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ISSN 2471-8335

About Landscape Research Record: Landscape Research Record (LRR) is published annually and consist of papers focused on landscape architecture subject areas. Each issue is a collection of papers presented at the Council of Educators in Landscape Architecture (CELA) annual conference of that year. The conference theme is expressed in the subtitle of Landscape Research Record. All views expressed in papers published in Landscape Research Record are those of the authors and do not necessarily reflect the views of the conference planning committee, or the Council of Educators in Landscape Architecture.

Peer Review of Papers: All papers published in Landscape Research Record have been reviewed and accepted for publication through the Council of Educators in Landscape Architecture’s peer review process established according to the procedures approved by the Board of the Council of Educators in Landscape Architecture. Reviewers are recruited by track chairs from among conference attendees and other outside experts. The track chairs also serve as co-editors in the peer review process. The Council of Educators in Landscape Architecture requires a minimum of two reviews; a decision is based on reviewer comments and resultant author revision. Reviewers’ names are acknowledged in the REVIEWERS section of Landscape Research Record.

All CELA Standard Tracks are considered for Landscape Research Record. The CELA Standard Tracks (12) are: Communication and Visualization, Design Education and Pedagogy, Design Implementation (LA CES track), History, Theory and Culture, Landscape Performance (LA CES track), Landscape Planning and Ecology (LA CES track), People-Environment Relationships, research and Methods, Service-Learning and Community Engagement, Sustainability (LA CES track), Urban Design, and the Film Track (added 2015).

In This Issue: In 2012, the conference committee accepted 387 abstracts for presentation and rejected 81 abstracts (79.1% acceptance rate). Authors of these abstracts were invited to submit a full paper. A total of 45 papers were received and underwent peer review. Finally, 9 papers were accepted for publication in this issue (20.0% acceptance rate). The organization of this issue follows the order of conference tracks listed in the table of contents.

Previous Issues and Acceptance Rates: Landscape Research Record is a post-conference publication and published online only. Previous issues of Landscape Research Record can be accessed from www.thecela.org.
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We are delighted to present this third issue of *Landscape Research Record*, published by the Council of Educators in Landscape Architecture (CELA). In 2013, the CELA Board approved and adopted a procedure to become fully responsible for publishing peer-reviewed conference papers annually and named the publication *Landscape Research Record* (LRR). LRR is a post-conference publication and published online only.

LRR volume 03 is a collection of peer-reviewed papers presented at CELA 2012 hosted by the University of Illinois at Urbana-Champaign, with the theme “Finding Center: Landscape & Values.” The conference host called for a discipline-wide discussion as follows:

> From our vantage in the middle of the great North American continent, the theme Finding Center is easily understood as a multiple entendre. First and foremost, centering is a relational metaphor implying spatial, visual and phenomenal geographies. It can suggest moral, political, social, and economic centers, or “heartland” themes. It captures the disciplinary sense of returning to core, to basics and fundamentals. Centering is also the place where we hope to find ourselves—to be centered means to be graceful, simple, and grounded.

> With only a little effort, the conference theme can also imply a dialectic, a back-and-forth dynamic between a center and its opposite dimension—the frontier—and all that is marginal, peripheral, and innovative. “Center” may thus invoke the tensions between insiders and outsiders, between norms and deviations, and every sort of gradation to the edge. Depending on what it is possible to measure, we may find multiple centers, each having an impact on all the others. Centers shift as politics shift. Values that we find possible to tolerate or impossible to even imagine today, may shift tomorrow. The University itself is a type of center, a value-laden symbol of intellectual aspiration and community in a world that is rapidly changing. The theme challenges us to provide non-traditional social metrics for what we do, or to assess the values of pedagogy, research, service, and activism in higher education, yet may also accommodate time-honored and elemental values such as “health, safety, and welfare.”

> With all this in mind, we hope to re-evaluate notions of what is “central” for higher education, for landscape architecture, and for the direction of contemporary life. Participants in CELA 2012 are welcome to address the range of gradations and values inherent in the conference theme in a broad or focused fashion. There are interesting implications for CELA in resetting the margins of our field, of our influence, of our interests—as well as resetting our goals at several scales, local, regional, national, and global. Whether from a central perspective looking out to the horizon, or from a more liminal perspective peering in, we hope this conference will generate a critical and imaginative focus on the broad range of values expressed in our respective curricula, as well as in our various fields of practice.

Enjoy!

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COMMUNICATION AND VISUALIZATION

Edited by Kevin Thompson
FINDING MULTI-CENTERS: USING CROWD-SOURCING TECHNOLOGIES TO IDENTIFY COMMUNITIES OF LANDSCAPE ARCHITECTURE

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1 ABSTRACT
This paper presents findings from website-based analytics identifying social and geographic topic hotspots within the fields of architecture, landscape architecture, and urban design. Three crowd-sourced surveys are utilized to record thousands of user’s topic interests and pin-point locations on a global scale. Topics include projects, research, visualization, sustainability, and competitions within architecture, landscape architecture, and urban design. The surveys also identify user locations, topics of interest, day and time of contact, social sharing, and user demographics. Preliminary findings from the crowd-sourced surveys suggest that: a) the social process of making meanings through social media exchanges of knowledge facilitates multi-centered geospatial social groupings according to topical interests, b) similar social groups topical interests vary by geo-location suggesting place-based meaning formation, and c) traditional groups of planners, architects, and landscape architects share degrees of common topical interests related to competitions, projects, and research topics.

1.1 Keywords
Social media, landscape architecture, crowd sourcing, geo-location
2 GENERALITIES

With the increasing use of Web 2.0 applications facilitating user generated content and exchange, and the exponential growth in social media use, new evaluative methods for understanding the relationship between the individual, community and landscape are emerging (Centola 2010). Gabi identifies intensive networks for the virtual exchange of knowledge, data and information beneath the surface of an expanding built environment (Gabi 2006). Healey describes the knowledge produced by this intensive network as “a social process of making meanings, shaped by the situation, trajectories, activities and values of particular social groupings.” (Healey 2007) Hewitt, Taylor and Nassar have identified landscape architecture related organizations, commercial enterprises, educational institutions, individuals and landscape architects employing social media techniques as part of this social process of meaning making and social grouping (Hewitt, Taylor, Nassar 2011). However, no scholarly work to date has examined the broader influence and impacts of social media in shaping communities of knowledge within landscape architecture and related professions. This paper presents findings from website-based analytics identifying social and geographic topic hotspots within the fields of architecture, landscape architecture, and urban design. Three crowdsourced surveys are utilized to record thousands of user’s topical interests and pin-point locations on a global scale. Topics include projects, research, visualization, sustainability, and architecture, landscape architecture, and urban design/planning.

3 ORGANIZATION

3.1 Methodology

Data was mined from twitter feeds of 5 different sources representing the landscape architecture profession and important affiliated professions. The 5 sources included: the APA, the ASLA, World Landscape Architecture, and Architectural Record and Architizer as the AIA was not accessible. Data-mined twitter feeds were then analyzed using GEPHI network graphing software, and displayed to compare the global network connections of the 5 different sources. Analysis graphs displayed prominent network centers and linkages as distinct network graphs to illustrate each sources unique organization of centers and linkages. Data-mined network characteristics were also geo-located within the continental United States and globally to illustrate the geographical characteristics of the APA, ASLA, World Landscape Architecture, Architectural Record, and Architizer networks.

Data-mined tweets from each of the 5 sources that contained hashtag phrases with key words associated with the ASLA, such as; ”#landarch, and #landarchsd, were also collected using a Twitter search API. Hashtag phrases associated the APA, World Landscape Architecture, Architectural Record, and Architizer, were selected in a similar manner. A web site was utilized to send twitter messages to the data-mined twitter sources concerning a wide range of topics including: projects, research, visualization, sustainability, and architecture, landscape architecture, and urban design/planning. Data-mined tweets and retweets in response to the website stimuli were then analyzed for lexical diversity associated with professional nomenclature and geo-located. The most active social networks were selected from a list of the top 20 cities that correlated across the APA, ASLA, World Landscape Architecture, Architectural Record, and Architizer sources. The lexicographical content of the tweets from these cities were characterized to illustrate the making of architecture, landscape architecture, urban design/planning, and associated meanings.

4 FINDINGS

4.1 Network, National, and Global Graphs

The following graphs and diagrams represent the network analysis findings of crowd-sourced, data-mined twitter feeds from 5 different sources associated with landscape architecture and important affiliated professions. The graphs and diagrams are presented to describe a specific professional source

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1 Hashtag use has become a unique tagging convention to help associate Twitter messages with certain events or contexts. Prefixed by a # symbol with a keyword, a Twitter hashtag serves as a bottom-up user-proposed tagging convention. (Chang 2010)
networks from three perspectives: 1) graph analytical based on force atlas mapping, 2) national geo-location representing twitter account locations and their influence ranked by number of followers and lines of connection, and 3) global geo-location representing twitter account locations and their influence ranked by number of followers and lines of connection. In general the graphs and diagrams are developed according to three criteria: a) the larger and bluer the nodes, the more followers and more frequent communication between followers, b) the closer the nodes to the center, the greater the interconnection among the general network nodes and followers, and c) the greater the frequency of communication between node and follower the greater the network lines of connection change from red to yellow to green networks.

Analysis of the crowd-sourced data mined from the American Planning Association (APA) suggests that the network is loosely connected, with many followers tenuously interconnected on the periphery of the network, and virtually all of the most influential followers weakly connected to the larger network. National geo-location analysis identified most of the data-mined APAs influential followers on the East Coast, in Toronto, and Texas with significant traffic from several West Coast cities. The converging lines to the North Central United States represent the location of the analysis server. At a global scale, the data-mined followers showed mostly weak connections spread through most continents.

Analysis of the crowd-sourced data mined from the American Society of Landscape Architects suggests that the network is very densely connected, with many followers interconnected throughout the network, and virtually all of the most influential followers well-connected to the larger network from its center. National geo-location analysis identified data-mined ASLA followers throughout the United States, Canada and Mexico with many moderately influential followers and multiple lines of communication. The converging lines of the analysis server are not visible in the diagram. At a global scale, the data-mined followers showed many weak connections spread through most continents, but concentrated in Europe, and East Asia. There were several influential nodes in Central Europe.
Analysis of the crowd-sourced data mined from World Landscape Architect (WLA) suggests that the network is the most densely interconnected, with many followers intensely interconnected throughout the network, and the most influential followers spread throughout the larger network from its center to periphery. National geo-location analysis identified data-mined World Landscape Architect followers throughout the United States, Canada and Mexico with many moderately and very influential followers and multiple lines of intense communication. The converging lines of the analysis server are not visible in the diagram. At a global scale, the data-mined followers showed many intense connections spread through most continents except South America and Africa, and concentrated in Europe, Australia and East Asia. There were several influential nodes in England, China, Australia and Japan.

![Figure 4. Twitter Network: @archrecord, Diagram by authors](image)

Analysis of the crowd-sourced data mined from Architectural Record suggests that the network is loosely interconnected, with many followers intensely interconnected in discrete groups throughout the network, and the most influential followers on the periphery. The network seems to be made up of mostly moderately influential followers with concentrations in the East and some very influential followers in the South Central United States. The converging lines of the analysis server are visible in the Mid-West. At a global scale, the data-mined followers showed a moderate amount of weak connections spread through most continents, and concentrated in Europe, Australia and East Asia. There were several influential nodes in Europe, China, and especially Japan.

![Figure 5. Twitter Network: @architizer, Diagram by authors](image)

Analysis of the crowd-sourced data mined from Architizer suggests that the network is very interconnected, with many moderately influential followers interconnected throughout the network, and the most influential followers near the network center. National geo-location analysis identified data-mined Architizer followers throughout the United States, Canada and Mexico with many moderately influential followers and multiple lines of communication, and one highly influential follower in New York serving as a hub of networking. The converging lines of the analysis server are visible in the diagram. At a global scale, the data-mined followers showed many connections spread through most continents, and concentrated in Europe and South America. There were several influential nodes in Europe and considerable interconnection between Europe and South America.

Taken as a whole, the different network graphs illustrate the great variation between the social networks of the five data-mined organizations. The networks range from 1) loosely connected with many tenuous interconnections at the periphery, and most influential followers weakly connected to the larger network; to 2) very densely and extensively connected with most influential followers well connected; to 3) very densely interconnected with influential followers sharing a wide range of interconnections; to 4) loosely interconnected, with many followers intensely interconnected in discrete groups and the most influential followers.
followers on the periphery, to 5) very interconnected, with many moderately influential followers, and the most influential followers intensely interconnected.

4.2 Geo-located Cities: Total Traffic, Organic Traffic, Email Subscriptions, and Content

The following graphs and diagrams illustrate urban geographical and lexicographical content of social networks related to architecture, landscape architecture, and planning. Geographical and lexicographical analysis of crowd-sourced, data-mined twitter feeds, web site content, and email subscriptions were focused on topic preferences shared between these three kinds of crowd-sourced data. Preference topics included: projects, research, visualization, sustainability, and architecture, landscape architecture, and urban design/planning. A website called “The Architecture Report” was utilized to disseminate articles and videos concerning preference topics with great lexical diversity (unavailable through twitter alone), alerting the identified twitter sources of new articles and video as posted every several hours over a three month period. Email subscriptions were included as data sources to better simulate contemporary social media network components. Preference topics indicated in twitter, web site and email data were geo-located and topic hotspots were identified based on proximity to urban areas. Totals from all three data sources were developed, and graphs were generated to illustrate total traffic and individual traffic amounts from the twitter feed, website (google organic traffic), and email subscription data.

![Figure 6. Top Cities: Total Traffic All Sources (07.12.2011 to 01.12.2012) Diagram by authors](image)

Figure 6 illustrates the geo-located urban areas with the greatest amount of crowd-sourced twitter feeds, web traffic and email subscriptions associated with the preference topics. The 20 most active cities in total source communication represent major cities within all urbanized continents. Total source communications associated with those cities ranged from 409 to 124 with an average communication per city of app 194.

![Figure 7. Top Cities: Google Organic Traffic (07.12.2011 to 01.12.2012) Diagram by authors](image)
Figure 7 illustrates the geo-located urban areas with the greatest amount of crowd-sourced web site communications. Crowd-sourced organic concentrations develop from the clustering of shared social media communication among a consistent group of individuals via website. The 20 most active cities in organic traffic represent major cities within all urbanized continents. Source communications associated with those cities ranged from 123 to 30 with an average communication per city of app 56.

Figure 8 illustrates the geo-located urban areas with the greatest amount of crowd-sourced email subscriptions. Email subscriptions represent another form of website/social media content communication among individuals. Because Guatemala City exhibited nearly 4 times as many email subscriptions as the second greatest subscription total, it was eliminated from analytical consideration of the whole as an outlier. Email subscriptions associated with those remaining cities ranged from 47 to 5 with an average communication per city of app 17. Taken as a whole the crowd-sourced, geo-located data analysis related to twitter traffic, web site traffic and email subscriptions above suggest: 1) network user participation on all urbanized continents, 2) wide variation in the rankings of cities among the three crowd-sourced data sets, and 3) significant differences between the cities in the email list and the other two data sets. Taken as a whole, the three data sets above identified five highly ranked cities based on their averaged rankings in the three data sets, and the city’s total amount of traffic. New York City exhibited the highest average ranking and total traffic amounts (5.3 and 645), followed by Barcelona (>8 and 367), London (>8.7 and 371), Bogota (>9 and 316), and Melbourne (>11.3 and 275). Of these five, only New York, Cairo, and Chicago exhibited rankings and traffic amounts in all three data sets.
Figure 9. Top Content: All Traffic Sources (07.12.2011 to 01.12.2012), Diagram by authors

While the geo-location of the twitter, website and email traffic data is useful in understanding social media user geographic concentrations, and to better understand those concentrations within the larger network of communications (as illustrated in figures 1-5), understanding the lexical content of the communications is especially worthwhile to differentiate user topic interest between the different cities. Lexicographical analysis of these communications offers a useful method to achieve this goal. Lexicographical analysis of the crowd-sourced data, twitter feeds were analyzed for frequency of content. Figure 8 illustrates the specific topic content and frequency of those twitter feeds, derived from web site articles and videos addressing issues of cinema, urbanism, firms, the web site itself, rivers, consumption, facades, to name just a few. The frequency per specific topic ranged from 149 to 57, with an average of approximately 88 per topic. The most highly communicated topic areas among all the twitter feeds addressed cities, computer technology and visualization, specific firms, architecture, urban design, specific projects, and the landscape. Very little communication topics recognized sustainability or research. A significant number of topics focused on particular cities.

4.3 Select Cities: Landscape Architecture, Architecture and Urban Planning Topics via Twitter

To this point, analysis of professionally oriented twitter-feed networks related to architecture, landscape architecture, and urban design/planning has illustrated network characteristics, and their national and global reach. Similarly, analysis of twitter feed, website, and email subscriptions according to geo-location and general lexical content has illustrated concentrations of social media use in cities, and broad topical interest in computer technology, firms, architecture, urban design, and the landscape. Analysis of specific geo-located lexical content, however, was needed to clearly differentiate specific attitudes associated with a given urban geo-locations and the professions. Differentiated urban attitudes associated with the professions, and geo-locations were mined from the crowd-sourced twitter data, related to landscape architecture, architecture, and urban design/planning. Figure 10 illustrates the geo-located cities with the greatest amount of crowd-sourced twitter feeds associated with the landscape architecture as a topic. The 20 most active cities in total twitter feeds identify major cities within all urbanized continents. Source communications associated with those cities ranged from 45 to 7 with average twitter feeds per city of app 16. The most active cities for landscape architecture topics included: Petaling Jaya and Subang Jaya Malaysia, Melbourne Australia, London UK, Orel Russia, and New York US.
Figure 10. Top Cities: Landscape Architecture Topics via Twitter (07.12.2011 to 01.12.2012), Diagram by authors

Figure 11 illustrates the geo-located cities with the greatest amount of crowd-sourced twitter feeds associated with the architecture. The 20 most active cities in total twitter feeds identify major cities within all urbanized continents. Source communications associated with those cities ranged from 52 to 6 with average twitter feeds per city of app 14. The most active cities for architecture topics included: Vancouver, Canada, London, UK, Subang Jaya and Petaling Jaya, Malaysia, Krasnodar, Russia, and Athens Greece.

Figure 12 illustrates the geo-located cities with the greatest amount of crowd-sourced twitter feeds associated with urban design/planning. The 20 most active cities also identify major cities within all urbanized continents. Source communications associated with those cities ranged from 27 to 5 with average twitter feeds per city of app 10. The most active cities for urban design/planning topics included: London, UK, Orel, Russia, Istanbul, Turkey, Melbourne, Australia, Vancouver, Canada, and Seoul, Korea. Taken as a whole the crowd-sourced, geo-located data above suggests: 1) representation of cities in all urbanized continents, and 2) wide variation in the rankings of cities among the crowd-sourced data sets for landscape architecture, architecture, and urban design/planning. Taken as a whole, the three data sets identified six of the most highly ranked cities based on their average rankings in the data sets, and their total amounts of traffic: New York, London, Petaling Jaya, Melbourne, Orel, and Krasnodar.
Figure 12. Top Cities: Urban Design/Planning Topics via Twitter (07.12.2011 to 01.12.2012)
Diagram by authors

Figure 13 illustrates the six cities according to average ranking and combined twitter traffic from the architecture, landscape architecture, and urban design/planning twitter feeds. New York City exhibited the second highest average ranking and total twitter traffic amounts (2.3 and 80), followed by London with the highest average ranking and the second highest twitter amounts (1.7 and 63), then Petaling Jaya (5.0 and 57), Melbourne (4.7 and 52), Orel (7.3 and 42), and Krasnodar (11.7 and 33).

Figure 13. Top Cities: Urban Design/Planning Topics via Twitter (07.12.2011 to 01.12.2012),
Diagram by authors

4.4 Geo-located Cities: Lexicographical Analysis Graphs

In order to better understand the specific professional attitudes of cities, geo-locations were mined from the six top cities in Figure 13 using the Twitter API and geo-locational extraction at an extent of 5 kilometer Euclidean distance from the city center.
Figure 14 illustrates the different categories of lexical content in the twitter feeds from the six geolocated cities above, as well as a column dedicated to the lexical content shared by all six cities. The graph indicates that most of the data-mined twitter feeds (123) are shared by all six cities with the largest concentrations of content related to architecture (44), landscape architecture (32), urban design/planning (29), and sustainability (18). Amounts of twitter feed content specific to the six cities range from 40 to 18, with an average of app. 25.2 given 121 total specific twitter feeds.

Figure 15. Proportional Content from all cities, Krasnodar, London, Melbourne, New York, Orel, and Petaling Jaya, Diagram by authors

Figure. 15. Proportional Content from all cities, Krasnodar, London, Melbourne, New York, Orel, and Petaling Jaya, Diagram by authors
Figure 15 shows the proportional distribution of lexical content among the six cities. Distinctive twitter feeds specific to each city include lexical content related to varying proportions of architecture, landscape architecture, urban design/planning, sustainability, and military base conversion. Krasnodar, London, Melbourne and New York are relatively more interested in urban design than other cities, while Krasnodar is especially interested in military base conversion. Melbourne is less specifically interested in landscape architecture, but shares greater specific interest in sustainability with Orel. Petaling Jaya is specifically interested in architecture and landscape architecture at the expense of all other specific interests, and is more interested in architecture and landscape architecture than any of the other cities, while Orel’s specific interests more closely resemble the general interest of all cities. A sample of the lexical content shared by all six cities includes: building health, mixed use development, computing, social networks, landscape mapping, skyscrapers, capital city urban design, green urban design, sustainable design, participation, landscape urbanism, sustainable design, and consumption. A sample of specific lexical content of the twitter feeds from Krasnodar include: military base conversion, urban edge design, design for veterans, sustainable technology, and urbanism. A sample of specific lexical content of the twitter feeds from London include: 3-D computing, ecosystem services, infrastructure, megacities, and urban network analysis. A sample of specific lexical content of the twitter feeds from Melbourne include: transportation digital technology, mapping technology, visualization, infrastructure, and urban visualization. Sample feeds from New York include: urban network analysis, global urban design, school design, media, landscape urbanism, and urban edge design. Sample feeds from Petaling Jaya include: architectural visualization, infrastructure, and green roofs.

5 DISCUSSION

The paper has proposed that the use of crowd-sourced, social media, data-mined from twitter feeds, web site traffic and email subscriptions, can identify professional networks in terms of their network characteristics, geography and interests. This process of identification and characterization utilized crowd-sourced twitter feeds from five professional groups (the APA, ASLA, WLA, Architectural Record, and Architizer) to develop network analysis graphs and network geo-location maps at national and global scales. The process has also used crowd-sourced twitter feeds, web site traffic, and email subscriptions to identify, geo-locate, and lexicographically characterize social network activity related to major urban areas throughout the world associated with architectural, landscape architectural, and urban design/planning professional networks. And the process utilized crowd-sourced twitter feeds to identify, geo-locate, and lexicographically characterize specific professional topical interests within six cities with the greatest amount of social network activity within the global network. America.

Findings from these three analytical methods have identified distinctly different networks among the five professionally oriented social networks surveyed with great variation in connectivity, and influence.
Many are multi-centric and some more uni-centric. All of the social networks are global in scale reaching all urbanized continents with the majority of connections in North America, Europe, Asia, and Australia. The reach of the five social networks is extensive throughout the continental United States with most networks primarily multi-centric and some more concentrated in New York City, the north east, and the southern central United States. Findings concerning the cities most active with social networks reaffirm user participation on all urbanized continents, and illustrate wide variation in the rankings of cities based on twitter, web site or email data sets. Of more than 60 surveyed cities, only New York, Cairo, and Chicago exhibited rankings in all three data sets, reinforcing the idea of great variation among social network types. The most highly communicated general topical areas among all social media not specifically identified with each city addressed, computer technology and visualization, specific firms, architecture, urban design, specific projects, urbanism, and the landscape. A significant number of topics focused on particular cities. Very few topics specifically recognized research or sustainability per se (which upon reflection may reflect the potential limitations of our methodology in identifying a broader range of lexographical inferences suggesting greater interest in these topics).

Specific lexicographical findings concerning the six cities with most active social networks suggest widely shared topical interests among the cities representing all urbanized continents except South America and Africa. The six cities (New York, London, Petaling Jaya, Melbourne, Orel, and Krasnodar), however, exhibit distinctive specific topical interests that are proportionally distinct from all cities common interests, except for the city of Orel, which might be considered a model city for shared interests. Petaling Jaya is perhaps most unique in terms of its more exclusive interest in just architecture and landscape architecture. As a whole the findings from these three studies help form the basis for an initial description and definition of professional social networks globally, nationally and locally. They provide initial descriptions of how and where the professionally oriented members of these networks interact, communicate, and reside. They provide initial understandings of shared and distinct differences in interests and meanings among the social network members directly related to place. And they suggest hierarchies of social network influence among urban areas throughout the world.

6 CONCLUSION
The paper has sought to examine the broader influence and impacts of social media in understanding communities of knowledge within landscape architecture and related professions. It has presented methods that combine crowd-sourcing techniques with related web-site, social media and geo-location data and techniques to identify and differentiate social network characteristics and geo-locations of the most active socially networked cities throughout the globe. Preliminary results suggest a varied landscape of interconnection, location and topical orientation with many common themes connecting the identified cities. While these methods and findings are preliminary, they are definitive in the sense that no other such scholarly work exists to date concerning these issues related to our professions. Future scholarly endeavors offer potentially important correlations with network analysis work related to socio-ecological systems management, public health and urban design, mobility and transportation, and the creation of social and political capital.

7 REFERENCES


DESIGN EDUCATION AND PEDAGOGY

Edited by Terry Clements
DEWEY, ALBERS, NEWTON: AMERICAN PRAGMATISM AND MID-CENTURY DESIGN EDUCATION

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1 ABSTRACT
The goal of this paper is to sketch one element of the intellectual history of design education: the confluence of American pragmatism and Bauhaus modernism, particularly in the discipline of landscape architecture. An investigation of the philosophy of John Dewey, the teaching methods of Josef Albers, and the writings of landscape architecture professor Norman Newton reveal a number of intellectual consonances. Primary sources for this work are writings by the three principal players. Supporting sources are comments and writings by their students and by other investigators. These sources are analyzed hermeneutically to discern commonalities in the theories and practices of the three principals.

1.1 Keywords
pragmatism, modernism, Dewey, Albers, design education
2 INTRODUCTION

This paper sketches one element of the intellectual history of American design education at the college level. Its primary sources have been the published works of its principal players; its method has been the hermeneutic analysis of these sources with input from secondary sources in the literature. As a work of historical analysis, it does not attempt or claim to achieve the establishment of cause and effect relationships between the ideas it examines.

The present work is instead intended to illustrate an apparent consonance between the philosophy of American pragmatism of John Dewey, the teaching methods of Bauhaus and Black Mountain instructor Josef Albers, and the design theory of Harvard landscape architecture professor Norman Newton. (Newton is cited in this paper because of the striking similarity of his language to Dewey’s and because of the degree to which Harvard dominated the production of design educators in the mid-to-late-20th century. Other seminal figures, such as Stanley White at the University of Illinois, deserve attention and recognition as well).

William Perry, Jr. is another important player in this sketch. His work was influenced by Dewey and his conclusions, though derived from his work with liberal arts students, are particularly instructive in the context of the intellectual development of design students.

Plans for future work along this line of reasoning include the explication of the deeper historical roots of thought about design education and a study of contemporary practice in studio teaching in light of the conclusions reached here.

Design differs dramatically in its pedagogical practice from many other fields of academic study in a number of ways: 1) it lacks a body of theory comparable to that of mainstream education; 2) “learning by doing” through studio instruction is its primary means of teaching; 3) it appears that the underlying, unspoken philosophy of design education is much more closely aligned with Pragmatic thought than it is with either the Rationalist or Empiricist paradigms that inform most of mainstream education.

One important aspect of this work is an examination of the intersection of the Bauhaus expression of European modernism with the philosophy of American pragmatism. The focus here is on the thought and practice of Josef Albers after 1933 (when he left Germany and began teaching at Black Mountain College in North Carolina), particularly in relation to the philosophy of American pragmatist John Dewey.

Design education intends to help students gain marketable skills; at a deeper level, it is concerned with helping them harness, develop, and direct their creativity to produce positive change. Albers and Dewey both had intense interests and firm stances on that subject, and each has had profound influence on subsequent thinking.

A timeline of the lives of the principle thinkers and teachers, along with dates of selected publications and educational programs pertinent to the current discussion is shown in Figure 1.
The architecture program offered at the Massachusetts Institute of Technology initially in 1868 is often considered the beginning of design education at the college level in the United States. The Ecole Des Beaux-Arts in Paris was the primary pedagogical model for the MIT program (William Ware, the program’s founder, and many early instructors, had been Beaux-Arts students) (Pause, 1976, p. 20). “There were nine well-establish professional schools of architecture by 1898;” the level of Beaux-Arts influence varied (Weatherhead, 1941, p. 68). In 1900, Harvard instituted the first baccalaureate program in Landscape Architecture (Simo, 2000, p. 9).

Walter Gropius, who became the school’s first director, founded the Bauhaus in 1919. The eventual widespread influence of the Bauhaus can be attributed to 1) the fact that it was a formally (if loosely) administered school and was widely recognized as such; and 2) the creativity and charisma of its founder, who saw how to realize his vision and how to identify and seize opportunities for its proliferation.

Modernism was not invented at the Bauhaus. It had been evolving in both Europe and in the United States since the late nineteenth century, and the American design schools were not oblivious to it. Prior to about 1930, however, modernism developed more fully in Europe as a response to the far more pressing social and political circumstances that dominated there during the period. In the United States, innovation was geared more toward finding advanced technical solutions within an established stylistic paradigm than a matter of responding to new cultural realities by developing a relevant theoretical stance (Alofsin, 2002, p. 51).

With the onset of the Great Depression, and in presence of longstanding significant uncertainty in society, politics, labor, education, and other areas (Kloppenberg, 1986), a set of philosophical questions arose that compelled design schools to face the fact that a new way of looking at the world was necessary.
Beaux-Arts rationalism, with its roots reaching back through the Renaissance to Antiquity, did not provide a theoretical framework within which to create design appropriate for the modern world.

At almost the same historical moment, the Bauhaus lost its home in Germany, forced by the Nazi regime to cease operation in July of 1933. Its most famous faculty members fled to the United States: Walter Gropius to Harvard, Ludwig Mies van der Rohe to the Armour Institute (later the Illinois Institute of Technology) (Kentgens-Craig, 1999).

American pragmatism began its development as a formal philosophy with conversations in Cambridge, Massachusetts in the 1870s between Charles Sanders Peirce (1839-1914), William James (1842-1910), Oliver Wendell Holmes (1841-1935), and others (Menand, 2001), and was explicated far more thoroughly in the works of John Dewey (1859-1952), who contributed roughly 700 articles and 40 books published between 1883 and 1952. The fundamental epistemological basis for pragmatism, introduced by James and developed by Dewey, is the transactional paradigm, in which knowledge is viewed as an interactive, ecological system of object and observer within a specific environment.

3 PRAGMATISM

William James’s father was Henry James Sr., whose epistemology was based on a Platonic, rational, “belief in the unchanging reality of an unseen world, indifference to temporal moral distinctions, and anti-individualism,” which “belong to the conception of a closed and predetermined universe—the ‘block universe’—that William James designed pragmatism to subvert” (Menand, 2001, p. 88). William James did not merely disagree with his father’s rationalism by adopting an empirical, experience-based view of reality like that of Locke or Rousseau. Instead, he upped the ante by shattering the epistemological dichotomy that supports both paradigms. Both rationalism and empiricism depend on the independence of object and observer. James’s pragmatic viewpoint envisions the object and the observer as interacting players in a contextual environment, all three of which continually affect one another, none of which make sense in isolation. Many philosophers have tried to create unified systems to explain reality. The German Idealists Kant (1704-1804) and Hegel (1770-1831) tried to address the rift between rationalism and empiricism through synthesis. William James bypassed the need for synthesis by doing away with the supposed division: The “knower is not simply a mirror floating with no foothold anywhere, and passively reflecting an order that he comes upon and finds simply existing. The knower is an actor, and co-efficient of the truth” (James, 1878, p.17).

The epistemological foundation built by James allowed John Dewey to see a way for philosophy to become useful in a practical way: “Philosophy recovers itself when it ceases to be a device for dealing with the problems of philosophers and becomes a method, cultivated by philosophers, for dealing with the problems of men” (Dewey, 1917, p. 65). This is possible because James’s insight allowed Dewey to understand and develop his “particular mode of intelligence… the strategy he used in approaching every problem: expose a tacit hierarchy [or dichotomy] in the terms in which people conventionally think about it… We think that first there are individuals and then there is society; Dewey taught us that there is no such thing as an individual without a society. We think we know in order to do; Dewey taught us that doing is why there is knowing” (Menand, 2001, p. 330).

One reason the pragmatic project may ring true for a designer (particularly for a landscape architect) stems from the notion that the object and the observer are elements of the environment in which they exist, parts of an integrated system. The epistemology of pragmatism is ecologic; it would almost certainly not exist without Charles Darwin (1809-1882) (Garrison, 2009, p. 85). Context is key—for obvious reasons in landscape architecture, where natural process and social circumstance are always part of the equation.

The system envisioned here is more than an assemblage of parts working in concert, like a machine. An ecologic system grows and changes in response to stimuli from within and from without. Using it as a model for knowledge relieves us of both: 1) the fundamentalism of permanent, unchanging, rationalist truth; and 2) the relativism that results from a purely empirical vision of a separate reality existing in the mind of each observer. Pragmatic holism is far more than seeing the whole as greater than the sum of its parts. It gives us a way to move beyond the intractable contradictions in the ways we have viewed knowledge for centuries.
At the beginning of the twentieth century, eight percent of youth in the United States graduated from high school (Tyack, 1995, p. 48). The magnitude of the crisis was well recognized. Many solutions were proposed; two major categories emerged. The conservatives advocated more of the same: strict discipline, rote memorization—the clichés of the American schoolhouse. The progressives, on the other hand, promoted innovations that have often, but only partially correctly, been attributed to the work of John Dewey.

The Committee of Ten, led by Harvard president Charles Eliot, evaluated the state of American high school education in 1893. The committee "saw the high school as an agency for honing intelligence for its own sake but also as an institution for preparing students for careers in a complex and interdependent society" (Tyack, 1995, p. 50). It recommended a system that included four years of high school at the end of a twelve-year curriculum.

By the early 1900s, public education was widely understood as a basis for the political future, and as a business. Also at this time, when the efficiencies of industrialization were at the forefront of the cultural consciousness, education began to be envisioned in terms of production. The Cardinal Principles of Secondary Education were published in 1918 by a group generally comprised of professional educators who are referred to by some as "administrative progressives," who were largely concerned with creating a pervasive system for the socialization of youth. Of the seven Cardinal Principles, one addressed the traditional role of education—Command of Fundamental Processes (the three R's). The other six were: Health, Worthy Home Membership, Vocation, Civic Education, Worthy Use of Leisure, and Ethical Character (Commission on the Reorganization of Secondary Education, 1918).

The early twentieth century progressive movement in education defeated the conservatives. Much of what the administrative progressives accomplished has been erroneously attributed to John Dewey's educational philosophy. First, "what Dewey meant by progressive education has been so distorted by generations of well-meaning but ill-equipped educational administrators that its original significance has been almost entirely lost" (Kloppenberg, 1986, p. 374). Many of the results of so-called the "child-centered" philosophy of progressive education were so patently bad that John A. Rice, the founder of Black Mountain College and a Dewey devotee, wrote: "Progressive education, when it is stupid, is much more stupid than the other kind" (Rice, 1934). Dewey's philosophy, and the resulting vision for education, has been misunderstood by both educational conservatives and progressives (and by extension, by both political extremes), almost certainly because the philosophical underpinnings (particularly pragmatism's transactional epistemology) of Dewey's work are not grasped by the majority of people whose views of knowledge reside in the rationalist or empirical paradigms. Dewey is quoted out of context to accuse him of socialism and atheism on the one extreme (Smoot, 1962) and to justify woefully misguided schemes on the other.

"Ellen Condliffe Lageman has argued that 'one cannot understand the history of education in the United States during the 20th century unless one realizes that Edward L. Thorndike won and John Dewey lost’" (Tomlinson, 1997, p. 367) the battle for the future of American progressive education. Thorndike "shaped the curriculum, pedagogy, and organizational structure of the American school as well as the basic aims and methods of university-based inquiry… it is Thorndike’s conception of human nature and the social good, rather than Dewey’s, that permeates [the] century’s mainstream literature and continues to generate what Henry Giroux has called ‘a culture of positivism’ within American educational thought and practice” (Tomlinson, 1997, p. 366).

Thorndike and Dewey both embraced the scientific method; their interpretations and conclusions were radically different. Thorndike assumed that quantitative measures used in the hard sciences could be directly applied to psychology and thence to education. He is known for performing a number of foundational studies; he introduced new statistical methods into the interpretation of data. His work led him to conclude that all human action could be reduced to cause and effect sequences and that statistics held the keys to understanding human nature. This mechanistic view led to a vision for education based on an industrial model that was easy for the administrative progressives to adopt. Their methods owed far more to Thorndike’s way of thinking than they did to Dewey’s. Thorndike "saw educational science as a storehouse of objective knowledge… Dewey viewed it as a method of rational problem solving" (Tomlinson, 1997, p. 367). Thorndike’s instructional goals and assessment methods were relatively easy to quantify, generalize, and administer. Dewey’s were based on individual experience, were inherently personal, and were difficult to reduce to a procedure suitable for mass production.

Thorndike’s epistemology was based on a view of truth as a fixed entity—a basic characteristic of
the rationalist viewpoint, developed by Plato, that had led to the nineteenth century successes of positivist science and capitalist industry. Dewey’s transactional paradigm challenged the foundation of 2,500 years of western philosophy. “Our reliance on grand theories... is the kind of thing Dewey hoped we would grow out of. Understanding that there is nothing out there to refer to, no universal truth or framework informing our culture, represents a significant shift in human inquiry” (Moore, 2010, p. 61).

Dewey tells us: “Since growth is the characteristic of life, education is all one with growing... The criterion of the value of school education is the extent in which it creates a desire for continued growth and supplies a means for making the desire effective in fact” (Dewey, 1916, p. 32). In Thorndike’s view, heredity was the basic determinant of a person’s character. “The concept of growth was simply not part of Thorndike’s vocabulary” (Tomlinson, 1997, 1997, p. 373). His work was extremely influential: he wrote the seminal Educational Psychology and Introduction to the Theory of Mental and Social Measurements. His career at Teacher’s College of Columbia University (“the Sears, Roebuck of learning” (Rice, 1942, p. 318)) spanned forty years. He influenced large numbers of educators at all levels. Thorndike’s way of thinking is still a dominant force in education today, though probably more in evidence at the elementary and secondary levels (e.g. No Child Left Behind) than in college teaching. Following Thorndike’s lead, later “behaviorists succeeded in eliminating the distinction between training (for performance) and teaching that aims at the generation of understanding” (Glaserfeld, 1995, p. 4).

5 CONSTRUCTIVISM vs PRAGMATISM

The phrase “learning by doing” is commonly used in relation to John Dewey’s educational program. The curriculum of the Laboratory School, which he established at the University of Chicago in the 1890s, “called for a pedagogy that would build on the inherent interests of the children, while leading them to the accumulated wisdom of adults embodied in the established subjects. He urged teachers to structure the classroom as a cooperative community of inquiry, thereby fostering in children both the skills of scientific investigation and the character essential for a democratic society” (Westbrook, 2001).

The constructivist theory of education is often written of as a result of the work of Dewey (along with that of Piaget, Vygotsky, and others) (Phillips, 1995). Educational constructivism is based on the notion that “learners construct or build their own knowledge and meaning as opposed to having it ‘given’ or ‘delivered’ to them” (McColluch, 2008, p. 125). The resulting teaching practices are designed to create conditions that lead to the building of knowledge by students: curricular content that relates to students’ life experiences; methods that promote “learning by doing;” emphasis on social interaction in learning; building awareness and mental discipline through encouragement of metacognition and self-regulation; and the assertion that each learner is responsible for their education, and ultimately in control of it.

If one examines the nature of the educational practices of a typical design program, many constructivist techniques will probably be observed. Studio courses lead students to find their own paths, require that they work in groups, strive to help them understand their unique design processes. Students are often asked to draw on their own life experience and often an objective is to help them project themselves forward into their creative futures. Constructivist theory therefore appears to be closely aligned the means and methods of landscape architecture education.

The viewpoint of constructivism is summarized in contrast to the objectivist view in Table 1 below.
Table 1. Objectivist and Constructivist views of knowledge and learning. (Thanasoulas, 2011)

<table>
<thead>
<tr>
<th>Objectivist View</th>
<th>Constructivist View</th>
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<tbody>
<tr>
<td>Knowledge exists outside of individuals and can be transferred from teachers to students.</td>
<td>Knowledge has personal meaning. It is created by individual students.</td>
</tr>
<tr>
<td>Students learn what they hear and what they read. If a teacher explains abstract concepts well, students will learn those concepts.</td>
<td>Learners construct their own knowledge by looking for meaning and order; they interpret what they hear, read, and see based on their previous learning and habits. Students who do not have appropriate backgrounds will be unable to accurately “hear” or “see” what is before them.</td>
</tr>
<tr>
<td>Learning is successful when students can repeat what was taught.</td>
<td>Learning is successful when students can demonstrate conceptual understanding.</td>
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</table>

Constructivist education theory is today fractured by the very kind of epistemological debates that Dewey found to be so counter-productive (Geelan, 1997). Through the means of the transactional paradigm, John Dewey’s body of work is consistent in its foundational principles, one of which is the rejection of false dichotomies. The basic philosophical issue is his dismissal of the subject/object distinction (with its inherent two-level view of reality) that provides the framework for both the rational and empirical branches of western philosophy. He doesn’t want philosophy to be irrelevant; he wants it to be a useful part of everyday life. The failure of philosophers, in his view, is that they do not see that the subject/object dichotomy leads to bad assumptions about the nature of knowledge and thence to bad conclusions. “Philosophic systems in their opposed theories of knowledge present an explicit formulation of the traits characteristic of these cut-off and one-sided segments of experience—one-side because barriers to intercourse prevent the experience of one from being enriched and supplemented by that of others who are differently situated” (Dewey, 1916, p. 187).

The fundamental difference between pragmatism and constructivism is epistemic. James transcended the rational/empirical dichotomy and thereby provided the foundation upon which Dewey built a coherent framework of pragmatic thought. Piaget and Vygotsky did not take the transcendent step; the constructivists’ approach is dialectic, in that they seek to reconcile or synthesize their essentially empirical positions with rationalism by insisting on rigorous scientific method. (Piaget, 1970), (Fox, 2001). Constructivism is therefore in the position of having to balance mutually exclusive views of knowledge. Pragmatism bypasses that problem, but does so by seeing knowledge in a way that throws many people’s intrinsic beliefs about the nature of knowledge into question. The issue is whether one sees knowledge as residing in either the object or the observer, and therefore in need of synthesis, or whether one sees knowledge as a system of object and observer in an environment, a position that renders the idea of synthesis superfluous.

ALBERS

Walter Gropius on the pedagogic method of Josef Albers: “Albers has the very rare quality of a teacher who treated every student in a different way. When the student was unsafe of himself, and he couldn’t swim yet, so to speak, he pushed him into the water, and when he started drowning, then he got him and he was open for advice. He was just ingenious, doing that... He is really the very best teacher I could imagine because he brought the student to himself. Imitation was taboo, and he brought him really down to earth and developed him out of his own qualities” (Gropius, 2007).

Albers asked in 1941: “How can we develop imagination when the schedule of study confronts the student with merely with a set of given problems to be solved by a given set of solutions? To place theory before practice, knowledge before experience, or research before search will end in mechanical application of rules and tricks. Such schooling may develop laborers or imitative disciples but not imaginative and

The repeated experience of being “pushed into the water” leads one to develop some level of acceptance of the ill-ease that comes with ill-defined problems. The work of William G. Perry (1913-1998) (conducted at Harvard in the 1950s and ‘60s) helps us see the process of growth away from a view of knowledge that only operates well when problems are well-defined and have demonstrably correct answers to a view that facilitates solutions to poorly-defined problems without clear solutions (Perry Jr., 1999).

Perry found that college students progress through a sequence of epistemological positions when faced with the sort of ill-defined issues posed in the realm of liberal education. This growth sequence, when successful, leads them to a belief system that works for them in the absence of universal truth. The sequence Perry describes is not a series of stages à la Piaget—retreats occur, progress is not always permanent. Further, positions will vary across various areas of a person’s intellectual and personal life. Perry’s study group came to these difficult realizations about their views of knowledge over the course of several semesters. In design school the experience is more immediate (in Albers’s words: “I put them in a vacuum and teach them how to breathe” (Horowitz, 2006, p. 99). Even so, Perry’s work shows us a way of looking at the design education experience in the light of American pragmatism, as an epistemological shift toward the transactional paradigm.

Perry’s position of Commitment allows for decision-making in a relative world that does not become another level of unassailable Truth. William James writes: “The pragmatism or pluralism which I defend has to fall back on a certain ultimate hardihood, a certain willingness to live without assurances or guarantees” (James, 1978). Creative thinking is at least in part the ability to see relative truths in productive relationships without producing new dogma. “Giving up the ideal of certainty in knowledge, however, did not mean embracing skepticism or despairing of knowing anything at all; on the contrary, it meant tempering our judgments by the available evidence and refusing to make claims that the evidence will not support. As Peirce put it, referring to our cognitive powers, when we know the limitations of the instrument, we all the more secure in setting it to work” (Smith, 1999, p. 5).

Why does design education exemplify the pragmatic view? The question becomes even more interesting when one factors in the dearth of theory associated with design pedagogy. Design instructors rarely have training as educators—many simply teach “as they were taught.” “The rejection of top-down learning, the promotion of shared learning experiences, an openness to the new, education as problem-solving [all characteristics of Dewey’s pragmatic approach to education]: these qualities characterize art education virtually everywhere today, and can be traced back directly [not to Dewey via mainstream education theory, but] to Albers’s beliefs and teaching practices” (Horowitz, 2006, p. 252), (Crawford, 2013, p. 11).

Josef Albers was a student at the Bauhaus beginning in 1920, and a master there from 1925 until 1933 (Wick, 2000). Although some of William James’s work was translated into German by 1899, and several of Dewey’s works were translated before 1914, “the outbreak of World War I abruptly broke off the development of the pragmatism debate that had begun to spread through Germany in the pre-war years. The fact that it was not resumed after the war is one of the most significant lacunae in the history of German philosophy. Instead of a productive exchange of ideas there arose a long chain of misunderstandings and misconceptions of American pragmatism, originating from some of the most eminent German philosophers, and passed on with an amazing uncritical self-assurance to others” (Oehler, 1981, p. 27). Some Bauhausers may have been familiar with, or influenced by, American pragmatism, but it does not seem likely that pragmatism was a direct or powerful influence at the Bauhaus.

After the Bauhaus closed, Josef and Anni Albers moved to Black Mountain College, where they taught from 1933 until 1948. Josef Albers then became the head of the Design Department at Yale, teaching there until his retirement in the late 1950s. His courses at both institutions were in basic drawing, basic design, and the interaction of colors—courses that were well suited to his inductive concept of learning and teaching.

Black Mountain opened its doors in 1933 under the direction of John Rice. It was one of many progressive colleges that began operation in the 1920s and 1930s in the United States. At Black Mountain, the active learning of art in the context of a liberal arts education was seen as an essential part of the program. John Rice admired the work John Dewey, who visited Black Mountain on at least three occasions (Reynolds, 1995). “Through Albers, Rice, and [Theodore] Dreier, Black Mountain achieved a unique synthesis between American progressivism in education and European modernism that resulted in an exceptionally dynamic, creative atmosphere” (Harris, 2002, p. 14). There was clearly some level of philosophical consilience between the primary players.
However, the agreement does not seem to have been particularly explicit, at least in the beginning. Albers writes that the primary goal of the Bauhaus was to influence industry, but that “instead, we gained something else, something much more effective: a new visual education. We had a disorganized but very far-reaching influence on general education. This was an unexpected success. I do not believe that during the ten years of my life at the Bauhaus I heard the word ‘education’ mentioned. We talked a lot about design, production, and industry, but hardly about education. We simply tried to teach anew. In America today the mistake is made of talking of a Bauhaus method. We have heard that it is of no use to talk about the Bauhaus style because no style was sought. A Bauhaus teaching method was never intended, because each master developed his own method of teaching, independent of the others and especially independent of any agreed principles and aims of teaching” (Albers, 1993, p. 181).

7 PRAGMATISM AND DESIGN EDUCATION

One constant in the history of American design education has been the centrality of the studio teaching model. Though the teaching prevalent during the Beaux-Arts era was constrained by Classical style and Renaissance method (Rykwert, 1982), (Pause, 1976), the studio environment was characterized by a hands-on approach to learning. Certainly, many of the tenets of the constructivist model of education are manifested in the studio method used in American design instruction at the college level today; we can see how the modernism of the Bauhaus has helped solidify that orientation (Table 2 below).

Table 2. Beaux-Arts and Bauhaus views of art and design. (Crawford, 2013)

<table>
<thead>
<tr>
<th>Beaux-Arts View</th>
<th>Bauhaus View</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timeless truth and beauty are expressed in the</td>
<td>Classic forms and orders have lost their ability</td>
</tr>
<tr>
<td>language of Classic forms.</td>
<td>to express meaning in the modern world.</td>
</tr>
<tr>
<td>Students must learn the Classical orders through</td>
<td>In the manner of the Medieval builders, students</td>
</tr>
<tr>
<td>strictly disciplined and repetitive drawing.</td>
<td>must learn craft and the essence of materials</td>
</tr>
<tr>
<td>Art is related to a higher plane of academic reason.</td>
<td>Art must to be restored to its former level of</td>
</tr>
<tr>
<td></td>
<td>importance in everyday life through good design</td>
</tr>
<tr>
<td></td>
<td>applied to industrial production.</td>
</tr>
</tbody>
</table>

One point of agreement between the American pragmatists and the European modernists had to do with the vision of a system that “would give those who engage in industrial callings desire and ability to share in social control, and ability to become masters of their industrial fate. It would enable them to saturate with meaning the technical and mechanical features which are so marked a feature of our machine system of production and distribution” (Dewey, 1916, p. 175). This statement by Dewey is as clear as any written by Gropius to describe the goal and purpose of the Bauhaus.

History and geography, the studies of the stories of people and their physical places, deserve emphasis in Dewey’s view because he sees the continuance of culture as one of the most important roles of education: The “development within the young of the attitudes and dispositions necessary to the continuous and progressive life of a society cannot take place by direct conveyance of beliefs, emotions and knowledge. It takes place through the intermediary of the environment [which is] truly educative in its effect to the degree in which an individual shares or participates in some conjoint activity” (Dewey, 1916, p. 16). Teaching is a matter of creating an environment in which a community of learners can flourish and help individuals find their own ways of seeing. As Norman Newton, who taught landscape architecture at Harvard for many years, says: “I, for one, am especially interested in helping you to develop a way of designing—or of viewing design—that will be uniquely yours” (Newton, 1951, p. 77). That unique style or vision is developed by each student in the process of comparing his or her responses to design problems with the responses of other students.

Dewey’s educational philosophy is exemplified by Albers’s teaching method, the basic tactic of
which is to assign tightly focused tasks that require students to examine the capabilities of materials in the simplest terms. One might expect that all the students would arrive at the same conclusion, but in practice the results are quite varied. Upon examination of this multiplicity, students are compelled to think about how they see in relation to other students' visions. This is an example of the transactional paradigm—knowledge as a system of object, observer, and environment in relation to one another—in action. Meaning is dependent upon shared concrete experience.

Further, Dewey tells us that thinking “is the method of an educative experience. The essentials of method are therefore identical with the essentials of reflection.” These essentials are:

- A continuous activity that genuinely interests the student
- A problem within the activity or situation that stimulates thought
- The information and observational ability necessary to understand the problem
- The development of, and personal responsibility for, orderly solutions
- The communication of the student’s ideas and the testing of their validity (Dewey, 1916, p. 90)

Here Dewey has described a project assigned in a landscape architecture studio in a modern American design school.

William James defines truth as “the name of whatever proves itself to be good in the way of belief, and good too, for definite, assignable reasons” (James, 1904, p. 40). Norman Newton defines quality design: “Our only measure of ‘goodness’ or ‘badness’ in a work of design is the ultimate balance, so far as we can judge it, between the helpful and harmful effects it will have on living men and women and children… under the given conditions, at the given time, for the given purpose…. There does not exist any such dogmatic, unrelated, invariant fixity as ‘good’ design or ‘bad’ design. Design can only be good insofar as it does good” (Newton, 1951, p. 78).

Newton continues: “we have come to realize that a strong parallel exists between the structure of design and the biological notion of the organism-as-a-whole-in-an-environment-as-a-whole… that both through organism and environment there flows a continuing transactional [emphasis added] stream as each of them, acting through as well as on the other, affects and modifies it in manifold ways (Newton, 1951, p. 86). John Dewey: “All communication is like art” (Dewey, 1916, p. 7), “a process of sharing experience till it becomes a common possession. It modifies the disposition of both parties who partake in it” (Dewey, 1916, p. 9).

The transactional relationship also exists between the designer and the designed: “The creative process does not end with the thing created… [it] forms a great circuitous flow of happenings—a sort of organic recirculating system… that carries over into the structure of the work of design thus brought into being and then feeds back as the thing created exerts its effects upon the designer himself” (Newton, 1951, p. 49). In experience, Dewey tells us, “the brain not only enables organic activity to be brought to bear upon any object of the environment in response to a sensory stimulation, but this response also determines what the next stimulus will be” (Dewey, 1916, p. 183).

Process, rather than a fixed object to be produced, is at the core of Dewey’s vision—the “process of growth, of improvement and progress, rather than the static outcome and result, becomes the significant thing… The end is no longer a terminus or limit to be reached. It is the active process of transforming the existent situation. Not perfection as a final goal, but the ever-enduring process of perfecting, maturing, refining is the aim in living” (Dewey, quoted in (Hildebrand, 2008, p. ix).

William James “believed that a risk-assuming decisiveness—betting on an alternative even before all the evidence was in—was the supreme mark of character…. He also thought that certainty was moral death” (Menand, 2001, p. 75). The designer assumes risk with almost every decision, because almost every problem is ill-defined. Certainty inhibits the possibility of seeing new and different relationships, which amounts to creative death.

Dewey’s view in regard to creativity:

The doctrine that intelligence develops within the sphere of action for the sake of possibilities not yet given is the opposite of a doctrine of mechanical efficiency. Intelligence as intelligence is inherently forward-looking; only by ignoring its primary function does it become a mere means for an end already given. The latter is servile, even when the end is labeled moral, religious, or esthetic. But action directed to ends to which the agent has not previously been attached inevitably carries with it a
quickened and enlarged spirit. A pragmatic intelligence is a creative intelligence

John Dewey advocated, and Josef Albers practiced, an inductive teaching method that sought to
enhance creative intelligence. It began in the personal experience of the real world and moved to the
abstractions upon which we build shared meaning. The philosophical foundation for the method is the
transactional epistemological stance that at practically every turn questions assumed dichotomies. Based
on the evidence shown herein, this philosophy is at the heart of good design and good design education as
perceived in the twentieth century and beyond.

Given the parallels we have seen between pragmatism and design, it seems reasonable to follow
John Dewey’s example and question the validity of common dichotomies: Where, for instance, do we draw
a hard bright line between intelligent thought and practice? “Dewey, at an eightieth birthday celebration, is
reported to have corrected his tribute by saying that his philosophical effort had not been… as the tribute
had it, to practicalize intelligence, [it had] been to intellectualize practice” (Xu, 2010). Intelligence and
practice are not opposites. Dewey wasn’t speaking in favor of one over the other; he was speaking of
changing the way we look at the relationship between them. It is hoped that a continuing discussion of how
we might intellectualize the practice of design education will allow us to compare our thoughts, to
understand our positions relative to one another and within a historical framework, and thereby to establish
our own commitments to how we wish to design our own teaching philosophies.

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WEB-ENHANCED TEACHING OF LANDSCAPE ARCHITECTURE DIGITAL GRAPHICS: AN EVALUATION OF BENEFITS AND CHALLENGES

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1 ABSTRACT

With the rapid development of web courses in higher education, there is a growing interest in the assessment of online education pedagogy. Landscape architecture digital graphics courses are traditionally taught in classrooms and require extensive interactions between students and instructors. This study assesses the benefits and challenges of using the web as a teaching method supplemental to classroom instruction. An experiment that integrated an online session with a classroom session for an introductory course of digital graphics was conducted. Survey instruments were used to solicit students' feedback on the challenges and benefits of the transition from classroom to web teaching (n=52). In addition, students reported the effectiveness of eight different learning vehicles (e.g., classroom lecture). Last, logistic regression analysis examined the effectiveness of the web session project tutorials. Results indicate that web teaching can bring multiple benefits to both students and instructors. However, the reduced level of interaction from the web session remains a major challenge, and this transition may have greater impacts on undergraduate students than on graduate students. Future study should also examine differentiated instruction methods in an online environment for students with different learning requirements.

1.1 Keywords  
Landscape architecture education, digital communication graphics, web-enhanced teaching, classroom interaction
2 INTRODUCTION

With the rapid development of web courses in higher education in the United States, there is a growing interest in the assessment of online education pedagogy (Moore and Kearsley, 1995; Martindale and Ahern, 2001; Katz and Yablon, 2002). Previous studies suggest that convenience is a major reason that students choose web courses (Navarro and Shoemaker, 2000) and the web can enable students to achieve a similar, or even better, performance level as through traditional classroom instruction. Moore and Thompson (1990) and Russell (1999) reveal that there is no significant difference between web learners and classroom learners in academic performance. Navarro and Shoemaker (2000) further suggest that the performances of these two groups of learners are not related to their differences in gender, computer skills and academic background.

Although the web seems to be a promising substitute for the traditional classroom, other studies that have assessed users’ perceptions of web teaching present mixed findings. Daugherty and Funke (1998) indicate the presence of both positive and negative perceptions from students and faculty. In their study, positive feedback from students included increased learning motivation, better access to course materials and enriched learning experiences. Faculty found the experience of experimenting with web teaching to be meaningful because of the flexibility of the teaching schedule and seemingly improved students’ performance. However, faculty also expressed some negative views on web-based instruction, such as less available technical support and increased course preparation time. This extra time-commitment to web instruction is an important reason that some faculty members are reluctant to try online courses (Metcalf, 1997; Smith et al., 2001).

Previous studies were conducted mainly in business, liberal arts, science and engineering courses. Studies on online teaching in landscape architecture have been few, but Li and Murphy (2004) and Li (2007) have explored the perceptions from undergraduate and graduate students in web-enhanced landscape architecture construction courses. Results suggest that both groups appreciate web learning, but their perceptions differ. Undergraduate students enjoy the convenience and flexibility of online courses, as indicated by Navarro and Shoemaker (2000), but they generally disfavor the limited interactions with instructors and peers in the web session. In contrast, graduate students show more inclination to independent learning and seem neutral about the reduced interactions when learning online.

Similar to construction courses, other major landscape architecture courses, such as design studios and graphics courses, are traditionally taught in classrooms. Graphics as one of the core skills of landscape architects is traditionally taught in the classroom and this teaching method is almost exclusively used for hand graphics. Since the late 1990s, digital graphics have started to enjoy wider applications in landscape architecture, as well as other design disciplines (Tsai, 2007). As online teaching presumably will decrease the level of face-to-face interaction, the benefits it could bring to other disciplines may not be applicable for landscape architecture. In addition, the lack of studies on teaching digital graphics online may be the result of the current nature of computer technologies. Hence, discipline-specific baseline studies are needed for landscape architecture.

There are generally three types of classroom instruction: (1) traditional face-to-face, (2) exclusive on-line (i.e., web-based), and (3) a hybrid approach that mixes the two (i.e., web-enhanced). The first approach (traditional face-to-face) is perhaps the most common one for landscape architecture studio courses (e.g., construction, graphics), and the latter two may be more applicable to lecture courses (e.g., history). This study reports lessons learned from a digital graphics course that uses a hybrid approach (web-enhanced). The study evaluates the benefits and challenges of web teaching and assesses students’ satisfaction rate and their perspectives on different learning environments. Last, the study assesses the effectiveness of the web session teaching materials and students’ digital literacy (e.g., students’ background experience with computer programs) in relationship to learning satisfaction.

3 MATERIALS AND METHODS

The course introduced the basic applications of four digital graphics programs, including AutoCAD, Photoshop, SketchUp and InDesign. Project assignments included the preparation of various types of drawings such as plan, section and perspective view. Students also created drawings at different design stages using different software packages: (1) schematic design (e.g., diagram and rendering with
Photoshop, drafting plan with AutoCAD and 3D modeling and animation with SketchUp), (2) design development, and (3) construction drawing (e.g., retaining wall detail with AutoCAD).

3.1 Sample

There were 52 students (39 males and 13 females) in this class including 44 undergraduate students and 8 graduate students. All the graduate students were from the landscape architecture master’s program. The undergraduate students were from diverse disciplines, such as civil engineering, geography, plant science, and university general studies.

3.2 Instruments

One third of the lectures and all the project assignments were delivered through a web session. Comparison was made between the web session and classroom session to examine whether web teaching can achieve the same level of effectiveness as classroom instruction. In the web session, students referred to the class lectures, project tutorials and finished project examples to complete the assignments. Blackboard Vista (webCT) was used to store course materials online. Generally, the web session allowed limited interactive opportunities. Students approached instructors during office hours or via email. Students interacted with peers via chat rooms on Blackboard or meetings scheduled on their own.

Teaching effectiveness of the web session was examined via use of a midterm and final anonymous surveys (survey form in paper format conducted in classroom), both approved by the university Institutional Review Board (IRB). These two surveys were conducted for feedback on students’ perception of online teaching, the benefits and challenges they considered, and their overall satisfaction with online learning. Students rated the effectiveness of eight different learning vehicles (adapted from Li, 2007) emphasized in different sessions. They also reported their background in the digital graphics programs before taking this class.

Logistic regression analysis was conducted to explore the relationship between students’ background knowledge of the digital programs and the effectiveness of course materials with their learning satisfaction with online learning. Logistic regression analysis is applicable for this study because the dependent variables are categorical (such as “yes or no” binary category). Further, as suggested by Li and Murphy (2004), the assessment of the level of satisfaction will yield valid results for the improvement of students’ learning skills. The assumption is that satisfied students are likely to explore additional learning opportunities in order to absorb new contents and develop skills to more advanced levels.

3.3 Procedure

Previous studies suggested that course materials supplemented online could enhance web teaching (Jiang and Ting, 2000, McKnight and Demers, 2003; Li, 2007). In this current study, detailed course materials were prepared in an attempt to recreate the lectures that would be delivered in a traditional classroom.

The course was structured based on 11 graphics projects, covering the basic applications of four digital graphics programs in landscape architecture. Of the 30 lectures, 12 were delivered in the web session and all the 11 project assignments were issued in this session. A project tutorial was developed for each project assignment. These 11 project tutorials were prepared by assembling print-screen images for each step needed to accomplish the projects. Project steps were also augmented by detailed descriptions of the purpose of the steps. The goal was to provide demonstrations with sufficient detail to compensate for the lack of interaction in an online learning environment.

In the web session, course materials were uploaded in Blackboard Vista (WebCT), such as PowerPoint slides, project base map, finished project examples, and self-learning project tutorials. The web session was meant for semi-independent study. Student used online course materials to self-orient and complete project assignments. At the same time, students were encouraged to contact the instructors with questions and to collaborate with classmates on projects at irregular times. Off-campus collaboration among students was facilitated via the chat room in Blackboard.
4 RESULTS AND DISCUSSION

4.1 Overall satisfaction with web learning

The midterm survey and final survey showed consistently that around 60% of the students reported that they benefited from the web session. In the midterm survey (n=52), 31 students (60%) said it is “definitely” or “probably” good to continue this course as a web-enhanced one. In the final survey (n=47), a similar result emerged; 23 students (58%) said that they preferred a web-enhanced learning environment. Of these 23 students, 17 would increase the instructional time for the online session and said they preferred a more frequent face-to-face lab session, which is currently offered at least once a week for additional questions and in-depth lectures. The remaining 5 students from this 23-student group thought a biweekly lab session was acceptable.

Overall, students showed enthusiasm for web learning. Detailed analyses below show the associated benefits and challenges of teaching online. Then, an analysis of the students’ background with digital programs and their perception of the online project tutorials follows. Interestingly, these two factors are not necessarily influential on students’ satisfaction with online learning according to this study.

4.2 Benefits

Table 1 shows the benefits and challenge, presented as number of mentions by students. The foremost benefit was flexibility of the learning schedule, as reported by 36 out of the 47 students who participated in the survey. This finding is consistent with Navarro and Shoemaker (2000), who indicate that convenience is a major reason why students choose to take online courses. As the web session class materials were readily accessible, students were granted the latitude to study any time according to their schedules.

Table 1. Number of students who mention benefits and challenges for web-enhanced teaching of a landscape architecture digital graphics course in the midterm and the final surveys.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>No.</th>
<th>Challenges</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility in learning schedule</td>
<td>36</td>
<td>Less timely feedback from instructors</td>
<td>47</td>
</tr>
<tr>
<td>Self-paced study (improved performance)</td>
<td>26</td>
<td>Limited peer interaction and collaboration</td>
<td>18</td>
</tr>
<tr>
<td>Lower lab fees</td>
<td>8</td>
<td>Project tutorials not informative enough</td>
<td>14</td>
</tr>
<tr>
<td>Less travel to class (save time and cost)</td>
<td>5</td>
<td>Expensive software</td>
<td>9</td>
</tr>
<tr>
<td>More students can take online class</td>
<td>4</td>
<td>Computer technical questions</td>
<td>5</td>
</tr>
<tr>
<td>Less need for classroom facilities</td>
<td>4</td>
<td>Class website technical questions</td>
<td>2</td>
</tr>
<tr>
<td>Incorporate other online materials</td>
<td>1</td>
<td>Less accessibility to university labs</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perception of online course as less rigorous</td>
<td>1</td>
</tr>
</tbody>
</table>

Another related benefit was that students could self-pace their learning. Depending on their energy peak time, they could watch the course materials and work on projects at multiple times during a day, repeat the exercises and balance the time devoted to different parts of the course content. However, in a classroom situation, they are given fewer options and subjected to a schedule pre-determined by instructors. Because of these benefits, some students reported that their performances improved when they were self teaching, since they often spent more time in the online session than they expected.

Reduced course fees was another benefit, reported as lower lab fees and less commute to class, which led to reduced travel related costs. In addition, some students pointed out another win-win situation. That is, the university may benefit from online courses since there is less demand on classroom and technology facilities. In the meantime, more students can take online courses and avoid the bottleneck in lab facilities (e.g., number of computers).

The majority of the benefits reported above are also shared by other disciplines, as reported in previous studies (Daugherty and Funke, 1998; Navarro and Shoemaker, 2000; Pérez-Prado and
4.3 Challenges

Students unanimously rated the most challenging issue to be the prolonged process of getting feedback from instructors (see Table 1). The digital graphics course, like many other landscape architecture courses, requires significant face-to-face interaction. When this process was hindered, students were unable to have questions answered in a timely fashion as they typically experience in a traditional classroom. In the same manner, spontaneous feedback from classmates was jeopardized and group study opportunities also diminished. Landscape architecture education has a culture that encourages students to collaborate on class projects and work on design competition entries. The interactive components available in an online teaching environment do not seem to maintain this culture.

Another challenge was that the online course materials, especially project tutorials, were not informative enough and self-explanatory as to allow students to pursue self teaching comfortably. Certain students also pointed out that these tutorials may not reflect the latest software versions being taught. Other concerns raised by students were related to learning associated costs and technical problems, both of which dampen the enthusiasm of learning online. Students disfavored the potential increase of course fees, especially the less affordable digital software programs. Some students reported that they experienced technical problems with the class website and some computer-related questions.

4.4 Effectiveness of eight different learning vehicles

Eight different learning vehicles were emphasized in the web and classroom sessions (adapted from Li, 2007). Their effectiveness was rated separately by undergraduate and graduate students and the results are presented in Figure 1. A dichotomy shows that undergraduate students and graduate students preferred different learning environments. The top three learning vehicles appreciated by undergraduate students were: (1) classroom lecture, (2) learning from instructors, and (3) learning from classmates. These three are mainly used in the traditional classroom. Clearly, undergraduate students appreciate an interactive learning environment that allows for substantial face-to-face interactions.

![Figure 1. Average rating of eight learning vehicles from master’s and undergraduate students in the final survey in a digital graphics course. Notes: The categories are adapted from (Li, 2007). N=47, including 41 undergraduate and 6 graduate students.](image-url)
4.5 Regression analysis of students’ learning satisfaction

Tables 2 and 3 show the independent variables in the regression analysis of the midterm and final surveys, with significant variables presented. The quality of the online tutorials and students’ background with the four digital programs are independent variables. Students’ satisfaction with online learning is the dependent variable, presented as a “yes or no” binary category. Four tutorials were delivered by the middle of the semester. An additional five tutorials were issued during the remainder of the semester. The last tutorial was not included in the final survey due to the class schedule.

Table 2. Independent variables used in the regression analysis in the midterm survey in a landscape architecture digital graphics course. No variable presents statistical significance in the logistic regression.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Variable</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Digital literacy of software</td>
<td>1.1 AutoCAD</td>
<td>5-point Likert scale was converted to: somewhat or strongly agree =1, other = 0</td>
</tr>
<tr>
<td></td>
<td>1.2 Photoshop</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3 SketchUp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4 InDesign</td>
<td></td>
</tr>
<tr>
<td>2. Satisfaction with tutorials</td>
<td>2.1 Tutorial 1 Basic Commands</td>
<td>5-point Likert scale was converted to: somewhat or strongly agree =1, other = 0</td>
</tr>
<tr>
<td></td>
<td>2.2 Tutorial 2 Raster Image</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.3 Tutorial 3 Section</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4 Tutorial 4 Scale and Printing</td>
<td></td>
</tr>
<tr>
<td><strong>Dependent variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Satisfaction with web teaching</td>
<td>3.1 Satisfaction rate</td>
<td>5-point Likert scale was converted to: somewhat or strongly agree =1, other = 0</td>
</tr>
</tbody>
</table>

In the midterm survey (see Table 2), none of the eight variables are significantly correlated with students’ positive perception of learning online. In the final survey (Table 3), background with Photoshop and the quality of the four Photoshop tutorials are variables with statistical significance. However, these variables do not construct a separate model that could predict students’ satisfaction level. Logistic regression analysis therefore showed a weak relationship between students’ digital literacy and the quality of tutorials with their satisfaction with online learning. Detailed explorations of the independent variables are as follows.
Table 3. Independent variables used in the regression analysis in the final survey in a landscape architecture digital graphics course.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Variable</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variables</strong></td>
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<tr>
<td>1. Digital literacy of software</td>
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</tr>
<tr>
<td>1.2 Photoshop*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3 SketchUp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4 InDesign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Satisfaction with tutorials</td>
<td>2.1 Tutorial 5 Plan Rendering**</td>
<td>5-point Likert scale was converted to: somewhat or strongly agree = 1, other = 0</td>
</tr>
<tr>
<td>2.2 Tutorial 6 Section Rendering**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3 Tutorial 7 Perspective Rendering**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4 Tutorial 9 Model Building</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5 Tutorial 10 Animation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dependent variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Satisfaction with web teaching</td>
<td>3.1 Satisfaction rate</td>
<td>5-point Likert scale was converted to: somewhat or strongly agree = 1, other = 0</td>
</tr>
</tbody>
</table>

* Significant variable at $p < 0.05$ level

** Significant variable at $p < 0.001$ level

** 4.6 Before-class digital literacy**

In the midterm and the final surveys, students rated their digital literacy with the four computer programs before taking this class (Figure 2). An interesting finding emerges when comparing the two surveys’ results. Students rated their before-class digital literacy relatively low when they completed the first half of the semester. However, in the final survey, students’ confidence level with the digital programs increased across the four computer programs, with an average 11% increase in their perception.

![Figure 2. Students’ perception of having good before-class knowledge of the four software programs in the midterm and the final surveys in a landscape architecture digital graphics course.](image)
4.7 Effectiveness of tutorials

The premise of the project tutorials was to provide self-explanatory materials so that students have a similar learning experience in a web virtual classroom as in a traditional classroom. Although 60% of the students favored a web-enhanced learning environment, the web session project tutorials were generally not considered to be as effective (Table 4) and the quality of the tutorials generally does not seem to meet students’ expectation as independent study materials.

An important issue emerged after the first four tutorials on AutoCAD were issued. Students raised the concern about the optimal level of details to be included in the tutorials. Because face-to-face interactions are not readily available online, students purely rely on the informative nature and coherence of tutorials to complete the assignments. Following the first tutorial on AutoCAD basic commands, later project tutorials skipped some basic steps. This was reported to pose a challenge to students with little background with AutoCAD in that the omitted steps made the tutorials hard to follow. Students could not have immediate communication with instructors or peers to continue the learning process.

Photoshop tutorials were rated low in the satisfaction level (Table 4). In the regression analysis (Tables 2 and 3), the low acceptance rate of the Photoshop tutorials is a significant variable that correlates with students’ disfavor of learning the Photoshop session online. The satisfaction rate across the digital programs is also reflected by the page numbers of the tutorial, which is an indicator of its thoroughness. This study suggested that stagnant tutorials, despite their level of detail, could not substitute for face-to-face interaction. In this regard, a better venue for delivering online courses requires further exploration.

<table>
<thead>
<tr>
<th>Tutorial 1 Basic Commands</th>
<th>50%</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutorial 2 Raster Image</td>
<td>33%</td>
<td>7</td>
</tr>
<tr>
<td>Tutorial 3 Section</td>
<td>38%</td>
<td>4</td>
</tr>
<tr>
<td>Tutorial 4. Scale and Printing</td>
<td>38%</td>
<td>40%</td>
</tr>
<tr>
<td>Tutorial 5. Plan Rendering</td>
<td>28%</td>
<td>4</td>
</tr>
<tr>
<td>Tutorial 6. Section Rendering</td>
<td>30%</td>
<td>4</td>
</tr>
<tr>
<td>Tutorial 7. Perspective Rendering</td>
<td>28%</td>
<td>3</td>
</tr>
<tr>
<td>Tutorial 8. Photo Montage</td>
<td>30%</td>
<td>29%</td>
</tr>
<tr>
<td>Tutorial 9. Model Building</td>
<td>33%</td>
<td>6</td>
</tr>
<tr>
<td>Tutorial 10. Animation</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>Tutorial 11. Portfolio</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

** *“Somewhat” or “strongly” agree=satisfied; other=not satisfied
** InDesign was not included in the final survey due to the class schedule

4.8 Instructors’ perspectives

For instructors, web teaching also brings multiple benefits and challenges. First, the benefit of flexibility in schedule is also true for instructors. Instructors appreciate the convenience to teach and provide feedback at irregular times. In addition, as some students pointed out, with the web being the teaching platform, instructors can teach a larger number of students and partly avoid the bottleneck of available lab facilities. Second, online courses may be offered with a higher frequency than classroom-taught courses.
From once a year to every semester. This may help alleviate faculty course loads since lack of staff is currently a concern for many landscape architecture programs. Last, web teaching shall allow instructors to differentiate teaching strategies for different student groups. For example, in an online situation, instructors can adjust course materials to fit students with different computer backgrounds, learning needs and area of concentration, whereas in a classroom situation, students are usually treated with the same contents.

The prime challenge for instructors is to explore a more effective way to deliver contents online. With the rapid advancement of computer technologies, the lack of interaction may not remain a serious challenge in the future. In this experiment, instructors provided the same course materials in the web session as they would use in a traditional classroom. The intent was to use detailed explanations to compensate for the missing component of classroom interaction. This effort, however, was not considered to be promising, according to student feedback. For instructors, developing detailed project tutorials is a time consuming effort and they may become outdated when software versions upgrade. Video-taped lectures with narrations may be a next step for testing an alternative way to teach digital graphics online.

5 CONCLUSIONS

This study reports lessons learned from web teaching of an introductory course of digital graphics in landscape architecture. The study shows that web teaching can bring students and instructors both multiple benefits and challenges. Students prefer web learning mainly because of the convenience in learning and this benefit is also appreciated by instructors. Online teaching suggests its feasibility, as reflected by students’ overall learning satisfaction with this web-enhanced course. The study also examines the factors that may contribute to students’ learning satisfaction. However, neither the students’ digital literacy prior to taking the class nor the quality of the project tutorials accounts for the satisfaction level of learning. Detailed course materials (e.g., tutorials) may not be able to compensate for the missing component of face-to-face interaction in a traditional classroom. In addition, the reduced level of interaction from the web session remains a major challenge, and this transition may have greater impacts on undergraduate students than on graduate students.

Given the level of interactions that web teaching tools can provide at this stage, a complete shift from the traditional classroom to a virtual web classroom may not be feasible. However, with the rapid advancement of web technologies, the potential and merits of online teaching deserve further examination. The manner in which instructors design an online course is as critical as the contents to be delivered. Hence, this study provides a departure point for future research that explores the paradigm shift of teaching method in which interaction is an important consideration. Future study is recommended that explores the factors that account for students’ learning satisfaction, which are instrumental in designing future web courses. Finally, although the sample size (n=52) used in this current study is not ideal, it is nonetheless more than the average class size of this digital graphics course. A larger sample size is needed in order to represent a more diverse student population. Future research to evaluate students’ performance is also highly recommended.

6 ACKNOWLEDGMENTS
This research was supported by the Utah Agricultural Experiment Station, Utah State University (approved as journal paper number 8626).

7 REFERENCES


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DESIGN IMPLEMENTATION

Edited by Margie Borecki, Daniel Roehr, and Ming-Han Li
MANAGING STORMWATER WITH GREEN ROOFS:
FINDINGS FROM NORTH AMERICAN RESEARCH

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1  ABSTRACT
Green roofs (vegetated rooftops) are well-known for ecosystem services including retention of stormwater draining from rooftops which helps reduce peak flows and flooding in urban watersheds. Much is known about the functions of green roofs in Europe, but less is known about their performance in North America. This review of literature assesses stormwater retention research from thirty-two extensive green roof field investigations published from 1998 through 2012. The data suggests that in North America, green roofs retain rooftop precipitation in all six geographic regions reported and they reduce peak flows in five reported regions. Across all regions, sixty-one percent was the average amount of precipitation retained. The highest average retention was in the Midwest region at seventy-four percent and the lowest average retention was the Pacific Northwest region at fifty-two percent. There were some regions, however, with large urban populations that were not represented, and some regions had conflicting or inconclusive findings. More research is needed to better understand ecosystem services in some regions and to begin research in regions not represented. Only a few of the studies had landscape architects directly involved with extensive green roof stormwater research. This marks an opportunity for landscape architects to better understand how green roofs function locally. These findings are important because those responsible for managing urban stormwater need to know that not all green roofs perform the same and design characteristics and maintenance practices are important. One should not assume that any green roof will effectively manage stormwater.

1.1  KEYWORDS
green roof, retention, peak flows, substrate, eco-region
2 INTRODUCTION

Before the turn of the twenty-first century, there were only a few extensive green roofs (with < 12.5 cm deep substrates) built in North America and perhaps only as many advocates. However, the groundwork that had been laid by a few began to awaken the environmental consciousness of many to the potential benefits and uses of green roofs. In 1998, for example, Bill Thompson in Landscape Architecture magazine wrote “Grass-Roofs Movement,” an article in which he discusses the potential benefits of green roofs and how American landscape architects may find creative uses for green roofs in the near future. He writes, “An opportunity is emerging to introduce landscape architecture into another realm—the roofs of buildings—in a revolutionary way” (Thompson, 1998). He elaborated on the multiple benefits of green roof technology already proven in Europe including mitigation of urban heat islands and stormwater management as well as providing habitat for urban wildlife. Bill Thompson was right about landscape architects engaging with green roof technology. Since 1998, the ASLA Headquarters green roof was built (2006), many green roofs have been designed and built by landscape architects, and many projects have been awarded recognition by the ASLA and discussed in Landscape Architecture Magazine, and contributed to LEED® certified projects (N. Miller, Spivey, & Florance, 2008). It is evident that landscape architects in professional practice have worked with green roof technology over the last decade. However, aside from professional practice, green roof technology has not been largely embraced by landscape architecture faculty doing research (Blank et al., 2013; Butler, Butler, & Orians, 2011). There may be a need therefore, for those teaching and designing green roofs in North America to understand how green roofs manage stormwater in their region. This study will help address these issues.

In 1999 there were only five European-styled extensive green roof venders accessible in North America (Peck, Callaghan, Kuhn, & Grass, 1999). Today, there are hundreds of vendors representing this fascinating, multifunctional, multi-beneficial, and at times complex technology (Cantor, 2008). Although green roofs have a long history in Europe with several decades of product development and research (Cantor, 2008; MacIvor, Ranalli, & Lundholm, 2011), in North America, green roof systems are still under development regarding products, guidelines and research (Cantor, 2008; Dvorak, 2011; C. Miller & Narejo, 2005).

Regarding application of the technology, there are a number of different types of off-the-shelf green roof systems ranging from pre-planted modular green roof trays to monolithic planted-in-place multilayered systems (Simmons, Gardiner, Windhager, & Tinsley, 2008). There is an emerging body of peer-reviewed research that investigates various green roof applications across North America (Dvorak & Volder, 2010; Getter & Rowe, 2006; Oberndorfer et al., 2007) and the vegetation in one region may not necessarily work in another region. Each eco-region may need green roof research to supplement its industry development and to better understand which ecological services can be effectively realized with green roofs (J. T. Lundholm, 2007).

The reported benefits from green roofs have been mixed as some market-based systems were not as effective as others (Simmons et al., 2008). Comprehensive reviews of green roof research are needed to better understand how they perform; including how green roofs manage stormwater and what design or property characteristics may influence their performance. Current reviews of stormwater research includes results from across continents and context (Berndtsson, 2010). Since the climate and natural vegetation in North America is different from those in Europe and abroad, this study reviews peer-reviewed extensive green roof stormwater retention research that has taken place across North.

3 METHODS

This review of green roof stormwater research begins when original research from North America on extensive green roofs was first published in 1998 through January of 2012. The method for selecting papers followed criteria similar to Dvorak and Volder (2010). To be included the research: (1) was located in North America, (2) applied directly to extensive green roof stormwater hydrology research, (3) was published in a peer-reviewed journal or a refereed conference paper, and (4) was published in the English language. If the paper was published as a conference paper only, then it had to be cited in other peer-reviewed publications or represent an eco-region where little has been published. Green roof research papers regarding stormwater management were collected and sorted into topic areas (water quantity and quality). Stormwater retention and flow reduction findings were sorted by geographic region into tables to recognize their original contribution to knowledge. Distribution of research in North America is captured in Figure 1 which shows the location of the research within one of six geographic regions determined by green roof stormwater research site locations, eco-region and Natural Resources Conservation Service (NRCS).
rainfall distribution patterns. An eco-region is a land area identified by its climate, natural vegetative cover such as the Tall-grass prairie eco-region in the central United States and other factors (Bailey, 1996). Green roofs often make use of drought tolerant native or naturalized vegetation such as succulents, drought tolerant grasses and forbs which can be low maintenance and sustained without irrigation in some regions.

Thirty-two peer-reviewed papers were found spanning from 1998 to 2012 within six geographic regions including: Pacific Northwest, Midwest, Southcentral U.S., Eastern Canada and Northeastern U.S., Mid-Atlantic and the Southeastern U.S. region (Figure 1 and Table 1). An "investigation" in this study is the reporting of results from a single green roof design. Some of the papers reported findings from more than one investigation. With Excel software, the reported retention and flow reduction rates from each investigation were separated into tables for each region. Averages and standard deviations were determined and reported in tables. The sample size was too small for more advanced statistical analysis. Three regions dominated the number of investigations including: the Pacific Northwest (n = 7), the Mid-Atlantic (n = 7), and the Southeastern U.S. (n = 6). Three of the four types of rainfall distribution patterns recognized by the NRCS (formerly SCS) are represented (Ia, II and III) across the findings (Figure 1). As can be seen in Figure 1, primarily the edges of North America are well-represented with stormwater management research, but the central U.S. and the west coast is lacking research.

Figure 1. North American green roof research regions based upon site location (dots) eco-region (see key) and NRCS rainfall distribution type (shaded areas). Geographic regions (curved lines) for this study include: Pacific Northwest, Midwest, Southcentral U.S., Eastern Canada and Northeastern U.S., Mid-Atlantic, Southeastern U.S.
4 RESULTS

4.1 General Findings
Some of the early North American research that documented stormwater retention and detention capacities of extensive green roofs in the peer-review method were published as conference papers (Hutchinson, Abrams, Retzlaff, & Liptan, 2003; K. K. Y. Liu, 2003; Charlie Miller, 1998; Monterusso, Rowe, Rugh, & Russell, 2004; Rowe, Rugh, VanWoert, Monterusso, & Russell, 2003). Several of these papers were published by the for-profit group Green Roofs for Healthy Cities, an organization set up to investigate, teach and promote green roof technology as part of its annual meeting and exposition conference Greening Rooftops for Sustainable Cities and later renamed Cities Alive.

Table 1 summarizes the findings of green roof stormwater retention from North America. For all of the geographic regions, green roofs captured and retained precipitation, causing a delay in runoff and peak flow rates compared to conventional roofs as a control. The average percent of precipitation retained across all regions represented was sixty-one percent (Table 1). The average standard error was eight and the total number of investigations was thirty-two. The highest average retention was the Midwest region at seventy-four percent (n = 5) and the lowest average retention was found in the Pacific Northwest region at fifty-two percent (n = 7). The range in standard error was the least in Eastern Canada and the Northeastern U.S. at 4.47 with a sample size of five (n=5). The maximum standard deviation was in the Southcentral U.S. at 26.87 and the sample size was two. In Simmons et al. (2008) there were only three rain events reported; however, data included results from six different green roof systems designs and there was much variance between the green roof system designs.

Table 1 Location of extensive green roof stormwater research site by geographic region, number of investigations and average percent of rainfall retained.

<table>
<thead>
<tr>
<th>Geographic Region</th>
<th>Number of Investigations</th>
<th>Ave. retention (percent)</th>
<th>Standard error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Canada and Northeastern U.S.</td>
<td>5</td>
<td>56</td>
<td>4.47</td>
</tr>
<tr>
<td>Mid-Atlantic</td>
<td>7</td>
<td>59</td>
<td>12.72</td>
</tr>
<tr>
<td>Pacific Northwest</td>
<td>7</td>
<td>52</td>
<td>20.96</td>
</tr>
<tr>
<td>South-central U.S.</td>
<td>2</td>
<td>58</td>
<td>26.87</td>
</tr>
<tr>
<td>Southeastern U.S.</td>
<td>6</td>
<td>67</td>
<td>10.40</td>
</tr>
<tr>
<td>Midwest</td>
<td>5</td>
<td>74</td>
<td>6.96</td>
</tr>
<tr>
<td><strong>32 total</strong></td>
<td><strong>61 ave.</strong></td>
<td><strong>8 ave.</strong></td>
<td></td>
</tr>
</tbody>
</table>

4.2 Retention of stormwater and reduction of peak flows
All of the papers reported the quantity of precipitation retained. Only some of the papers reported peak flow reductions. Tables 2 to 7 report the individual investigation details by geographic region including the percentage of precipitation retained and reduction of peak flows for some investigations.

The research in eastern Canada and the northeastern United States (Table 2) is represented by investigation sites located in Ottawa, Toronto and Storrs, Connecticut, and are equally divided within the NRCS distribution of Type II and III. The average percent of precipitation retained was fifty-six and the reduction of peak flow ranged from twenty-five to eighty-five percent. The green roofs in Toronto were irrigated and it was reported by MacMillian that the irrigation likely interfered with the green roofs capacity to retain stormwater (MacMillan, 2004). The study by Gregorie, reported that most of the precipitation was snow, even though the study period covered one year (Gregoire & Clausen, 2011).
Table 2 Average stormwater retention and flow rate reduction from extensive green roofs in Eastern Canada and Northeastern geographic region

<table>
<thead>
<tr>
<th>Research Site Location</th>
<th>Eco-region of Research Site</th>
<th>Ave. retention and (flow rate) % reduction</th>
<th>Major Points Discussed</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ottawa, ON</td>
<td>St. Lawrence Lowlands</td>
<td>54 (-)</td>
<td>Delayed runoff from 19 mm storm, 95 minutes and 85% retained; 21 mm storm delayed 4 minutes and 73% retained.</td>
<td>Liu (2003)</td>
</tr>
<tr>
<td>Toronto, ON</td>
<td>Lake Erin Lowland</td>
<td>55 (85)</td>
<td>Green roof was continuously irrigated and media was maintained moist, which reduced capacity to retain rainwater. Succulent green roofs with 5% vegetated cover. When substrate was dry for at least 6 days, 1.5 cm rain events were 100% retained and 7.5 cm roof retained less on individual events; both effectively reduced peak flows.</td>
<td>MacMillan (2004)</td>
</tr>
<tr>
<td>Toronto, ON</td>
<td>Lake Erin Lowland</td>
<td>57 (25-60)</td>
<td>Continuation of previous study (MacMillan, 2004) with irrigation reduced June through October when moisture fell below predetermined values. Irrigated about every 2 days average. Rainfall was above normal for region.</td>
<td>Liu and Minor (2005)</td>
</tr>
<tr>
<td>Toronto, ON</td>
<td>Lake Erin Lowland</td>
<td>63 (-)</td>
<td>Succulent green roof trays dominated by Sedum spp. retained 41.6 percent of precipitation during the first year of establishment. Majority of precipitation was snow.</td>
<td>Van Seters et al. (2009)</td>
</tr>
<tr>
<td>Storrs, CT</td>
<td>Southeast New England Coastal Hills and Plains</td>
<td>51 (-)</td>
<td>Region average retained 56%</td>
<td>Gregorie et al. (2011)</td>
</tr>
</tbody>
</table>

The Mid-Atlantic region reports findings from Philadelphia, Rock Springs and Pittsburgh, Pennsylvania; Washington D.C. and two sites in North Carolina (Table 3). The research sites are equally divided within the NRCS rainfall distribution Type II and Type III. The precipitation in the region is primarily rainfall; however, some year’s snowfall can contribute significant amounts. The average volume of precipitation retained in the region was fifty-nine percent and the standard error of the mean was 12.72. Peak flows were reduced from five to eighty-seven percent depending upon how saturated the media was prior to the storm event.
Table 3 Average stormwater retention and flow rate reduction from extensive green roofs in Mid-Atlantic geographic region

<table>
<thead>
<tr>
<th>Research Site Location</th>
<th>Eco-region of Research Site</th>
<th>Ave. retention and (flow rate) % reduction</th>
<th>Major Points Discussed</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philadelphia, PA</td>
<td>Northern Atlantic Coastal Plain</td>
<td>65 (-)</td>
<td>Succulent green roof pilot study was set up to monitor 24-hour, 2-year return-frequency storm events. Storms &lt;1.5 cm runoff was negligible.</td>
<td>Miller (1998)</td>
</tr>
<tr>
<td>Rock Springs, PA</td>
<td>Central Appalachian Broadleaf/Coniferous Forest-Meadow</td>
<td>40 (-)</td>
<td>Succulent green roofs with a porous expanded polypropylene layer above growth media, only Sedum sperium planted. Results are from two 25-mm October rainfall events.</td>
<td>DeNardo et al. (2003)</td>
</tr>
<tr>
<td>Neuseway and Goldsboro, NC</td>
<td>S. Atlantic Coastal Plain</td>
<td>55-63 (57-87)</td>
<td>Runoff from two succulent green roofs were monitored from one collection point. 78% average reduction of peak flow.</td>
<td>Moran et al. (2005)</td>
</tr>
<tr>
<td>Rock Springs, PA</td>
<td>Central Appalachian Broadleaf/Coniferous Forest-Meadow</td>
<td>45 (56)</td>
<td>Succulent green roof results from October and November months of data collection, plant coverage 40% to 90% of roof surface, delay up to 5.7 hr. 100% retained &lt;12 mm</td>
<td>DeNardo et al. (2005)</td>
</tr>
<tr>
<td>Pittsburg, PA</td>
<td>Pittsburg Low Plateau</td>
<td>70 (5-70)</td>
<td>Extensive succulent green roof retained 70 percent of precipitation from August to January.</td>
<td>Bliss et al. (2008)</td>
</tr>
<tr>
<td>Washington, DC</td>
<td>Northern Atlantic Coastal Plain</td>
<td>74 (-)</td>
<td>Meadow-like green roof on ASLA Headquarters building results for 50 of 65 events, no runoff was detected. Significant delay in water runoff during large events. 2% to 45% slope.</td>
<td>Glass and Johnson (2008)</td>
</tr>
</tbody>
</table>

Region average retained 59%

The Pacific Northwest (Table 4) has stormwater research taking place in Portland, Oregon and Vancouver, British Columbia. The region falls within the NRCS rainfall distribution Type Ia. Precipitation primarily falls as rain and the pattern of rainfall is typically light rain falling throughout the rainy season but summers tend to be dry. The average amount of precipitation retained was fifty-two percent, and peak flows were reduced in one study ranging from eighty-four to ninety percent. Although precipitation retention rates were the lowest of the regions, the flow reduction rates during the study were consistently up to ninety percent.
Table 4 Average stormwater retention and flow rate reduction from extensive green roofs in the Pacific Northwest geographic region

<table>
<thead>
<tr>
<th>Research Site Location</th>
<th>Eco-region of Research Site</th>
<th>Ave. retention and (flow rate) % reduction</th>
<th>Major Points Discussed</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland, OR</td>
<td>Willamette Valley</td>
<td>69 (-)</td>
<td>Ecosystem maturity, rainfall distribution and intensity patterns, and ambient air temperature appear to influence runoff behavior.</td>
<td>Hutchinson et. al. (2003)</td>
</tr>
<tr>
<td>Vancouver, BC</td>
<td>Pacific Maritime Lower Mainland</td>
<td>67 (-)</td>
<td>The succulent green roof showed mean retention of 67% precipitation with the 75 mm deep substrate.</td>
<td>Connelly and Liu. (2005)</td>
</tr>
<tr>
<td>Portland, OR</td>
<td>Willamette Valley</td>
<td>50, - , 64 (90),(84),(90)</td>
<td>Hamilton Apartment ecoroof average peak flow reduction was consistently over 90% for the most intense storm events. Annual retention 50% with high of 63% in 2005. Portland Building peak flow reduction 90% for intense storms, 64% overall annual retention.</td>
<td>Kurtz (2008)</td>
</tr>
<tr>
<td>Portland, OR</td>
<td>Willamette Valley</td>
<td>18, 29, 69 (-)</td>
<td>Three large ecoroofs investigated for 28 months. Meadow-like designs had substrates 10-15 cm deep.</td>
<td>(Spolek, 2008)</td>
</tr>
</tbody>
</table>

The Southcentral U.S. region (Table 5) green roof research was limited to two locations: Austin, Texas and College Station, Texas. Both sites fall within the NRCS rainfall distribution Type III. Precipitation in the region is typically dominated by intense thunderstorms and infrequent tropical storms. Distribution of rainfall is bi-modal with spring and fall rains. Summers are consistently very warm and droughty in some years. The average amount of precipitation retained in the region was fifty-eight percent. Peak flow reduction was not reported. The research at the Austin site investigated six different green roof designs. Some of the designs did not perform well and therefore the overall average for the site for the three days reported was low compared to other studies (Simmons et al., 2008). In College Station, Texas however, seventy-seven percent of all storms was retained from April to September of 2010. Retention ranged from thirty-seven percent to one-hundred percent. There was a fairly strong negative correlation (R² = -0.8038) between the depth of rainfall and percent effectiveness which means that generally the larger the rainfall event the less effective the green roof modules were in retaining rainfall. Rainfalls of one inch depth or less were largely retained.
Table 5 Average stormwater retention and flow rate reduction from extensive green roofs in the Southcentral geographic region

<table>
<thead>
<tr>
<th>Research Site Location</th>
<th>Eco-region of Research Site</th>
<th>Ave. retention and (flow rate) % reduction</th>
<th>Major Points Discussed</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austin, TX</td>
<td>Subtropical Backland Prairie</td>
<td>39 (-)</td>
<td>Stormwater retention differences were observed between six different vendor systems. Plots were irrigated.</td>
<td>Simmons et al. (2008)</td>
</tr>
<tr>
<td>College Station, TX</td>
<td>Subtropical Backland Prairie</td>
<td>77 (-)</td>
<td>Succulent green roof modules received only rainfall. Green roofs retained 36.9 to 100 percent of rainfall. Several large storms occurred during the study including 10cm (4 inches) of precipitation over 24 hours. This is a 2-year storm event for the region and 36.9 percent of precipitation was retained.</td>
<td>Dvorak et al. (2011)</td>
</tr>
</tbody>
</table>

Region average retained 58%

The research sites in the Southeastern region of the United States (Table 6) were located in Orlando, Florida, Athens, Georgia and Starkville, Mississippi. The investigation sites fall within the NRCS rainfall distribution Types II and III. The average retention of precipitation was sixty-seven percent and all precipitation was rainfall. One of the research sites made use of rainwater harvesting and attained one-hundred percent of the precipitation during the study period by using the harvested water for irrigation (Wanielista, Hardin, & Kelly, 2008).

Table 6 Average stormwater retention and flow rate reduction from extensive green roofs in the Southeastern geographic region

<table>
<thead>
<tr>
<th>Research Site Location</th>
<th>Eco-region of Research Site</th>
<th>Ave. retention and (flow rate) % reduction</th>
<th>Major Points Discussed</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orlando, FL</td>
<td>Florida Coastal Plains Central Highlands</td>
<td>80 (-)</td>
<td>Native herbaceous green roof runoff captured in 18 green roof plots to cisterns was evaluated. Retained 80% of rainfall.</td>
<td>Wanielista et al. (2006)</td>
</tr>
<tr>
<td>Orlando, FL</td>
<td>Florida Coastal Plains Central Highlands</td>
<td>100 (-)</td>
<td>Runoff from two 10 cm green roofs was captured in cisterns. No overflow from cisterns for year of 109 mm average is 127 mm of precipitation.</td>
<td>Wanielista et al. (2008)</td>
</tr>
<tr>
<td>Athens, GA</td>
<td>S. Appalachian Piedmont Midland Plateau</td>
<td>78 (-)</td>
<td>100% retention of small storms, influenced by season, temperature, moisture content of media prior to rain.</td>
<td>Cater and Rasmunssen (2006)</td>
</tr>
<tr>
<td>Starkville, MS</td>
<td>Coastal Plans-Middel Section Black Belt</td>
<td>60, 70, 55, 60 (-)</td>
<td>Extensive green roofs were investigated at two substrate depths and two deck slopes were investigated. The succulent vegetation</td>
<td>Anders and Walker (2011)</td>
</tr>
</tbody>
</table>

Region average retained 67%

The research sites in the Midwest (Table 7) were located in East Lansing, Michigan and Southfield, Michigan. Both research sites fall within the NRCS rainfall distribution Type II. The precipitation occurred as snowfall and rainfall. The average volume retention for the region was seventy-four percent. The research at Michigan State University was one of the first in North America to study effects of slope and
Table 7 Average stormwater retention and flow rate reduction from extensive green roofs in the Midwest geographic region

<table>
<thead>
<tr>
<th>Research Site Location</th>
<th>Eco-region of Research Site</th>
<th>Ave. retention and (flow rate) % reduction</th>
<th>Major Points Discussed</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Lansing, MI</td>
<td>S. Central Great Lakes</td>
<td>68-74 (-)</td>
<td>Multiple slopes and depths studies on shallow extensive succulent green roofs. Shallow substrates produced more runoff. Green roofs continued draining 3 hours after rain event compared to gravel roof. Sloped vegetated roofs retained much more water than flat conventional gravel ballasted roofs. Plants established 3 years prior to data collection. Plant maturity increased retention from 17% to 67%. Curve numbers: 2% slope (84), 7% slope (87), 15% (89), and 25% slope (90). Slope had a negative effect on runoff retention curve numbers.</td>
<td>Rowe (2003)</td>
</tr>
<tr>
<td>East Lansing, MI</td>
<td>S. Central Great Lakes</td>
<td>75-85 (-)</td>
<td>The retention observed for the green roof was 68.24% which was compared with two conventional roofs. A bituminous membrane roof retained 10.44%, and a rock ballasted roof retained 48.55%. The green roof also showed a reduction of peak flows with an average of 84%.</td>
<td>Getter et al. (2007)</td>
</tr>
<tr>
<td>Southfield, MI</td>
<td>Lake Whittlesey Glaciolacustrine Plain</td>
<td>68 (84)</td>
<td></td>
<td>Carpenter (2009)</td>
</tr>
</tbody>
</table>

Region average retained 74%

4.3 Other findings

Several important findings were shared across geographic regions. In most investigations, small rainstorm events (less than 1.5 cm) resulted in very little to no runoff from green roofs if the roofs were not saturated prior to the rain event (T. L. Carter & Rasmussen, 2006; DeNardo, Jarrett, Manbeck, Beattie, & Berghage, 2003; Dvorak, Volder, & Aitkenhead-Peterson, 2011; Glass & Johnson, 2008; Hutchinson et al., 2003; Johnston, McCready, & Nelms, 2004; Kurtz, 2008; K. Liu & Baskaran, 2003; K. Liu & Minor, 2005; MacMillan, 2004; Charlie Miller, 1998; Monterusso et al., 2004; Moran & Smith, 2005; Rowe et al., 2003; Van Seters, Rocha, & MacMillan, 2007). Another shared finding was the relationship between saturated growth media and a reduced capacity to retain runoff (Miller 1998; Liu and Baskaran 2003; Rowe, Rugh et al. 2003; MacMillan 2004; Monterusso, Rowe et al. 2004; Moran, Hunt et al. 2004; Liu and Minor 2005; Getter, Rowe et al. 2007; Van Seters, Rocha et al. 2007; Glass and Johnson 2008; Dvorak et al. 2011), although one paper from the Pacific Northwest reported that fairly consistent retention and runoff rates were maintained throughout storms when media was previously saturated (Hutchinson, Abrams et al. 2003), and another reported no correlation between rainfall retained and the time between rain events (DeNardo, Jarret et al. 2003). Although green roofs were very effective in absorbing small and even some medium rainfall events, depending upon the storage capacity of the green roof substrate, most were not able to retain all of the precipitation from large rainfall events. In line with these findings are observations that research plots that were regularly irrigated (without moisture sensors) were somewhat hindered in their capacity to retain stormwater (MacMillan 2004), but if rainwater harvesting with cisterns was included as
part of the system, annual retention rates greatly increased as one investigation found that no water left the
cistern for the entire year (Wanielista et al., 2008).

Similarities and differences were observed resulting from seasonal characteristics across regions. Spring and summer rain events were more likely to result in greater proportions of retained precipitation than rain events during the fall or winter at many investigation sites (Rowe, Rugh et al. 2003; Johnston, McCreary et al. 2004; MacMillan 2004; Liu and Minor 2005; Carter and Rasmussen 2006; Van Seters, Rocha et al. 2007; Kurtz 2008), but during some investigation periods, heavy rain fell only during the summer and the green roof became saturated and therefore less effective but still more effective than controls (Liu and Baskaran 2003). A study in the Pacific Northwest compared results from two years that had similar total rainfall amounts but different distribution patterns and found different runoff rates due in part to the pattern or distribution of rainfall (Hutchinson, Abrams et al. 2003).

A few investigations looked at the contribution of growth media to the retention and evaporation of stormwater (Rowe, Rugh et al. 2003; VanWoert, Rowe et al. 2005). Sedum-vegetated plots (2.5 cm to 6 cm) were compared with non-vegetated plots and were found to be about 10% more effective than media-only plots during rain events, but the sedum-vegetated green roof plots were still less than 1 year old and had not yet reached maturity.

Roof slope was another variable investigated at a few sites, with mixed results. A newly planted study found no significant difference among slopes of 2%, 5%, and 15% (Rowe, Rugh et al. 2003; VanWoert, Rowe et al. 2005) but later found those same trail plots at a more mature condition to exhibit differences (VanWoert, Rowe et al. 2005). In later investigations, an additional slope category of 25% was added and it was found that slopes of 25% were effective at retaining runoff up to 77%, whereas green roofs with slopes of less than 2% had a rate of 85.6% (Getter, Rowe et al. 2007).

Other mixed results include investigations of the effect of the thickness of growth media. Some investigations found little difference between very shallow (2.5 cm) and shallow (4 cm) green roofs (Rowe, Rugh et al. 2003; VanWoert, Rowe et al. 2005) and between shallow (5 cm) and thicker (10 cm) green roofs (Moran, Hunt et al. 2004), whereas other investigations found differences between them (Getter, Rowe et al. 2007). One study that made use of rainwater harvesting with cisterns found that the combination of using a green roof and a cistern to recycle water and irrigate the green roof retained 80% of annual runoff in one study (Wanielista, Hardin et al. 2006) and 100% of rainwater that fell on the roof for that year (Wanielista, Hardin, 2008) in another study.

Modeling was used to estimate the effectiveness of green roofs at the watershed scale in urban environments (Miller 1998; Johnston, McCreary et al. 2004; (T. Carter & Jackson, 2007); Jarrett and Berghage 2008; (Taylor, 2008)). Stormwater runoff coefficients (CN) were investigated and determined so to represent the porosity of green roofs. One investigation used 10-cm-deep green roof data and found that the green roofs averaged a CN of 86 (Carter and Rasmussen 2006) and in a different study, investigators used 2.5-cm and 4-cm-deep green roofs and found CN values varied from 84 to 90 (Getter, Rowe et al. 2007).

5 DISCUSSION

The findings across geographic regions indicates that green roofs in North America have similar
retention rates (52%-74%) (Table 1) to those in Europe (40%-70%) (Klaas, 2012); however, there are times and conditions where the green roofs were not very effective. The size of the rainfall event, the moisture in the substrate prior to the rainfall event, this thickness of the substrate and the time of the year appear to play a large role in the effectiveness of the green roofs. Also design of the green roof system demonstrated large differences in one study; however, the data set was limited (Simmons et al., 2008).

One of the most influential factors found in nearly every study was the size of the rainfall event. This is not surprising since small storms (< 1 cm) typically generate little runoff, even on rooftops. Large storms (> 2.5 cm) were consistently in the category of least volume retained. There are mixed results in the moderate storms across regions, as the investigations varied greatly in length of study, time or season of the research, and type of vegetation. More detail from the investigation sites is needed as not all papers reported hydrographs or tables with rainfall retained for each event.

Another influential factor in the capacity of the green roofs to retain precipitation was the amount of moisture in the substrate prior to a rain event. It was reported in several papers that the more moisture present in the substrate prior to a rain event, the less effective the green roof was in retaining precipitation. Several papers reported that if the green roof had a few days to dry out, then its retention capacity was restored. One paper reported that regular irrigation hindered the capacity of the green roof to retain rainfall.
One investigation reported that if succulent green roofs with shallow substrates are to be irrigated in the Midwest, then irrigation only once every two to four weeks may be necessary for plant survival. The rate of irrigation for succulent green roofs appears to be minimal to keep vegetation healthy in some of the studies. This suggests that plant selection and maintenance are critical to the performance of the green roofs. Research on plant forms also suggests that mixed designs with succulents, forbs and graminoids may be best for retention of precipitation year-round for some regions (J. Lundholm, MacIvor, MacDougall, & Ranalli, 2010).

The thickness of the substrate appears to make some difference in performance. One study found that very shallow (2.5 cm to 4 cm) deep substrates provide some benefit, but when green roofs are at least 10 cm deep, then their effectiveness greatly improves. Very few, intensive green roofs with deep substrates (>20 cm) have been investigated. The few that have been studied demonstrate that they can retain most of the rainfall (Berndtsson, Bengtsson, & Jinno, 2009).

The effect of season was reported in some but not all papers. Where season was reported the results are mixed. In Toronto, the summers of the periods of investigation were wetter than normal. The substrates were often saturated and the green roofs were reduced in capacity to retain water. The green roofs were also irrigated and thus the capacity to retain water was further reduced. Conversely, winters in the lower elevations of the Pacific Northwest tend to be cool but not frigid with ample precipitation; however, the summers are typically dry. In the Midwest and Mid-Atlantic regions, winters can be frigid with extended periods of frigid air temperatures where plants are dormant. Precipitation can be persistent during the summer in these regions as well, with days or weeks with continuous rainfall. The Southcentral U.S. studies demonstrated that the green roofs can be effective during the growing season as summers are dry and hot. The substrates tend to dry out quickly if irrigation is reduced or not present.

These findings are important for landscape architects involved with research, teaching, private practice, or service in municipal or governmental agencies because it appears from the research that there are differences in performance across regions. One should be aware of the influence of rainfall patterns, plant selection and substrate design. One design characteristic only reported in a few papers was the compliance of substrates with the universal German FLL Green Roof guidelines. North America has few guidelines for design of green roofs and more research is needed in North America to better understand the role of substrate and drainage layer design in retention (Dvorak, 2011). Hutchinson et. al. (2003) reported that one of the substrates was very porous and did not effectively retain precipitation. The design characteristics of the substrate in that research were not reported. Consistency in reporting substrates is needed to better understand what the findings mean. With greater reporting of green roof substrates, design details, and drainage designs, the more applicable the findings are and can be used to compare with similar studies.

In terms of stormwater retention, the question of whether to irrigate or not seems to be less important than how much water should be applied. It seems that if a priority of the green roof is to retain stormwater, then irrigation must be minimized or not used during times when consistent rainfalls typically occur. Plant materials must be selected to survive from year to year; however, there may be gradations of good designs from succulent dominated green roofs to meadow-like green roofs or mixed designs. With so few investigations to represent the many ecological regions across North America, we may not have an accurate understanding of how to design green roofs for specific eco-regions.

Regarding the distribution of research across disciplines, there were only a few landscape architects involved with publishing green roof stormwater research. This area of work needs more participation by landscape architects so that landscape architects can better understand and teach about green roofs for low impact designs and watershed planning locally. With the advent of the many landscape metric systems, green roofs are often used but local research many be need to maximize their ecosystem services. Education, research and design characteristics of green roofs are in the domain of landscape architecture, and cross disciplinary collaborations are encouraged to expand the knowledge base within landscape architecture.

Regarding limitations of the statistical analysis, the number of investigations ranged from two to seven for six regions. The limited data set did not allow for an in-depth cross examination analysis. With future publications throughout the regions, updates to statistical analysis and reevaluation of regions could be made.
6  CONCLUSIONS
From the review of the thirty-two investigations in North America, the green roofs retained from fifty-two to seventy-four percent of precipitation events across six geographic regions. There are geographic regions, however, with large areas of urban development that were not represented (New York City, Washington D.C., Houston, Miami, Los Angeles), and there were only a few papers that reported detail regarding the substrates and plants used on the study. More research is needed to capture performance in the Southeastern and Southcentral U.S., Mid-Atlantic and regions. There was no research in the southwestern U.S. and west coast. Also, because of the low number of papers, more research is needed regarding seasonal variations and flow reductions to more accurately understand how green roofs perform. Generally, Landscape architects were not represented in the pool of research investigations, but could become involved to make important contributions to research and understand how green roofs that landscape architects design perform. Bill Thompson was right that landscape architects in professional practice would make use of green roofs in a big way in the first decade of the twenty-first century. However, thus far, Landscape architects have not participated with green roof stormwater research, but should become involved to help learn about the technology and teach a new generation of landscape architects how green roofs can be designed to effectively manage ecosystem services.

7  REFERENCES


PEOPLE-ENVIRONMENT RELATIONSHIPS

Edited by Lynne Manzo
GARDENS AND MUSIC: AN INITIAL SURVEY, PROBING POTENTIALS

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1 ABSTRACT
Although sound and landscapes are variously connected, connections between music and gardens are of particular interest for landscape architecture. On the one hand, many musical compositions evoke or otherwise refer to gardens; on the other hand, gardens variously incorporate or respond to music. Gardens and music have also served as analogues and metaphors for one another. So as to better comprehend the range, historical continuities and future possibilities of these connections, this paper surveys and categorizes some of the many examples of connected music and gardens. Music in gardens, gardens that have been shaped by music, gardens conceived as musical instruments and music inspired by and evoking gardens are considered. More conceptual connections and a few examples of their contemporary expressions are also discussed.

1.1 Keywords
Gardens, music, gardens and music, music and gardens, landscapes and sound
2 INTRODUCTION

Although visual understandings of landscapes continue to dominate the landscape architecture profession and its representations, a multisensorial perspective potentially enriches the landscape designer’s work even as it complicates it.1 If landscape experience is understood as multisensorial, then sounds are certainly part of that experience. Sound can factor into design as an existing condition, a conscious introduction, or an unexpected by-product; the designer may seek to accommodate, mitigate, create, enhance or manipulate sound.

While the relationship of music to sound and gardens to landscapes are not parallel, we can say provisionally that music derives from sound as gardens derive from landscapes. Both gardens and music are consciously composed and constructed. Music is considered an art form, and it is as gardens that landscape architecture most often has been called art. More to the point, there have long been and continue to be situations in which music and gardens are conjoined -- composed, refined, manipulated, cultured and abstracted -- nature and sound married.

Descriptions, depictions and testaments of these marriages can be found in the literature of music, acoustic ecology, and art, as well as landscape architecture. Although usually embedded in more general discussions, they can be found in scholarly and first-hand accounts of specific gardens of particular times and places (Goethein, 1928; Sitwell, 1909; Cohen, 2000; Strong, 1983; Hunt, 1986; Lazzaro, 1990; Stoksstad and Stannard 1983; Carpeggiani, 1991, Zangheri, 1991). More in depth studies such as Yu Zhang’s account of music’s evolution in the garden of Beijing’s Yun qin zhai (Zither Rhythm Studio) (2014), are much rarer. For this paper music literature concerned with specific musical compositions are of greatest interest, and pertinent music has been sought out and heard, indeed when this paper was presented it incorporated sound clips. Similar direct experience informs much of this discussion of gardens.

Scholarly and artistic investigations on sound, design, landscapes, music and nature in recent years have included conferences, symposia, exhibitions, installations, performances and books in the design and art communities (Ruggles, in press; Benedict, 2014; Brown, 2015, 2014, 2008; Monk, 1992). Discussions in Acoustic Ecology and Geography may have very interesting implications for the subject here, although they usually concern relatively large landscapes (Krause, 2012; Blessier and Salter, 2007; Corbin, 1998). This survey paper focuses relatively narrowly on gardens and music. Its intention is to draw attention to the subject, and, through examples, provide some working categories and historical perspective to inform and stimulate further design and thought.

3 GARDENS AS ENVIRONMENTS FOR MUSICAL PERFORMANCES

Google ‘music in gardens’ and a plethora of hits results. Musical performances are programmed in gardens from Minneapolis to Oakland, from Queens to Sheffield. The music may be spontaneous or highly choreographed; performed by individual troubadour, groups of musicians, ensembles of entertainers, or machines. It may accompany or stimulate human motion or theatre. It may work harmoniously with other garden sounds or may compete with them. It is music in gardens that most obviously connects the two.
Music in gardens has a long history. Images of musicians in gardens come close to archetypal, akin to the English urge to eat in gardens as portrayed by Nan Fairbrother (1956). Marco Polo reported singing damsels in part of the Paradise garden from which the Old Man of the Mountains recruited his band of assassins (Ibid.). Illustrations of gardens with instrument playing musicians appear in manuscripts as least as early as the 13th century; they are also found in illustrations of Renaissance Pleasure Gardens, as in the British Library’s *Le Roman de la Rose* of around 1500 (Figure 1). R. Murray Schaefer (1994, p. 106) describes European gardens of the later Middle Ages, where, in the “diminutive meadow . . . behind the protective wall of the castle . . . the troubadour art flourished, and the voices of the birds were often woven into their songs.”

However, music in gardens goes back to even earlier pleasure gardens -- to the slightly older Moorish gardens that influenced Christian cultures further north, as well as Roman Imperial gardens and the Persian pleasure gardens described in the Old Testament’s *Song of Songs*. A 7th century BCE Assyrian carved relief shows musicians serenading the king Assurbanipal and his queen in a garden (Figure 2).

Music was often part of events performed in the theatrical spaces of 16th and 17th European gardens. Thomas Campion composed an “Entertainment,” for Queen Anne’s 1613 visit to Caversham House on her Progress to Bath. The Entertainment included actors – among them a gardener – engaged in dialogue, dance, sounding cornets, and song. It progressed in stages through the Caversham garden along with the arriving queen, assumedly amusing as well as heralding her. Campion describes and locates action outside the park gate, inside the park, on a smooth “greene”, in the lower garden and arbours, and in the upper garden, and he specifies songs to be sung at each of the latter three locations. There was a reprise later in the house hall, and then, the next day, as the Queen departed, another speech and song in the lower garden (Nichols, 1828, pp. 630-639).

At Versailles, Louis XIV’s three great fêtes, in 1664, 1668 and 1674, – spectacles within spectacles – involved prescribed and changing ways for the king and his guests to move through the gardens where various events, including music and dance, were staged. On the last night of the final fête, a palace, fully illuminated, was erected at the long canal’s end. Sarah Cohen (2000, p. 79) writes of the 650 herms glowing along the side of the canal that represented “figures all very different in their actions and colors.” The king and courtiers traveled up and down the canal in gondolas, to the sound of the violins following the royal vessel. Félibien claimed that “the sound of these instruments seemed to animate all the figures, while the dim light also gave the symphony a certain agrément that it would not have had in total darkness.”

While surely to different and diminished effect, music lives on in the Versailles gardens today. *Jardins Musicaux*, recorded performances of late 17th century works, are amplified throughout, especially noticeably near the fountains. Now, as in Louis XIV’s time, the music is usually by French Baroque composers such as Jacques Champion de Charpentier, Jean Philippe Rameau, Louis and François Couperin, Henri Desmarets and perhaps most of all, Jean Baptiste Lully.

While Le Notre and other designers created spaces for music and theater, natural landforms that amplify and/or contain sound have long been adapted for similar purposes. Today at Mexico City’s Chapultepec Park’s Audiorama, an existing land formation has been transformed into a garden dedicated to musical experience (Figure 3). Its enveloping geological formations reflect and contain sound, and with its speakers, seating and broadcast musical recordings, it is a contemplative garden for listening.

Of course, technology-assisted music in gardens is not new. European Renaissance gardens included spaces intended and adapted for live musical performance, but they also incorporated musical events produced by automata. These machines might be found in pre-existing reverberant spaces akin to the Audiorama’s or housed in constructed grottoes. They included massive structures such as Villa d’Este’s Water Organ (Figure 4) as well as much smaller machines. They were usually driven by water and/or air. Villa d’Este’s water organ, Montaigne reported, produced two types of sounds. One was created when the water fell violently into a “round vaulted cave, agitating the air trapped inside, and forcing it into the organ pipes.” The second type, which made for musical harmony, was created when a water wheel’s teeth struck the organ keyboard and produced a sound like two trumpets (Lazzaro, 1990, p. 228). Montaigne also described the sounds of 20 naturalistic, painted, bronze birds of Villa d’Este’s Fountain of the Owl, located at the opposite end of the garden from the Organ. The birds were of various species -- among them linnets, goldfinches and nightingales -- and, propelled by water, each sang its distinctive song. However, singing abruptly stopped when the owl appeared, and the birds only resumed -- one by one -- when the owl departed (Ibid., p. 229).
At St. Germaine-en-Laye the Francini family created automata that included a hydraulic water organ played by a woman in a farthingale (Figure 5). Buontalenti created garden theatre automata at Pratolino whose technology aroused great interest among scientists and travelers (Zangheri, 1991). They included hydraulic organs, mechanisms imitating birdsong, and a grotto in which Fame “. . . loudly sounded a trumpet” (Strong, 1998, pp.78-79.) Musical automata were also at play in English gardens as seen in one of the three Victoria & Albert Museum’s drawings for garden grottos at Wilton. Long attributed to Isaac de Caus, it shows Mercury playing the pipes, presumably their sound produced hydraulically.

Mechanical marvels have been replaced by electronic ones, but the tradition of musical machines in gardens continues today, albeit bereft of classical myth and less dramatic and marvellous. Although bearing little stylistic resemblance, Bernhard Leitner’s Le Cylindre Sonore, in Chemytoff’s Bamboo Garden in Parc de la Villette resembles much 16th and 17th musical automata in its situation within a sound reflective structure: a constructed, curved, below-grade, “resonance chamber” of concrete (Figure 6). Leitner’s composition is conveyed via twenty-four loudspeakers in stacks of three behind each of the cylinder’s eight perforated elements; seating facilitates prolonged experience (Leitner, 1998, p. 148).

Left image: Figure 5. Grotto of woman playing organ, St. Germain-en-Laye. Engraving by A. Francini, 1614. Two right images: Figure 6. Le cylinder sonore, exterior (left) and interior (right).


Left: Figure 3. Audiorama, Chapultepec Park, Mexico City. Photograph by author, 2011. Right: Figure 4. Fountain of the Water Organ at Villa d’Este. Engraving: Giovanni Francesco Venturini, 1691. From The fountains of the extended gardens in Tivoli, with their perspectives and views of the cascades of the Aniene River by Giovanni Giacomo de Rossi. Roma.
soundFIELD by Douglas Moffat and Steve Bates, created for the Eighth International Garden Festival at the Jardins de Métis in 2007 (Figure 7) looked like a cross between contemporary high tech and 1970s futuristic. Located in a small stream wetland dominated by poplars, its spindly 4-feet-tall steel poles formed points in a grid of blue electrical wire. This skinny-legged furniture accommodated five mini wind sensors (measuring speed and direction), 50 speakers and 25 amplifiers that broadcast the designer/composers’ sonic response to the site. The existing lowland trees’ leaves were distinctly sonorous in the wind, but the dominant sound was a 144,000-minute — the length of the festival — composition, comprised of electronic sounds Moffat and Bates made, treated, mixed and structured to create a second mass of sound to work “in concert” with that of the site’s trees. Given the festival theme, site size, quantity of trembling-leafed trees, and the likelihood of breezes, most visitors would, if they had not before, come to know the distinctive, gentle maracas-like sound of poplar leaves in the wind. Still, as in gardens 500 years ago, the technology at work was at least as intriguing as the composition (Brown, 2008).


4 GARDENS’ TRANSLATIONS INTO MUSIC
The “labyrinth of love,” a popular planted form in 16th and 17th century Italian gardens, apparently derived from its portrayal in the music and poetry of the late 15th century Mantua court.8 Toronto’s Music Garden, created by Yo-Yo Ma and Julie Moir Messervy, translates Bach’s Cello Suite #1 in G-major into a spatial composition, each garden room corresponding to one of the suite’s six movements. However, such instances in which music or its text has directly shaped gardens are relatively difficult to find.9
In contrast, music has long referred to, expressed, represented or evoked gardens through both texts and sounds. Gardens have inspired and been settings for the natural phenomena the music portrays (as in Liszt’s Villa d’Este works); music has referred to garden incidents and temporal experiences (as in Debussy’s *Jardins sous la pluie*); and music has referred to gardens both as specific places and representative of places (as in Falla’s *Noches en los Jardines des España*). This portrayal is often filtered through poetry and myth as well as the composer’s imagination. The text, whether song lyrics, composition title, program notes, or written beneath the score’s final measures, ranges widely in specificity, power and integration with musical sound. So too ranges the garden’s significance to the composer. Usually some trigger of words is necessary to ‘get’ the garden reference; the words and language flavours how we hear the music (Brown, 2014).

Gotthold Lessing (1766/1972) and others discerned centuries ago that music is a temporal medium. And so it is not surprising that in music, gardens are typically places of pulsating and changing phenomena. Light and colors, birds’ songs, mammals’ calls, water’s ripples, rain, mist, snow, fog, scents, people moving with varied speed and rhythm -- the sounds all shift and change; all take time. Music may refer or evoke these phenomena through sonic analogue or transformation; it may imitate actual landscape sounds; it may reproduce them through recording technologies.

Handel, Vivaldi, Beethoven and earlier composers evoked landscapes in their works; gardens figured into texts of fifteenth century Europe’s religious music. However more specific references to gardens in western classical music came after 1825, when landscape inspired tone-poems began to be written, fed by poetry, prose, painting and graphic arts as well as actual landscape experience. Franz Liszt, credited with articulating and advancing program music and the symphonic poem, referred to landscapes in his piano compositions. Various pieces in his *Album d’un voyageur* (1835) refer to landscapes he experienced directly, (though these same works usually also have superscribed quotations—not obviously landscape related—from Byron’s *Childe Harold’s Pilgrimage*). The third book of his *Années de pelerinage* (1877) includes three works of interest here, all tied to Villa d’Este, where the composer spent time during each of his last twenty years. There are two different *Aux Cyprès de la Villa d’Este, Threnodie*, and in 1877 the composer described how the garden’s cypresses inspired him “... three days I have spent entirely under the cypresses. It was an obsession, impossible to think of anything else, even of church. Their old trunks were haunting me and I heard their branches singing and weeping, bearing the burden of their unchanging foliage” (quoted in Williams, 1990, p. 550). The many low, ponderous, brooding and sometimes dissonant and staccato passages of the cypress pieces contrast to the arpeggios pacific sparkle in the third piece, *Les Jeux d’Eaux à la Villa d’Este*, which evokes the shimmering play and splashing of that garden’s waters, from trickles to cascades, presaging works by Debussy and Ravel.

Debussy’s music is often associated with landscapes (and not coincidentally recordings of his music are often packaged with cover art featuring Impressionist painters’ landscapes). Although he only occasionally evokes a specific landscape, Debussy evokes landscape phenomena superbly through titles, sonic analogues, imitations and transformations. *Jardins sous la pluie* is the third of the three works of Debussy’s *Estampes* for piano. The title *estampes*, translates to prints or engravings and reflects the composer’s interest in possible principles common to all the arts and in sonic analogues for visual phenomena. Indeed, the bounded garden form may be a particularly appropriate metaphor for a print. The set’s first piece, *Pagodes*, with its pentatonic scales and similarities to a Javanese gamelan orchestra, suggests the Orient, its second, *Soirée dans Grenade*, the atmosphere of Andalusia. *Jardins sous la pluie*, on the other hand, is situated in France, and its gardens are sites for meteorological phenomena and children’s play, for the work’s two main themes are based on two French children’s nursery rounds. One might not make the connections without the title, but the piece’s structure -- the chromatic, whole tone, major and minor scales, the broken chords, the dynamics and the sequencing -- and the nursery song themes are easily interpreted to represent rain drops’ patter, gusty downpours, thunderous rumbles and claps followed by a brilliant sunny clearing. Yet Debussy also casts the rain event within the garden, in a context of civilization and safety. The garden and its phenomena entwine with childhood (perhaps especially a French one) its perspectives and experiences.

Manuel de Falla described his *Noches en los jardines de España* as “symphonic impressions for piano and orchestra.” Written in Paris between 1911 and 1915, it is thought to have been inspired by a series of melancholy poems by the Nicaraguan writer Ruben Dario, ‘Night Thoughts.’ It has been called a meditation on beauty (Griffiths and Webber, 2002, p. 441) and reflects the period’s romantic interest in the exotic and its growing interest in music as expressive of folk culture and nationalist pride. Each of its three pieces suggests a different garden or garden group. *Generalife* refers to the jasmine-scented gardens...
surrounding the summer palace of the king’s harem; *Danza lejana*, an exotic dance in an unidentified garden experienced from a distance; and *El los jardines de la Sierra de Cordoba* the gardens in which gypsies dance and sing for the feast of Corpus Christi. While the work reflects the influence of Debussy and Ravel (Falla was after all in Paris when he wrote it) it also incorporates Spanish *alhambrismo*, an exotic imitation of Moorish music popular with Albeniz and other composers of the previous generation (Ibid., p. 441).

5 METAPHORS, ANALOGIES; CONCEPTS, TRANSFORMATIONS

... the brain seems to be able to trade space for time.

John J. Gibson, *The Senses Considered as Perceptual Systems* 

When considering garden/music relationships and interactions beyond music in gardens and gardens in music Gibson’s assertion naturally comes to mind. In this case, these spatio-temporal trades occur via metaphors and analogies; their transformations realized by their experiencer as well as their creator. While the metaphor of architecture as frozen music verges on cliche,20 gardens have long enjoyed some ambiguity in the dichotomy of the temporal versus the spatial arts. Gardens uniquely engage change over time, yet spatial closure is fundamental to garden’s very definition and etymology.21 Moreover, as Souriau argued, (1949/1958, p. 125) landscape design is the one plastic art in which a “melodic order of view by means of a set progression [in time] is structurally fundamental.”

The garden’s demarcated space, its framing and structuring of landscape and Nature, along with its association with the Garden of Eden and Paradise gardens, make it a popular metaphor for composers naming, if not conceiving, their time-bound compositions. In R. Murray Schafer’s *Garden of Bells* that metaphor involves sound: a human chorus creates an enveloping assemblage of bell-like sounds.22 In Marjan’s Mozetic’s *Lament in the trampled garden* and Tristan Murail’s *C’est un jardin secret* the metaphor is based in text. In the former the garden symbolizes despoiled nature; the latter’s title comes from the Song of Songs, in which the garden already is symbolic.

Conversely, writers have used musical terms to describe gardens, George Sitwell, (1909/1951), who onomatopoetically noted gardens’ murmurs, sighs, rustles, “muffled thunder,” and “silvery plashes,” most memorably. Highly attuned to garden acoustics, he went further, interpreting garden sounds as music. His *On the Making of Gardens* concludes with the hope that unborn children will know in gardens “all the mystery and the music.” (p. 70). And early in the book he describes “the magic of the wizard’s music” at Villa d’Este, where above the “muffled thunder” of the great cascade dominating the garden, “... blended like the rolling of spheres into one, deep melodious thrill, are the varying notes of murmuring, mourning, whispering, rioting, rejoicing water”(p. 8). We might say that Sitwell was primed to hear and interpret Villa d’Este’s music, however much the original designers intended its orchestration. There are cases however, in which the composer or designer’s manipulations and transformations of sound and space are intentional, clearly articulated and independent of one connoisseur’s sensibilities or interpretation. These concepts may be straightforward or mysterious, rarefied or easily accessible.

Composer Tōru Takemitsu pushed garden/music metaphors much further than titles. Gardens were often integral to his works’ very concept and structure. He compared the structure of his *Garden Rain* to that of a Japanese Rock Garden (Burt, 2001, p. 168). Interested in how the ancient gagaku was “a kind of strolling music for playing outdoors such as while strolling in a garden” in his *In An Autumn Garden* Takemitsu spatially distributed the instruments based on how he interpreted the spirit of the original gagaku performances (Ibid., p. 162). A *Flock Descends into a Pentagon Garden* was inspired by Takemitsu’s dream in which a flock of white birds, led by a black bird, descended into such a garden.23 In the heavily programmed and controlled composition, musical elements correspond to those of the dream: the black bird, the white birds -- each has its musical correlate. Moreover, the pentagonal garden’s starting point is the F# pentatonic scale24 (Ibid., p. 170).

Yet gardens were an inspiration and compositional analogue – even model – for Takemitsu before they entered his titles. In *Arc* (1963) for piano and orchestra, he conceived a garden in which the piano soloist (musically) strolled. He even drew a map of it (Figure 8). Different garden elements corresponded to different sounds and their tempi: sand and clay with “a constant sound of strings . . . representing eternity and infinity;” earth with different strings. Low-sounding instruments represented immobile stones and rocks, which, though static, varied in shape because the stroller’s position changed. Small instrumental groups

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musically represented the trees, and the grass underwent “greater and more rapid changes in the different cycles compared to the trees” (Taskemitsu, 1995, pp. 120-121.)

Later in life he wrote, “Sometimes my music follows the design of a particular existing garden. At times it may follow the design of an imaginary garden I have sketched. Time in my music may be said to be the duration of my walk through these gardens. . . . the garden . . . gives the ideas form” (p. 114).

Referring to himself as “a gardener of time,” (1995, pp. 142-143) Takemitsu also used the image and experience of a garden to describe his approach to composing for Western orchestras, contrasting his view of the orchestra as “a source for many sounds” to the more typical “one gigantic instrument”.

... we can think of the orchestra as a garden, especially a garden for strolling, the popular Japanese landscape garden that has a variety of aspects, all in harmony without a single detail overly assertive. This is the aesthetic I wish to capture in my music. In such a garden things sparkle in the sunlight, become sombre when it is cloudy, change color in rain, and change form in the wind. That is the way I wish my orchestra to be. (Ibid., p. 114)

My own work with landscapes and sounds has grown out of an interest in multi-sensory experience, the reciprocal revelations of landscapes and sounds, and an interest and concern for our acoustic environment more generally. Listening gardens comprise one realm of these design investigations. The term listening garden correlates to the landscape architect’s viewing garden, such as at Ryoan-ji (Figure 9), a garden designed for the eyes, often not entered bodily, its use and aesthetic primarily visual and discretionary. These listening gardens are, analogously, designed for the ears, favour hearing over viewing, and depend on the listener’s discretion. They play off ideas of garden as well as music practices. They are intended to draw attention to our everyday acoustic environment and provoke reconsiderations of our experience and understanding of gardens, sound and music.

Sounds from different stations in a nearby landscape are heard indoors via a sound mixer, each station assigned its own pair of stereo channels. I as designer determine the garden boundaries and general sound characteristics by selecting the overall location, choosing specific sites within it, and (usually) the times of those sites’ sounds. However, each visitor– each listener -- mixes the sounds and, in a sense, creates her or his own composition. One can choose to hear one, two, three, four or five sites simultaneously or sequentially, and what and how to emphasize and combine. In One Listening Garden, Gainesville, Florida, sounds fed into the mixer from sites on a residential lot--a house roof-top, an outdoor fountain, a grove of nut-dropping Laurel oaks, and a compost bin.
In *Ringling Listening Garden*, the sites on the campus of Ringling College of Art and Design in Sarasota, Florida included a busy street median, a dormitory courtyard (Figure 10), a banyan tree in central campus, a live oak tree by the bayou on the campus edge, and a location beneath bayou waters. As the images suggest, *Ringling Listening Garden* had two parts: *Ringling Listening Garden—Outside* and *Ringling Listening Garden—Inside*. Outside there was a listening device at each station from which sounds heard inside had been collected. Thus the five different listening sites spatially defined this Outside garden. The Inside garden within Ringling’s Selby Gallery featured a six-sided gazebo housing a sound mixer. Five gazebo panels bore an image of an outdoor station, the sixth a montage of the five. The gazebo’s grey-veiled interior softened, but did not obliterate visual landscape references (Figure 11).

If *Listening Gardens* or Takemitsu’s compositions seem overly complicated, consider *Cat’s Cradle*, a work in the Jardins de Métis International Garden Festival in 2007. Its creators, Juliette Patterson, Michel G. Langlois and Gerard Leekey, conceived a garden as a musical instrument and a musical instrument as a garden. Bordered by birches, containing three resonating sound cabinets constructed of recycled piano boards, the garden was a sort of Aeolian harp, its trees both musicians and instruments. A lattice of strings (in fact piano strings), extending between the sound cabinets and the tree branches on three site edges formed the cat’s cradle. The moving trees’ branches pushed and pulled the strings so the boards resounded. Musical instruments played by natural elements go back at least as far as ancient Greece, but this integration with a garden was a fresh and delighting take.

6 CONCLUSION
Although connections between landscapes and music must predate gardens, this refined landscape genre has a particularly rich realm of linkages, linkages entwined with the rest of the natural world and what we make of it. Connections between music and gardens—historical, aesthetic, conceptual, even psychological--have resulted in expressions ranging from the very concrete to the very abstract. Gardens have held music, music has held gardens. Gardens and music have been mutually enriching and
have reciprocally enriched and inspired those creating and experiencing them. Today when the integral connection of our acoustic surroundings to our greater ecological environment is ever more apparent, how can we as designers, musicians and educators most meaningfully, imaginatively and pleasurably, maintain and develop these connections to surprise, delight, provoke and reveal?

Figure 11. Gazebo (right) and sound-mixing station inside it (left). *Ringling Listening Garden – Inside*. Work and photographs by author, 2008.

7 END NOTES

1 Mirko Zardinis’s *Sense of the City: An Alternate Approach to Urbanism* (2006), the hefty catalogue for an exhibit of the same title, is the most comprehensive attempt to address contemporary sensorial landscape experience of which I am aware.

2 These visual depictions, like gardens of the time, were reinforced by (sometimes fanciful) literary accounts. For more on these gardens of pleasure, see Stokstad and Stannard, (1983), pp. 25, and 57-59.

3 Hunt (1986) devotes a chapter of his *Garden and Grove* to “Garden and Theatre,” describing how Italian gardens of the period, likely influenced by Roman precedents, included spaces specifically for performances as well as similar spaces suggesting theatres that could be adapted for performances. Indeed he discusses how Italian gardens such as at Villa Mondragne, “offered miniature worlds, in the same way that Elizabethan theatre like the Globe had done” (pp. 67-68). Often this theatre entwined with spectacle, particularly in Royal Progresses, and masques, which, as described by Orgel and Strong (1973) included music composition and performance along with nearly every other art form of the age, including landscape images that served as backdrops as well as active components in dramatic development.

4 These Royal Progresses encompassed much larger landscapes and many other theatrical events. See Nichols (1828, pp. 630-639), Hunt (1986, p. 113) and Strong (1984).

5 Cohen quotes from André Félibien’s *Les Divertissements de Versailles donnez par le Roy à toute sa cour au retour de la conquêt de la Franche-Comté en l’année 1674*.

6 Lully was Louis XIV’s *Surintendant de la musique de la chambre du roi*, and if he did not compose all the music of the court, all French music was nonetheless subject to his approval. The *Centre de Musique Baroque de Versailles* (CMBV - Centre of Baroque Music Versailles), a centre for the study and performance of French Baroque music, is also based at the Versailles Palace.

7 As demonstrated by classical Greek theatres, thought to have evolved from natural landforms occasionally used for performances into constructed theatres that adapted, built into and off those landforms.


9 I am not overlooking the suggestions and analogies to music in Lawrence Halprin’s scores. However, his concerns seem less with music than the notations that might inform all the arts and creative process.

10 As Claude Debussy did in his *Preludes*. 

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Handel's and Vivaldi's respective *The Seasons* and Beethoven's Pastoral Symphony are among the obvious. Word-painting portraying landscapes also comes to mind. Going back at least as far as Gregorian chant, word-painting was very popular in 16th century madrigals and Renaissance music theory. Strictly interpreted, in word-painting music serves the text. The passage from Isaiah 40:4 in Handel's Messiah is a landscape-related example: *Every valley shall be exalted, and every mountain and hill made low; the crooked straight, and the rough places plain.* The melody has "valley" ending on a low note, "exalted" as a rising figure, "mountain" as the peak, "hill" a smaller rise, and "low" another low note. "Crooked" is sung to a rapid figure of four different notes, while 'straight' is sung on a single note, and in 'the rough places plain,' 'the rough places' is sung over short, separate notes whereas the final word 'plain' is extended over several measures in a series of long notes" (Wikipedia, 2012). See also Carter (2012) and Whittall (2012).

This later became the first of the three books of the *Années de pelerinage*.


According to Roberts (1996, p. 68) suggesting water with "rapid arpeggio figurations" was a nineteenth century convention. Sitwell (1967, p.373) notes that Debussy, like Ravel, admired Liszt and heard him play.

Others discuss and dispute relationships and reciprocal influences of composers and painters during this period (Vergo, 2010; Lockspeiser, 1973; Bruhn, 1997; Roberts, 1996). When Debussy refers to landscape, he seems most concerned with its sensorial experience (Brown, 2014). As it is said that Impressionist painters’ real subjects were light and how we see, in works such as *Le vent dans la plaine*, *Reflets dans l’eau, La terrasse des audiences du clair de lune*, or *Les sons et les parfums tourment dans l’air du soir*, the composer’s subject is a composed, sonic equivalent of the multi-sensorial experiences the titles suggest.

Most famously articulated by Debussy in an article in *Revue Blanch* in 1901.

Roberts (1996) argues that the reference was particularly the Japanese prints then so popular in Paris.

The songs are *Dodo, l’enfant do, l’enfant dormira bientôt* (Sleep, child, sleep, the child will soon be asleep) and *Nous n’irons plus au bois, les lauriers sont coupés* (We’ll not return to the woods, the laurel trees are cut down.)

See Benedikt, 2014 for examples.


Schafer (1986) wrote that the piece “suggests a soniferous garden filled with bells of all shapes and sizes through which a traveler might wander at leisure and be entertained by a tintinnabulation of sounds.”

The composer’s dream (in turn) was reportedly instigated by Man Ray’s photograph of Duchamp in which Duchamp’s shaved head has a bald spot shaped as a 5-pointed star.

The scale of a piano’s black keys.

This is one of three realms of investigation on “Landscaes as/of Sound,” I have engaged since 2003. I explore reciprocal revelations of landscape and sound and how landforms, habitat, and plant and animal communities relate and interact with climate, time, light, and wind to affect sound. Simultaneously, I explore how to engage, inform, amplify and transform people’s motion, listening, hearing, and comprehension.

Others have used this term for different sorts of works.

### REFERENCES


SERVICE LEARNING AND COMMUNITY ENGAGEMENT

Edited by Paula Horrigan and Cheryl Doble
HANDS-ON DESIGN FOR HANDS-ON LEARNING WITH YOUTH IN SOUTHERN WEST VIRGINIA- A CASE STUDY IN PARTICIPATORY DESIGN PROCESS

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1 ABSTRACT
Wyoming County in southern West Virginia is an economically and ecologically compromised area long dependent on extractive industries. Public space for recreation, community building and education is dwindling as non-resident landowners, controlling eighty-five percent of predominantly forested landscapes, continue a trend of physical enclosure and controlled access to previously quasi-public areas. In particular, children lack local access to the experience of nature and the ability to interact with their environment within an educational setting. Identifying opportunities and devoting space for outdoor learning, especially in STEM fields, is a concern of local educators who desire project-based learning opportunities to increase student interest, motivation and performance. Faculty and students from West Virginia University (WVU) landscape architecture program joined with WVU Extension’s local 4H, Friends of the Earth (a high school environmental club), Groundwork Wyoming County (a local non-profit), and the Upper Guyandotte Watershed Association to develop a vision for the design of an outdoor classroom at Wolf Pen, WV along Indian Creek to be funded by the private landowner Cliffs Natural Resources, a significant local employer. The ‘site understanding’ activities and following design process integrated ecological assays, cultural landscape exploration, site ritual, and abstract art production. This process sought to create a transformative experience for students in designing the outdoor classroom- and create a model process for participatory design with youth.

1.1 Keywords
Participatory Design; Place-based Design; Outdoor Classrooms; STEM; Outreach
2 PROJECT CONTEXTS

2.1 Partnership in Planning

Building partnerships between the academic community and local groups creates sustainable momentum for the implementation of site specific projects. This project, the design of a two-acre community space/outdoor classroom for Wyoming County high schools, brought together local youth, private industry, non-profit and academic groups to envision and design an outdoor classroom at the site along Indian Creek, equidistant between East and Westside high schools and a short detour off of the National Coal Heritage Trail, a National Scenic Byway. Faculty (Professors Butler, Campbell, Kyber and Wittner) and graduate students from West Virginia University (WVU) landscape architecture program joined with WVU Extension’s local 4H, Friends of the Earth (a high school environmental club), Groundwork Wyoming County (a local non-profit), and the Upper Guyandotte Watershed Association to develop a vision for site development to be funded by the private landowner Cliffs Natural Resources, a significant local employer. The Upper Guyandotte Watershed Association monitors and quantifies water quality data for Indian Creek and is a strong local environmental advocacy group and community organizer. Groundwork Wyoming County (GWWC) is a non-profit group committed to the rehabilitation of brownfields and the mitigation of environmental liabilities. The organization also consists of partnerships between other non-profits including the Coal Heritage Highway Authority, Eastern Coal Regional Roundtable, Upper Guyandotte Watershed Association and Rural Appalachian Improvement League, Inc. GWWC’s mission includes directing park and recreation development for the county which is currently not a role of local government. WVU Extension officials provided a much needed connection to the local 4H and assisted in organizing the project. Cliffs Natural Resources has assisted non-profit groups by funding projects that create positive change in the county and region including water quality mitigation and reforestation initiatives.

2.2 Context- Social, Environmental and Local Issues

Wyoming County in southern West Virginia is an economically and ecologically compromised area long dependent on extractive industries. Local public health is of particular concern. When compared to national averages, the county has higher rates of physical as well as mental health problems. Heart disease, diabetes, cancer, and other illnesses, especially immunosuppressive illnesses, are elevated and rising in an aging demographic where population growth is stagnant. Lifestyle is at the center of the health issues in Wyoming County. Poverty, where the workforce depended on the boom and bust cycles of the now mechanized coal industry, puts an emotional strain on disadvantaged area youth. Contaminated water, soil, and poor air quality creates both a perceived and real threat in the environment that may prevent youth from engaging in activities and interaction with the natural world. Where rivers run orange with abandoned mine drainage and refuse piles stretch over infertile acres children seemingly have nowhere to engage with nature. Life expectancy is declining at a rate rarely observed across the United States (Finn, 2008) with mine-related pollution the probable cause. Aluminum, lead, and other mine-related pollutants are entering the water system contaminating wells.

Surface mining has dominated the economy and landscape of this part of West Virginia for some time and is now considered to be the primary driver towards land use change in the Central Appalachian region of the United States (Palmer, 2010). Deforestation, soil compaction, topsoil loss, alteration of hydrologic flow regimes and coal processing practices associated with mining operations have significantly altered the ecology of the region and seriously fragmented the ecological processes of the landscape. It is estimated that approximately 800,000 acres of forest, 470 mountains, and 1900 miles of headwater streams have been destroyed by surface mining in Appalachia (Wuerthner, 2009). Primary impacts include; increased stormwater runoff, soil degradation, contamination of streams, accumulation of airborne toxins, loss of biodiversity and decline in human health.

Fragmentation of these landscapes and loss of ecosystem services have the potential to devastate landscapes beyond repair, threatening a culture that has existed for generations. Ecosystem services (Costanza, 1987), providing the green infrastructure that has sustained populations for centuries, are now disabled. Lacking in contemporary West Virginia are the natural and semi-natural benefits that locals traditionally obtained from their environment including essential elements such as food and water provisions, regulating services such as flood and disease control, and production services such as nutrient cycling, soil formation, and oxygen and biomass production. A more socio-cultural view of ecosystem services refers to non-material benefits that people obtain from their environment such as recreational, cultural and aesthetic experiences (MEA, 2005). The Guyandotte River watershed is contaminated with domestic wastes and mine drainage creating a compromised landscape. The 2004 TMDLs (Total Maximum...
Daily Loads) for the Guyandotte River (Hydrologic Group E) include: Aluminum, Conditions Not Allowable (CAN)-Biological, Fecal Coliform, and Iron (WVDEP, 2008). Indian Creek of the Upper Guyandotte is impaired as a public water supply and warm water fishery, containing iron and manganese (EPA, 2008). Figure 1 demonstrates the level of fragmentation and disturbance in close proximity to the outdoor classroom site.

![Figure 1: Gray areas show surface mine permit boundaries. Circles show all mine permits. The white pin is the site of the outdoor classroom project along Indian Creek, Guyandotte River Watershed (2010 Google Earth Image and 2011 WVDEP mine permit data).](image)

3 OPPORTUNITIES FOR OUTDOOR CLASSROOMS

3.1 Critical Need

Public space for recreation, community building and education is dwindling as non-resident landowners, controlling eighty-five percent (GWWC, 2009) of predominantly forested landscapes, continue a trend of physical enclosure and controlled access to previously quasi-public areas. Trails into the dense Mesophytic forest are gated with video surveillance to control trespassing. The loss of land in West Virginia mining counties, particularly in Wyoming County, due to surface extraction, is often overlooked. Areas where communities once explored, harmonized and had strong ties to their landscape are now no longer accessible due to mountaintop removal and valley fills. In particular, children lack local access to the experience of nature and the ability to interact with their environment within an educational setting. Combining outdoor classrooms with place-based and project-based learning presents an opportunity for schools and the communities surrounding them to learn about, understand and experience nature. Identifying opportunities and devoting space for outdoor learning, especially in STEM fields, is a concern of local educators who desire project-based learning opportunities to increase student interest, motivation and performance. Students would then have the ability to learn about ecological systems in relation to the industrial developments surrounding them. Projects located on school grounds and other areas in and around a community offer the ability to improve environmental quality, health and quality of life while delivering open-space amenities and hands-on educational opportunities.

3.2 Participatory Action Research/Place-based Learning/Project-based Learning

With the goal of providing a transformative experience and building momentum for project implementation participatory action research (PAR) as a model for engagement was deemed the most appropriate approach. Involving local school children and educators sought to develop a sense of ownership and build stewardship of the site towards positive change (Arnstein, 1969). PAR, in this case, aimed to provide workable solutions to site development as well as develop local capacity (Riel, 2010). Within this particular environment, the Mountain Top Removal mining region, increasing awareness of abusive land practices and environmental impacts served as a core outcome for developing the outdoor classroom. The ‘place’ of Wyoming County served as the context for the design and the context for developing learning opportunities. The place-based learning paradigm promotes the framing of curriculum around the local community and environment to teach concepts in language arts, mathematics, social
studies, science and other subjects. Emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances students’ appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens. With the local trend of enclosure of privately held lands opportunities for community capacity building are lacking in Wyoming County. Enhancements of community vitality and environmental quality through the active engagement of local citizens and community organizations was an identified potential outcome for the project. A core goal of the outdoor classroom was to help disconnected communities come together to learn, socialize and recreate.

Workshops held with local educators, from the two county high schools and a community college, identified specific project-based curriculum opportunities for the Wyoming County outdoor classroom. Themes for the project included a wide range of educational opportunities generated by participants. Biodiversity through restoration of multiple habitat/plant community types; Education through hands on science and entrepreneurship; Engagement with local experts, non-profits, government, and industry; Stewardship by building through tiered activities and longitudinal projects; Openness by creating a place for all ages from elementary school age through lifelong learning for seniors; Cultivation of the site promoting programs in entrepreneurship and conservation; and Observation of inherent ecological processes including disturbance and succession. Science curriculum opportunities were pinpointed in relation to the existing landscapes found on site. A rich palette of plant communities was observed during site visits including: riparian forest, streamside wetlands, floodplain forest, mixed-hemlock forest, aquatic communities, and meadow. These communities, through management, would provide a diverse set of frames for observing soil, water, vegetation relationships; succession; and alpha and beta biodiversity among others. Horticulture and cultivation of native plant species by implementing a nursery was also suggested, filling a need in local landscape restoration projects. An integrated approach to STEM education focused on real-world, authentic problems was central to curriculum development. The impetus for this approach is supported by research in project-based learning demonstrating that projects can increase student interest in science, technology, engineering, and math (STEM) because projects involve students in solving authentic problems, working with others, and building real solutions (artifacts) (Fortus, Krajcikb, Dershimerb, Marx, & Mamlok-Naamand, 2005).

Hands-on science involving children throughout the process was at the core of program development for the outdoor classroom. Classroom “visioning, design and construction processes can involve children in meaningful, developmentally appropriate ways with a multitude of benefits. Involvement contributes to their self-esteem, builds awareness of their role in a democratic society, and enriches their understanding of the people and professions within their community” (Hart, 1992). Developing the program for the site design with educators and students through meetings and discussions identified specific activities for engagement, both within the curriculum and with the adjacent community. Activities brainstormed in stakeholder meetings and with students included first building a knowledge base of site characteristics and elements that would be built upon year after year. Curricular undertakings would include: plant identification, labeling, and interpretation of native communities; insect identification and collection in the diverse habitats; active restoration of plant communities and removal of invasive species; habitat enhancements for biodiversity; stream clean up and restoration focused on water quality and aquatic biodiversity; conservation related to local forests management through arboriculture and developing a native plant nursery focused on restoration and species protection especially for eastern hemlock; creation of a micro-economy based on local food and value added products for distribution to market; community-driven planting, maintenance and harvest as a capacity-building exercise. All of these activities would include local experts, community and non-profit organizations with the local students being at the organizational center.

4 SITE UNDERSTANDING IN THE DESIGN PROCESS
4.1 Overview
Working with local youth in an intensive two-day design workshop required inventive approaches to the design process. Project leaders determined that a reading, making, interpretation, and abstraction framework would draw meaningful contributions from participants and allow for the spatial design of the site with a predetermined curriculum-driven program. Three tracks were introduced to faculty led student teams: ecology, culture, and ritual. Track one, understanding the site through ecology, brought students on a plant walk identifying the existing diversity of vegetation and plant community structure. Soil was gathered to create pigments and drawings, documenting the tonal characteristics of the site. Plant prints recorded
textures and patterns for interpretation (Froggett, 2009). Track two, understanding the site culturally drew from local and regional patterns, interpreting and abstracting maps, and recognizing natural and cultural patterns in the near landscape. Track three, understanding the site through ritual included the creation of a path and space through movement, dance and music; revealing routes of unconscious movement, and a gathering of stones and other materials defined the edges of the found space (Reason, 2001). The products of the first day’s labors then were showcased within the 4H camp setting. Discussion and interpretation of the produced artifacts led to a team-based (MacKinnon, 2009) determination of forms, patterns, and experiences to be included in the design of the space.

4.2 Understanding Site Ecology

A central goal in the design of the outdoor classroom space is to demonstrate and track ecological resilience in the fragmented landscapes of Wyoming County and to provide a model of positive land management practices. The outdoor education initiatives in Wyoming County strive to not only heal the fragmented landscapes through restoring ecological functions but to use design as an education tool to visibly demonstrate these processes. Wetland and water quality processes, pollinator and food growth and sustainable energy interconnect through design to illustrate how these processes function holistically rather than as separate entities. Links between landscape science and landscape design are required to achieve many societal needs in regards to landscape ecology success. It is often through design language that landscape pattern is understood by society, influencing the human propensity to effect landscape change (JI, 1992; Gobster P, 2007; Nassauer, 2008). However, ecological sustainability is only realized to the extent for which societal disposition is aligned with the perceived value of ecosystem services (Nassauer, 2008). If people are not aware of the benefits that a landscape provides them they are less likely to be moved to care for these systems.

Not only does restoration of ecosystem services add value by building ecological function into the landscape, but it is through community engagement, understanding cultural norms and education where the greatest contributions towards resiliency are achieved (Lister, 2009). Palmer and Mappin (2004) assert that ecological restoration must be supplemented by ecological design that will blend familiar components of indigenous ecosystems with cultural patterns. Understanding culture through community engagement and environmental education are important components to the success and sustainability of ecosystem service resiliency.

Participation with the students to gain an intimate understanding of their personal relationship to ecology is a critical component in early inventory initiatives and throughout the design and implementation of these systems. It is not only important to think of culture as a source of ecological impact, but to understand what motivates a community’s behavior. This in turn shall help integrate human effects into landscape understanding and action (Nassauer, 2009). In order to gain a deeper understanding of the culture of an adolescent in an Appalachian mining community, we spent time with the students and teachers in their environment. At the 4-H camp, we were exposed to the daily activities and the learning spaces accessible to the children. This in turn provided insight to many of the societal issues and cultural norms that shaped their daily life. Students also spent time at the future home of their outdoor education site where elements such as plant material, water system and invertebrate connections were explored through nature walks, art pieces, poetry and music. Here students harmonized with their natural environment learning about landscapes by being immersed in the space and having a physical relationship with not only the biotic factors or living resources, but how they function together as a physical landscape unit (Figure 2). This holistic understanding is an important connection to make, as it is not the individual elements or processes that make the landscape valuable, but rather the complex, self-organizing networks.
In order for restoration of ecosystem services to be successful they must respond to a multifold of variables with social, physical and biological interactions that are unique to each community. It has been shown that the most successful and instrumental ecosystem restorations initiatives are able to facilitate hands-on learning and require citizen participation in ecological processes (Lister, 2009). Active participation from the students will ensure that ecosystem services are provided in a way that recognizes societal needs and respects societal values and culture. The needs and life experiences of a child living in Wyoming County, West Virginia is significantly different than that of one in New York City. In order to ensure that design and educational spaces responded to the needs of Appalachian adolescents, the students engaged in a design charrette process and in the act of production (Figures 3 & 4).
4.3 Understanding the Cultural Landscape Context

As a cultural landscape, reflecting the integration of human developments with the natural environment (Sauer, 1963), the project site gave several clues to its history that were framed and interpreted with the students. Students observed the former meander of the stream that had been redirected to the rock outcrop slope allowing for agricultural development in the floodplain. A concrete footing and open well was identified through site surveys and various infrastructural utility patterns could be read. The relationship of the former homestead to the roadway and the stream was also clear as the winding route followed the slope break at the edge of the floodplain. As a component of the exercises, faculty interpreted and guided students’ eyes (Lewis, 1982) to reveal the patterns as expressing the local culture’s values, economic conditions, social structure, crafts and traditions. Specific structures were identified that connected the design project to the vernacular construction techniques of locals and the ways in which local materials are used. Adjacent types of cultural landscapes included agricultural systems; industrial developments; housing developments; front yards and back yards; paths, and roads (Jackson, 1984). Investigating USGS topographic maps revealed larger patterns of development (Figure 5) in relation to the ridge and valley landform cut from the Allegheny Plateau, the mining, settlement and road patterns in relation to the Indian Creek watershed. These patterns were then pulled from the maps to create abstract compositions demonstrating cultural landscape observations.
4.4 Understanding the Site through Ritual and Song

Students from the 4H camp had not visited the site prior to the design workshop. Given the short timetable for site investigation, quickly followed by a participatory design charrette, there was a need for faculty to establish trust in the process as well as maintain student interest. In order to evoke an interest in site exploration, establish student’s place-based narrative and evoke community-building to facilitate participatory site design, faculty developed intertwined creative activities with science-based lessons. This pedagogical approach was meant to use culturally accessible creative process as a platform from which to introduce site relevant ecological and experiential lessons that would influence later site design while also building communal relationships between the participants. The premise for these activities references “mimesis” as a means of establishing “rehabitation” (McGinnis, 2000). According to McGinnis (2000), the “act of mimesis” via “ritual, performance, art and theater” serves to “renew and restore” community. During the days prior to the event, the students had been immersed in traditional camp community-building activities that included the sharing of personal stories and group sing-a-longs. ‘Call and response’ song structure and storytelling lyrical form is typical to both ‘camp songs’ and Appalachian old-time gospel shape-note music. The familiarity of this type of music allowed faculty, trained in the fine arts and music to begin site intervention using this lens of connecting students to place via song. Cherokee stories, of “The Stone People” and “The Standing People” as delivered by the author Jamie Sams (1990) were shared as a means of widening students’ perspective of land to a more indigenous understanding as being integral to the nature of reality. Site activities were choreographed via ritual as an experience of performance, tying McGinnis’ frame for establishing a bioregional community with oral tradition (Reisman, 1966).

The first introduction to the site was a gathering in the familiar camp circle to share personal stories, this time using the guiding question of ‘tell us about your special, or even secret or sacred place you go to in the outdoors that makes you feel at home.’ After the sharing, the instructor introduced the Cherokee Stone People which framed indigenous principles of ancestry and connectedness to the land. This story provided a point of departure from story to sound as students were asked to close their eyes and imagine being in their ‘special’ place in the outdoors and imagine that place while the instructor begins a slow-steady heartbeat-like drumming. The instructor asked that each student listen to the drum, the ambient sounds of the site, and find their heartbeat (Figure 6). Upon doing so, they joined the drumming by simply beating their chest with the drum. Once all students are engaged the instructor asked the students to take up an instrument and join the drum walk.
Following the instructor, the students were led through the two dominant ecotones present on the site: a centrally located ‘old field’ succession grassland and a floodplain forest edge. Students were asked not to talk but sing, walk and listen and watch for the plant and animal inhabitants of the site. As the group walked single-file through the site’s tall grasses, they were surrounded by a flurry of hand-sized butterflies. The instructor sang: “We are a circle, within a circle/with no beginning/and never ending” (Hamouris, 1986). Gathering the students in the center of the site the instructor then drew the group into a circle where another story sharing takes place. Weaving in a lesson in grassland ecology, sharing the interconnected relationship of fire to the prairie, specifically the depth of the root mass of a prairie plant. This lesson was followed by an introduction to site phenomenology discussing the role of the butterflies in pollination and the potential of the succession field as a community garden space. Students were asked to listen and locate the birds in the vicinity. As birds were located and their calls between individuals of one species identified, the instructor explained the role of edges in maintaining animal habitat. Students and instructor then discussed their comfort-level in the open land and used the drum and chant as a means of transitioning from the field into the floodplain forest. Here, the instructor shared the story of “The Standing People” and “The Grandmother Tree”. This story provided a means of discussing indicator species, trophic levels as related to plant families and plant communities. The lesson concludes at the base of a century old sycamore where students shared one last song: “She changes everything she touches/and everything she touches/changes (touches, changes)/we are changers/everything we touch can change.” (Livingstone, 2005)

The students were led out of the forest along the river to a road cut. The instructor shifted the lesson from a story and chant site walk to site documentation through art production. Given the students’ varying drawing skills, the instructor developed abstraction activities of pastel chalk rubbings, drawn found objects with site vegetative and soil-based pigments and rudimentary papermaking. These right-brained activities were balanced with field-study methods of pressing and documenting plant materials to reveal endemic patterns for design inspiration.

Collected patterns for inspiration that were used in the design during the day two charrette included rubbings- textures from soils, plants, rocks, insects, and creek life; mud drawings- tromp, stood on, dip, mineral (windblown); collage- plant materials collection and composition; and abstract drawings- dendritic drainage of surrounding slopes; music patterns, rhythms and scales; serpentine forms from the stream; circles of unity and assemblage, time, seasons, and the meadow dance. Specific environments created emotional responses in the participants. These responses were drawn upon when creating the design for the outdoor classroom site: woods- seclusion, enclosure, safety; meadow- calm; weeds- danger, fear and running free; streamside- flowing, freedom, fish, movement; and single tree- spirituality and transcendence.
4.5 Design Process- Developing a Plan

The elements of design inspiration were drawn upon when completing the design for the outdoor classroom. A discussion of abstraction and the design process introduced three student teams to their activities. With guidance from landscape architecture faculty and students, each team developed a plan for the site (Figure 7) that included elements of place: boundary, threshold, path, terminus, and eddies. They were to find in the products of the previous day’s exercises a pattern that would guide overall spatial organization and develop a legible structure for integration of previously determined programmatic requirements. Students drew and labeled their plans and presented them to the larger camp population for feedback (Figure 8). A final plan (Figure 9) was developed by faculty and presented to the key stakeholder groups for review and comment.

Figure 7: High school students working on their site design solutions with faculty and students at the 4H camp (2011). Photo by the author.

Figure 8: High school students presenting their site design solutions at the 4H camp (2011). Photo by the author.
5 CONCLUSIONS AND REFLECTIONS

Partnership, planning, mitigation, design and development of strategies to deal with troubled sites in underserved ‘survivor’ communities can be expected to empower local citizens towards a future of investment in healthy living and enhanced quality of life (Thering, 2007). As outdoor classrooms these places can function in education through building advocacy and stewardship in area youth and in building community capacity through engagement both in the design process and programming of the spaces. There is a critical statewide need to promote outdoor, place-based and project-based education venues based on local ecology and culture. Through participatory action research, this project sought to cultivate stewardship in local youth while creating positive space for learning and the experience of nature. The design process and local partnerships created during this project may serve as a model for a statewide project in promoting outdoor education, STEM, and sustainability through participatory action research.

Figure 9: Indian Creek Outdoor Classroom: Concept Plan (2011). Photo by the author.

The process, as developed and facilitated by faculty members, was an experiment in place-based participatory design. The Indian Creek Outdoor Classroom concept plan reflects the depth of programming envisioned with local educators. Through the ‘site understanding’ activities students and faculty cultivated a deep understanding of site conditions and opportunities that were integrated in the plan. The layered approach considering ecology, cultural patterns, and ritual established the knowledge base from which to work. Without previous familiarity of the ‘place’ of the design, working through the layers allowed students and faculty the experience necessary to generate context specific solutions in the design. As a process, tied to place-based, experiential and project-based learning, this case study provides a repeatable mode of inquiry, a model that may be applied to other contexts.

The outdoor classroom, as envisioned by local educators and students, was not implemented. Just months after completion of the design a major gas pipeline was installed through the site destroying much of the highly diverse riparian forest wetlands and meadow plant community. The funder of the design process did not share the vision of the educators and students, imagining a very different solution to site development. The design team involved the funder in the initial planning in developing curriculum as well as welcoming him during the exercises on both days of the design process- on site and at camp. In retrospect, the faculty team and extension agents could have established a stronger connection between
the goals of the funder and the products of the design process, though through his observation and participation during initial meetings we viewed his support as implicit. If the funder’s views had been shared, the design process would have been compromised and the visioning of students limited. This may have, however, resulted in a product that the funder could have supported and invested in. Navigating the political landscape, especially in terms of land ownership and controls in this part of southern West Virginia, is complex. Working with industrial corporations in the region is necessary as they are the principal land owners and have communicated interest in enhancing local environments to support community needs. In measuring this project’s result within the context of Arnstein’s “ladder of citizen participation” (Arnstein, 1969) faculty members did not reach citizen control but rather established partnership that continues today. The rung of the ladder for delegated power remains occupied by industrial land owners. Design outreach projects completed previous to and after this example have had mixed results. Working on projects in which the primary stakeholder (in this case identified as the local educators and students) does not fully control the land has resulted in several projects discontinued after conceptual design. Other projects, considered successful after having been constructed, have been executed through non-profit organizations whose membership maintained control of the designed sites. As design outreach is a core mission of the landscape architecture program at West Virginia University, faculty members continue to refine and evolve their processes of engagement continually seeking the approaches that lead to project realization.

6 REFERENCES

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TELLING IT AS IT WAS: INCORPORATING ORAL HISTORIES INTO A COMMUNITY VISIONING PROJECT

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1 ABSTRACT
As participatory practice continues to offer benefits in the community design and development process, new strategies of engagement are showing increases in participant recruitment and sustained levels of involvement in participatory activities. New process approaches centering on accessible technologies such as video, soundscape, mobile GIS and digital photography have seen increases in voluntary participation of one particular demographic: community youth. While youth participants offer a unique perspective in community planning activities, they will often turn to elders who provide valuable input by offering insights into the history of their community, its people and their landscape. This historical contextualization not only makes us aware of the past, it also helps us better understand contemporary local value systems as important determinants in design and planning outcomes. With a combined professional experience of more than thirty years, the authors have observed the challenges of broadening participant demographics first hand. This paper presents a model for motivating a typically under-represented population, namely, elders, to take part in a community-visioning project. The model we present, “eldervoice,” adapts traditionally employed oral history approaches by involving project designers in the multiple stages of a video documentary-based oral history project.

1.1 KEYWORDS
eldervoice, elder participation, participatory video, community visioning, oral history
2 INTRODUCTION

Participation is a method that solicits public input in planning and development decisions. The approach is used frequently by social scientists and education specialists but has also been used by urban planners, architects and landscape architects on projects in which an inclusive process or multiple stakeholder inputs is desirable. Participatory methods were popularized in the 1960s and have been influenced by the work of education theorist Paulo Freire. Freire maintained that education and communication are mutually beneficial activities and that only through effective dialogue can mutual understanding be achieved. Such a dialogue enables participants to gain a voice in decision-making processes and results in an increased capacity to affect change as a result. (Freire and Freire. 1994, p. 39).

Participation was further popularized as a planning method by Sherry Arnstein who developed the well-known “Arnstein’s Ladder of Citizen Participation.” This model describes eight levels of citizen participation ranging from “manipulation” to “citizen control.” (Arnstein, 1969).

Participation has faced many challenges. A common concern of the practice and one experienced firsthand by the authors of this paper is a tendency to over-state the extent of citizen engagement particularly on projects with pre-determined outcomes. True participation, according to development practitioners, involves citizen and community member inputs in all stages of a participatory process, particularly in the ideation stage. (Bond, Thompson-Fawcett, 2007. P. 449). Another challenge of participation is with engagement itself. Soliciting initial public input can be a challenging facilitation and logistical task but sustaining engagement in project activities is all the more difficult.

We have been involved in numerous publically oriented or community-based projects that involved participatory objectives. In nearly all of these projects, participant engagement was motivated by the extrinsic rewards of monetary payments or the issuance of certificates or other awards or prizes. While these strategies may provide solutions to short-term engagement challenges, participants seldom continue to exercise their voice in planning projects after the certificate is in hand or the final payments have been made.

Another important critique of many participation projects is that while a community voice may emerge, it is seldom representative of a broader community with varied demographics and population groups, both mainstreamed and marginalized. (Forester, 1989), (Bond and Thompson-Fawcett 2007). Rarely are public or community-based projects aimed at serving the needs of a single group or a narrowly defined population within a community. Nevertheless, we have seen organizers claim too often that a narrowly defined participant demographic was an adequate representation because they were the only group motivated to participate in such activities.

Earlier studies undertaken by the primary author confronted the challenge of motivating youth involvement in participatory planning activities. These studies suggested that youth are motivated to participate in activities that not only give them a voice in community decision-making processes but also build their capacity through new skills training or are simply fun and joyful activities in which to be engaged. More specifically, these earlier studies show that the intrinsic rewards of methods employing new media enterprises such as digital video and participatory filmmaking motivates youth to join in community development projects. (Thompson and Widmer. 2010). During the course of these earlier studies, youth participants were observed consulting with older family members and community elders at distinct points in the project’s development. In a project that asked participants to create narratives describing their community’s attachment to its agrarian lands, youth participants turned to their elders to gather historical details about their community and its landscapes, to seek approval for their work or to gain informal endorsement of the content for the narratives they were authoring. (Thompson and Widmer. 2010).

This project seeks to deliberately involve elders in a participatory planning process. While elders might not immediately recognize the value of their experience and perspective in community development and planning work, they do see the value in sharing stories of the past. Working with a group of students enrolled in a landscape architecture Site Planning and Design studio, we asked these designers to assume central roles in the production of video-documented oral histories. We also asked them to consider both the experience of their involvement and the oral history product itself as data that could be used to inform their design and planning outcomes.
Figure 1. White Springs Bathhouse Circa 1919. State Board of Health Collection Image SBH0303

3 BACKGROUND
The town of White Springs is a rural community situated along the banks of the Suwannee River in northern Florida’s Hamilton County. During the 1800s, thousands of health-seeking visitors from across Florida and other states came to White Springs to bath in its white sulfur springs (Woodard, 2011). With the expansion of the interstate highway system in the early 60s and new amusement and theme parks opening in central Florida shortly thereafter, the visitor attraction to White Springs quickly vanished. The successive waves of development that swept across the state for much of the twentieth-century managed to skip over White Springs leaving much of its historic fabric intact.

Today, White Springs is a town of approximately 900 people (US Census, 2004). It is home to Stephen Foster State Park which was originally built as a memorial to the great American composer whose well known works include the song “Old Folks at Home” which most people recognize as the song that starts, “Way Down Upon the Swannee Ribber.”

The Park is home to the Florida Folk Festival (one of the region’s largest) drawing thousands of visitors to White Springs in a single late August weekend. In addition to the Florida Folk Festival and other similarly-aspiring local events, White Springs’ main draw for tourists these days is its natural setting. The town is surrounded by thousands of acres of wilderness area and hundreds of miles of trails. Residents believe it is the natural splendors that surround the town that will help the area regain some of its original glory as a tourist destination.

In 2010, White Springs elected one of their newest residents, Dr. Helen Miller to office as Mayor. Recently retired and with a Ph.D. in economic development, Mayor Miller quickly recognized development opportunities for White Springs while being deeply-committed to preserving the historic and small-town character of her new home. One of the Mayor’s community development initiatives is to build a charter school on the site of the old Carver School. Located at the center of what is now known as the Carver Neighborhood (named after the black American botanist and educator, George Washington Carver), the original school was abandoned after Desegregation due to many of the area’s youth being bused to schools in neighboring cities (Woodard, 2011). When the Carver school closed, the neighborhood lost an important social center at the heart of its community.

When the Mayor invited faculty from the University of Florida’s Department of Landscape Architecture to contribute to her economic and community development planning, a site planning and design studio project was proposed. This project would explore concepts for redeveloping and expanding the existing Carver Neighborhood community produce designs for the proposed new school and school grounds. The project was conceived to be an inclusive, redeveloped neighborhood with a charter school and community center at its core. In addition to site planning concepts such as low-impact development,
conservation development, walkability, transit-oriented development, intergenerational space and urban agriculture amongst others, the studio applied concepts from theories in civic engagement, participatory planning and co-operative societies.

Community participation was identified as an important activity in the process of planning for redevelopment and designing new neighborhoods within existing communities. To facilitate this participation, plans for the eight-week project were made that included multiple visioning workshops to be held in the Town of White Springs. The intention of holding these workshops in White Springs was to provide a forum for community input and to create opportunities for a range of population groups within the White Springs community to become involved in activities that could influence the future of their town. Since the identity of the White Springs community is integrally tied to the legacy of its past, activities and workshops were planned that would solicit involvement from one demographic group in particular: the community elders.

4 APPROACH AND OBJECTIVES

Soliciting multiple groups to engage in participatory planning projects that build a representative voice is challenging enough, however, some groups are more difficult to motivate than others. Community elders can be particularly difficult to organize because they don’t always recognize the value of the contributions they make to planning initiatives. We have observed this on many occasions in the work we have done and in White Springs, Mayor Helen Miller has also found this to be the case. Elders “don’t feel they are sophisticated enough” to participate in visioning activities or don’t believe their contributions are “of any value.” (Miller, 2011). Elder community members do, however, respond enthusiastically to the opportunity to contribute to oral history projects that share stories and contribute to the preservation of community heritage. Oral histories can be directed along many different topics, including community identity, legacy and visions for the future.

In the White Springs study, eldervoice was organized with the goal of achieving three primary objectives. First, it was included in the visioning workshop activities as a means to attract the more senior members of the community. By becoming involved in the eldervoice workshop, they would incidentally be exposed to the other activities planned for the event. The second objective was to raise awareness amongst the student and youth participants of the contributions being made by the community elders. Last and perhaps most obvious, eldervoice was included as a means to capture the unique views, perspectives and memories of a local group of elders and to enable their voice to be heard throughout the process of planning for White Springs’ future. In this context, elders are not only seen as active participants in visioning activities, but their recorded stories, remembrances and opinions about the future of their community become an important reference throughout the design and planning process.

The participatory approach we call “eldervoice” borrows from traditional oral history methods as well as engagement approaches used in participatory video and photovoice. It is, fundamentally, a video-documentary-styled oral history project. Where eldervoice differs from traditional oral history recordings is how it is positioned within the context of other participatory planning activities that are organized to support a community planning and design process. Similar to participatory video and photovoice, eldervoice encourages participants to “reflect on and discern their own perspectives” (Castleden, Garvin, First Nation, 2008, 1395) and to convey information that culminate in a greater understanding of the social and spatial structures of community.

When we’ve been involved in community visioning programs in the past, the few that did include oral history interviews did not make these interviews central to the other activities of the visioning programs and workshops. Interviews were often conducted in isolation of other activities and were nearly always led by social scientists or oral historians, not landscape architects or planners. These oral histories might contain information that could be helpful in some of the design or planning decisions that were being made. However, it is important to remember that the information that is collected, interpreted and represented in the final edited volume has often been filtered multiple times by individuals with little or no training in planning and design. Designers are trained to listen and to ask questions. They are trained to think of client briefings as critical opportunities for interpreting the needs and desires of a client, for identifying the project’s program and for understanding the impacts of budgets. Designers engaged in community planning and visioning efforts also receive briefings but these are usually from individuals who have interpreted the needs of a community or public constituency. In the cases where designers do solicit input from the public or the broader community, the pool of responses again, are limited by the population of community members choosing to participate in such activities.
Eldervoice positions designers in roles that help them engage elders in a planning process and to better understand local value systems and community aspirations for their future. In our White Springs project, we asked student designers to give careful consideration to the questions that should be asked of the elders. They were encouraged to consider what historical influences might be important to the way they see White Springs today or how they might imagine its future to be. They were challenged to develop strategies for “softly steering” conversations along paths of relevance to community planning and design and they were encouraged to connect with their subjects on a personal level. While only a few student designers could be logistically involved in conducting the eldervoice interviews, all students contributed to discussions that generated the leading questions for our elder subjects.

Two community workshops were announced in town meetings and at church services in the weeks prior to the events. For the first workshop, recruitment was also through personal invitation. The Mayor, working with life-long White Springs resident and local celebrity chef Teddy Bear, identified individuals from the community to invite to attend the visioning workshop and specifically to participate in the oral history project. Teddy Bear, the Mayor and the Mayor’s husband provided transportation for community members with mobility concerns.

For the second event, fliers were posted on town bulletin boards announcing an “open house” to showcase the student’s concepts for Carver Neighborhood Redevelopment and new School plans.

The eldervoice interview sessions were organized to coincide with a charrette-type community visioning workshop with the anticipation that seniors arriving to participate in the interviews would also be exposed to the other activities of the workshop. Therefore it was important that the interview setting itself be within visual proximity of the design charrette yet removed from the impact of its activities, particularly its noise. For this study, an outdoor amphitheater was equipped to function as the interview space. Interview participants were met by a member of the eldervoice team who introduced the background of the project and its relationship to the community visioning and design workshop activities, explained the type of questions that would be asked and obtained permission and release form signatures.

Despite the simultaneously-scheduled workshop events, the clear line of sight between activity areas and direct invitations to community elders to at least walk through and see what the student community designers were doing, only three of the eldervoice participants felt comfortable engaging in the activities or mixing with the student designers.
RESULTS

Eldervoice interviews were conducted over two full days of workshops and generated more than fourteen hours of recorded interview content. This content was catalogued and transcoded. The first editing pass of this material reduced all erroneous footage such as lags in conversation and responses to questions meant to help subjects warm-up to the process of being interviewed. The material was then catalogued according to discussion type focusing on six key subject areas: the character of the White Springs community; historical events; local legends; stories of landscape (specifically forest, river and farm); stories specific to the Carver Neighborhood and stories specific to the original Carver School. The footage for each topic area was then edited for redundancy. The student in charge of editing made decisions about which footage to keep based on the content of the responses and the quality of narrative and images. From fourteen hours of original footage, this editing process reduced footage to just over an hour’s worth of video. This footage was then presented to the entire studio of student designers who were asked to take note of its content. In discussions following the screening, the students were asked to develop a framework for a narrative that they felt best reflected the character of the Community of White Springs as they had come to know it. They were also asked to identify key footage that expressed this character or footage that suggested the community’s collective hopes for its future. This process further reduced the extent of the footage and helped the designers identify key program elements or perspectives underscoring opinion concepts that could inform design responses in their plans.
6 DISCUSSION

Balancing demographic populations in community development workshops is challenging for many reasons. One of the more significant reasons it can be difficult to motivate older populations to participate is that many community elders do not recognize the value of their voice and they don’t understand the value of their views, perspectives and lived experiences as reflections of local values important in community planning activities. This was seen to be particularly the case in White Springs.

According to Mayor Helen Miller,

If I talk about planning, they say: ‘just keep it up, do what you’re doing.’ Most feel planning is complicated and that they are not sophisticated enough to really contribute to the process. If I invited them to a planning meeting, they would not show up. But, asking them to tell their story is a different matter. Most really do want to talk to someone who really seems to care, that their lives really have mattered and that after they are gone, there will be some record of their struggles and their contributions.


At the same time however, elders are enthusiastic about contributing to initiatives that preserve the heritage of their towns or that underscore the cultural identity of their communities. This sentiment was echoed by the families of some of the participants in this study. According to one family member who attended the open house, “She wanted to come out. She wanted to tell her stories – she has lots of stories about this place….but she don’t care too much about that other stuff. What you doin up there anyway? Drawin maps?” (Visioning Workshop Participant #12. 2011). While participants may not be any faster in recognizing their contributions to visioning processes, that their voice has been heard at all represents a significant step in the direction towards a more inclusionary planning process.

Although many of the student designers could not be directly involved in the eldervoice interviews during the workshop, they were very much aware that the interviews were being conducting. Several students mentioned being impressed by the stream of participants heading to the eldervoice interviews and by the energy and endurance of its participants. After realizing the duration of a typical interview, one student shared this observation:
I saw that guy coming in. He kind of wandered through – Ed (the Mayor’s husband) was with him so I knew he must have been with the project. He walked around and asked what we were doing and we kinda told him about our site analysis work – turns out he had gone to school at the Carver School…. anyway, I just went out back… and saw he’s still down there. Has he been down there that whole time? I mean, he’s been talking for hours. Must have a lot to say.

- Student participant #15. 2011

Another student involved with the design charrette expressed an eagerness to hear what the elders had to say about White springs. During a workshop critique, they shared:

I just want to go down there and hear what they’re saying. I mean, here we are, designing their town for them. I really want to know what they see as the problems with the way it is and to understand what sorts of things they would like us to consider in our plans. Will we get a chance to see all that video they’re shooting down there?

- Student participant #3. 2011

While eldervoice motivates involvement from community seniors and while the value of that involvement is recognized by other participants of community planning activities, eldervoice also accomplishes another very important objective: it adds unique insight and perspective to the knowledge base from which visions emerge and plans derive. Students developing plans set program priorities that included community gardens, a “produce-swap” space, an edible forest reserve where residents can continue to harvest deer tongue plant (Liatris odoratissima) and palmetto berries (Serenoa repens). Students designed shared, semi-private community spaces with fire pits similar to the vacant lots with burn barrels common in the Carver neighborhood and they developed plans that resisted boundaries between “improved” and “unimproved,” “redeveloped” and “original.” This was particularly important in a community who identified that “not everyone wants change,” and that change can be incremental, implemented “a little bit here and a little bit there <over time>.”
Elders shared many stories related to the tradition of community gardening, “swapping vegetables” and giving food they produced to residents in need. 2011. Student perspective.

The value of the elder’s contributions to a planning process was also recognized by other members of the community who attended the open house presentations. When asked what they thought of the idea of including the video interviews in a community planning project, one young community member offered:

I think it’s a good idea (conducting an oral history project) because these folks, they know a lot about this area. We’ve heard some of the stories but there’re lots of stories, some we ain’t never heard before. It’s important to know about the history of the place because so many things happened before and lots of things change. People around here, they know each other and they like the way things is. They’re not going to like things changin all that much.

- Visioning Workshop Participant #7. 2011

Eldervoice is itself a new cultural document. Such a document may bring immediate benefits in working towards the objectives of a community planning workshop, or it may have longer-term benefits by contributing to the historical record of a place and its community. This point did not escape the notice of another community member who did not personally participate in the eldervoice study but was there to assist in its logistics:

They’s a lot a stories in this town, stories about how folks get by, bout how they help each other out. You know, times are tough for a lot of folks in these parts but we always do alright cause we help each other out (underlined to reflect spoken emphasis) you know what I’m sayin? When it gets cold, we always make sure everyone has fuel. A lot of folks still heat with fire so we make sure everyone has wood, you know what I’m sayin? And us older folks know all these stories. But the kids, they don’t know this stuff. They should though cause that what this community all about, helpin each other out.

- Visioning Workshop Participant #9. 2011

Eldervoice rallies participation. As word of the activity spread throughout the town it caused a flurry of interest from other community members wanting to participate. While it may not be within the domain of every project to continue conducting eldervoice interviews after the event, the requests for involvement certainly suggests that the method is capturing attention. According to the Mayor in the days immediately following the eldervoice sessions “the town is buzzing over the oral history project – everyone wants to participate.” (H. Miller, personal correspondence).

That buzz apparently continued. Attendance levels at the final presentation of the student’s work and the first public screening of the eldervoice interviews, reached staggering proportions. According to the Mayor, the viewing of the eldervoice presentation drew:

The largest gathering we’ve seen yet, and the largest group of black and white community members together in one place. This project has meant a lot to so many people.
community member’s attitude has taken a 180 degree turn. He was always a bit skeptical and cautious about what we’ve been trying to do. He was literally on his way to Tallahassee when I called him, and he turned around and drove all the way back here to participate in the interviews. For him to open up this place (his home) to you like this is very unusual. The project has obviously touched a nerve.

- Mayor Helen Miller. 2011

Figure 7. Eldervoice compelled elder involvement in activities they wouldn’t have engaged in otherwise. Here, Teddy Bear Marshall responds to a student plan that integrates a community fire pit into the Carver neighborhood redevelopment plans. 2011. Photo: First Author.

Eldervoice offers distinct benefits to community planning processes, but all good things come at a price. Including activities that are tailored to specific populations within a community adds complexity to the process of organizing events. Scheduling can be challenging when groups lead different lives and follow different schedule. Senior populations in particular commonly face additional challenges, like mobility, that require special accommodation. More specific to eldervoice however, are the unique technical demands that come with the process of conducting video interviews. While there is recognized advantage in positioning the eldervoice activity within the same context as the other workshop activities, the noise generated by most charrette activities poses a serious problem in the production of often softly-spoken interviews. Quiet space must be found for the interview environment. It must be a space that can be equipped for production yet comfortable enough for the participants to spend upwards of three hours in at a time.

Video interviewing also requires specialist skills. Someone with technical training needs to set-up and maintain operation of video cameras and microphones and be skilled in editing and post-production techniques. Editing and post-production can also be very labor intensive. In the White Springs eldervoice study, the team conducted interviews that ran for a total of just two days. With two cameras, the team captured approximately fourteen hours of video all of which requires cataloguing and transcoding. Even simple processing can be a labor-intensive effort. Hard decisions need to be made about which content gets carried-forward into whatever production mode has been established for the project. Furthermore, decisions have to be made about how the finished product will be used. While it is not essential that
eldervoice leads to a tangible “product” such as an edited oral history video for instance, participants need to understand how and in what manner their contribution will be used in the planning process and beyond.

Finally, there are special skills required in conducting interviews. Interviewers need to be friendly and sociable and able to readily establish a trusting report with their interviewees. They need to understand the objectives of the interviews and they need to be adept in their ability to “softly steer” conversations along topically specific conversations in order to meet the objectives identified for the project.

7 CONCLUSION

There are several challenges to an inclusionary planning process including motivating and sustaining citizen engagement and participation and organizing a project that generates a representative voice. Community elders are reluctant to participate in planning projects because they don’t recognize the value of their contributions. They do, however, recognize the value of their contributions to projects that attempt to preserve community heritage or the cultural legacy of their past.

Eldervoice adapts traditional oral history approaches by directing interviews along topics concerning issues relevant to community planning and design. It also positions designers into the role of deciding what questions are asked and what responses come forward through the editing process. Students involved in this eldervoice study felt that the approach made them better designers and changed the way they think about their work. In reflection discussions, students said that rather than designing “for” the community, they felt like the community was being designed “through” them. This sense was further reinforced during final presentations made to the community. In their design boards, students were encouraged to identify statements or quotes from the eldervoice footage that inspired their visions for the project. In an informal, poster session-type presentation, students expressed great pleasure in presenting their work to the community members who participated in the eldervoice process and rejoiced in the personal connections that are made when a designer satisfies a client need or desire.

Eldervoice motivated elder involvement in a study that explores the potential and options for White Springs’ future. In ways they never imagined, community elders took an important lead in that initiative. In ways the students hadn’t foreseen, they felt that through the personal connections they had established and the satisfaction they experienced by meeting the needs of this unique client group, that they had achieved “real good” for a “real client.”

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URBAN DESIGN

Edited by Madis Pihlak
RECONSTRUCTED GROUNDS

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1 ABSTRACT

In this paper, I discuss the generative role of design narration and video production in the provocation and rehabilitation of an existing environment. “Bemis Gardens” is an exhibition and design laboratory that sought to consider the urban condition of the contemporary art center and its relationship with downtown Omaha through the transformation of the Bemis Center’s exterior dock into a public art site and urban garden. In recent years, artists, architects, ecologists and social designers have formed new hybrids between food production and social space, urban ecologies and public art, forgotten space and material ingenuity, and public spectacle. “Bemis Gardens” was structured as an open laboratory and interactive exhibition. Throughout its three-month run the exhibition hosted a series of workshops consisting of professionals from diverse fields in effort to consider urban land use futures and speculate on specific actionable possibilities for the Bemis Center’s site. The proposed installation of the Water Hutch designed and constructed by Peter P. Goché is one such actionable proposition. Reminiscent of the many waterways that meander through the Midwest, the work consists of a sinuous line made up of three oxbows. This set of parts served as provocateur for the subsequent design strategies developed as a result of this open laboratory and interactive exhibition whereby I developed a generative literary narrative based on the history of Omaha’s “jobber’s canyon” and the social phenomenon depicted in a previously produced video. This narrative served to inform the mock installation of the Water Hutch.

1.1 Keywords

Design laboratory, Holistic Design, Interdisciplinary, Social Design and Actionable Proposition
2 HISTORY

The territory that would eventually become the city of Omaha, Nebraska, was acquired as a part of the Louisiana Purchase, which was completed by Thomas Jefferson in 1803. The open plains of the central United States were, at this time, uncharted lands that held significant potential for the developing nation. On July 21, 1804 William Clark and Meriwether Lewis passed through the area and, consequently, the territory was developed as a trading and fortification outpost.

The development of the warehouse district in the 1800’s mirrored Omaha’s emergence as a central hub in the United States transportation system. As “Gateway to the West” the district housed several warehouses, grocers and other dry goods outfitters for merchants throughout the Old West. The Bemis Bag Company Building [Figure 2] is located at the intersection of Leavenworth and 12th Street. Constructed in 1887, it was one of several warehouse facilities owned by the Bemis Company. The Bemis Company (founded in 1858) was a national leader in the manufacturing and sale of bags and sacks for flour, grain, and other commodities. The building is now home to the Bemis Center for Contemporary Arts. As an artist-centered organization it was founded for artists by artists.

3 EXHIBITION BRIEF

Bemis Gardens was an exhibition and design laboratory that sought to consider the urban condition of the contemporary art center and its relationship with downtown Omaha through the transformation of the Bemis Center’s exterior into a public art site and urban garden. In the midst of the Building | Bemis
construction process, a project that resulted in a significant expansion of the artist-in-residence program, renovated fabrication facilities and a restored front dock—this exhibition and project series served to initiate a holistic reconsideration of the Center’s land use and exterior relationships with the public.

In recent years, artists, architects, ecologists and social designers have formed new hybrids between food production and social space, urban ecologies and public art, forgotten space and material ingenuity, and public spectacle. *Bemis Gardens* was structured as an open laboratory and interactive exhibition. Throughout its three-month run the exhibition hosted a series of workshops consisting of professionals from diverse fields in effort to consider urban land use futures and speculate on specific actionable possibilities for the Bemis Center’s site. Participants included Ruth Dusseauult (Photographer), Jeff Day (Min|Day Architects), James Woodfill (Sculptor), Josh Shelton (El Dorado Architects), Michael Beitz (Sculptor), Anne Trumble (Landscape Architect), Author (Installation Artist and Sculptor), Sarah Thomas and David Karle (Landscape Architects), Bryan Kliewer (Organic Farmer), Sean Ward (Artist) and Colin Smith (Artist).

4 **WORKSHOP**

The installation of the *Water Hutch* designed and constructed by Peter P. Goché is one such actionable proposition. Reminiscent of the many waterways that meander through the Midwest, the work consists of a sinuous line made up of three oxbows. The constituent forms are constructed of built up dimensional lumber. The set of parts serve as an ambiguous measure by which people situate themselves. It might best be understood as an object or trace that indicates the presence of, and makes clearly recognizable, its context as referent rather than source or setting. It operates metaphorically as an open set of shelves onto which people, and thereby, memories accumulate. This set of parts served as provocateur for the subsequent design strategies developed as a result of this open laboratory and interactive exhibition. Our role was to consider the socio-spatial effects of this form as it relates to the new space of the dock. Invoking John Hejduk’s published thoughts titled Mask of Medusa: “A poem is a poem, a building is a building, architecture is architecture, music is…it’s all structure. Essential. I use it as language. I cannot do a building without building a new repertoire of characters of stories of language and it’s all parallel. It’s not just building per se. It’s building worlds.”

![Figure 3. Workshop performance.](image)

The exhibition of this work included a performance-based workshop conducted by (Author’s name). This interdisciplinary performance was staged on the *Water Hutch* in Gallery One at the Bemis Center for Contemporary Art [Figure 3]. The participants were Elizabeth Zimmerman (musician), Annie Binder (Poet), Scott Ricketts (Novelist), Jassim Al Nashmi (Design student, ISU), John Kerner (Design student, ISU) and Jasmine Singh (Design student, ISU). The workshop included a series of oratories presented by (Author’s
name), Binder and Ricketts and a musical performance by Zimmerman. As an introduction to the social phenomenon associated with the hutch, the following literary abstract was presented.

Teetering along this obscure line, I’d enter gaited time and situate self within the intimacy of accumulated daydreams. Into this, sometime later, I inserted self [a concentrated being] and reciprocally, the embodiment of community. Within, I am seized by the sensation of something vast and deep and boundless. It took complete hold of me and, for several moments, I was overwhelmed by the grandeur of its shadowy trace. Marshaled by Hejduk’s angels, I slip into subconscious, and lie flat amongst a new repertoire of characters and stories and language and enter into full communion with the fertility of its host surround. Off in the distance, a little boy hums in vernacular.

As a result of workshop contributions and response, the following literary excerpt was developed as a generative means of design thinking while living on the grounds as guest artist for two weeks following the performance.

The morning sun traces the naked contour of Asiam’s descent along 12th Street. She arrives beneath a skeleton of time and ascends into a crazy little garden overgrown with last year’s growth. The grade rises and then falls beneath her bare feet. Arrested by a wooden hutch, she pauses and is inscribed by a ring of water. Inebriated, she studies its nuance and is reminded of her childhood tracings while playing in the dirt beside her mother’s watch as Oxbow wades out into the world and bathes in its lazy current. Aroused by the smell of sweet basil, Asiam steps out from this crucible of time and is escorted west by her grandfather, Meriwether.

For days the hutch remained fixed except in the hour before dawn. Over this still moment, Guernica presides. Leaning out the second floor window, she’d watch over through hollowed baldachin. With lantern in hand, she’d illuminate a cast of woolen’s while they performed in the garden below. Each character, wearing wool clothing, would dance along the hutch singing the stories interred there by the previous day’s inhabitants. Standing in an old niche looking onto the hutch, Oxbow lingers. Unclothed. At the close of ghost hour Isabelle would extinguish her flame and retreat with a crow’s caw and the impending diurnal trace of the sun. The elongated shadow of its early morn creep stretches out across the basin of earth as the hutch begins its meander.

It had been years since her initial engagement with this figural creep, this sunken line. Asiam’s return toward morning sun lead her back through the Midwest and down Leavenworth Street where she was rejoined by Oxbow – a long since forgotten companion. Enjoined between the candlelit canyons of used books in Sutton’s Archive, they stare into each other’s eyes as their tongue rest in a residue of coffee and cream. The stale scent of old books seduce while light seeps through shelved stories. A candle is tipped. From inflamed silence faint screams of Earnest Hemmingway and Walt Whitman are heard. Asiam and Oxbow weep. The library smolders. Staggering away they take refuge up the street beneath the Bemis Bag Company dock. Turning to look back, tears fall as the neighborhood children sift through the ashes. From inside the factory Asiam hears a watery cord progression accompanied by a sweet voice singing of people and the earth. Looking up she recalls the silly garden she had played in. Ascending the stair, she is followed by a chorus of children carrying hymnal bindings filled with blackened word. Asiam entered the garden and fell asleep in the niche as children’s hands polished the hutch with ash and olive oil.

Figure 4. Video still
In addition, a video [Figure 4], developed in collaboration with Cameron Campbell (photographer and multimedia production) and Elizabeth Zimmerman (musician and composer of video score; To the Earth), was presented in effort to document and study the situation of people with respect to the set of oxbows.

5 PROPOSITION

Concurrent with the development of our comprehension specific to narration and bodily occupations, (Author’s name) worked with Hesse McGraw (Chief Curator), Anne Trumble (Landscape Architect) and Thomas Printz (2D Artist) to develop a mock proposal for the semi-permanent installation of the Water Hutch in a void within the recently reconstructed dock. Located at the north end of the dock, this void measured 20 by 60 feet [Figure 1.3]. Bounded by new concrete retaining walls and the Bemis warehouse, the space is accessed from the dock proper on the south. A pair of windows and a door with sidelights looks out onto this space from inside the Center’s information shop. It is adjacent to an alley on the north and 12th Street on the east. The top of the retaining wall system is 48 inches above street level. The structural components of the original building canopy remain above the void and dock. Resident artist are housed in the second and third floor spaces of the Center overlooking the dock.

![Figure 5. Proposed garden setting.](image)

Our intention regarding the placement of the Water Hutch within this new garden setting [Figure 5] was to provide seating in a manner that would support multiple social configurations amidst a new topography and planting scheme and thereby negotiate the condition of the contemporary art center and its relationship with downtown Omaha. Therefore, we sought to engage those associated with the Center and the neighborhood passersby. In addition, we wanted to develop the space in a way that was differentiated from the level plane of the dock by depressing the plane of entry into the garden and locating two components of the Water Hutch so that the seating surface was level with the retaining walls and dock plane. The remaining component was located along the sloped entry plane to accommodate multiple seating heights.

The door and sidelight configuration was to be built up in such a way that the sill block (at dock height) was extended into the garden and created a cantilevered seat or speakers platform. The placement of the Water Hutch with respect to this hyper-extended sill block provided a concentric seating pattern. The door was to be replaced with a fixed panel in effort to promote access from the dock and corresponding cross circulation path leading to the main doors of the Center.

6 CONCLUSION

The insertion of this type of line sets up a necessary visual and spatial tension between the rectangular void and the ambiguous form. This kind of misfit provides a social margin or leftover volume whereby people could simply linger. Linda Pollak (2006) cites this type of constructed ground as a space of differences that can be understood as a framework for design practice in which the negotiation between the respective scales at which architecture, landscape architecture and urban design can operate performatively to engage dimensions of difference that characterize the space that is being produced. It is

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a spatial configuration that, by abstraction, attracts and supports informal social configurations.

Within this new setting, we imagined routine causal encounters between the local people and artist-in-residence. We were delighted with the reciprocal possibility that the fellows and neighbors might find their own narrative in the story of others. As stated by Michael de Certeau in The Practice of Everyday Life: “In this configuration, the story plays a decisive role. It describes, to be sure. But every description is more than a fixation, it is a culturally creative act. It even has distributive power and performative force when an ensemble of circumstancess is brought together. Then it founds spaces.” In this way, we understood the Water Hutch not only as provocateur in the evolution of this space and everyday human encounter, but as a type of cultural attendant that, like waterways, serves as line by which people situate themselves.

Over time, as per the design narrative, we envisioned the burial of this work in effort to provide a new ground to be developed into ‘garden’ by another artist or group of design professionals. In this way, we sought to provide an exterior rotating venue for the production of space within the void. Each arrangement would cultivate a new spatial configuration or set of changes that is an extension of the evolution of micro urban spaces within the contemporary landscape of downtown Omaha.

Even though the work presented and developed for this effort was not actually installed, it engendered a sustained interdisciplinary workshop focused on use and meaning of public space specific to human occupation. Based on this, we sought to re-construct the cultural landscape of the dock and void as a historical site of labor in a manner that would accentuate its recreational potential through a new form of spatial development specific to the generative role of narration in the provocation and rehabilitation of an existing environment. As in “Mapping” by Teresa Stoppani when referring to the James Cowan’s novel, A Mapmaker’s Dream, she asserts the object of the novel is not the map itself, but the process of the making of the map and the endless and yet ever sufficient knowledges that inform it. In the novel, the map as an object never comes into existence, it remains unattainable, its form never defined and closed (Stoppani, 2004). Accordingly, our speculation of the Water Hutch within the void served as an alternative approach to the analysis of this place and its spatial manifestation. Consequently, it is an approach that engages strategies of scale and configuration as it relates to identities and has the potential to recalibrate such a site in a way that can reconnect with the fertility of its host surroundings.

7 REFERENCES

WHO’S TALKING TO WHOM? VILLAGER PARTICIPATION IN THE RELOCATION OF EL GOURNA, EGYPT

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1 ABSTRACT
There is almost universal agreement among planners and designers that public participation in civic projects is critical. However, successful public participation can be problematic. There are important differences between the concepts and goals of planners and designers on one hand, and the daily lives of local residents on the other. Participatory procedures are often formal and stiff, representing a bureaucratic approach that is not suited to the customs and communicative structures of local populations. This paper presents the results of a 16 month qualitative study of village participation in the relocation of El Gourna, Egypt. While the study corroborates certain findings from other studies of relocation, it introduces a unique communicative structure that we have called "village talk." The main purposes of the study were to examine how relocation and villager participation actually occurred, to describe relevant conditions of the relocation, to draw conclusions, and to propose recommendations for better participation. The study provides examples of various levels of interaction and communication between government officials, designers, and the local population. It shows that while important social and communicative structures, special occupational skills, and local knowledge were present in the community, they were not properly utilized in the participatory procedures or resettlement plan. This oversight led to conflicts between relocation officials and the local population, and to some unsatisfactory solutions. It suggests alternative methods for involving local residents in complex civic undertakings. It recommends that social, political and communicative structures of local communities be carefully studied, and that a strategy of participation and inclusion be designed to fit the unique aspects of these communities.

1.1 Key Words
El Gourna Egypt, Tombs of the Nobles, relocation, public participation, village talk.
2 INVOLUNTARY RELOCATION

According to the World Bank, from 1986 to 1993, about 80 to 90 million people were displaced due to large development projects involving infrastructure, dams, reservoirs, airports, and urban transportation, a number far greater than those displaced by wars, famines, and natural disasters (Betts, 2005; Cernea, 1997; Cernea & McDowell, 2000). More recent figures for displacement have been difficult to compile because a large number of projects are internal and governments are reluctant to share figures (Scudder, 2005). In addition, many projects are not financed by major lending institutions, such as the World Bank, that keep track of such figures (Dwivedi, 2002). But estimates are still between 4 to 8 million per year (Betts, 2005; Stanley, 2004).

Unlike refugees from wars or natural disasters, villagers who are involuntary relocated cannot maintain any hope of returning to their ancestral homes which are now either submerged behind a large new dam or replaced by new uses. Relocation is a permanent, irreversible change which engenders a deep sense of loss and grief (Fahim, 1983; Fernea & Kennedy, 1966; Marris, 1974; Scudder, 2003). During these transitions, relocatees undergo a series of traumatic changes as well as the disruption of traditional values, social structures, and customs (Cernea & Guggenheim, 1993; Scudder, 2003, 2005). They also face the intimidating prospect of re-creating new economic, social, and community structures in unfamiliar conditions and amid an unknown host community.

Achieving new sustainable livelihoods remains one of the most intractable problems in relocation. Failure to resolve this issue alone results in long term impoverishment for the resettlers (Cernea & McDowell, 2000). “Tragically, there are very few cases world-wide where resettlement caused by large dams has been able to improve, or even restore, the livelihoods of a majority of those who must relocate” (Scudder & Habbob, 2008). However, some studies do report that meaningful involvement of relocatees has contributed to better results (Cernea & McDowell, 2000; Cernea & Guggenheim, 1993; Scudder, 2005).

3 RELOCATION OF EL GOURNA

Beginning in 2005, residents of the historic village of El Gourna, Egypt, located on the west bank of the Nile, opposite Luxor, were relocated to a new site about 3 to 4 kilometers away in order to protect priceless underground tombs from the Pharaonic era that lay directly below the village. El Gourna consisted of about twenty-four hamlets and family clusters that included Arab settlers, Coptic residents, and indigenous peoples from earlier times. The hamlets were gradually established over a period of 250 to 300 years on the dry, sandy limestone ascent of the nearby Theban mountains, opposite the ancient capital of Thebes (modern Luxor).

Figure 1: Partial View of Old Gourna. Photo by authors.
Since the many tombs and caves remaining from the Pharaonic era provided good protection, visibility of the Nile Valley both north and south, and hiding places from roaming armies, tax collectors, conscription, and the annual Nile inundation, early settlers gradually moved from the valley floor to the caves and unfinished tombs into an area known as the Tombs of the Nobles (Figures 1; El-Aref, 2007; Farag, 2004; Seel, 2007; Simpson, 2000, 2003). Over time, they expanded their dwellings and built over or near entrances to the caves often incorporating them into family compounds. Although many of the dwellings included only unfinished caves, some were built over finished or decorated tombs.

These finished tombs are among Egypt’s greatest treasures. They contain priceless artifacts and wall paintings of fascinating scenes from everyday life in ancient Egypt, providing a detailed account of the life and times of the Middle Kingdom. Although the kings, queens, and princes of Egypt’s Middle Kingdom dug their tombs in the valleys and gorges lying deeper in the mountains, in the Valley of the Kings, the royal nobles told their stories in tombs that were cut into cliff sides or in the dry, rocky ascents facing the Nile.

With the arrival of European adventurers and archeologists in the 19th century, the Gournawii, as the local residents are known, became expert guides and excavators. As their livelihoods became entwined with foreign visitors, they worked as low paid laborers and guides for treasure hunters and archeologists, and from time to time sold artifacts from the tombs, or in many cases, hand made replicas, in order to supplement their income (Van der Spek, 2003). Unfortunately, long occupation and unregulated trade in ancient artifacts had damaged some of the tombs and posed a threat to their preservation (Hawass, 2007; Kamil, 2008; Simpson, 2000).

In 1946, the Egyptian government initiated a program to protect and preserve the Tombs of the Nobles as well as other antiquities in the Luxor area. Well known Egyptian architect Hassan Fathy was commissioned to build a new village, known as New Gourna, on the valley floor about 2 to 3 km. east the old village (Fathy, 1969). Fathy used vernacular architecture and innovative low-cost mud brick construction to build the new village which included mosque, school, theatre, commercial center, and about 90 new homes. The project, which lasted about three years, was not successful and never completed. Only a few families from El Gourna moved to the new village. After the flash floods of 1994/95, some of the Gournawii moved to El Suul, a hastily built village north of Old Gourna near the village of El Tarif, but many remained on the mountain (Van der Spek, 2000, 2003).

Another attempt to relocate residents began in January 2005 with the arrival of a new governor in Luxor. The governor selected a new site near El Tarif and employed a new design team. Aspects of participatory planning were utilized to keep the Gournawii informed about the relocation, to gather information on social and economic structures of the old village, and to persuade residents to relocate. As of February 2011, all the residents had been moved from the mountain and either relocated to the new village to the north or have moved to other villages on their own. The old village of El Gourna has been completely demolished except for about 20 buildings in the southernmost hamlet of Gournet Mar’ii. The intention is to preserve these buildings as examples of the former mountain community.

The new village, called “Gurna Jedeeda,” or New Gourna, is not yet complete. Some streets and services are unfinished and detract from an otherwise satisfactory new village. Government housing has been built for most families, but other plots that were set aside for families who wish to build their own homes, and for commercial use, are still vacant. The Luxor Supreme Council has developed plans to provide better and more diverse employment opportunities and additional community facilities such as recreational and health centers, but these projects have not yet been realized.

4 PURPOSE AND METHODOLOGY

The main purposes of the study were to determine: 1) how villager participation was implemented and functioned during the relocation, 2) if villager participation affected outcomes and 3) how meaningful participation and involvement of local residents can be structured and enhanced to improve project outcomes.

A qualitative and ethnographic approach was selected for the study in order to develop a comprehensive description of actual events and experiences. In other words, we endeavored to learn about participation and relocation from the participants themselves, from an “emic” or insiders perspective, and to develop interpretative concepts and conclusions grounded in the collected data. Information for the study was gathered from interviews, group meetings, documents, casual conversations, personal observations, and participation in village life (Lofland & Lofland, 1995; Spradley, 1979; Stake, 1979). We learned about relocation and participation by listening to residents, by recording and transcribing what participants had to say, by determining the roles of various participants, and by investigating events,
available documents, and actual circumstances of the relocation.

A total of 46 villagers and villager families were interviewed over a period of 16 months, from November 2009 till February 2011. The interviews were recorded and transcribed in verbatim format as far as possible. The processing of information followed standard qualitative methods of "chunking," detecting themes, and interpretation. Findings, conclusions, and recommendations were formulated based on insights gained from the processing and analysis of the data (Creswell, 2007; Miles & Huberman, 1994; Richards & Morse, 2007; Wolcott, 2001).

5 RELOCATION STUDIES

At present, there are two main theories of relocation: Thayer Scudder’s theory regarding stages of adjustment and adaptation, and Michael Cernea’s theory of impoverishment risks and reconstruction. In the 1980s, Thayer Scudder and Elizabeth Colson developed a four-stage framework of adjustment and adaptation, a sequence of stages that relocatees go through in the process of successful resettlement (Scudder, 2005). They identified four stages: a) resettlement planning and physical removal; b) multidimensional stress, and initial coping; c) economic and community redevelopment; and d) handing over of local governance and incorporation into the larger society (Scudder, 2003; Scudder & Habbob, 2008). This framework was primarily behavioral and dealt with three forms of stress: physiological, psychological, and socio-cultural. It helped “explain why resettlers are the key resource for achieving a positive outcome” (Scudder, 2005, p. 32).

Michael Cernea, former Senior Advisor for Sociology and Social Policy at the World Bank, developed another model of relocation based on relocation risks and the need for redevelopment following relocation. “Risk recognition,” he emphasized, “is crucial for sound planning” (Cernea & McDowell, 2000, p. 33). Cernea defined risk as “the possibility that certain courses of action will result in future injurious effects — losses and destruction” (Cernea & McDowell, 2000, p. 19). His study of relocations funded by the World Bank led him to conclude that, “The most widespread effect of involuntary displacement is the impoverishment of … relocatees” (Cernea & McDowell, 2000, p. 12). Cernea identified the causes of impoverishment as the loss of homelands, livelihoods and occupations, and social support systems.

Cernea also emphasizes the importance of good communication and local participation. “Dysfunctional communication between decision makers and groups affected by displacement are one of the roots of resettlement failure” (Cernea & McDowell, 2000, p. 51). Christian Sorenson, an anthropologist who has studied relocation extensively, agrees and focuses attention on the importance of villager involvement. “It is important that ‘outsiders,’ including the government and humanitarian agencies, build on refugees’ own initiative-driven strategies for survival and reconstruction of livelihoods instead of imposing preplanned packages” (Sorenson in Cernea & McDowell, 2000, p. 201).

In a more recent study of 50 large dam projects, Scudder suggested that if his theory of adaptations and Cernea’s theory of risk reversal are used in combination, they can provide a more complete approach to resettlement (Scudder, 2005). Scudder goes on to point out that, “Resettlers are the key resource for achieving a positive outcome … (and) government policies and the activities of project authorities have been the main factors constraining a successful resettlement process” (Scudder, 2005, p. 32).

Anthropological case studies have also provided significant details for the study of relocation and participation. They show that meaningful participation by the local community is essential for successful resettlement, and that there is a critical lack of correspondence between the goals and capacities of various relocation entities, and the needs and often neglected resources of relocatees. (Cernea & Guggenheim, 1993).

In sum, various theories, studies, and approaches to relocation point to the local community as the key to the recovery process. “(Research) suggests that more encouragement given to the initiative, energy, and self-organizing capacity of oustees may unlock a potential insufficiently used in resettlement programs” (Cernea & Guggenheim, 1993, p. 397).

What these theories and case studies on relocation do not adequately clarify is how the various “forms of communication” among participants and within the village itself function and influence outcomes. Most often studies of participation are concerned with standard forms and venues of participation, such as public meetings or technical conferences. In this study, we point out that there is an additional layer of village communication, what we have called “village talk,” that takes place almost exclusively among villagers themselves. This form of communication was replete with effective and creative solutions to difficult problems and tailored to the specific needs and customs of the villagers.
6 IMPORTANCE OF PARTICIPATION

In western democracies, public participation in planning and design projects has been sought as a way of obtaining greater acceptance of civic projects, of providing and exchanging information, and for giving citizens a greater voice and more input in the decision making processes (Glass, 1979). In these environments, citizen participation depends on certain pre-conditions such as common terminology, speech patterns and technical knowledge, legal and formal frameworks, locally organized interest groups and leadership, and planners, designers, and staff that can communicate effectively and facilitate meetings. Participants themselves must also be capable of expressing their thoughts and be able to work with others who may have contrary opinions. Given these prerequisites, some segments of modern, and yet traditional, society may still be unable to participate effectively. For example, those who have limitations regarding educational or technical background, or of time, resources, and/or information. Thus, important sectors of the public may still find themselves excluded (Allmendinger, 2002; Corburn, 2003; Forester, 1989, 1999; Innes & Booher, 2010).

Planning agencies and design firms tend use participatory methods that coincide with their philosophy of planning (Lane, 2005). For example, for approaches such as “rational planning” or “urban systems planning,” participation is a way of consulting with and gaining input from key stakeholders and more powerful citizen groups who are able to relate to planning terminology and objectives, but they may still exclude significant sectors of the population. Advocacy, equity, and collaborative approaches endeavor to include citizens and social groups that may not be well connected to the larger society (Davidoff, 1965; Innes & Booher, 2010; Krumholz & Forester, 1990; Peattie, 1968). For these latter approaches, participation necessitates alternative techniques and creative ways of reaching out to those who are most impacted by planning and design decisions, but who are frequently left out of the process (Allmendinger, 2002; Krumholz & Forester, 1990).

Inclusion of local residents, who live at the margins of society, in formal participation procedures can be difficult (Innes & Booher, 2010; Quick & Feldman, 2011; Peattie, 1968). These groups often lack the social organization and local leadership needed for participation in wider planning process, or may not possess the necessary background and experience to participate in public meetings and other formal settings. Although gathering local knowledge from all segment of society is critical for all types of projects, since it “provides crucial political and technical insights often overlooked by professionals (Corburn, 2003, p. 420), it is particularly important for the planning of more complex projects such as relocation (Corburn, 2003; Innes & Booher, 2010; Quick & Feldman, 2011).

Examples of successful inclusion of marginal groups typically involve informal participatory methods. In other words, instead of inviting residents to participate in formal planning meetings in a controlled setting, planners, designers, and community workers have gone out to the residents in their communities and neighborhoods and met with them in informal settings (Innes & Booher, 2010; Krumholz & Forester, 1990; Peattie, 1968). Information was then gathered using ethnographic, or even conversational, methods. They “gathered data, took a poll, did interviews” (Peattie, 1968, p. 85). However, experience also shows that even with the best of intentions, community workers may still be considered as outsiders by these groups.

Certain “practical” theories of participation and local involvement have also demonstrated better success in the field. Landscape architect Randy Hester has suggested five ways of obtaining information on user needs and of involving citizens: town meetings, interviews, questionnaires, neighborhood observations, and post-construction evaluation (Hester, 1975). These steps combine both formal and informal methods. As part of neighborhood observation, Hester often uses behavior mapping, a method of graphic observation and documentation, to discover and record the habits and “daily rituals” of people that are often not mentioned in surveys and interviews (Hester, 1985, 1993). Participation and involvement in more complex projects, such the relocation of El Gourna, can be even more problematic because of the unique characteristics of local communities, long-range consequences, and complicated redevelopment problems involving social, economic and psychological factors. In these situations, residents are involved in multifaceted processes that include not only relocation and resettlement, but reconstruction of new social and economic structures that go well beyond typical participatory scenarios.

Studies of relocation indicate that there are many practical benefits to be derived from meaningful involvement at the local level. For example, it provides critical local knowledge and innovative solutions, important new roles for residents during the resettlement process that can affect future social development of the new village, and it strengthens the determination and self-motivation of the resettlers to succeed in
the new environment (Cernea & Guggenheim, 1993; Choguill, 1996; Colson, 2003). Participation enables residents to develop a sense of ownership, to take part in developing designs that will more closely fit their activities and life patterns, to more quickly reestablish livelihoods and social structures, and to develop their own “initiative driven strategies” (Sorenson in Cernea & McDowell, 2000, p. 201). Local involvement also provides a dynamic management framework within which decision making can be shared and many of the diverse elements of a project can be brought together into a more unified process (Cernea & Guggenheim, 1993, Davidson, et al., 2007; Ganapati & Ganapati, 2009).

During our study, it was clear that El Gourna was a community at the margins of a larger society, and subject to the communicative difficulties discussed above. Specifically, El Gourna was governed by an authoritative political structure centered in Luxor. Policies and programs were managed by national agencies in Cairo rather than by local institutions. El Gourna was a traditional community with an intricately developed and fragile economy. Speech patterns and the cultural and social organization of the community were unique and often at odds with modern Egyptian society. And, the community was not experienced with formal participatory methods and techniques such as public meetings, stakeholder workshops, and local organization and representation. Given these conditions, an alternative approach that involved reaching out to the community, locating participation within the community itself, gathering local information in informal settings, and developing an emic perspective on community problems, was needed.

7 Village Talk

The phenomenon of village talk as a significant form of village communication only came to light as we gradually discovered how villagers communicated with one another and how most of them obtained information about the relocation. Village talk was the most active form of village communication and constituted a unique social institution and communicative structure (Scones, 1998). It occurred whenever residents got together to share news, to talk to each other, or just to spend time together. Village talk took place in the streets, at the markets, in the cafes and restaurants, at the mosque, in the diwans, and every night in front of the houses with residents, relatives, neighbors and guests seated on the “mastaba” benches. These places were the principle venues of social interaction in the village and the core of village life. (Figure 2)

Figure 2. Village Talkers. Photo by authors.

One reason why participation in the El Gourna project did not include village talk was that the definition of participation did not include informal aspects of communication. “Participation” was only understood in a formal sense, i.e., in terms of committee or public meetings, or as communication between public officials and residents, but not as participation between residents. The procedures of participation did not include these informal gatherings or tap into this level of village communication, where villagers
could freely speak their mind, to capture the ideas, solutions, and energy of the village community.

In addition, the flow of information and ideas went in one direction only. Few officials or higher level representatives went into the village to listen and learn from the residents, or to seek their input. Thus, the flow of information and ideas from the village upward to the public and administrative meetings was only minimal (Forester, 1999).

For El Gourna, and by implication for many small towns and villages, representatives from the government “side” not only needed to carry information to the village, but they also needed to listen to residents, to go into the villages, to meet with local people, and to gather ideas and information from them at the level of village talk (Forester, 1999; Krumholz & Forester, 1990; Peattie, 1968). Relocation officials and representatives could thereby learn from the residents about their lives, about the village, and about their thoughts and hopes for the future. Villagers would also be able to engage government representatives by “telling their stories,” by describing for them their situations, and in return by listening to and understanding issues that were important from the government side (Forester, 1999).

In El Gourna, the most appropriate setting for this type of communication was at the various venues of informal communication where villagers felt most comfortable. This aspect of communication was the missing feature of the discourse. But it is also a kind of involvement for which the villagers might have needed assistance.

8 FINDINGS

In qualitative studies, verbal descriptions are necessary for clarifying themes and presenting specific findings. The descriptions below highlight the findings of this study. They help explain how the process of participation worked in reality, and establish a context for assessing participation.

8.1 Resettlement Plan

Although several redevelopment plans and some social and economic studies were prepared for City of Luxor, which also included the relocation of El Gourna as an additional objective, no relocation or resettlement plan was developed specifically for El Gourna. At the time, only the physical design of the new village and some proposals for new economic development, such as hotels and shopping areas, were considered. The absence of a comprehensive plan, as well as much needed input from local villagers for its preparation and implementation, resulted in many ad hoc arrangements and left important issues unaddressed.

8.2 Compensation

Because there was no actual resettlement plan, and no prior anthropological study of the cultural and occupational conditions of the village, compensation problems arose. In addition, the idea of replacement costs, as well as allowances for costs involved in moving and setting up homesteads anew, was missing from the relocation planning.

Although discussed in public meetings in the main Diwans of the West Bank, (large meeting halls usually attached to a mosque or a large family compound) the agreed upon solution of one “flat”, or one new unit, for every married man as compensation for lost housing, was out of touch with the living situation of many families. In the new village, each prototype unit had 4 rooms plus a small courtyard in the back. The units were about 150 square meters each, or about 1,600 square feet, compared to about 300 to 500 square meters (3,230 to 5,282 sq. ft.) for the former family compounds.

Most households were actually extended families composed of several generations of related family members living in one compound. Splitting up families by awarding one “unit” per each married man undercut the social and economic structure of the extended family. In addition, individual units that housed related family members were often located in disparate places throughout the new village making family activities difficult.

By the time construction was completed on the first two sections of the new village (the village had a total of 5 sections), compensation problems began to snowball. In the old village, there were considerable differences in the size of family compounds, in the size and number of families living in a compound, and in the needs of each family. Some households included unmarried adult siblings, as well as other dependent family members such as divorced women with children, and older parents, aunts and uncles. Some families that included unmarried adults with dependent children were being supported by an unmarried head of household and received only one or two small units as compensation.

These conditions did not come to light during administrative meetings nor during the village
discussions on compensation which relied heavily on the authoritative opinions of upper level village representatives rather than on input from local villagers. The result was that all these different family situations could not be accommodated by the “married man” solution, nor by the single prototype housing unit. As the relocation progressed, and the government realized that they would not have a sufficient number of units, families were pressured into accepting fewer units than were needed to accommodate their needs.

8.3 Occupations and Sources of Income

It became clear during the interviews that a significant number of residents had lost all if not most of their income. No matter what occupation a resident might otherwise have, most residents also worked at home producing fine quality statues and figurines from local stone and selling them to tourists who visited old Gourna (Van der Spek, 2003). This supplemental income was a crucial component of family income.

Relocation officials seemed unaware of the complicated ways in which villagers assembled their monthly income from many small sources and depended on tourists who visited the village rather than on those who stayed in hotels in Luxor. Using generalized survey data from earlier studies and assumptions generated by experts, officials incorrectly assumed that villagers would be able to continue working in the same occupations, and have the same incomes, after the relocation (Yousry, 2004).

As two respondents explained:

The disadvantage (is) that they don’t have any extra income. Because he is a clerk in the government, he gets a salary. And after this, ... in his free time he was working at home doing this souvenirs and selling it. Now it’s totally closed.

And,

Here in the new Gourna, it’s very nice. It’s clean, bigger, and I don’t deny that it’s much better. But I need to live. I have no income.

8.4 Social Fragmentation

Although plans for the new village called for each extended family group to be housed as closely as possible to each other, it was only partly achieved. For example, family Horobat, the largest of the four families from old Gourna, was split into 4 different areas. The splitting of larger family groups and the separation of more immediate families’ members from each other has led to a diminished sense of traditional community life and less participation in community events.

8.5 Villager Initiatives

In New Gourna, residents have shown considerable initiative by providing many improvements to the homes and village. These improvements have enhanced the quality of village life and demonstrated a determination to succeed in the new environment. However, local government policies have sometimes hindered and, in some cases, even penalized residents for improvements. For example, villagers were subject to fines for planting trees, for opening small shops and other business to compensate for lost income, and for adding much needed extra rooms to the housing units.

8.6 Modes of Communication

In observing the modes of communication that took place during the relocation as a key to understanding villager participation, it became apparent that communication and participation were occurring at three different levels. However, only two levels were recognized as forms of participation, and communication was predominantly a unidirectional process. The levels of communication could also be identified by the various meeting and communicative formats, such as administrative and executive meetings, public meetings, and informal communication in the village. The three levels of communication include:

1) administrative and executive meetings: This level involved planning meetings in Luxor, the discussion of technical details, and input from various specialists such as economists and designers, and from higher level village representatives, many of whom no longer lived in El Gourna.

2) public meetings: The general purpose of these meetings was to inform the villagers of what would be happening in the relocation, to select a single prototype for the housing units, and to discuss problems with compensation. In these meetings, of which there were only a few, there was little sharing of information or collaboration between average residents, village leaders, and the relocation officials.
Conversation was mostly between the “bigger” people.

3) village communication: This was the most dynamic level of communication and informal participation during the relocation. It was the level of everyday village talk.

9 CONSEQUENCES OF RELOCATION

Taken as a whole, the relocation of El Gourna had both positive and negative outcomes. On one hand, major improvements were provided. There are better services, better houses (although much smaller than the traditional compounds), new schools, town services, and the quality of life has improved. On the other hand, serious issues remain. The project is not yet complete. Streets, parks, services, and residences remain unfinished (Figure 3). Most residents have lost a significant portion if not all of their income. In many cases, compensation was not an equal exchange or adequate reimbursement. Poor construction in about 30% of the houses in sections 4 and 5 has caused walls to crack and some houses to be unsafe. And the lack of government support for the initiative and improvements provided by the residents has discouraged many and prevented innovative solutions from being proposed or utilized.

![Unfinished units in New Gourna. Photo by authors.](image)

For the families of El Gourna, the relocation has introduced complicated changes. At its most fundamental level, residents have gone from a traditional rural way of life to town life. This has resulted in significant trade-offs such as a change from a modest form of independence, self-reliance and autonomy to being a small part of a larger political and economic system, from a self-sustaining traditional economy to a wage economy, from rural services to city services and cash payments, and from a life based on day to day living to a future based on training and education, with the ever present threat of dependency and unemployment. In addition to the old village itself, many unique features of the village may be inevitably lost such as world class artistic skills, local craft trades, a widely acknowledged tradition of local hospitality to visitors, and a unique cultural and historic site.

As with most relocations, one of the most difficult problems is the sense of loss and sadness experienced by villagers when leaving the old village. A university educated resident from family Horobat describes it thus:

While we were moving from the old Gourna to the new, I didn’t think it would be hard for me or difficult. Then when they started to destroy our house I was very sad. … I felt like unconscious. I didn’t know what to do, where to go. Pain, painful. My father and my mother they cried. They let the mother go to another part of the family that she doesn’t see the house while they destroy it … (It was) the saddest time in my whole life when the bulldozer (a front loader) came and destroyed the house. The father, … that was the first time to see him cry. … And he couldn’t move, like paralyzed. That was too sad. … In old Gourna, it was my life and it was my memories.
10 CONCLUSIONS AND RECOMMENDATIONS

In sum, although the intention was there, the process of villager participation had only a limited effect on relocation. Official “participation” was restricted by definition to formal meetings that typically involved only government representatives, consultants, and higher level village representative. It did not recognize or take advantage of “local knowledge,” local communicative patterns such as village talk, nor the resources, ideas, and solutions that were available at the village level.

10.1 Relocation Planning

Whether redevelopment plans originate at a local or regional level, the challenges for large scale civic projects involve issues at various levels that are intrinsically bound up with and influence one another in complex ways. For resettlers however, the critical effects and long term consequences tend to crystallize at the local level. Long after the planners, designers, and government officials have all departed, what remains in this transition is the relocated residents themselves. They carry within themselves the solutions, the innovations, the determination, and the potential for adaptation that successful relocation depends on. Stefano Bianca refers to this as a “regeneration from within” (Bianca, 2000, p. 335).

The traumatic changes involved in relocation and resettlement go far deeper than just a change of location or the design of a new town, and present complex challenges for the planning process itself. There are difficult questions to answer such as how the community will regain a sense of purpose and meaning, how residents will deal with critical losses such as the loss of income and occupations, and the loss and disruption of individual social positions and community functions. All of these questions are interrelated and must be addressed on a holistic basis.

This human dimension of large scale civic projects must be carefully considered and receive equal emphasis with economic and engineering concerns. If not, it can result in irreconcilable tensions between residents, government administrators and design experts, in long term harmful consequences, and in dependency on the part of the resettlers. What seems most certain in this process is that recovery, regeneration, and redevelopment of village or community life cannot be achieved by external means, or without the full participation of the local residents.

An often overlooked element in the planning of large projects is an assessment of the immediate and long term impact a project will have on local residents. Extensive involvement with the local population is necessary to perform this assessment and to formulate predictions. Once a project is completed, a continuing follow-up relationship with the community that will monitor its long term impact should be maintained as part of a post-occupancy study.

10.2 Villager Participation

Could more inclusive method of participation have resulted in better outcomes? This might have been possible if other conditions were also favorable. For example, if government officials were willing to consider alternative solutions proposed by the villagers, or if outside factors did not constrain outcomes such as limited local governmental capacities or limited funding.

Nevertheless, it is essential that the social, political and communicative structures of local populations be carefully studied using alternative techniques, such as ethnographic inquiry and participant observation, and that a strategy of participation and inclusion to be designed to fit unique local characteristics (Glass, 1979). Since villagers themselves are the most important source of local information, potential ideas and solutions, their input are crucial and essential.

In the relocation and resettlement of El Gourna, three levels and formats of participatory communication, as outlined above, were identified that included both formal and informal means of communication. The importance of informal village communication, or village talk, fits in at this point. It is easy to think of village talk as just conversation in the village and miss its institutional character. As an important social institution of village communication and interaction (Scoones, 1998), it provided a communicative function similar to that provided in more modern or middle class communities by organized community and interest groups, and by various media sources (Kim & Ball-Rokeach, 2006).

In situations similar to El Gourna, where local populations are not experienced in or lack the required resources and capacities to participate in the organized ways, such as executive meetings, public meetings, or stakeholder meetings, planners and designers must be prepared to reach out to the residents, rather than expecting the resident to come to them, and to assist them in developing the capacity for meaningful participation and involvement. This will require much more than inviting citizens to participate.
It will involve actively soliciting their input by entering into dialog and working within the community in the local village setting, by developing and insider’s perspective. It includes such activities as supplying technical information and assistance, equipping and encouraging local resident to participate, identifying capable representatives and leaders, helping residents form interest groups, and possibly providing staff assistance (Innes & Booher, 2010; Krumholtz & Forester, 1990; Peattie, 1968).

10.3 Guidelines for Participation

One objective of the study was to identify principles or guidelines that could be used to enhance and improve participatory procedures. The following guidelines are drawn from the participatory experiences of El Gourna, but they can be applied to almost any project that requires public participation or citizen involvement.

A) An effective strategy of participatory and inclusion should be designed before the project begins, and should include the follow components: 1) the collection of specialized local knowledge, 2) identification of local skills and sources of income, 2) participatory methods that build on local communicative processes, 3) identification of potential leaders, spokespersons, and advocates who are approved by the villagers themselves, and 4) assistance in the formation of interest groups to address specific issues such as new occupations and vulnerable residents.

B) Project officials and designers should seriously consider using alternative methods of data collection that include informal interviews, participant observation, and other forms of involvement with residents, rather than expecting them to be conversant in formal participation procedures.

C) It is critically important that local residents have the capacity to interact and participate. They need to have the necessary information, the skills to organize and communicate effectively, and the ability to learn and communicate with others. If they do not have these background skills, program officials should assist them in developing them. In addition, since they will need the time and resources to participate, adjustments in the participatory methods selected may be necessary to accommodate their way of life. In other words, the participatory framework must fit the local population (Glass, 1979; Innes & Booher, 2010; Krumholz & Forester, 1990; Peattie, 1968).

D) Citizens on the edge of a larger society often do not participate because they feel they will not be respected or listened to (Innes & Booher, 2010). Program officials should clearly demonstrate to the residents, in tangible ways, that their input will matter.

10.4 Implications of the Study

The thrust of these comments is that planning and design professionals need to develop an effective “policy framework,” from the start of a project, which fits the unique characteristics and capabilities of local residents. This framework will be different from one community to the next, but the same principles of careful study at the village level and development of a unique participatory framework apply. Planners and designers need to employ alternative participatory methods, to risk departing from the comforts of familiar policies and procedures, to go into the community on a regular basis, and to learn from the local population about their circumstances, needs, aspirations, and dreams. This will requires personal contact with local communities and input from their point of view.

11 REFERENCES


November 6, 2007 from http://www.hss.caltech.edu/.
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**Abstract Submittal: September**
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**Abstract Review: September-October**
The Vice President for Research leads the track chairs in the abstract review. Double blind review is used. Each abstract is reviewed by at least two reviewers.

**Paper Submittal: January 20-25**
Authors of accepted abstracts receive the invitation to submit a full paper in November. The deadline is in January of the following year. The papers submitted at this time are not peer reviewed but only edited to satisfy the conference standard. Papers that do not follow the template of the conference are rejected.

**The CELA Annual Conference: March-April**

**Paper Review: May-June**
Papers that are submitted in time in January and stratify the conference standard become eligible to enter the peer review for the publication in the Record. The track chairs manage the review for their tracks and select high quality papers based on the score of abstract review, grammar, completion of study, contribution of new knowledge, format quality, etc. The track chairs then send out selected papers to at least two reviewers.

**Review Result and Revision: July**
Track chairs collect review results and make recommendations on the manuscripts. Papers that are accepted with revision requirement will be sent back to the authors in July.

**Final Manuscript Submittal: August**
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