Master of Landscape Architecture

RESEARCH CONFERENCE
MARCH 28, 2017

University of Guelph
Guelph, Ontario
It is our pleasure to welcome you to the 2017 Master of Landscape Architecture Research Conference.

As part of the Master of Landscape Architecture program at the University of Guelph, students completing the thesis portion of their degree convey their research findings at the annual MLA conference. Today is an opportunity for students to present their work to peers, faculty members, involved parties, family, and the general public. The MLA conference represents the culmination of the students’ formal graduate course requirements and is a celebration of their dedication and effort over the past three years. Please join us in supporting and congratulating the students on their achievements.

Carrying on the tradition, the second year MLA students have been working behind the scenes to organize today’s event. The co-operative spirit of this joint venture among the 2nd and 3rd year graduate students provides the foundation for today’s conference.

On behalf of the participants we would like to extend our sincere appreciation to Ontario Agricultural College, the School of Environmental Design & Rural Development, the faculty, peers, advisors and committee members – for many hours of effort and guidance, we thank you.

Sincerely,
The MLA Students

We extend our sincere appreciation to our sponsors, without whom this conference would not be possible:

Richards Learning Trust
LANDSCAPE EFFECTS ON TURTLE ROAD TRAUMA IN SOUTHERN ONTARIO

Advisor: Robert Corry

Roads in Southern Ontario have a detrimental effect on turtle populations. Due to turtles’ complex habitat requirements and migratory movement, they are especially impacted by vehicular trauma. Past research indicates vehicular trauma is aggregated both spatially and temporally. In order for mitigation to be effective, it should focus on locations and times of concentrated trauma. This study used a geographic information system (ArcGIS) to map six years of turtle trauma data from the Ontario Turtle Conservation Centre, identify trauma clusters, and examine multi-scale landscape characteristics correlated with these clusters. Data for three turtle species (Emydoidea blandingii, Chrysemys picta marginata, and Chelydra serpentina) were combined with classified landscape imagery to analyze landscape pattern characteristics associated with trauma clusters by species, sex and season. By targeting locations with specific landscape characteristics and moments of peak potential, results can be used to guide locations for species-specific mitigation efforts.

Keywords: Freshwater turtle; vehicular trauma; roadkill; ArcGIS; hotspots; hot moments
The field of landscape architecture has become more complex through increased social and ecological implications, requiring a greater need for landscape architects to work with other professionals such as horticulturalists, ecologists, engineers, and planners. Artists also rely on the skills of other professionals when creating outdoor and permanent public art due to issues such as environmental exposure and human interaction. The goal of this project is to create a list of recommendations of how landscape architects can improve the creation of public art. Case studies in combination with reviewing public art policies, and key informant interviews of public art professionals were analyzed to find recurring challenges during the development of public art from initial concept to construction and reveal how landscape architects may be able to resolve such issues.

**Keywords**: professional collaboration, specialization, challenges in public art, design of public spaces, Canadian art
Cycling, an increasingly popular sustainable mode of transportation, is often discredited as a four-season option as it is perceived as being dependent on weather conditions. This paper presents the concept of winter cycling and its impact on, and how it is impacted by, streetscape design. Winter bikeability criteria were synthesized and applied to four cities known for their bikeability and year-round maintenance of cycling infrastructure, including Montreal (Canada), Minneapolis (USA), Copenhagen (Denmark), and Oulu (Finland). Through evaluation of these criteria, a set of best practices from each city was created based on safety, ease of use, and overall improvement to bikeability. The best practices were supported by a review of the literature and guidelines published by professionals in the field. The best practices were then applied to Toronto to create design recommendations to improve streetscape design. The results provide direction for future planning of streetscapes in cities with winter climates.

Keywords: Bikeability, sustainable transportation, active transportation, complete streets
Green infrastructure (GI) has emerged as a strategic landscape approach to aid in creating more sustainable communities that benefit both people and wildlife. Despite the well-known social, economic and environmental benefits of GI in managing stormwater, municipalities have been slow to adopt and implement this modern technology. This study explores a comparative case-study analysis between two municipalities located in southern Ontario to identify existing barriers inhibiting the adoption of green infrastructure technologies for stormwater management (SWM). Interviews were conducted with four key stakeholders and were analyzed using coding and theming. Results indicate a number of significant barriers including: a lack of experience by contractors in constructing GI projects, maintenance costs and complexities of GI, and the need for a cultural modernization within municipalities. The GI approach has evolved out of the need to better plan and manage new and existing development in order to shape healthier and more sustainable communities.

Keywords: sustainable communities, barriers to implementation, coding and theming, comparative casestudy, strategic landscape approach
HOW MECHANICAL DISTURBANCES AFFECT SOIL RESPIRATION RATES IN URBAN FORESTS 5-11 YEARS AFTER DEVELOPMENT

Advisor: Robert Corry

Urban forests are a valuable resource which provide ecological services and functions. The integrity of an urban forest patch can be affected long-term by soil disturbances associated with urban land development, such as: topsoil clearing and soil compaction. The purpose of this exploratory study is to analyze soil microbial activity of forested urban areas following land development with known disturbance histories. Three sites in Guelph, ON, with soil disturbance histories between 5-11 years ago were used to compare soil microbial activity. Soils from forests after mechanical disturbance and controls were measured for respiration rates in forest patches using a 24-hour soil CO2 respiration test. Disturbed soils from 5, 7, and 11 years after disturbance had lower respiration values compared to controls. Impacted soil biology can be easily tested for and should be considered by landscape architects in order to plan for more resilient urban forests.

Keywords: Urban Land Development, Solvita 24hr CO2 test, Landscape Architecture, Soil Microbiome
EXPLORING HOW SKATEPARK DESIGN CAN ADDRESS THE NEEDS OF YOUNG PEOPLE AND COMMUNITIES IN CANADA

Advisor: Cecelia Paine

Although some people suggest that skateparks enable negative behaviour and increase crime, others argue that skateparks provide much needed public places. The aim of this study is to explore how skatepark design may best address the needs of young people and communities in Canada. A case study approach compared and contrasted four public skateparks across Canada. Semi-structured interviews were conducted with community members and key informants involved in the planning, design and implementation process of each site. I collected data on participant use of each skatepark through secondary data analysis from newspapers, electronic sources and social media and from direct observation of site use. Interview results and observations reveal a number of factors that address the needs of young people and communities. Skateparks that accommodate a range of uses, abilities and ages may have useful implications for addressing young people's needs and community development.

Keywords: skateboarding, youth needs, social capital, adolescent development, politics of space, recreation
Urban soil is the foundation for many landscape architectural projects, however, urban conditions may challenge optimal soil functions. Despite the importance of soils, literature suggests that landscape projects often fail due to poorly-managed soils throughout the stages of design, implementation, and management. This study explores challenges, gaps in knowledge, and opportunities to improve urban soil care within the profession of landscape architecture in Southern Ontario. Semi-structured interviews were conducted to collect qualitative data from key informants who possess an understanding of urban soil and how they are managed. Data from key informant interviews and a document analysis were used to identify how urban soils are currently viewed and what resources have been developed to guide management decisions throughout the design process. This research will strengthen the role for landscape architects to value urban soils and ensure that they are being properly managed on project sites.

Keywords: anthropogenic urban soil, anthropic soil, urban ecology, soil conservation, landscape design, sustainable urban environment
Brownfields are a legacy of urban development after World War II. Large-scale city expansion associated with rapid urbanization rendered many urban waterfronts as obsolete brownfield landscapes in city centres. Many Canadian waterfront cities, including Toronto and Mississauga, Ontario, have extensive brownfields. Data collected through literature review and case studies are synthesized and demonstrate design principles for the redevelopment of waterfront brownfield sites and will ultimately apply to a 70-acres former brownfield site in the city of Mississauga. The design concept has been realized through consideration of mix use, density, connectivity, and public spaces. This research will contribute to a better understanding of socially and environmentally cohesive urban spaces for waterfront brownfield revitalization, as well as provide urban planners and landscape architects with tools for creating dynamic possibilities for accommodating emerging public demands in the heart of cities.

Keywords: Brownfield Land, Post-Industrial Landscape, Urban revitalization, Community planning, Waterfront Landscape Design principle
AISLIN LIVINGSTONE

CITIZEN SCIENCE AS A PARTICIPATORY APPROACH TO LANDSCAPE ASSESSMENT AND MONITORING ACROSS TEMPORAL AND SPATIAL SCALES IN LANDSCAPE ARCHITECTURE

Advisor: Karen Landman

The field of landscape architecture faces increasing demand to apply design processes that are evidence-based and informed by sound research. As a participatory approach to landscape assessment, citizen science engages the public in the production of localized scientific knowledge across temporal and spatial scales. Although citizen science is a popular programmatic element in landscape architecture, little research explores how it can be incorporated elsewhere in the design process. This research uses a document analysis and data from key informant interviews to draw insights from selected citizen science projects at the site and regional scale in Southern Ontario. Long-term and coarse-scale data collected through participatory research have positive implications for landscape architects. Results provide a framework to include citizen science in design to promote the collaboration between the public, researchers, and designers that is essential to furthering evidence-based landscape architecture.

**Keywords:** public participation, design process, ecological monitoring, data collection, Ontario
Eight Perceived Sensory Dimensions (PSDs) were identified in previous studies to describe user preferences of park qualities and characteristics: nature, culture, prospect, social, space, rich-in-species, refuge, and serene. Recently, PSDs and biotopes have been integrated to enhance park users' preferences and vegetation structure. Usable city green space needs to balance social aspects (PSDs) and environmental aspects (biotopes) at the design stage. This study will assess urban green spaces through experimental design based on the inclusion of the biotope 'green space' and PSDs. Designs were created based on market squares in Guelph and London, Ontario, by including biotope characteristics for plazas and PSDs. Designs were critically analyzed to identify synergies and conflicts between biotopes and PSDs. This research contributes to the understanding of socially and environmentally cohesive urban green spaces, providing landscape architects with tools for creating usable green spaces in Southern Ontario cities.

Keywords: Plaza, Preferences, Landscape, Design Exploration, Virtual Model
Adele Pierre

Using Geodesign to Communicate the Effects of Bioswales on Urban Stormwater Management

Advisors: Sean Kelly, Nadia Amoroso

With increases in storm frequency and intensity, municipalities need to find new ways of managing stormwater. Solutions require collaboration across planning disciplines and input from an informed public. This study compares a system of bioswales to existing curb and gutter infrastructure in a post-industrial streetscape of Hamilton, Ontario. Using the geodesign process, a section of Ottawa St. North was modelled to show how green infrastructure can ease the burden on aging, combined sewer systems. Qualitative data was gathered from residents of the neighbourhood through field notes, and quantitative geospatial data through GIS. Parametric modelling was used to generate a design, and scenarios created to show resulting impacts on stormwater runoff. The model was posted online as an interactive presentation, accessible to all stakeholders for review and comment. The results of the study demonstrate powerful new tools that can assist landscape architects in designing, collaborating and communicating stormwater strategies.

Keywords: green infrastructure, combined sewers, surface hydrology, rainwater, Low Impact Development, GIS
Residents in Long-Term Care (LTC) facilities frequently experience depression and malnutrition. Many factors contribute to this including a poor dining experience. Being in natural environments can improve mental well-being while plants can enhance the feel of a space. However, previous research has not explored plants ‘en masse’ in LTC dining rooms to determine if exposure to nature can positively influence residents’ length of stay at the dining table and improve food and drink consumption. Nutritional intake and length of stay data were collected before the installation, during and postinstallation of a greenwall. Resident data were analysed using a series of paired t-tests. Analysis revealed that residents who directly faced the greenwall had a significant increase in fluid intake (p=0.03) and a non-statistically significant increase in food intake (p=0.21). Landscape Architects should understand a LTC facility’s interior layout and design for natural ‘dining room views’ as this could positively impact resident health.

Keywords: nutrition, living wall, nature, seniors, elderly, institution
Landscape architects have a vision-oriented approach to design. Sonic environments are seldom acknowledged. As a result, a growing number of designed environments are disjointed and under-utilized. This study aims to bring more awareness to the importance of the acoustic environment in landscape design practices. Steps for approaching soundscape design will be developed through a literature review and a soundscape design for Day Park Beach, Cape Breton. The literature review provides context for the design by examining disciplines relating to sound. Data were collected through soundwalks, two focus groups, and on-site observations. Using a sound recorder, the researcher collected perceptions of three people residing in Cape Breton and six visitors regarding existing soundscapes at Day Park Beach. Results show the importance of soundscape assessment and the value of understanding the viewpoints of both residents and visitors during the design process. This thesis offers useful tips for landscape designers for developing soundscape designs.

Keywords: soundscape, acoustic design, landscape architecture, soundwalks, perception
In large North American cities, public-private partnerships and the prevalence of semi-public spaces contribute to the trend of privatizing public space. Citizens' urban practices that intentionally alter a public setting challenge privatization of open spaces. Research on the spatial context of these practices, referred to as citizen urban interventions, is limited. This project identifies spatial conditions that contribute to the emergence of citizen urban interventions. From the literature, I developed a site assessment form to evaluate the site-specific conditions that are theoretically related to the occurrence of citizen urban interventions. Using wandering as a method, I identified and evaluated the sites of interventions found in publicly accessible areas throughout Toronto. After analyzing the data collected, I describe commonalities among the spatial conditions of the observed sites. The results can be used by designers of the urban public realm, like landscape architects, to create spaces that allow for citizens’ urban interventions.

**Keywords:** radical democracy, citizen appropriation, ludic practices, interstitial space, agonistic public space
SUCCESSFUL ECOLOGICAL DESIGN IN SOUTHERN ONTARIO: A STUDY OF LAND MANAGEMENT STRATEGIES AND LESSONS FOR LANDSCAPE ARCHITECTURE

Advisor: Karen Landman

Ecological design projects face many challenges in intensively modified landscapes that threaten the long-term integrity of natural systems. Intensification of surrounding land uses and increasing recreational pressures present numerous obstacles for conservation land managers. This research investigates the existing land management strategies of public and private agencies in Southern Ontario. The goal is to determine how adaptive management and ecological design principles contribute to the long-term success of conservation and habitat enhancement projects in intensively modified landscapes. Six case studies form the basis of this investigation; a review of existing management plans and semi-structured interviews inform a comparative analysis of current land management regimes. Results are used to determine how metrics for land management, informed by ecological design goals, contribute to the adaptive management process and the ability of landscape architects to achieve long-term success in their ecological design projects.

Keywords: ecological design, adaptive management, land management, conservation, habitat enhancement
Bayfront Beach was permanently shut down for the 2016 swimming season, due to high E.coli levels sourced from waterfowl feces. During rainfall events, runoff carries feces across the beach and into the water, elevating E.coli concentrations above the Ontario recreational standard. When recreational waters do not meet the safety standard it is classified as unsafe for human contact and must close down to the public. This thesis investigates minimizing beach closures at Bayfront Beach with green infrastructure technologies. A site inventory, capability and suitability analysis, and design concepts were developed based on the data collected through, municipal and technical reports, Environment Canada and semi-structured interviews with professionals who have extensive working experience with the subject site. The findings in the analysis and design concepts informed design specifications and framework, and recommendations for green infrastructure implementation in order to meet the provincial recreational standard.

Keywords: beach closure, E.coli concentrations, green infrastructure, mitigating E.coli, runoff, Ontario recreational water standard
EXPLORING THE APPLICATION OF SPONGE CITY DESIGN FOR DOWNTOWN GUELPH

Advisor: Cecelia Paine

“Sponge City” is a concept already constituted in many cities around the world. The mode of this new thinking is to create a city that absorbs rainfall and releases rainwater when required — similar to a sponge. The goal of this research is to understand whether the concept could be effective when applied to medium-sized cities in Canada, with a particular focus on Guelph, Ontario. Design strategies were gleaned from precedent analysis of well-known storm water management cases. Cases were conducted on three different principles of the concept of Sponge City - waterfront design, community planning, and urban rooftop garden design. On the base of the secondary plan created by Urban Strategies, my design were applied to an existing part of Downtown Guelph. Data of site area and annual precipitation were collected through GIS (Geographic Information System). A comparison with collected data and a calculation of water absorption of the landscape design will be used to verify the absorption ability of conception. Results indicated the benefits and limitations of applying this concept. Redesign recommendations for Downtown Guelph are provided to assist landscape architects and urban planners to understand the value of resourcing rainwater and effects of implementing the stormwater management concept - Sponge City.
Thank you to our learned presenters!