, speed and transport are an integral part of day-to-day life for almost everybody. Although the car plays a dominant role in this culture of mobility, it is part of larger cultural movement that is part of our daily lives.

Dutch landscape architecture has a long tradition in the design of infralandscape. Already in the beginning of the last century, the Dutch Ministry of transport asked the Ministry of Agriculture to '...advise on plantations along all major roads and waterways in the country'. It rapidly grew out to the making of plantation plans and later landscape plans for all new motorways and major waterways. Due to the explosive growth of the road system, the motorways starting at that time in Holland, landscape architects were asked to make plans that had never been made before. In Holland, it is one of the major developments in landscape architecture in the 20th century; the design of the landscape as public space.

In this paper we will research how this demands from society has influenced the profession and has laid the foundation for the modernisation of the profession towards an academic discipline. Goal of the paper is to research the relation between demands from society, practice and theory in a specific case of Dutch landscape architecture.

In the first part, three research approaches and techniques are presented that were used in this research; the need for an analytical framework, case-studies and precedent analysis and finally the use of oral history that was needed in the given circumstances.

In the second part some of the results of this research in the form of a theoretical basis is developed. From the road as part of the landscape towards the road

& surroundings as an an autonomous landscape that needs a different design approach.

Finally we will work out how practice, research and teaching can interact and stimulate the overall body of knowledge on the subject that has evolved towards a special design approach in landscape architecture; giving form to the culture of mobility by the design of acceleration and deceleration.

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**CONCURRENT SESSIONS X
SATURDAY, JANUARY 17TH, 2009
3:45PM - 5:15PM**

LEADERSHIP BY DESIGN: DEVELOPING A STUDENT LEADERSHIP PROGRAM

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The primary purpose of this paper, "Leadership by Design: Developing a Student Leadership Program" is to elevate pedagogical discussions in design education to encourage student leadership, collaboration and communication. In 2002, the American Institute of Architecture Students released the Studio Culture Task Force report, reflecting the need for increased focus on the physical and emotional well being of students. The release of the Studio Culture Task Force report is synergistic with parallel programs occurring on many campuses (e.g. the First Year Experience), the new criteria regarding Studio Culture from the National Architecture Accrediting Board, and an influx of literature on student leadership in higher education. Additionally, leaders of the architecture and landscape architecture professions support these initiatives and recognize the need for designers with strong leadership, communication, and collaboration skills as complementary to traditional design skills. The professions of architecture and landscape architecture are changing, and design education must change in support of the professions.

In response to these reports, the School of Architecture formed the Leadership by Design (LBD) committee to discuss development and implementation of a positive, holistic learning culture within the school. A survey was developed to track student values and behaviors. The survey revealed discrepancies between what students value and how they behave. For example, a student may agree that regular exercise is beneficial to their health, but they may not exercise regularly. The committee, along with Associate Professors Laura Terry and Judy Brittenum, implemented the Leadership by Design course for all first-year School of Architecture students in an effort to introduce these values into the curriculum. With the support of the Dean, the School of Architecture enlisted upper-level student mentors, bridging the divide between first year students and professional design education. While the committee agrees great strides have been made in introducing these shared values to the students, the committee recognizes the need for educating the student mentors to lead, communicate, and collaborate. A follow-

up survey was completed in the spring of 2008 to determine if the course bridged the gap between student values and practices. Data from this survey is currently being tabulated and will be compared to the previous survey.

The Student Leadership Program will be instituted this fall, prior to the beginning of classes. In addition to leadership development, student mentors will also help craft the course content, develop discussion-sessions on relevant topics and help create a "Leadership by Design: Handbook for Beginning Design Students." The outcomes of this leadership program are many: increased student engagement and involvement in their education, improved relationships between beginning students and their upper-level mentors, fostered leadership and collaboration as preparation for professional settings, and increased potential for service learning within the School of Architecture.

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DISCOVERING LANDSCAPE ARCHITECTURE: MECHANISMS OF STUDENT CHOICE IN A COMMON FIRST YEAR PROGRAM

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Purpose:

This research explores how students in a common first year program choose a major from three professional degree tracks that begin in the second year. The focus of this study is the students who choose landscape architecture.

Background:

Landscape architecture is less well known to the public than architecture or planning. How students 'discover' landscape architecture as a potential career path is of interest to educators as well as to practitioners. The author is First Year Coordinator in a College offering degree tracks in Architecture, Landscape Architecture and Planning – and is also a faculty member in Landscape Architecture. The majority of entering students intend to major in architecture after the first year, but a significant percentage shifts to landscape architecture by the time to apply to one of the degree tracks.

Methods:

Entering students were surveyed at the beginning of the fall semester. Among other queries they were asked to list architects, landscape architects and planners they knew by name, then to describe a work of each profession that they had visited and been impressed by. A second round of surveys was administered to the freshmen near the end of fall semester, asking what major they had intended to pursue at the outset, and which was their current choice – if there had been a change – and what factors influenced the choice. A similar survey was given to second year students completing their first semesters in their chosen majors. Another round of surveys is currently being administered to the first year students who have made their choices of major, and to the students who are graduating from each of the programs.

Main findings:

Only 10 to 15% of entering students plan to major in Landscape Architecture; by the end of spring semester, however, this increases to 25 to 32%. The major factors influencing their choices as freshmen after the first semester also shift. By the end of the first year, the

perception that their choice is the best fit for their personality/abilities ranks highest, at 88% in the group most recently surveyed.

Importance of the study:

While only a percentage of landscape architecture programs participate in a common first year, this curriculum structure has its proponents and benefits. It does provide an interesting sample of students, however, in which to examine the mechanisms of choice in a cohort that is in the process of a career decision to become landscape architects.

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INCIDENTAL LEARNING IN COMMUNITY-BASED STUDIO PROJECTS: A COMPARITIVE STUDY OF LANDSCAPE ARCHITECTURE, INTERIOR DESIGN AND URBAN PLANNING STUDENT PERCEPTIONS

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This study focuses on student perceptions of incidental learning that occur in community-based studio projects across three disciplines: landscape architecture, interior design and urban planning. Incidental learning may be viewed as a byproduct of another activity where people are often unaware of the learning (Marsick and Watkins, 1990), and can occur in multiple situations such as social interactions, work experiences, trial-and-error, mistakes, problem solving, and adapting to new situations. Incidental learning is an important component for teaching in the 21st century as higher education explores learner-centered environments and assisting students with self-directed learning (Marsick & Watkins, 2001). Outcomes of incidental learning include increasing skills in communication, teamwork, leadership, time management, coping, resource utilization, and developing a greater tolerance for complexity.

This study derives nineteen incidental learning items from the literature and organizes them into four areas: social and group skills, authentic problems of a community-based learning environment, learning abilities, and personal affect. Survey responses from 120 students across all three disciplines will be analyzed using multivariate statistics to identify incidental learning elements, pattern preferences, and determine whether there is any significant difference between students perceptions based on disciplines.

The following research questions will be answered using Principal Component analysis and Discriminant analysis:

- What are the key dimensions of incidental learning in community-based studio projects?
- Are there hidden patterns of preference for certain incidental learning skills?
- Are the preference patterns different across

the three disciplines: landscape architecture, interior design, urban planning?

Findings from the Landscape Architecture group provide an example of our analysis. Three hidden structures of incidental learning are unearthed. First, teamwork, communication skills, real world problem solving skills and understanding through social interaction are significant incidental learning skills identified by the students. Second, a Connections with People and Knowledge pattern indicates fostering skills for leadership and knowledge transference could have significant impact in the overall learning experience. Third, a Team Work Skills pattern is strong enough to be brought out independently

This study provides an important start to identifying what our students are learning in community-based projects, in addition to disciplinary specific knowledge and skills. The multi-disciplinary study creates the groundwork for issues to be considered for University's exploring interdisciplinary and cross-disciplinary teaching approaches.

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TRANSDISCIPLINARY ACTION RESEARCH IN INDIAN COUNTRY WITH EMPHASIS ON SUSTAINABLE DESIGN DECISION MAKING

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This ongoing research includes work done in multiple design charrettes with students and clients, workshops, and presentations. The evolving work includes the collaboration of multiple disciplines under the aegis of Landscape Architecture.

The purpose of this paper is to illustrate an ongoing project with implications that far exceed the immediate, and how more of this work can be done by other programs in other locations. Our work with the Ojibwe in Wisconsin is only the beginning of needed place based action initiatives that are well within the capabilities of many campuses and programs in Landscape Architecture.

This work began with the intention of producing important projects with the Native Americans and introducing our students to the greater communities which lie outside the metropolitan district of their familiarity. The work has now evolved into a multidisciplinary effort in multiple First Nation communities, with plans including new neighborhoods, parks, ceremonial grounds, and commercial sites. We are now producing buildings utilizing an adapted straw clay component, and instructing the local Indians in how this can be their industry.

We are generating a work book for sustainable construction which includes road design, stormwater management, consideration of site specific, place-based design principles, and construction techniques for the mixing and application of the straw clay product. The workbook accompanies the completion of workshops that began last summer in Santa Fe, New Mexico, and continue this year on Wisconsin reservations. Our new educators include Indian participants in prior workshop. We also continue an intensive lecture and studio format class for Native American as well as mainstream UW students at the University, followed by intense charrette on the reservations.

The principles of the education process include the application of permaculture, stormwater management, water harvesting, phytoremediation, and locational considerations for appropriate siting of structures that include cultural imperatives. The workshop attendees leave with a knowledge base of the principles of straw clay construction along with a better understanding of the imperatives of stormwater management and siting considerations.

The results of our work to date include a more informed client base with an emerging body of student cum educator. The ultimate product of this work is an improved quality of life for disadvantaged populations.

The pedagogy is based on the work of Boyer and Paulo Freire.

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AN EVALUATION OF OPEN SPACE QUALITY IN SUBURBAN RESIDENTIAL COMMUNITIES: A COMPARISON OF NEOTRADITIONAL, CLUSTER AND CONVENTIONAL DEVELOPMENTS

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This paper analyzes the success of protected open spaces in fifteen suburban residential developments across the United States. Using case studies from five regions across the country, neotraditional, conservation and conventional residential developments are analyzed and compared for their habitat, recreational, visual landscape quality and water quality goals. The paper identifies and analyzes the original open space and green infrastructure protection goals of the developments and their outcomes, along with pre- and post-development forest stand and open space protection success.

The flight of homeowners out of cities to relatively inexpensive land and housing in the suburban fringe has placed tremendous pressure on ecosystems, water quality, visual quality and recreation opportunities. For these reasons, the goals for green infrastructure (open space) in many suburban developments over the past two decades have been to provide active and passive recreational areas, to serve as stormwater quality enhancements, wildlife habitat, and as a visual buffer to the hard surfaces of urban areas. This was certainly the case with neotraditional and conservation developments of the late 1980's and 90's which were simultaneously seen as an antidote to the placeless sprawling suburbs and the environmental degradation that ensued.

However, almost 20 years after neotraditional and conservation developments were brought into common use the question remains: How effective have they been, particularly in comparison with other more conventional development styles, in protecting functioning open space systems? In the literature, post occupancy assessments of suburban forest and open space systems have been few. These have largely focused on the total land area protected (and in some cases patch size) (Brabec 2001), rather than the functionality and condition of the protected

area. Specific assessments of Kentlands and other neotraditional communities have focused on the increased real estate values achieved (Tu and Eppli 2001), walkability (Lee and Ahn 2003), and sense of community (Kim and Kaplan 2004) rather than on the open space system.

This paper, therefore, serves as an initial step in the analysis of the success of suburban developments for recreational, habitat, visual landscape quality and water quality goals. The paper identifies and analyzes:

1. Open space and green infrastructure protection goals through two methods: a content analysis of public documents filed in connection with development and site plan approvals, and interviews with the developer, planners and designers;
2. Evaluation of pre-development forest stand protection through the comparison of current and pre-development aerial photographs and site level inventory, resulting in a finding of the amount and quality of existing forest stands that were protected during the development process;
3. Forest stand and open space protection measures and outcomes, using aerial photographs, a detailed site-level inventory of ecosystem, recreational, visual and water quality indicators, and an analysis of local regulatory and homeowners association codes; and
5. Level of compliance and achievement of green infrastructure protection goals through a comparison of current conditions and intended outcomes.

The findings from this analysis are mixed. Success in open space conservation and optimal function with respect to habitat, stormwater, recreation and visual quality, depends as much on the vision and sophistication of the developer as in the method chosen. In many cases, no matter which method is chosen, the execution contained serious flaws that compromised the ecological system. For example, water quality goals hampered by direct discharge of stormwater into the stream system, and an inability of protected stream buffers and other BMP's to absorb levels of site runoff created by new development. In

addition, the mix of jurisdictional control of protected areas and the lack of removal of invasive exotics in many instances compromised the ability of the areas to serve as native habitat, and attractive, passive recreational areas.

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COMPARE PLANNING METHODS FOR NEIGHBORHOODS: CASE STUDY OF STORMWATER IN THE WOODLANDS, TEXAS

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The Woodlands, Texas, has been well known as a town created with Ian McHarg's ecological planning concept, in which land use is determined based on environmental data; particularly, soil permeability. That is, land with high soil permeability was preserved as open space and land with low soil permeability was assigned for commercial or residential developments. The Woodlands survived the one-hundred-year storms in 1979 and 1994, while Houston, 31 miles away, was severely flooded in both events.

Despite numerous studies that used The Woodlands as the study site, very few quantitatively measured the effect of planning methods on stormwater. This study investigates the impacts of different planning methods for neighborhoods on stormwater quantity and quality. The Soil and Water Assessment Tool (SWAT) is used to create three planning scenarios for a built neighborhood development: the Grogan's Mill, in The Woodlands. These three simulated scenarios are created for comparison with Grogan's Mill's current and 1970's conditions. Data from US Geologic Survey (USGS) gauging stations are used for this study.

The Soil and Water Assessment Tool (SWAT), embedded in GIS interfaces, is a hydrologic and water quality model widely used in agriculture dominated land uses. Increasing studies have proved its applicability in urban watershed modeling. In the SWAT model, each unique combination of land use and soil type will generate a unique Hydrologic Response Unit (HRU). Therefore, superimposing varying land use types onto different soil patches will generate runoff quantities as well as water qualities for comparison. Furthermore, standardized approaches have been proposed for simulating specific Best Management Practice (BMP) in SWAT

This study examines how different planning methods (or development patterns) impact stormwater

quantity and quality. In addition, this study will examine whether the planning approach (e.g., The Woodlands approach) is more significant than Best Management Practices (e.g., grassed waterways, field borders, grade stabilization structures). Lastly, this study may provide calibration data for SWAT model used for urban watershed modeling. The results of this study will indicate that using soil permeability to determine densities and land use is an effective planning method to mitigate environmental impacts, particularly stormwater quantity and quality.

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LEARNING TO LOVE THE LANDSCAPE: PREFERENCES FOR DESERT VS TRADITIONAL SUBURBAN LANDSCAPES AMONG EXPERTS AND HOUSEHOLD OWNERS

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In an era of increasing concern for sustainability and water conservation (Hurd 2006), residential garden design with desert landscape plants and low water use landscapes is seen by landscape architects as a potential solution (Martin et al 2000). This study used a photo-preference survey with photo-manipulation to test the preferences of two groups of respondents – experts (landscape architects) and homeowners. Seven photographs were manipulated in photoshop to show various levels of desertification. Respondents were asked to rank their preference for the landscapes and to respond to a series of emotional response descriptors.

Respondents were bi-polarly divided in the aggregate results. When the respondent groups were analyzed separately however, clear and extreme differences between the groups were indicated. Homeowners indicated a clear preference for lawns and irrigated flower beds, and a distinct discomfort with desert landscapes. Landscape architects preferred the designed desert residential landscapes and responded positively to the native plants used in the design. Homeowners indicated in follow-up interviews that the naturalized landscapes appeared abandoned and evoked feelings of anxiety among householders faced with increasing foreclosures and home repossessions in their subdivisions. Heavily irrigated landscapes quickly reverted to native plant material and desert appearance once regular maintenance and water sources dried up.

This study has significant implications for the dialogue between practitioners and clients in the residential market, and identifies a disconnect in water conservation efforts as related to landscape design.

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DID YOU FIND WHAT YOU WERE LOOKING FOR?

ACADEMIC TRENDS IN LANDSCAPE ARCHITECTURE

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In 2006-2007 academic year a record number of academic position openings were advertised for fall 2007. This number of announcements created an opportunity to conduct a simple content analysis that is essentially a snapshot of the state of landscape architecture in the academy in 2007. In particular it allowed a look at which areas of teaching and research were then in greatest demand. While not a statistical study, since this was not a random sample, it does allow conclusions about trends in the early twenty-first century to be examined empirically and compared to anecdotal recollections of past trends.

Over 60 landscape architecture academic-position descriptions from scholarly and professional publications, websites, and direct mails were collected and analyzed. The sources for the data included: All announcements posted on the Council of Educators in Landscape Architecture (CELA) website, a limited number of others posted on the American Society of Landscape Architects (ASLA) website, commercial job-posting websites, and direct mail sent to current faculty. CELA was the primary source of postings for this research since it is most directly tied to academia. The word content from these announcements was then evaluated through the elemental analysis technique of counting word frequencies (Dym, 1985). Where appropriate statistical techniques were also used for frequencies and descriptive statistics. The analysis also included previous trends in academic jobs based on oral interviews of long-term professors and reviews of available advertisements and literature (Cantor, 1997; ASLA, 2004; OOH, 2008). The fundamental research question was 'What can position announcements tell us about landscape architecture in the academy?' In particular the study looked at questions such as:

- How many advertisements came from accredited versus unaccredited programs?
- How many were for tenure track versus non-tenure track positions?
- What academic credentials were required or preferred?
- What professional or experience-related credentials were required or preferred?
- What were the teaching and research subject

areas that were listed as being required or preferred?

Among the findings, it was established that there are particular trends in the subject areas for which faculty are being sought. Some of these, not surprisingly, included newer areas such as sustainability, GIS, and CAD. But traditional areas were also in demand, including design implementation. Many positions listed a Ph.D. as preferred. This latter finding is a rather new development, since less than ten years ago few programs listed this as a preference. The paper will conclude with a detailed discussion of the subject areas that appear to be newest and most upcoming in the field.

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HOW DO WE VALUE TEACHING?: ASSESSING CONTRIBUTIONS TO ACADEME, TEACHING, RESEARCH, SERVICE AND DESIGN RECONSIDERED

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Traditionally, teaching has been a major focus of landscape architecture programs. Increasingly however, university administrators are demanding that faculty participate in research and scholarly activities. In the design professions this is complementary to the generally increasing demand for research from the public and private sectors to provide justification for design and planning decisions (Chenoweth and Chidister 1983, Nassauer 1985, Harris 1995, Innes 1996). Consequently, the role of the academic practitioner is changing from one focused on education, to one that includes contributing to research and the development of the discipline.

As a result, architecture, landscape architecture and related professions have been struggling to resolve the criteria of academic research with a discipline traditionally based in teaching, design, professional knowledge, 'intrinsic' understanding, and practical application. The current battle to establish both teaching and design as a viable forms of research as addressed by Benson (1998), Selman (1998), Thwaites (1998), Armstrong (1999), Bowring (1999), Lawson (2002) can be interpreted as the result of this longstanding battle to reconcile these forms of traditional knowledge and traditional faculty roles with the requirements of rigorous scholarly research. This struggle is at the heart of the current division in the profession between teaching and research-oriented academics.

This paper proposes a reconsideration of Boyer's (1990) scholarship framework by redefining scholarship as research, and defines teaching, design (or creative works) and service as contributions to academe. Furthermore, it proposes that teaching, design, and

service can be either topics of research or products of research, but are not, by definition, research. As such, they are located at the beginning of the research process as the incentive or topic of the research, or at the end of the research process as an application of the insights and understandings acquired as a result of a study. Thus, there can be research into teaching, design and service, research as a response to teaching, design or service or research leading to or informing teaching, design or service. Within the research process the researcher can study the teaching (or design or service) process itself, report on a particular case, critically reflect on years of experience, or analyze prior work as topics of research. Teaching, design and service can occur after research, through the application of ideas and standards informed by rigorously conducted, peer reviewed, universally accessible research.

Boyer (1990) identified six main criteria that should be considered in the review of scholarship: clear goals; adequate preparation; appropriate methods; significant results; effective communication; and reflective critique. These criteria have been revised in light of this paper's argument for peer review, new or substantially improved insight, and universal accessibility as the criteria for contributions to academe. This paper argues that until we formulate assessment criteria for teaching (and design and service) which measure both quantity and quality in a widely accepted framework such as that used currently in assessing the research contributions for tenure, teaching, design and service will fail to be taken seriously in the tenure process. "Tenure creep" or increasingly onerous expectations for tenure will continue and a lack of clear assessment criteria creates contention in the assessment of quality. There is a need for a set of detailed checklists for the assessment of research and the adaptation of these frameworks for the assessment of other contributions to academe such as teaching and design.

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EMERGING PEDAGOGIES IN EDUCATION OF LANDSCAPE ARCHITECTS

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“Graduates go out into the workforce ill-prepared to solve real problems in a cooperative way, lacking the skills and motivation to continue learning.”

(Shaping the Future: New Expectations for undergraduate education in science, mathematics, engineering and technology, the National Science Foundation, U.S.A., 1996).

Discussion

The education in landscape architecture, like most design fields, has long relied on a studio format with support from lecture and seminar courses. Although this combination has provided a well rounded education in creativity, planning, and design, it seems to fall short on preparing students in written and spoken communications as the ASLA surveys indicate. According to the practicing professionals, for the twenty plus years running the #1 ranked knowledge, skills, and abilities (K.S.A.) in the profession of landscape architecture is written and spoken communications, and it is not planning and design as most of us would have expected (American Society of Landscape Architects, ASLA, 2000).

During the last twenty years, universities, both public and private, have been trying to respond to the challenge of preparing their students better to solve the problems of the future. Most of these responses may be categorized under a new approach to teaching known as “constructivism.”

Online course communication tools enable students to interact with course content, the instructor, and their peers outside of the classroom. Students are given the opportunity to negotiate the meaning of course content through these interactions - creating the potential for a deeper and longer lasting learning. A virtual learning community that provides support and sharing among its members can be built through the integration of online communication tools and course activities and sustained through effective facilitation by the instructor.

Fundamental principles of constructivism support this view:

- learning is an active process of constructing rather than acquiring knowledge
- individuals learn through interaction with their world

- individuals develop knowledge through social interaction

Several learning psychologists like Jean Piaget, John Dewey, and especially Lev Vygotsky have established that language and communication play a central role in mental development and thus knowledge development. Extensive educational research seems to indicate that actively pursuing communication across the curriculum alongside of the regular curricular objectives significantly improve educational outcomes both in and after the school (Bean, 2001).

Furthermore, two factors are rapidly changing the education, teaching or professoriate: (1) Shift in paradigm, (2) Infusion of technology (Barr & Tagg, 1995; Chovan, 2001; Greed, 1997; Schlecty, 1997).

As a result of these changes, many universities (University of Clemson, Louisiana State University, University of Maryland, M.I.T., University of Minnesota, University of Missouri, et.al) have been providing their students with opportunities for intensive communication across the curriculum (C x C) alternatives. Although approaches may vary from one institution to the next, most of them focus on providing four interdependent components: (1) Written, (2) Verbal/Oral, (3) Visual, and (4) Technological communications.

Online education (also known as distance learning) has gained a significant ground and acceptance due to rapid technological advancements (Ion, 2003; Karpati, 2000; MacGregor, 1999; Sclater, 1997; Spodic, 1995). However, almost all of the current online education courses and technology have been developed to adapt and deliver information from a traditional lecture, seminar, and recitation based disciplines. The current online education technology allows asynchronous (time separated) or synchronous (live) delivery, interaction between students and faculty in the form of Q&A via whiteboards, interactive televisions and the internet. Some allow use of videos or still photography for illustration and ease of comprehension. The current delivery systems are quite effective for most of the higher education curricula relying on traditional lecture, seminar and recitation formats. However, this researcher has not been able to find or discover use any established online technology for synchronous delivery of the design studios, which are the backbone of landscape architectural education and alike planning and design fields. There are a number of universities

and professional offices, which claim to have “virtual design studios.” However, none of them provide instant feed-back i.e. desk-to critiques because they require pre-conference scanning, digital photography, etc. as such they are not synchronous. Although the technology that could offer synchronous design studios online has been available for some time and becoming more cost effective with advancements, they have not been either adapted and/or fully utilized for online education in planning and design fields (Artunc, 2005 & 2003).

As many practitioners in education, private and public realms would agree, most curricula in landscape architecture provide a sound education in visual and technological communications. Yet, most programs in landscape architecture somehow have not been able to take advantage of the new developments not only in C x C but also online education toward accomplishing a more comprehensive professional education. Today’s global society where landscape architects practice at all corners of the world. Therefore, their awareness of the opportunities and constraints of the professional practice at different regions, countries of the world is crucial for both the success of their practice as well as the sustainability of the resources even though they may have been educated in one region but practice in a different region. “Connectedness” through online education is one of the means of developing such awareness. Utilizing online education technology may allow collaborative studies among students, faculty at different part of the world and thus provide a more comprehensive awareness of the natural and cultural resources of this planet toward a more sustainable planning, design, development and management.

Moreover not all nations of the world have fully developed landscape architectural education. For an example the entire continent of Africa has no established landscape architecture program to date even though communities and nations in that continent need the services of landscape architects urgently and perhaps more than any other continent. Yet according to the International Federation of Landscape Architects (IFLA) report in 2006, Africa remains as a black hole in landscape architectural services, especially in education. Providing opportunities for online education in landscape architecture originating from fully established programs at other continents to residents of Africa,

may be one of the most cost effective means of immediately responding to the need of Africans as a short term solution since internet connections are already in place in most of the larger African cities.

Proposal and Methods

This paper and presentation will discuss the following:

1. How principles of C x C may be integrated into the professional curricula alongside of the regular curricular objectives to significantly improve educational outcomes both in and after the school. In order to accomplish this objective, the paper will discuss and survey pedagogical foundations and developments in both general higher education and professional landscape architectural education towards a scholarly discussion platform. The paper will also survey current programs landscape architecture in the USA and Canada in terms of their awareness, integration and use of C x C in their curricula. The paper will conclude with a series of recommendations toward an emerging professional education model, which may have implications to both educational and accreditation institutions.

2. How principles of online education may be utilized in landscape architectural education not only for delivery of lectures, seminars, and recitations but also delivery of virtual synchronous design studios. In order to accomplish this objective, the paper will evaluate, modify, and evolve the conventional design studio pedagogies to enable creation of virtual design studios. This may be accomplished by taking advantage of the emerging as well as the current technologies to provide instant two-way feedback similar to desktop critiques in the conventional design studios.

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OPERATIVE TERRAIN: AN ARMATURE FOR DESIGN STUDIO AND SEMINAR INTEGRATION FOCUSED ON CONTEMPORARY THEORIES OF LANDSCAPE AND URBANISM

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In recent years, landscape scholars and practitioners have increased attention on new theoretical and design frameworks for understanding the role of landscape and city-making in our contemporary cultural condition. This is evidenced by the burgeoning notion of landscape urbanism, which asserts that “landscape has become a lens through which the contemporary city is represented and a medium through which it is constructed” (Waldheim, 2006). Within the context of this emerging theoretical dialogue, educators are challenged with developing delivery models that are well adapted for these conceptions. Operative Terrain is an integrated design studio/seminar structured to investigate contemporary notions of landscape architecture and urbanism with a focus on hermeneutics, landscape agency, and potentiality.

Operative Terrain was originally taught in fall 2007 as a studio course for fifth year students. The course has been refined and integrated with a seminar for fall 2008. It's organized into three segments, using three interpretations of the term “operative terrain” as a framework. Part 1: Essential + Geographic Area focuses on hermeneutics and understanding regional contexts. Part 2: Working + Ground is concerned with phenomenal, performative, and physical forming of site, including imagining and crafting strategic resolutions inspired by hermeneutic observations and rational analysis. Part 3: Efficacious + Environment concentrates on the indeterminate and spatial-temporal qualities of a design resolution, and sequentially overlaps Part 2. The course includes research, expository writing, analysis, montaging, mapping, datascaping, and site-scale formal design. These activities are framed by readings in contemporary theories of landscape, urban design, ecology, complexity, and representation; and are supported by notions of site-informed design, landscape performance, and spatial-temporal projections.

The paper will present an armature for delivering a studio/seminar framed within contemporary landscape

theories, providing fodder for developing or refining pedagogical models with similar objectives. The incorporated studio / seminar model is ideal for this content, as the integration allows a focused effort aimed at dissolving limitations inherent to either course if taught independently. The paper presents self-critique of the 2007 course, as well as feedback from students, design professionals, and colleagues; and describes the resulting refinements made to improve the course in 2008. As theories and practices of landscape architecture evolve, models of pedagogy also evolve. Operative Terrain provides a structure for teaching contemporary theories and practices of landscape architecture and urbanism.

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THE 21ST CENTURY FLANEUR OR WALKING AS RADICAL RECLAMATION OF SPACE OR THE ARTIST RESIDENCY AND THE LANDSCAPE EFFECTS OF A CAPTIVE, VISUAL, PEDESTRIAN POPULATION

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Walking is a radical act of reclaiming space from the dominant culture of car dependent locomotion. Land artists Richard Long and Hamish Fulton walk as their art form. Walking becomes a conscious contemplative act, through Vipassana Meditation techniques (Ann Chamberlain) and a political act, through the simple act of noticing our surroundings. (Wendell Berry) I study three communities: Provincetown, Massachusetts, (The Fine Arts Work Center) Johnson, Vermont, (The Vermont Studio Center) and Wendover, Utah (The Center for Land Use Interpretation). Each residency lasts from weeks to a year. Residents use little or no car travel. This paper seeks to understand visually and through narrative, the preservation and alterations introduced by a captive pedestrian population whose daily practice is making visual and written art.

Excerpt from 30 Stories about a State Line, a text I generated by walking the Utah and Nevada state line in Wendover, Nevada, working as a resident artist. The full texts are posted at <http://catherinepageharris.org/30STORIE.htm>

Silence

We haven't listened to anything but the wind since we arrived. No television, no radio, no stereo. The silence here has a variety of textures. In the dark of the night, walking through the barracks, silence is a palpable creature just behind my shoulder. ...

While we were walking the state line, at 7:24 AM, as I faced Needle Point, and Kevin faced south toward town, a herd of seven antelope galloped from behind Anna Smith Elementary School, not one hundred feet behind my back... Almost close enough to smell them, their hooves beating the ground they flowed past me across the state line and up into the Leppy Hills of Nevada. At 8:19, as we were photographing next to the few houses crawling up the hill past the Wendover Cinema, a radio blasted out the window, erasing the morning's silence with the one two rhythms of the nineties.

This study creates a visual and narrative compendium of the dying practice of pedestrian land use. In so

doing, the paper seeks to raise consciousness of the simple act of walking and how it can change the built world. The artist population offers a uniquely visual and narrative perspective on the world they walk through. The landscape of walking creates a narrative, both visual and intellectual, that can reclaim our towns and cities from the automobile, if we pay close enough attention.

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THE SEARCH FOR APPROPRIATE FORM: THE INTERACTION BETWEEN ART AND LANDSCAPE ARCHITECTURE IN THREE TIME PERIODS

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Historically, whenever the framework of landscape design criteria changes dramatically, landscape designers have looked back to art to seek design guidance for new and appropriate form development. Art, in the form of design and painting, was seen as a much older and more respected profession than landscape design and landscape gardening. Much of landscape design, in the middle ages and the early renaissance, was seen as gardening, with an emphasis on horticulture and its practitioners had very little training in basic design. Therefore when new design forms were needed, dictated or called for, the landscape gardeners, designers or architects did not have the requisite design skills to adapt. Because of that they were told to go back to basic “art” to seek solutions or approaches to seeking new design forms. This has happened at least three times in the history of landscape design:

- During the transition from formal to naturalistic design, 1700 - 1800 a.d,
- During the transition from the Beaux Arts to modern design, 1938 - 1958 a.d.
- During the movement from modern to environmental design - 1960 - 1990 a.d.

Phase 1

When garden designers left the safety and security of the French and Italian formal garden design and sought new forms which were more natural and informal here existed no precedents for them to follow. What is an appropriate for for more egalitarian clients which seems natural and requires less maintenance over its lifetime?

Decisive influence on the composition of new gardens was exercised by the architect and painter William Kent. He went on to become a landscape gardener, a profession in which he used the rules of composition to be found in landscape painting. Alexander Pope was an English poet who believed that “All gardening is landscape painting” When the traditional formal garden was discarded there was a search for form in the new garden genre. As a part of that search the artist Hogarth outlined a “line of beauty” based largely on the human female anatomy. This, then, was applied to

landscape, furniture and other types of design.

Phase 2

As contemporary landscape architects moved from the Beaux Arts style to “modern” landscape design they searched for “form givers” to embody the new concept that “form follows function”. They searched in modern art, in oriental landscapes and in nature for new and relevant garden and landscape design guidelines. Garrett Eckbo referred to the work of Kandinsky and other modern artists in his work, Thomas Church referred to both Arp and Aalto in his design of the Dewey Donnell swimming pool and Roberto Burle Marx borrowed from his own paintings in his landscape design.

Phase 3

The environmental art movement began in the 1960's because the artists wanted to remove their work from the commodity status of art, they wanted to contribute to improving the environment and they wanted to work at larger scales in the environment. Architects such as Maya Lin, sculptors such as Isamu Noguchi and Robert Irwin, landscape architects such as Peter Walker and Martha Schwartz (who had been trained as an artist) and artists such as Maggie Keswick (along with Charles Jencks) all began to become involved in large landscape projects.

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YGGDRASIL AS MAP: THE LOCATIONS OF THE LARGEST BRONZE/IRON AGE BURIAL MOUNDS IN SCANDINAVIA AS POSSIBLE EVIDENCE OF AN INTEGRATIVE SOCIAL DIMENSION

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Recent scholarly discourse in Scandinavian middle-ages history and archaeology focuses on the wide spread symbolism of the ancient Norse world tree, "Yggdrasil". At the same time, landscape historians, archaeologists, geographers, and others are becoming increasingly interested in larger landscape contexts of pre-modern cultures. The expression of this iconic embodiment of a world tree as religious cosmos generally takes the form of images in stone carvings, tapestries, grave structures and mythology recorded in 13th century Iceland. The present paper explores the possibility that the ultimate and primary Yggdrasil was a geometrically formalized large-scale framework composed of coincidental most significant natural features on the Scandinavian landscape. This structure, it is hypothesized, became the basis for the location of the largest of Bronze/Iron Age burial mounds, possibly socially integrating social groups in areas that today are Denmark, Sweden and Norway. The paper builds an argument for an expansion of scale of Eliadian ritual spatial structures--north south axes mundi and centering cross patterns--to large landscape scales, and a concomitant moderation of competitive authority of chieftain burial sites to a greater, more cooperative and integrative "georitual" landscape. This work depends as well upon the accurate, computer based analysis and statistical testing of these patterns; a discussion of ancient surveying practices is included.

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TIPPING POINT DOUGLAS: EMPOWERING NEIGHBORHOOD RESIDENTS WITH NEW LAYERS OF ANALYSIS FOR LANDSCAPE ARCHITECTS

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The role of the designer in re-imagining urban environments can take on many forms, including masterplanner, facilitator and negotiator, all with varied levels of influence and engagement. This paper will evaluate the role landscape architects offer for affecting neighborhood change through their attitude toward the players involved and their prescriptions for environmental change. The authors describe a design process for working with neighborhood organizations and provide a conceptual framework for landscape architects to successfully put themselves in a position to evaluate change from a resident's perspective. The study revolves around the conceptual idea of minimal intervention and its ability to catalyze citizens, thereby creating community "tipping points", an idea put forth by Malcolm Gladwell in his book entitled *The Tipping Point: How little things can make a big difference*. Three methods of inquiry for landscape architects that offer a new lens for viewing urban environments and the players involved will be discussed: network analysis, tipping levels, and power flows. A case study will be presented for an urban design project in the Point Douglas neighborhood of Winnipeg, Manitoba, Canada, that employs these methods for assessing a neighborhood, and in turn assesses these methods. The research findings center on the projects outcomes and the conclusion that the landscape architect's choice of lens can, and often does, create a tipping point for complex design problems.

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UNDERSTANDING THE ROLE OF EMERGING GEOSPATIAL TECHNOLOGIES IN LANDSCAPE ARCHITECTURE: PPGIS, VGI, AND VIDEO GAMES

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This paper will present short case studies of innovative geospatial applications that are changing GIScience and will identify specific impacts relevant to landscape architectural research, practice, and education.

Geospatial technologies have been an important force in landscape architecture (LA) since at least the early days of the Computer Graphics Lab at Harvard (1). But, the forces for change in Geographic Information Science have not always paralleled the outcomes produced in LA. Public Participation GIS (PPGIS) has become an established area within GIScience, forcing a socially-responsive reconsideration of this seemingly objectivist technology (2). PPGIS focuses on ways the general public uses various forms of geospatial technologies to participate in public processes, such as mapping and decision making. The emergence of PPGIS as an interdisciplinary field of inquiry has created conflicted dialogue as scholars and students from many traditions endeavored to develop common theory from disparate vocabularies and theories.

Neogeographers are creating their own highly visible tools and innovating outside traditional disciplinary boundaries, advancing an area of work called Volunteered Geographic Information (VGI). One example is the enormous amount of geospatial information that is being generated through crowdsourcing using Google Earth, a free software package that has been downloaded over 350 million times (3). VGI has also quickly gained academic credibility in the literature and following an NSF-sponsored Specialist Meeting on the topic (4). Both VGI and PPGIS have implications for the practice of landscape architecture.

This paper will summarize the emerging literature on VGI and PPGIS within the existing framework of landscape architectural consideration of geospatial information. It will present case studies demonstrating how Google Earth, web map hacks, custom programming and video games like Second Life are all contributing place-based information to online

discourse in a manner directly relevant to landscape architecture. Findings will illustrate both significant risks and benefits associated with this rapidly advancing technology which remains far beyond our ability to control.

This paper is important because the discussion of PPGIS and VGI brings an extensive dialogue from allied fields into our knowledge realm. The energy and impact of the excited innovators and crowdsourcing masses represent forces we need to acknowledge. While early GIS may have allowed landscape architects to reach into the world of geography, today's technology is allowing untrained neogeographers to tinker in landscape architecture, risking a new potential form of marginalization for the profession and members of the communities we purport to help (5).

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INSIGHTS FROM THE FIELD: EVALUATING TRANSDISCIPLINARY ACTION-RESEARCH THROUGH THE LENS OF THE “SURVIVOR COMMUNITY” HEURISTIC

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A faculty position in a Land Grant Institution will occasionally present opportunities to participate in the development, implementation, and evaluation of projects and programs that address fundamental needs in communities that are little understood by the planning and design professions. When outreach faculty approach these opportunities as practitioner/researchers, informed by theory and methods from education and the social sciences, they can contribute to the growth of knowledge in theory, methods, practice, and pedagogy in professional planning and design disciplines in ways that will allow these professionals to work respectfully and productively with these communities.

Such an opportunity arose in the 2001, when one of our neighboring First Nations contacted the Department of Landscape Architecture for technical assistance with a planned affordable housing development in a nearby community. Over the subsequent years, upon the recommendations of our professional colleagues and local leaders in that community, and with support from the state, federal, and non-profit organizations with whom they work, the faculty team who responded to that request has developed partnerships with planning professionals and local leaders in several First Nations across the state.

These transdisciplinary partnerships have engaged a broad scope of projects and programs, including: participatory land use and masterplanning; site design; stormwater management; housing design; and hands-on jobs training in “green” home construction methods and materials. Participants have included local professionals; elected officials; non-profit staff; community members; faculty and students from nearby Tribal Colleges; local artisans and tradespeople; professional architects, engineers, and planners; and faculty and students from landscape architecture, planning, architecture, engineering, and environmental studies programs.

The methods of inquiry overviewed in this paper are framed by the idea of a “Science of Transdisciplinary Action-Research” (Stoklos 2006), informed by the

theories of Dewey, Friere, Habermas, and Subedi (1916, 1970, 1971, 2004 respectively), using research methods informed by sociology and program evaluation research, and guided by the definitions of “community capacity” articulated by the US Centers for Disease Control. This paper will: articulate a heuristic that emerged from this approach (theory); describe how this heuristic informs ongoing program development and evaluation (methods); offer a series of vignettes that illustrate how this approach is helpful when working with communities that fit the description of “Survivor Communities” (practice); and how this approach is integrated into professional education (pedagogy).

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DESIGN BUFFET: SERVING MULTIPLE CONSTITUENTS IN A COMMUNITY-UNIVERSITY PARTNERSHIP

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Through a proliferating number of cases, community-university partnership has emerged as a model for higher education institutions and local community organizations to collaborate on projects and initiatives and achieve mutual benefits (Rubin 2000). Unlike the consultant model of service learning with limited involvement in the community process, community-university partnerships often engage a broad range of players (e.g., students, residents, university, community-based organizations, and public agencies) in a collaborative, less hierarchical, and more dynamic pursuit of social and educational goals. However, while the model offers opportunities for the different partners in terms of learning and organizational capacity, the experiences also present challenges for those who are involved (Forsyth, Lu and McGirr 1999; Reardon 1998). Specifically, there is an increasing level of complexity in balancing the needs and objectives and in bridging the differences among a proliferating number of players and constituents. The diverse needs, perspectives, culture of organizations among the different partners can often lead to tensions and conflicts (Dewar and Isaac 1998; Prins 2005).

This paper examines a recent design studio involving students and faculty from the Department of Landscape Architecture at the University of Washington (UW) and their community partners in Seattle's International District – a neighborhood with predominantly Asian American populations. Building on the model of partnership, the UW students worked collaboratively with high-school youths from a community-based program to develop a redesign of a neighborhood park that would serve the area's children, youths, and elders alike. Using "Design Buffet" as a participatory technique, the studio engaged the elders, youths, and university students in a collective design exercise to find common ground that bridges age, linguistic, and intercultural differences among the participants and park users. Based on participant observations conducted in the studio process, this paper examines how the studio and the project negotiate the likely conflicts and differences in both the participatory process itself and the design of the park. Focusing on both the participatory technique and the

studio process, the paper reflects upon the capacity of service-learning studios in serving and engaging diverse interests and participants in a community-university partnership. It argues that while the complexity and the differences among the various participants present a difficult challenge to the studio, it is through which that learning and creativity can occur and expand the realm of landscape architecture education and practice.

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EVALUATING MULTICULTURAL LEARNING IN A COMMUNITY-BASED DESIGN STUDIO: LESSONS FROM THE EAST ST. LOUIS ACTION RESEARCH PROJECT

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Community-based learning, or service learning, in the context of low-income communities of color is generally applauded as a strategic use of university resources to underserved communities and a multicultural context for student learning. Recent attention to the potential race and class differences between students and community has led to intentional multicultural education as part of service-learning instruction (Boyle-Baise 2002, O'Grady 2000). For landscape architecture, the community-based design studio is often considered an important opportunity to engage students in diverse settings and with clients from different ethnic, racial, and economic backgrounds, in order to extend learning outcomes to include increased cultural understanding and socially responsible design (Forsyth et al. 1999, Hill 2005). While community engagement and reflection are considered best practices to encourage multicultural learning, there has been limited evaluation into how they fit in the design curricula or studio format (Lawson 2005, Rios n.d.).

The University of Illinois' East St. Louis Action Research Project (ESLARP) has a twenty-year history of service-learning courses that engage design students with community partners from the City of East St. Louis. While the ESLARP studios have provided important services to community organizations and unique opportunities for students, how students process the experience – both in terms of academic learning and personal experience – has varied according to instructor and project. In particular, while having predominantly white and middle-class students work with low-income African American residents suggests opportunities for discussion and learning about race and class, this outcome has been largely assumed without evaluation or a structured approach (Reardon 1994).

To address this need, faculty from Department of Landscape Architecture and Educational Psychology initiated a research project to study students' personal and professional experiences in the program, as well as their perceptions of race, privilege, and racism. At three phases, students completed survey packets that

included questions based on established measures of racial attitudes and open-ended questions and participated in a focus group. Interpreting the findings in light of the multicultural service-learning and community-based design literature yielded four themes: multicultural learning framed in professional development, persistent racism, studio format limitations, and new interdisciplinary opportunities. Findings that the immersion experience and the disciplinary nature of the course did not provide sufficient opportunities for students to reflect at a personal level, the issues arise as to how explicit multicultural education should be within landscape architecture pedagogy and the level of instructor training and institutional support necessary to achieve desired learning outcomes.

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HERITAGE PLACES IN THE CZECH REPUBLIC: BUILDING BRIDGES THROUGH EDUCATION AND SERVICE

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In our increasingly global society, design professionals have many opportunities to practice throughout the world. As a result, practitioners are challenged to become familiar with diverse cultural settings and, in general, to become more culturally literate. The landscape architecture program at the Pennsylvania State University strives to prepare leaders in the field; such leadership requires sensitivity to intercultural issues as landscape architects trained in the US are asked to provide their expertise beyond national borders.

In 2001, the Department of Landscape Architecture at Penn State introduced a course where graduate students provide pro bono landscape architectural services to communities and organizations in the Czech Republic. The program has facilitated ten projects that involve valued heritage landscapes, ranging from proposals to re-establish historic open space linkages in the town of Decin to studies of potential impacts of a transnational highway upon the Cesky Raj, a UNESCO Geopark.

This paper discusses the program's background, methods, and examines outcomes in the context of program goals, with an emphasis on the reflection component of the service-learning process. Students learn appreciation for cultural similarities and differences through everyday encounters with local people, other students and professionals. Reciprocally, Czechs appreciate the students' professional point of view, work ethic, and inclusive approach to solving problems. The students try to leave a positive imprint through ideas that they generate about the historic landscapes that they study. They take away a greater understanding of Czech people and heritage as they see how Czechs negotiate daily challenges of democratization, development, and economic expansion, all evident in their rich landscapes. Among the outcomes have been invitations for Penn State students and faculty to participate in Czech heritage-related projects beyond their course involvement. Examples include the monastery park and garden in Bechyne, and the World Heritage nomination for the Kuks-Betlem Cultural Heritage Landscape.

The most important outcome has been discovering how people can come to common ground, in this case, through a shared vision of landscape.

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ERASING BOUNDARIES THROUGH ACADEMIC SERVICE-LEARNING

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This paper introduces the Erasing Boundaries Project by providing a critical overview of its April 2008 symposium papers, workshops and dialogue. The Erasing Boundaries Project unites faculty from Architecture, Landscape Architecture and Urban Planning disciplines in the shared goal of increasing participation by faculty and students in academic service-learning, achieving better integration of service learning in design and planning curricula, and fostering new collaborations between disciplines and community partners. With funding from NY/Pennsylvania Campus Compact and Learn and Serve America, the Erasing Boundaries Project is being spearheaded by four public colleges in New York and Pennsylvania.

In April 2008, the Erasing Boundaries Symposium, at City College, convened an interdisciplinary group of 60 faculty gathered together to hear 24 selected papers. The symposium asked: How can we overcome boundaries created by our own pedagogical strategies, professional education, disciplinary autonomy and academic curricula in service to communities and to academic service-learning? As the selected papers confirm, service-learning pedagogy is particularly suited to education in the design and planning disciplines, which are charged with shaping, improving and maintaining the communities in which we live. But, service-learning pedagogy engages specific teaching practices of reflection, integrated theoretical literature, service and community partnering and often proves messy and challenging to conventional studio teaching and learning approaches. Opportunities for transformative learning are often missed in community-based studios or classes that fail to adopt service-learning pedagogy. Such studios are more aptly defined as client-based field work or experiential learning and may risk reinforcing stereotypes and misunderstanding of the issues underlying complex social problems.

The symposium papers provide evidence of concern, among design and planning faculty, about how our implicit and explicit agendas, approaches and processes influence the learning process and service to the community. They are concerned about the ethics

and obligations informing our academic-community engagements and the best ways of engaging students in critical and reflective thinking about uncomfortable and charged issues of race/ethnicity and structural inequality. To adapt academic service-learning to the design and planning disciplines faculty are finding themselves turning to a range of thinkers, theories and practices including Paolo Freire, bell hooks, Donald Schon, transformative adult education, praxis, community design, participatory action research and placemaking.

As a challenging and important pedagogy, the presenters hope to broaden the understanding and embrace of academic service-learning and to encourage participation in the growing interdisciplinary academic peer network of the Erasing Boundaries Project.

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IS THE GRASS REALLY GREENER ON THE OTHER SIDE OF THE FENCE? A QUESTION OF SUSTAINABILITY

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This study sought to determine if residential front yards that have no turfgrass, called alternative landscapes, are more sustainable than front yards that have traditional turfgrass lawns. Five criteria of sustainability were selected to compare the two yard types: water use, chemical inputs, polluting equipment use, labor time for maintenance, and monthly costs for maintenance. Surveys were given to 68 homeowners in two urban Pittsburgh neighborhoods, half with turfgrass lawns and half with alternative landscapes. Sixty-one surveys were ultimately completed. This survey asked a total of 25 questions pertaining to the design, installation, and maintenance of the subject's front yard, but the subjects were not told the purpose of the survey. The survey answers were grouped according to yard type and analyzed for the five chosen criteria of sustainability. If, in the opinions of the subjects, the yards that have alternative landscapes use less of the five criteria than the turfgrass lawns, the yards were considered to be more sustainable. The findings show that this was true for chemical inputs, polluting equipment use, and maintenance costs. Due to the broad way the questions were worded, the study was unable to determine the outcome of water use; and lastly, the alternative landscapes proved slightly higher in labor time for maintenance. In secondary findings, the subjects with alternative landscapes were more satisfied with their yards than those with turfgrass lawns. They chose plants for their yards based on perceived ecological factors more than the subjects with turfgrass yards. And lastly, the subjects with either yard type who use landscape maintenance services maintained their yards in a less sustainable manner (for 3 of the 4 measurable criteria) than those who do their own maintenance. The implications of this study for landscape architecture are that alternative landscapes should be considered for residential design based solely on the two findings that were strongest: lower chemical inputs and polluting equipment use. The secondary finding of a higher satisfaction level of the homeowner could also be used to encourage their design. These findings, if also applied to larger scale projects where turfgrass was not required programmatically, would help to decrease chemicals and pollution in the environment, and may reduce maintenance costs.

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COLLABORATION IS KEY, A GRASS ROOTS AND AGENCY APPROACH TO EFFECTIVE WATERSHED IMPROVEMENT

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Non-governmental organizations (NGO) are important entities in the education of the general public and the monitoring of water quality within regional ecosystems. Because of their independent nature, there is often a lack of coordination between individual NGO groups, agencies, and a comprehensive understanding of regional issues and efforts. This study developed a model to identify organizations working within selected watersheds of the eastern Gulf of Mexico and categorized their efforts and programs. An analysis of this information could lead to focus areas for water quality issues within a region. A survey questionnaire was developed that organized data into education and program categories. The survey questions included categories regarding drafting of water quality ordinances, managing land, wetland restoration projects, conservation easements, proposed development planning, monitoring water quality, and education programs. The survey also included questions on major issues of concern within watershed, water quality ordinance effectiveness, and challenges to enacting water quality ordinances. Twenty-two environmental organizations that directly work within four watersheds were identified, and had completed and submitted the survey information. Twenty-one were non-profit organizations, and there was one private corporation. Seven groups were surveyed in the Biloxi watershed (Mississippi); five within the Tchefuncte and Bogue Falaya rivers (Louisiana); five in the Fish River watershed (Alabama); and five in the New River (Florida). This study revealed that environmental organizations are present and play an active and important role within each of the identified test watersheds of the Gulf Coast. These entities network with federal, state, and local governmental planning and environmental agencies, as well as other non-profit organizations; and are primarily concerned with conservation, enforcement, education, monitoring, and the drafting of water quality ordinances and standards. The results from the survey revealed that the efforts

conducted within watersheds varied in programs resulting in gaps in critical water quality effectiveness. Multi-agency and non-profit organizations that are part of a larger comprehensive umbrella organization are more effective than individual organizations addressing singular issues. This method provides better avenues for missing program components and coordinates priority issues for watershed goals. The development of comparison models for NGO's could lead to better understanding for individual groups and their program development for regional water quality issues.

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PERCEPTIONS AND UTILIZATION OF RIPARIAN FOREST BUFFERS BY FARMING INTEREST LOCATED IN THE BIG SUNFLOWER WATERSHED

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The Landscape Architecture profession can develop a niche in conservation planning for the agricultural community that will help farms become more productive for the community and healthier for the environment. This study is an attempt to understand farmers' perceptions and use of riparian buffers for water quality in an agricultural-dominant area of Mississippi. A survey was developed and distributed to agricultural producers and managers in the Big Sunflower watershed of the MS Delta. The survey will inform the interested parties of producers' perceptions and uses of riparian forested buffers (RFBs), perceptions and uses of conservation practices that restore water quality, perceptions of their environment, perceptions of surface water quality, perceptions of governmental incentive programs, access to information sources for conservation practices, and perceptions and utilization of digital technology. An analysis of this data could lead to a better understanding of the knowledge and attitudes farmers have of the riparian systems and watershed processes at work within the region and the factors that influence the farmers' decisions of implementing conservation plans and conservation practices. The mixed-mode survey utilized one postal mail-out questionnaire of 1,000 active farmers and an announcement of the web-based questionnaire in a popular farmer publication of the area. The survey questionnaire was categorized in background/demographic information, conservation practices, RFBs, incentive programs, and technology use. The survey also included questions on wildlife importance, sources of information, and pollution of the watershed. The study revealed that farmers perceive a problem with water quality in the region and the watershed, but rarely on their own farm. Age, education, size of

farm, income, non-farming jobs, leasing land, and family members were all factors that significantly influenced conservation practice and RFB adoption rates. Farmers made use of the internet, Microsoft software, and GPS; but utilization of ArcView, ArcGIS and Basins/HSPF was insignificant. By understanding the farmer's perceptions and uses of RFBs, this stakeholder approach to conservation planning will help coordinate the needs of the agricultural community and the Big Sunflower watershed.

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OLD GAS STATIONS - NEW FUEL FOR ENVIRONMENTAL AWARENESS

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The purpose of this paper is to determine whether revealing the process of remediation will increase environmental awareness and result in a change in environmental behaviour. It is hypothesized that through an increased awareness of remediation, observers will develop pro-environmental attitudes. By exposing contamination and communicating the remediation processes, the public is provided opportunities to engage in advocacy and to lead more sustainable lifestyles. The remedial landscape used in this study is a temporary landscape that would be created for an abandoned gas station in the city of Vancouver, Canada.

Background

According to Environment Canada, there are over 1400 abandoned gas station sites that are contaminated across the country. Unbeknownst to local residents, many of these sites are undergoing remediation. Environmental psychologists indicate that pro-environmental behaviour stems from increased awareness of environmental degradation. Furthermore, by presenting first-hand experience in the form of landscapes in repair, observers are provided strong indices to affect behaviour and attitudes.

Methods

Methods include work by a literature review of similar studies conducted by environmental psychologists, precedent studies that exemplify eco-revelatory design, and a survey that was distributed to residents living near the contaminated gas station under study.

Findings

The work of environmental psychologists was examined to determine in what ways environmental behaviour can be affected. Literature indicated that observers' behaviour can be affected best through direct exposure to environmental degradation. Precedent projects by Kristina Hill as well as Julie Bargmann and Stacy Levy's project were examined to determine in what ways the remediation process can be revealed and communicated through the landscape. The survey results indicate that residents living near a site undergoing remediation:

a. want to be informed of the site's activities

b. want the site's activities to be more visible
c. believe that site remediation is a community concern
d. support the use of landscape as a tool for communicating site activities.

The public however did not indicate that the experience of the remedial landscape would affect their behaviour by decreasing their dependence and consumption of gasoline.

Design guidelines were developed and applied to a former gas station undergoing remediation.

Importance

There are currently thousands of opportunities across Canada and North America for further testing and development of this relatively unexplored land use. This represents a substantial area of work for landscape architects who are uniquely qualified to design and study remedial landscapes and their impact on environmental behaviour.

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POSTER SESSIONS

POSTER TITLES

Developing Eligibility Criteria for Daylighting Streams as Applied to Dallas's Mill Creek
Deepa Harkishore Koshaley

The Effects of Landscape Ecological Structure on Single Family Sale Prices
Woo-Hwa Shin, Byoung-Suk Kweon, Ph.D., Christopher D. Ellis, Ph.D., Jun-Hyun Kim

Learning from Experience in Design Disciplines: Towards a Knowledge-based Design in Landscape Architecture
Martin van den Toorn

A Conceptual Master Plan for an Environmental Estate on Palawan, Philippines
Helen Walthier

Preparing students for the marketplace with green building credentials
R. Alfred Vick

Design for Community: Exploring Mechanisms to Ensure the Success of Community Garden Projects
L. S. Milburn, B. Adams Vail

Shooting at a moving target: Teaching contemporary history and theory
Gary O. Robinette

Helping Students see the Trees in the Forest: Using Writing Trees as a New Technique for Improving the Quality Writing of Students in the Design Disciplines
S. J. Mulley; L. S. Milburn, A.O. Wilcox

Electric Spaces - A Private / Public Open Space Model in Tucson, Arizona
David Marhefka, Larui Macmillan Johnson

Integrating Habitats: Urban Ecotones
Ken McCown

What Place is this Class: Teaching Landscape Architecture and Environmental Art
Gary O. Robinette, Margaret A. Robinette

Bringing Back Nature into Cities by Greening Urban Surfaces
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Integral Landscape Architecture
L. S. Milburn, L. X. Curley

Developing a Sustainable Master Plan Through Participation: The Integrated Environmental Research and Education Site (IERES)
Michael V. Holmes, Dr. Dale M. Maronek

A Framework for Recording the Design Process
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Indeterminacy, the I Ching, and John Cage: A New Design Method for Landscape Architecture
Barry R. Morse, Lauri Macmillan Johnson

Ordinances and Water Quality in the Northern Gulf of Mexico: Comparisons, Correlations and case study
Kenny Langley, Timothy J. Schauwecker, Jason Walker, Michael Seymour, Mark Levy

A Wildlife Viewing Experience: Planning for Visitors to Whitewater Draw
Margaret Livingston, Eric Meadows

Paths Through the Wilderness: Planning a Rural Greenway System Through Southeastern Arizona
Zachary Babb, Margaret Livingston

DEVELOPING ELIGIBILITY CRITERIA FOR DAYLIGHTING STREAMS AS APPLIED TO DALLAS'S MILL CREEK

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The review of the literature indicates that stream daylighting is an important stream repair strategy; it is still in a developmental phase (Pinkham, 2000; Kitchell and Schueler, 2004). No standard design and construction details or references have been published, although several useful summaries and reports of individual projects exist. Criteria and guidelines are needed to help professionals assess and plan for the rehabilitation of urban streams. Through an examination of stream daylighting literature, including case studies of twenty completed projects in North America, this paper establishes common denominators in the daylighting process.

This study focuses on daylighting issues surrounding Mill Creek, a buried stream in Dallas, Texas. Historically, Mill Creek--once the longest and deepest creek in the city of Dallas--played an important role in the city's early development. However, over several decades the creek became an open sewer carrying human and industrial waste and the riparian system that enveloped the creek was removed as the developing urban framework encroached on the stream periphery in the name of progress. In 1910, the Park Board authorized city planner George Kessler to prepare a city plan for Dallas. According to the Kessler plan, parkways were envisioned along Turtle Creek, Mill Creek, and Cedar Creek in Dallas. Rather than following this plan, however, the decision was made in the 1930's to bury Mill Creek in underground storm sewers. Events in the past decade, including violent floods in residential neighborhoods and Baylor University's medical complex, revealed the extent of the subsurface drainage problems of the historic creek. According to the City's Master Drainage Plan for Mill Creek, partial daylighting is being proposed to mitigate these problems. A detailed evaluation of this proposal using GIS (Geographic Information Systems) was conducted, along with interviews of experts skilled in stream ecology, hydrology and daylighting processes.

The Mill Creek criteria were compared with preliminary criteria developed through the literature review in order to propose improvements to the stream daylighting decision-making process. The results focused

on important components and issues of decision-making for daylighting streams, rather than a detailed step-by-step protocol for stream daylighting implementation.

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THE EFFECTS OF LANDSCAPE ECOLOGICAL STRUCTURE ON SINGLE FAMILY SALE PRICES

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Previous studies found urban forests and landscaping improved the value of residential properties, commercial areas, and office spaces (Wolf, 2003; Laverne & Geideman, 2003). Anderson and Cordell (1988) found that trees were associated with a 3.5% to 4.5% increase in single-family sales price. In Henry (1994)'s study, homes with an excellent landscaping rating could expect a sales price of 4% to 5% higher than equivalent houses with good landscaping. Recently, quantifying landscape structure has become a critical issue as related to ecological processes, biodiversity, and ecosystem health. Although humans are a part of ecosystems, landscape structure is rarely examined relative to human habitat. To investigate the value of landscape structure on our lives, we explored its association with single family sale prices.

We randomly selected 640 single-family homes sold between 1998 and 2000 in College Station, Texas. Hierarchical multiple regression analyses were used to predict the effects of structural characteristics (sale date, lot size, built year, heated area), locational characteristics (distance to nearest park, distance to Texas A&M University), and landscape ecological indices on sale prices. Landscape indices were measured with classified satellite images (ICONOS) and calculated using FRAGSTATS 3.0. To examine distance effects, landscape indices were measured in two different sizes of buffers (i.e. 300ft vs. 300 to 1500ft) and tested in the models. Also, to avoid multi-collinearity problems, landscape indices were divided into two groups: 1) area, perimeter, number of patches, mean nearest neighbor; and, 2) fragmentation measurement index.

The model with four landscape indices showed that both buffer groups contributed to variance increments with $R^2=.003$ ($p < .01$). In the 300ft buffer, a higher

sale price was significantly associated with more trees and shrubs, less patch perimeter, a larger number of patches, and increased gaps between patches. For the 300 to 1500ft buffer, a higher sale price was related to more patch perimeters, fewer numbers of patches, and increased gaps between patches. In the model with patch fragmentation, single family home sale prices increased when trees and shrubs between the 300 to 1500ft radius buffer were less fragmented ($\chi^2 = .038$, $p < .000$, $R^2 = .001$), whereas fragmentation in the 300ft radius buffer was not related to single family home sale price. Findings show the importance of landscape ecological structure to both human and wildlife habitat, and will be of interest among both landscape architects and land planners.

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LEARNING FROM EXPERIENCE IN DESIGN DISCIPLINES; TOWARDS A KNOWLEDGE-BASED DESIGN IN LANDSCAPE ARCHITECTURE

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Landscape architecture as a design discipline has evolved out of the practice of cultivating the land, the making of gardens and the creation of urban landscapes. Professionally, landscape architecture at this moment is developing at an impressive scale. It still is a practice-based discipline that presently works on major projects based on demands of society like sustainability, urban development and the need for a new approach to water management.

Practice is developing rapidly both in widening the scope of work and in deepening certain specialisations. What is lagging behind is theoretical development as a foundation for interaction with professional practice, as a starting point for critical reflection and research. The introduction of the Bachelor/Master (BAMA)-based education system in Europe is a perfect moment to set up, extend and develop research in landscape architecture and integrate that in the new educational structure of BAMA. The newly created Master's programs in a great number of European schools offer new challenges for teaching design and research in landscape architecture.

In this paper we will work out an approach and outline for teaching design and research in landscape architecture. Goal of the paper is to work out and clarify the importance of research in landscape architecture and how this can be applied in Master's education. First of all we will give a brief overview of a recent development in landscape architecture; the transition from 'style-based design' via 'program-based design' towards 'knowledge-based design'. Secondly we will work out a model for research in landscape architecture that encompasses three different types of research; research as basis for the design process, 'design as research' or 'research by design' like plan analysis, precedent analysis, methodological research and thirdly the development of theory as a body of generic knowledge for the discipline. In the last part we will work out some examples, case studies and teaching methods that can enable this new relation between research and design based on the three different types of research in landscape architecture.

One conclusion of this paper is that the relation between research and design in landscape architecture can get new influxes from the interaction between research in day-to-day practice and academic research. Another conclusion is the need for a theory in landscape architecture as a starting point for research but also to make explicit the implicit design experience in the profession based on more than thousand years of practice.

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A CONCEPTUAL MASTER PLAN FOR AN ENVIRONMENTAL ESTATE ON PALAWAN, PHILIPPINES

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The purpose of this paper is to describe the research, design process and final conceptual Master Plan for an Environmental Estate which incorporates contextual, environmental and cultural considerations.

The outer island of Palawan is known as the "Last Frontier" of the Philippines. It is home to the provincial capitol of Puerto Princesa and numerous indigenous species, many of which are unique to Palawan. Palawan and Puerto Princesa are committed to environmental goals and in 1996 dedicated an 1100 hectare (~2700 acre) Environmental Estate along the coast of Puerto Princesa Bay.

Literature and existing project reviews included research on the three components of the Estate: 1. Scientific Research Centers and campus design; 2. Sustainable Tourism design including economic and social considerations; and 3. Conservation design for protection of sensitive zones and endangered species. This Master Plan incorporates ecologically sensitive principals including vegetative corridors, permeable surfaces, green roofs, and protection of indigenous species. Cultural elements are incorporated by the use and demonstration of local architectural materials, styles and demonstration of historical context.

Project methods included a two week site visit, interviews, case reviews, literature reviews, review of legal documents and design studies. Design implications derived from these methods were evaluated based on their success in satisfying five ordering system categories: aesthetic, environmental, economic, functional and socio-cultural.

Design implications from these methods were used to create a Master Plan which meets the needs of the environment, the governmental client as well as scientist and tourist visitors. Preservation of existing vegetation corridors and planting of indigenous species were design priorities, as were facilities for research of indigenous Mangrove forests, sea turtle breeding grounds, Dugong (Sea cow) habitat, and tropical rain forest. Ecologically sustainable facilities such as

wastewater management, desalination, and composting were included on the site. Design plans for several key elements establish the visual concept for the project.

This project is important to assist the Palawan government in creating a center for the scientific research planned for the Estate. It will create a living laboratory for ecological research, innovative ecological design, and the integration of scientists, local citizens, and tourists who work toward global environmental reform. It showcases ecologically sustainable amenities including rainwater harvesting, permeable surfaces, detention ponds, and local species.

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PREPARING STUDENTS FOR THE MARKETPLACE WITH GREEN BUILDING CREDENTIALS

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In the spring semester of 2008, a new course was offered at the University of Georgia titled Issues & Practices in Sustainable Design. The course was established as a required 2 credit hour seminar for 5th year BLA students, and available as an elective for MLA students.

The primary objective of the course is to prepare students to meet the growing need for landscape architects capable of contributing to green building projects as a part of an integrated design team. Instruction covered current trends and practices in the green building industry, as well as detailed investigation of the LEED for New Construction Rating System.

The syllabus established incentives for students to take the LEED Professional Accreditation Exam prior to the end of the semester. As more firms enter the green building practice, this credential has seen tremendous growth over the past few years and should make students that obtain it prior to graduation highly sought after.

As of May 6, with one week left in the semester, nine students have already successfully passed the exam and have become LEED Accredited Professionals. At least six more are planning to take the exam in the next week.

A survey of the students has indicated that a majority of them expect to utilize the information presented in this course as a part of their job responsibilities at their first job, and that this course has helped them secure entry-level positions upon graduation.

DESIGN FOR COMMUNITY: EXPLORING MECHANISMS TO ENSURE THE SUCCESS OF COMMUNITY GARDEN PROJECTS

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Whether providing sustenance during the World Wars, an avenue for grassroots activism in the 70s, or a local food source for a modern world focused on “sustainable” living, community gardens have proven adept at conforming to societal needs. Today, community gardens are implemented by a great range of organizations seeking to reap the community building and food security benefits commonly attributed to their success. Despite these benefits, community gardens often face a wide range of obstacles that can affect their long-term viability. This research attempted to address the issue of long-term success using two methods: a literature review and interviews with community garden leaders. In-depth interviews were conducted with four organizers of community garden programs to get a breadth of information on multiple gardens. Participants were chosen to reflect a range of community sizes, structural organization and geographic location.

Results indicate that community gardens have many benefits, including beautification, alternative recreation, a place to work, play and learn, reduced crime and vandalism, community food security, increased nutrition, positive connections with the Earth, and increased physical activity occur with the operation of the garden. However, some benefits are more complicated and require more effort and organization to achieve. These include youth education, community organizing, community development and intergenerational and cross cultural connections. Among these, the most overarching is community development which, “requires and helps to build community capacity to address issues and to take advantage of opportunities, to find common ground and to balance competing interests. It does not just happen – it requires both a conscious and a conscientious effort to do something (or many things) to improve the community” (Frank & Smith, 1999, p. 6). Achieving a community garden that also helps with community development requires stability among the people involved and the land

being used in the project (Schukoske, 2000). A community garden that effectively acts as a community development tool along with having secured land tenure and a sustained interest is one that will thrive. In addition, each of these factors can be expressed and enhanced through the design of the garden. Addressing these four issues at the start of the development of a community garden is feasible and will help ensure its success in the long-term.

The final stage of the project was the development of a flow diagram that can be used to guide a decision making process for developing community gardens with long-term stability. The study results were condensed into easy to read guidelines and suggestions so that community garden organizers can make informed decisions about what will work best for their particular situation. The process presents recommendations for those issues which were identified through research to be the most crucial for sustaining a long-term community garden.

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SHOOTING AT A MOVING TARGET: TEACHING CONTEMPORARY HISTORY AND THEORY

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Teaching contemporary landscape architecture is more difficult each year, since it is one year longer than it was the year before. There is also more literature being developed, not only on the past, but about new projects being planned and developed. To teach that history and to keep current and up to date is like shooting at a moving target, since both the history and the information expands each year.

Contemporary landscape architectural history began in 1841 (or earlier, according to some) and it needs to be taught in schools of landscape architecture. It is usually taught by some who has lived part of this period and knows it biographically. In my case I have lived 77 years of it, 52 years of it in the profession and 25 years teaching the history of this period. As I near the end of my teaching career I would like to present an outline and receive feedback or discussion on how this should be taught and what is the appropriate outline for organization of the data.

If 1841 is taken as the beginning of contemporary landscape architecture with the writings of Andrew Jackson Downing, then an appropriate outline of the subsequent periods seems to be as follows:

- The difference between historical and contemporary landscape architecture
 - The democratic client
 - The genius loci
 - The rational process of design
- The beginnings
 - The first great age of personalities (1800-1899)
 - The great age of institution building (1899-1929)
 - The great age of public service (1929-1945)
- The maturing years
 - The second great age of personalities (1938 -1960)
 - The first great age of office building (1949-1959)
 - Beautification and recognition (1960 -

1970)

- The environment, energy, history and the users (1970 - 1980)
- Behemoths and boutiques the old and the young (1980 - 1990)
- The locus moves out of the United States (1995)
- Sustainability, brownfields and drosscape (1990 - 2000)
- Security, water and international practice (2000 - 2010)
- The present and the future
 - Options and alternatives

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HELPING STUDENTS SEE THE TREES IN THE FOREST: USING WRITING TREES AS A NEW TECHNIQUE FOR IMPROVING THE QUALITY WRITING OF STUDENTS IN THE DESIGN DISCIPLINES

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Teaching university students how to improve their writing is often frustrating and unrewarding (Blackburn 1993, Campbell 1994). Teaching writing skills is closely allied with the improvement of thinking and reasoning skills (Ausubel 1968, Ruggiero, 1988). Traditionally the design disciplines such as landscape architecture, architecture and interior design have relied on faculty in other disciplines to teach and improve student writing. However, with the new focus on “writing across the curriculum” and evidence that first year English courses are particularly ineffective forums for improving writing (Davis 1993), the design disciplines face internal challenges to help students improve their writing skills. While a challenge, this also creates an opportunity for design faculty to teach writing in a way that better suits the learning styles, focus and understanding of design students (Vogel and Adelman 1993). Design students may face particular challenges in writing based on their mental processes and the way they conceptualize learning (Howard and Barton 1986). Cognitive or content mapping has proven to be an effective tool for enabling students who struggle with traditional educational structures and techniques to better cognitively process information and express their ideas (Markham, Mintezes, and Jones 1994, Hall and O’Donnell 1996, Pinto and Zeitz 1997, Osmundson, Chung, and Klein 1999, Ruiz-Primo, Shavelson, Li and Schultz 2001) .

This new technique uses a variant of ‘mind mapping’ or cognitive mapping to help students develop and articulate their writing, and to improve their quality of argument (White 1987, Collins, Brown and Newman 1989, Novak 1990, Novak 1995, Crandell, Kleid and Soderston 1996, Novak 1998, Freeman and Jessup 2004,). This technique uses an image visualization clear to landscape architecture students (trees) to examine how authors construct their writing, how students should marshal evidence for their writing, and how reports, papers and theses can be constructed. The image of branching limbs seems particularly effective for students in design programs, and

illustrates both the need for complexity of evidentiary support and the relative ease of planning such a structure.

The author has used this technique at both the graduate and undergraduate level, for term papers, reports and theses. Feedback from students has been overwhelmingly positive. Learning style inventories were used to better understand which students preferred this method of writing vs students who preferred a more traditional outline. In general students report that this technique seems “less threatening” in terms of their writing, and that they can more easily “break the writing into manageable segments”. Many students have reported that they experience less ‘freezing’ or writers block, and therefore are less likely to procrastinate in their writing. Anecdotal feedback from other faculty in the design disciplines who find writing for scholarly publication a significant challenge indicates that this technique can also improve their comfort and facility with writing and may encourage them to author and submit refereed journal articles.

Faculty in the design disciplines face increasing challenges in improving student skills in writing. While writing is often undervalued as a skill during their design education, as professionals graduated students quickly understand the importance of writing as part of their everyday practice. New techniques for learning, geared specifically for design students, are increasingly crucial for faculty in the design disciplines.

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ELECTRIC SPACES – A PRIVATE/ PUBLIC OPEN SPACE MODEL IN TUCSON, ARIZONA

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As the population of the southwestern United States continues to grow at record numbers, the need for electrical generation also increases. Construction of new electrical generating stations in this region has increased in the past 50 years. The trend in siting these facilities has been to construct them well outside of urban centers and away from residential zoning. But over time as the urban centers of the Southwest rapidly expand, some of these facilities have become integrated into the urban fabric with residential and other land uses situated adjacent to these facilities. Each electric generating station in the United States owns land ranging from 400-4000 acres, much of which is undeveloped and used for the ground water, which is used for steam and cooling during the generating process. As communities begin to encroach upon these facilities this land, which can be considered “open space,” becomes valuable to the communities as well. This report proposes a design solution that provides the community of Tucson, Arizona shared access to land that is owned by the UniSource Energy Company at the H. Wilson Sundt Generating Station, an operational facility, for public educational/recreational purposes.

This poster will present the design process and develop a design model that provides the community with a unique educational/recreational experience while respecting the context of the generating station site and that has the potential to be applied to similar sites.

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INTEGRATING HABITATS: URBAN ECOTONES

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Central Theme

This poster session will show the winning design and an honorable mention in the "Integrating Habitats" competition in Portland, Oregon. The competition asked entrants to examine the potential of integrating architecture and development with sound habitat design.

Context

This poster session will display the winning entry and an honorable mention in the international competition sponsored by Metro Portland and a series of developers. The competition asked entrants to examine how development could maximize profitability while allowing functional hydrology and habitat systems.

This set of competition designers used site planning techniques that show how design for good human habitat, urban design, is complementary to ecological habitat. Jurors Joan Nassauer and Stefan Benisch noted the importance of these site design decisions, how effective urban design can create a meaningful interface between human use zones, and sensitive ecological habitat areas.

Competitions are a bellwether, a place where designers investigate the edge of critical issues to predict trends and solutions to contemporary problems. These case study competition designs can teach about the implications of applied scientific research along with traditional construction and zoning in site development.

Method of Inquiry

The method of inquiry is a case study, a typological site provided in Portland, Oregon giving an urban and ecological context.

Findings and Conclusions

Interdisciplinary investigations between architects and landscape architects that use common theories can create powerful urban developments that endure by being ecologically feasible and economically viable in short and long-term cycles.

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WHAT PLACE IS THIS CLASS: TEACHING LANDSCAPE ARCHITECTURE AND ENVIRONMENTAL ART

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Environmental art is a relatively new phenomena which relates to certain aspects of landscape architecture. Landscape architectural students want to know more of the derivations, practices and results of large scale or environmental art and there are usually few or no classes available in art programs at the university level. The students in graduate programs need to know what is happening in related design field and how it will affect them in the future. Many landscape architectural professionals are required to work with public or environmental artists as part of their practice in public art programs or on collaborative projects. Yet there are few sources to gain information or insight on how the professions can or have worked together.

Such a class could be (and maybe should be) taught in every school but it can be taught very differently in each school and community. It is taught at the University of Texas at Arlington as an elective class with students from landscape architecture, architecture and the art program. It is taught in what we think is a unique way because of the distinctive characteristics of the DallasFort Worth community. This is a metropolitan area of 6,500,000 people which stretches for nearly 100 miles from north to south and east to west. What we have done is to use the location to teach the class in the community with the resources of this place.

Both Dallas and Fort Worth have public art programs and their staff members meet with members of the class and explain their processes and results. Dallas-Fort Worth International Airport has an extensive public art program and their staff members conducts tours for the students. Smaller airports such as Love Field and Dallas Executive Airport have initiated public art project which are available to the students in the class. Museums such as the Dallas Museum of Art, the Nasher Sculpture Gallery, the Kimball Museum, the Fort Worth Museum of Modern Art as well as the entire Dallas Arts District are available to the students

on field trips. The students also visit architectural, landscape architectural and development offices where collaborative projects are being planned or developed. One of the most exciting projects for the students is to visit the studios of the many environmental and public artist who live and work in this large metropolitan area. In addition visits to local commercial and public galleries to visit traveling exhibits are arranged as possible depending on schedule.

This has proven to be a very popular class in the curriculum and it is possible in any landscape architectural educational program. It can and should be different in form and content depending on the local resources available. We have found that it helps the graduates to make a singular contribution upon graduation as they move into professional offices and public agencies.

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BRINGING BACK NATURE INTO CITIES BY GREENING URBAN SURFACES

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This research attempts to transmit to students, and the public in general, the critical need to approach today's landscape architecture from a holistic perspective. It argues landscape architecture should focus not only on parks, squares, or streetscapes, but also on all urban surfaces within cities, including building roofs, building façades, urban voids, etc. The thesis is framed on contemporary global challenges such as peak oil, climate change, and population growth, to which cities contribute significantly. Furthermore, 2008 marks a threshold year in which the world's urban population has surpassed the rural- for the first time in history. By increasing urbanization, cities increase their negative impact on water and carbon cycles, and greatly consume the world's limited natural resources. All of these conditions prompt research to focus on the many surfaces of the urban fabric as crucial elements in returning ecological functioning to cities, and in seeking more sustainable alternatives to status quo development.

This research proposes to improve existing urban environments by greening building envelopes, roofs and façades, as well as streets. This also includes incorporating green energy retrofits to urban surfaces, such as photovoltaic and thermal panels. Such green interventions would directly affect urban environments, contributing to reduced building energy demand, improved water quality by reducing runoff, increased urban biodiversity and agriculture, reduced CO₂ emissions, improved aesthetic of urban space, and will ultimately reach the goal for carbon/water/waste neutral cities by restoring ecological functioning to their development and performance.

To quantify the benefits derived from such green interventions, the research analyses previous studies conducted, among others, in Berlin, Germany; Malmö, Sweden; Toronto and Vancouver, Canada; Chicago and Seattle, USA; and

Tokyo, Japan. It then applies the findings to a particular case study in the city core of Vancouver, Canada. It proposes to increase Vancouver's level of ecological functioning by greening part of its existing urban surfaces, such as façades, roofs and streets, by incorporating vegetation and green energy retrofits to them. The research concludes by providing the results of the proposed green interventions which are specifically focused on the reduction of energy demand by buildings, CO₂ emissions, and water and air quality. This attempts to show how greening urban surfaces would contribute to reintroducing nature and natural functions into cities. It argues for the need of re-evaluating how we are currently building cities, and suggests alternative, green intervention designs, which would contribute to reducing the environmental impact of cities.

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INTEGRAL LANDSCAPE ARCHITECTURE

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The profession of landscape architecture is suffering from a crisis of meaning and identity that is nowhere as apparent as in the minds and hearts of those who practice it. Attempts at defining landscape architecture seem to limit rather than free the profession. One of the reasons for this crisis of meaning and identity may be a lack of unifying theory in the discipline. Theory can help us codify knowledge as a basis for action, challenge existing paradigms of thought, and understand or interpret our world (Swaffield, 2002). A new theory of landscape architecture is proposed as a result of applying Ken Wilber's Integral Theory (Wilber, 2006) to landscape architecture. Wilber's Integral Theory is a meta-theory of reality which attempts to organize, honor and include as many known paradigms, disciplines, scientific discoveries and professions as possible. The theory maps the world we live in and determines that our knowledge and experience can be seen as fitting into five major categories. These five aspects are quadrants, levels, lines, states and types (AQAL). These five categories have been applied to landscape architecture to provide insight into the designed artifact (the site), the designer, the design process, and their relationships. The theory proposes the following:

- The landscape site can be seen through the AQAL perspectives of: objective (forms, bodies and behaviors on the site); interobjective (physical, ecological and social systems); subjective (interiors of individual users and consciousness of the designer); and intersubjective (meanings, morals, and cultural norms). There are eight levels from which people will orient to the site, lines which reflect the ability of the site to accommodate activities or level of functionality. Sites reflect different states as a result of changes such as seasons and weather, and can be described as types by use, form and zoning.

- The designer includes the four dimensions: subjective (intentions, values, etc.); objective (body, behaviors, etc.); intersubjective (cultural meanings,

morals, etc.), and collectives (ecosystems and social systems). Designers reflect different levels of development, are more advanced or skilled in some areas than others, and experience different states of awareness. Designers also reflect types such as gender and personality which influence how they orient to the world.

- The design process can also be viewed through the lens of the AQAL framework. It influences behaviors and form, the intention of the designer and stakeholders, is an artifact of practice, and reflects the shared meanings and agreements of the team and stakeholders. The process has levels (site inventory, design development, etc.), lines (will and care), and states (on schedule, etc.).

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DEVELOPING A SUSTAINABLE MASTER PLAN THROUGH PARTICIPATION: THE INTEGRATED ENVIRONMENTAL RESEARCH AND EDUCATION SITE (IERES)

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In the state of Oklahoma and the surrounding Great Plains Region, sustainable landscape practices that are becoming common place on the east and west coast have been very slow to gain acceptance with local municipalities and developers. As part of Oklahoma State University's Botanical Garden, a year long participatory design process was undertaken to develop a comprehensive site design focused on the research and demonstrate of sustainable landscape practices. The result of this effort was a master plan for the Integrated Environmental Research and Education Site (IERES - pronounced Iris).

The 20 acre IERIS site plan includes the several significant components: a green building to house sustainable education programs, a series of stormwater best management practices (BMPs), an "Utility Garden" that promotes the sustainable integration of utility infrastructure into the landscape and the efficient use of energy resources, an enhanced riparian corridors, and improved richness in biodiversity and wildlife habitat. These elements are connected through a network of trails that includes educational signage for all environmental research and demonstration components.

Phase one of IERES is currently under construction and nearing completion. This phase focuses on stormwater BMPs and includes a porous entrance road constructed of modular concrete pavers as well as two bioretention cells. A monitoring program measuring water quality and quality is being implemented simultaneously.

This presentation examines the collaborative processes used in this project, identifying successes and failures in the planning process as well as the results from the first phase of implementation, research, and education programs. This process included over 50 participants in a series of design workshops. Participants included members of state agencies, municipal planners and engineers, researcher, educators, as well as corporate

partners. As in most collaborative processes the varying agenda's of the individual participants present significant challenges but participation in the workshops series was critical to coalescing of several formal and informal research and education teams, as it is these teams that are currently focused on the site implementation and future program development for the different project phases.

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A FRAMEWORK FOR RECORDING THE DESIGN PROCESS

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The ability to reflect critically on one's design process is fundamental to pedagogical approaches commonly employed in studio settings. Yet students are often at a loss to explain how they navigate the various methods and strategies leading to a particular design proposition. This paper reviews a methodological framework developed to overcome this limitation. The intent of the framework is to help students record their design process in a manner that allows them to recognize patterns within their own process and to contrast these patterns with those of their peers. It was anticipated that the framework would also provide insights on how technology is effectively integrated in the design process and what transformative effect, if any, this has on design thinking.

The paper begins with a discussion of five definitions of design that are consistent with the aim of helping students consolidate their own design process: design as an iterative process, as a conversation, as reflection-in-action, as an act of form-making, and finally as a dialectic process. It then proceeds to describe the transformation of the methodological framework through three years of implementation in graduate design studios and its subsequent consolidation around a variation of Brian Lawson's revised categories of design tasks (Lawson, 2006).

Results from this experimentation support the view that the design process is iterative and specific to each individual. They also indicate that students tend to reflect on the strategic value of technological alternatives for various design tasks and choose to use digital media for ideation and representation tasks but non-digital media for formulation. Finally, while visualization and 3D modeling technology is readily used in the ideation and selection tasks much of the evaluation tasks are conducted simultaneously to the representational ones, typically with two-dimensional graphic design software.

One implication of this last observation is that many students end up testing their spatial propositions using two-dimensional representational tools, effectively maintaining an analogical disconnect between the symbolic constructs employed in design thinking and the ecological, cultural, and material factors that inform our experience of places. The paper thus concludes by asserting the need for reciprocity in design thinking through methods and strategies that present limiting

boundary conditions analogous to those found in the real world.

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INDETERMINACY, THE I CHING, AND JOHN CAGE: A NEW DESIGN METHOD FOR LANDSCAPE ARCHITECTURE

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This paper addresses the questions of how the adoption of a design method from another art form can contribute to the teaching and practice of landscape architecture: specifically, the often overlooked creative use of indeterminacy (i.e. "chance") as exemplified by the chance operations technique of composer and artist John Cage (1912-1992).

Much has been written about Cage's use of the I Ching to generate indeterminate results in his music compositions, lectures and visual art, yet there appears to be no documented application to landscape architecture. This paper could well be a forerunner in this direction of theoretical and pedagogical inquiry.

Following Cage's own adaptation of his chance operations method to visual art, this paper will demonstrate first, the direct application of such methods to the hypothetical redesign of an existing public plaza. Next, it will present a comparative evaluation among the new indeterminate concept and two preexisting designs - one the actual built design by Hargreaves Associates, the other design created in a graduate level landscape architectural studio structured within traditional design doctrines-that was conducted using non-partisan professionals in landscape architecture and architecture. The original plaza program objectives were used as a guide against which the three plaza designs could be evaluated for effectiveness.

A number of surprising discoveries occurred as a result of this process. For one, the impartial "judges", using only the existing Hargreaves plaza's original objectives as a "checklist", chose the new, indeterminate plaza as the overall most effective design. Other findings as a result of this research are more applicable to the history, theory, philosophy, and pedagogy of landscape design: that humans have a long, spiritual connection to

the landscape through indeterminate processes; that chance operations can "reconnect" the designer to the landscape through a highly interactive and spiritual design mode; that techniques from other art forms can be effectively applied to landscape architecture.

Teaching indeterminacy as a technique and philosophy may help student designers understand and accept obstacles and circumstances that are not in their control while also helping to release potential anxiety by exposing the landscape in a new creative light. As for long-range implications of indeterminately designed landscapes, this is impossible to say. The shamans of the Chou people who created the I Ching millennia ago could never have imagined the works of art it generated when in the hands of John Cage.

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ORDINANCES AND WATER QUALITY IN THE NORTHERN GULF OF MEXICO: COMPARISONS, CORRELATIONS AND CASE STUDY

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Significant planning and regulatory effort has been focused on the adoption of ordinances to reduce non point source pollution. The United States Environmental Protection Agency (EPA) has recognized non point source pollution as the largest source of water quality problems. Research into the influence of a variety of best management practices upon the water quality of individual sites is common. However, little investigation has been conducted into the influence of federal, state, and local regulations and ordinances at the watershed scale. A complex array of laws and regulations affect water quality beginning with the federal government's role and the requirements of the Clean Water Act. Since the 1987 Clean Water Act amendment, states have been required to implement non point source pollution control programs. The role of individual states in permitting, inspecting and enforcing federal mandates varies and some municipalities have also adopted regulations which have unknown effects upon water quality.

This paper presents the initial results of a study funded by the National Oceanic and Atmospheric Administration (NOAA) which was aimed at creating a method to explore the impact of ordinances and regulations on water quality and coastal resiliency. The initial phase of this study examined four gulf coastal watersheds, one each in Florida, Alabama, Mississippi and Louisiana.

The approach of these four states in addressing water quality were compared and contrasted.

County/parish and municipal ordinances and enforcement measures were examined and categorized using as a baseline the model ordinances created by the Stormwater Manager's Resource Center. These categories were expanded and a standard measure created for purposes of comparison. Water quality data from United States Geological Service (USGS) and EPA databases and Non-Governmental Organization (NGO) monitoring stations were compiled and correlated with the categorization of the associated local ordinances. Trends in water quality were correlated with ordinance characterizations.

A case study using the methods of investigation is presented. Covington, Louisiana represents a growing municipality in the age of water quality awareness. The watershed within which Covington is located has undergone comprehensive water quality monitoring since 2002. Using timelines, GIS and water quality data, we examine the effectiveness of various regulatory action on the water quality of Covington.

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A WILDLIFE VIEWING EXPERIENCE: PLANNING FOR VISITORS TO WHITEWATER DRAW

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There are major changes taking place within wildlife-related outdoor recreation activities. Traditional activities, such as hunting and fishing, are seeing participation figures stagnate or decline while wildlife viewing activities, primarily observing and photographing wildlife, are experiencing dramatic increases in participation. These latter activities have been labeled non-consumptive forms of recreation based on the fact that resources are neither captured nor harvested and in general they reflect the public's growing concern for environmentalism, habitat conservation, and resource stewardship.

Wildlife areas or refuges, established to protect important wildlife habitat and species, are likely locations where wildlife viewing participants go to view and photograph wildlife. Yet for many of these sites experiencing substantial surges in visitation, the additional visitors present management agencies with a number of problems in managing for both humans and wildlife. In response many agencies are establishing wildlife viewing programs, complete with site master plans. Regrettably traditional activity oriented recreation management strategies typically provide little use to agencies in helping generate wildlife viewing programs and master plans. Fortunately new recreation strategies have been developed which seek to be more accountable and responsive to both human and wildlife, all the while seeking to provide optimal wildlife viewing opportunities for participants. Within these strategies are discernable focuses placed on the experiential aspects of a participant's viewing excursion, means of enhancing the experience through habitat restoration and other wildlife management techniques, and the roles of educational and interpretive materials. Along the way all these concentrations produce implications and applications as they concern a site's physical setting.

Together with traditional landscape architecture planning and design techniques, these new recreation management strategies were used to generate a master

plan for the Whitewater Draw Wildlife Area. Located in Cochise County, Arizona the Whitewater Draw provides critical wetland and grassland habitat for a number of wildlife species, in particular migratory birds and waterfowl. The end goal of this research intended to create a responsible and informed master plan, for both humans and wildlife, which can serve as a model wildlife viewing area within the Southwestern United States. Key elements included: wildlife viewing visitor hub, interpretive center, wildlife observation blind, and wildlife observation bridge.

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PATHS THROUGH THE WILDERNESS: PLANNING A RURAL GREENWAY SYSTEM THROUGH SOUTHEASTERN ARIZONA

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Greenways are typically linear open spaces, often built along streams, railroad right-of-ways, and other corridors associated with human or natural systems. Greenways provide a multitude of uses including recreational opportunities, transportation alternatives, economic opportunities, and ecological protection. Areas associated with rapid development such as the arid Southwest have experienced significant increases and interest in greenway planning and design. However, the majority of greenway-related research has been conducted in urban areas outside this region, resulting in a scarcity of research applicable to the unique arid conditions and rural regions of the southwestern US.

The goals of this research were to: 1) identify traditional greenways planning strategies developed for non-arid regions applicable to the Southwest, 2) analyze and prioritize potential greenway opportunities along existing, retired railbeds in rural southeastern Arizona, and 3) describe how these greenway opportunities can be planned to account for unique conditions of the region, including preservation of natural and cultural amenities. Methods included literature and case reviews of greenway development and a GIS-based feasibility analysis applied to various segments of a proposed greenway system in rural southeastern Arizona. Study results provide communities and governments in the Southwest with effective strategies to draw upon for developing rural greenways in the region.

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