

8th Annual Carleton Heritage Symposium *Heritage & Technology*

This 8th Annual Carleton Heritage Symposium will feature a wide range of presenters from diverse backgrounds, all speaking on the topic of Heritage & Technology. We look forward to hearing from them, and from you, the audience, on March 16th, 2013 in Ottawa, Ontario.

Keynote Speaker: Sue Warren is currently Manager of the Conservation Division of the Canada Science & Technology Museum Corporation. She has a Master's degree in Art Conservation from Queen's University, and is accredited by the Canadian Association of Professional Conservators, as a Conservator of Industrial Technology.

The Conservation Division is responsible for the care of the National Collection which includes objects from the Agriculture Museum, Aviation and Space Museum, and Science & Technology Museum. In total, there are over 50,000 3-d objects, and over 100,000 archival objects.

Sue has worked at the Museum for 25 years, and has seen a huge shift of focus and priorities; which is mirrored across the field of heritage preservation. Expectations have changed in a field where there are as many if not more virtual visitors; than people visitors. Where we used to collect tractors, we now collect and preserve satellite navigation units that drive tractors; there are paper records from hundreds of years ago that can still be read; and floppy disks from 30 years ago that can't. Curators must be familiar with traditional as well as cutting-edge technology; and Conservators are required to be knowledgeable about a huge range of materials, and to understand their preservation needs. In addition, we must all now consider how to preserve the function and significance of increasingly complex technological objects, in a world that won't wait for heritage preservation to catch up.

Session 1: Heritage Conservation & Technology

1. **Mark Zwolak** is a first year student of Willowbank – School of Restoration Arts in Queenston, ON. His academic background also includes a BA (Honours) in Geography from Brock University and a postgraduate degree in GIS (Geographic Information Systems) from Niagara College. Mark's work experience in framing-carpentry and stonemasonry has increased his appreciation for the 'heritage' trades and eventually led him to Willowbank. With emerging interests in physiology, neuroscience, engineering and technology Mark hopes to assimilate these disciplines into the heritage field by examining heritage as memory and sensation.

Heritage as Memory and Sensation

Our five senses can ultimately be used for two purposes: Experience and Documentation. It is my hypothesis that Sensory Experience creates knowledge (active) and Sensory Documentation uncovers knowledge (static) when linked to intangible concepts of study. All sensory experience (sight, hearing, taste, smell, touch) is understood as 'tangible', and such experiences can be used for experiential personal growth and precise documentation.

In my presentation, I plan to examine what I refer to as two separate and distinct forms of 'technology'. One technology I call 'Inner Technology'. Our 'Inner Technology' entails the full utilization of our five senses. Access to intangible concepts (e.g. 'Memory' / 'Heritage') become unobstructed when an enhancement and blending of the five sensory technologies are utilized. This also creates a richness in sensory experience. It is this process that has an open, fluid and creative access to 'Memory' (knowledge). Lastly, I will examine the opposite of 'Internal

Technologies', classified as 'External Technologies' (which are the external documentations of our sensory experience), and its effects on the future of Heritage Conservation.

2. **Anton Graser** is a graduate of the Nelson Mandela Metropolitan University - Wood Production Engineering program. With a background in mill management in South Africa and Ghana, he has interned at Springfield Forest Products (Oregon) and Timbadola Mills in northern South Africa. A retired military healthcare officer, his Ph.D. defence assessed electronic medical records acceptance among Canadian Forces care providers. Anton is currently studying Carpentry and Joinery – Heritage at Algonquin College Perth campus. The quantum leap from healthcare to carpentry was the result of a second career based on his love for wood.

The Collegiate Heritage Message

This presentation will explore the impact of technology on heritage scholars and associated professionals, tech-driven government initiatives, modern media perceptions, and the need for public heritage values education. Key topics include media, medium, and heritage revitalization as a viable alternative to modern structures. As well, centres of instructional excellence (colleges and heritage movements) will be analyzed for their relevance, effectiveness, and ability to address the looming skilled trades craft shortage.

These topics will be presented by means of a discussion about the heritage movement's background, the significance of sustained heritage momentum, the conceptual framework of public-private benefit, the assumptions based on the author's view, the limitations including application beyond Canada, the key themes associated with heritage as concept, business case benefits, the heritage population, and suggestions for future research. This presentation will conclude that there is a need for new avenues of communicating the heritage message, increased integration of apprentices and professionals, greater visibility to the public, and an interpretation of heritage training methods.

Session 2: Digital Tools for the Conservation and Promotion of Heritage

3. **Rozhen Mohammed-Amin** is an architect from Kurdistan of Iraq and a PhD candidate in the Faculty of Environmental Design (EVDS) at the University of Calgary. She finished her Master's degree in EVDS as well. Her life-long interests in cultural heritage, historic architecture, and technology have made her dedicate her research projects to explore the confluence of these domains. In her BSc. project, Rozhen designed a memorial museum in which she proposed integrating new state-of-the art technologies with the museum exhibits, while in her master's thesis she designed a mobile Augmented Reality (AR) proof-of concept for the ancient site of Erbil Citadel. She recently presented her master's research at the Personalized Access to Cultural Heritage (PATCH 12) workshop in the ACM Multimedia conference, held in Japan. In her PhD research, she is designing and developing a mobile AR system for Canada's largest living history museum, Heritage Park Historical Village in Calgary. Rozhen was recently awarded Roger Soderstorm Scholarship from Alberta Historical Resources Foundation's (AHRF) Heritage Preservation Partnership program from Alberta's Ministry of Culture in support for her PhD research.

When Past, Present, and Future Merge: Augmented Reality for Exploring Museums and Heritage Sites

Recent decades have witnessed a dramatic change in the roles and functions of cultural heritage institutions as they make the transition from collections storehouses to active learning

environments. Consequently, museums and heritage sites have started investing in new technologies in order to improve their interpretation strategies. One of the latest technologies to be introduced is Augmented Reality (AR), a context-aware technology that overlays computer-generated entities into a user's view of a real scene or environment. By layering the physical environment of museums and heritage sites with virtual entities and linking various sources of 3D models and multimedia contents to an artefact or historic building, AR promises a state-of-the-art way to explore museums and heritage sites.

This presentation will explore the state of AR in cultural heritage and its current and potential uses and applications. It will then discuss the lessons learned from a research project for developing a mobile AR proof-of-concept for the ancient site of Arbel (also known as Erbil citadel in Kurdistan region of Iraq) and its 8000 years of history. Building on several years of researching in this domain, the presenter will then discuss an ongoing PhD research project for developing a mobile AR system for Heritage Park Historical Village in Calgary, Alberta.

4. **Andrew Waldron, Ariane Marin-Perreault** (Parks Canada)

Creating Mobile Tools for Heritage Appreciation

In recent years, information technology has begun to increasingly shape our society into a mobile one, linking people through personal devices that deliver information directly to smart phones and tablets through ever-expanding Wi-Fi coverage. This advancement in technology is likewise increasingly influencing the experience and understanding of heritage. Parks Canada's Canadian Register of Historic Places was interested in moving towards a more mobile and personal experience of heritage, rather than only maintaining the Register as a repository of information on designations. To this end, a mobile application, called Edifica was recently developed for presenting users with a more dynamic method of understanding the meaning of places in communities. This paper will be presented as a case study on how the app was developed and how it complements the Register, concluding with recent reception and use of the app.

5. **Robert Shipley** is an Associate Professor in the School of Planning at the University of Waterloo where he completed his Ph.D. in 1997. He is the Chair of the Heritage Resources Centre and a Research Fellow at Oxford Brookes University in Oxford, England. Professor Shipley is recognized as a leading international expert on the role of public participation in planning for the future of communities. He is also in the forefront of research in the area of culture, heritage and tourism and particularly in the economic aspects of heritage development. Studies on the financial values of heritage properties and the demolition of historic buildings have been key documents in improving heritage planning in Canada. He is a founding member and former VP of the Canadian Association of Professional Heritage Consultants from whom he received the Award of Merit in 2006. In 2012 Prof. Shipley received the Queen's Diamond Jubilee Medal for his work in heritage conservation.

Lindsay Benjamin is a Heritage Planner at the University of Waterloo's Heritage Resources Centre. She received her BES from the University of Waterloo and is currently working towards the 2013 completion of an MAES degree in Planning. Lindsay rejoined the Heritage Resources Centre permanently in 2009 after working in both the private and public sector. Her work involves the conservation of Ontario's built heritage and includes large-scale research projects, municipal contracts and public education. Her recent undertakings include completion of a heritage bridge inventory of the Grand River watershed, participation in the creation of Building Stories, and work on Phase 2 of the Heritage Districts Work! study by the Architectural

Conservancy of Ontario. She is also an executive member of the North Waterloo Branch of the ACO.

Kayla Jonas joined the Heritage Resources Centre in 2007. She has an Honours BES in Environment and Resource Studies with a joint major in Anthropology from the University of Waterloo, and has recently begun her Masters in Planning. At the Heritage Resources Centre, Kayla is involved in many projects including work on the Historic Places Initiative, acting as Coordinator for the Heritage District Work! studies by the Architectural Conservancy of Ontario, and compiling the Town of Halton Hills' Heritage Register. She also completed the Goderich Harbour Cultural Heritage Landscape study. In addition she has her own blog at www.adventuresinheritage.com and tweets at @jonaskayla

Opportunities and Challenges of an Interactive Inventory

The online interactive inventory for historic sites in Canada, Building Stories, was launched in April of 2012. During the development, launch and operation the team has encountered many unexpected opportunities and challenges.

The idea for Building Stories came out of an examination of the needs of volunteers. Local volunteers have significant knowledge about their local resources. But how do you turn that knowledge and enthusiasm into community assets? Building Stories provides a venue for citizens, volunteers and professionals to document their local sites in an accessible and dynamic way. Several communities have jumped on board and have begun documenting their local history in unique ways. For instance, the Town of Goderich has not only documented existing buildings, but also those lost in the 2011 Tornado.

However, issues unique to technology and heritage have arisen that we have had to overcome. These include copyright, data ownership, reviewing entries and quality control. In addition, a major challenge has been creating an inclusive database to be used by multiple user types: volunteers, citizens, professional architects, historians and municipalities, all with different needs and expectations. These issues, and the lessons learned from them can be applied to other heritage and technology uses.

Session 3: Technology of Heritage Conservation

6. Mariana Esponda (Assistant Professor, Azrieli School of Architecture and Urbanism)

Construction of Torre Reforma, to be the tallest building in Latin America at 57 levels high (plus 9 levels of underground parking), is taking place on a site occupied by an early 20th century gothic-eclectic house officially classified as artistic heritage of Mexico City. The main challenge has been to optimize the undersized site area to both pursue the building code requirements and to respect the heritage house. Through studying how they decided to move the classified heritage building in response to this challenge, we can analyze how technology is a critical resource that helps to incorporate new and old buildings systems.

This structural movement is significant not only because it is the first time this process has been applied in Mexico City (considered a highly vulnerable area for earthquakes and other unique geological characteristics), but also because it represents one of the most important technological innovations in engineering and preservation of heritage buildings. The 2000 ton unreinforced quarry stone house was separated from its foundation and moved temporarily 18 meters north. Nine weeks later, after the Torre Reforma's foundation and basement were built, the house was

repositioned in its original place. This structure relocation was a very long and careful process in which a multidisciplinary team participated: civil and geotechnical engineers, architects and restorers. The heritage house will eventually be the main entrance for the skyscraper, as well as a space for a library and serving coffee.

7. **Brian Hierlihy** (BArch MBA, OAA CAHP MAPTI MCIM)

Canadian architect Jim Strutt is one of many in that profession to consider his own a 'signature piece' of his long and distinguished career. The building was built in about six weeks in 1955. For the most part, it is not attached to its footings. It did not comply with applicable building codes when constructed, and does not do so today. The house was one of the first in Canada to utilize a 'curtain wall' as the building envelope. The wooden hyperbolic paraboloid roof was not only the first in Canada, but of its particular construction anywhere. The building is a deceptively simple integration of structure, building science and planning.

In 2012, when we completed our six-month investigation, this remarkable structure was still essentially what was constructed in 1955, including the original fit-up and finishes. Our investigation included a three-dimensional computer simulation of the building construction, which exposed critical aspects of the design not evident through observation. It also provided a 'carcass' upon which fabric failures and related interventions could be 'hung'. It exposed the building as a highly-modular 'kit of parts'. This presentation will describe the design and detailing of the Strutt residence and our simulation of its construction.

8. **Zeynep Ekim** is in her final year of the Bachelor of Architecture degree, majoring in Conservation and Sustainability at the Azrieli School of Architecture. During her studies she had the opportunity to study and document heritage structures in Canada, and gained international experience by documenting the Old Library of Port of Spain, Trinidad and Tobago as part of the directed studies abroad program. She was exposed to the practice of masonry structures by participating in the courses offered by Willowbank School. She is currently a part of the research team at Carleton Immersive Media studio. Her personal research interests include adaptive reuse, and the role of human memory in the practice of heritage conservation.

Ken Percy holds a Bachelor degree in Music Performance from the Glenn Gould School in Toronto, a Bachelor of Architectural Studies and a Masters of Architecture from Carleton University. He is currently a member of the research team at the Carleton Immersive Media Studio where he is working on a number of projects related to the documentation of historical buildings. His personal research examines new and emerging technologies and their potential to empower individuals and communities through desktop manufacturing by allowing them to design and manufacture anything from housewares to houses.

Sarah Ward is in her first year of a Master's of Architecture degree at Carleton University and has previously obtained a Bachelor of Architectural Studies in the stream of Conservation and Sustainability from Carleton University. She has previously had the opportunity to participate in several international projects that have inspired her research including constructing a high school in Moshi, Tanzania and documenting heritage homes in Port of Spain, Trinidad. Previous work experience includes a summer internship at Toronto based firm Stevens Burgess Architects where she assisted on heritage preservation as well as new design

projects. Her personal research includes adaptive reuse, the integration of heritage construction with passive sustainable techniques and cultural landscapes.

Accuracy of Total Station Surveying vs. Photogrammetry in Recording Earthen Architecture

Kasbah of Taourirt is one of several major “fortified cities” along the former caravan route between the Sahara desert and the city of Marrakech in Southern Morocco. Built in the 16th century, the site reached its peak of importance in the mid 19th century. The Kasbah was used by settlers and squatters from 1930s until 2010.

Although part of it is restored and functioning as a museum, the site is today mostly in ruins. The documentation of this historic site was undertaken by the Carleton Immersive Media Studio (CIMS) in accordance with the Getty Conservation Institute (GCI) as part of their “Conservation of Earthen Architecture” project. The survey focused on the documentation of the workshop and barn areas of the site, including two “Staras”, which previously housed farmers and artisans. Surveying methods included total station data collection and hand measurements. Due to the complexity of the structure and the number of individual rooms/spaces, photogrammetry was also used to accelerate the data collection process. The combination of measurements acquired from the survey and photogrammetric models were used to create floor plans, elevations and sections.

Focusing on documentation technology, this presentation will discuss the advantages and disadvantages of total station surveying and photogrammetric methods.

9. **Stephen Fai** holds a professional BArch (Carleton) and a PhD in Religious Studies (Ottawa). He is an Associate Professor at the Azrieli School of Architecture and Urbanism where he teaches in the design studio and in the PhD program. He has taught courses on hand drawing and on various themes in the history and the theory of architecture. Professor Fai served as the Acting Director of the School of Architecture (2002 – 2004), Director (2004 – 2005), and Associate Director, Graduate Programs (2006 – 2010). He became the Director of Carleton Immersive Media Studio (CIMS) in 2007. Stephen's research interests are at the intersections of architecture, religion, and representation. These have played out through various projects during his time at CIMS. His most recent focus is on applications of building information modelling for heritage conservation.

Who needs digital tools for heritage conservation?

This presentation will discuss recent and ongoing projects at the Carleton Immersive Media studio that investigate the application of digital technologies in the documentation, modeling, and, most recently, the renovation of architectural heritage. It will outline the objectives for each project and present a critical evaluation of the outcomes. The projects include a web-based history of the Bytown locks at the mouth of the Rideau Canal, the use of building information modelling (BIM) for the documentation of materials and methods of construction specific to heritage buildings in Canada, and our involvement in the renovation of the West Block of Canada's Parliamentary Precinct.

Session 4: Conservation of Technological Heritage

10. **Susan M. Ross** is an Ottawa-based architect working with the federal government. She previously worked in Montreal and Berlin, both in private practice and for heritage organizations. Her project work has included additions to hospitals, schools and factories, rehabilitation of a power station, and condition assessments of lighthouses. Her research on the water supply landscapes of Montreal, completed for a M.Sc. in Planning (Conservation of the built

environment) at the University of Montreal, was published in 2011 in *Metropolitan Natures: Environmental Histories of Montreal*. Her research on industrial landscapes, modern heritage and sustainable heritage conservation has been published in Canadian and international journals of architecture, conservation and industrial archeology. She is co-chair of the Education and Research focus group of the Technical Committee for Sustainable Preservation of the Association for Preservation Technology, and is teaching in the Conservation and Sustainability program of Carleton's Azrieli School of Architecture.

How 'Appropriate' is our Technological Heritage?

This paper will explore questions about the heritage of technology itself, and how it challenges heritage conservation in specific ways. The fate of a series of 20th century Canadian built technological sites will be examined, in order to consider how the concept of appropriate technology could alter the discussion of technology as a heritage value.

Throughout its history, the Canadian environment, from the city to the hinterland, has been transformed by the application of specific technologies. Residential towers, hospitals, lighthouses, canals, highways, grain elevators, water works, dams and mines are all examples of tangible built elements associated with the application of technology in the country's physical and demographic expansion. These forms also reflect intangible values, including individual and community aspirations, knowledge and institutions.

Technologies, as means to an end, are expected to evolve over time, however the ends often change too. Understanding the limits to earlier technological forms, such as they relate to later social ideals, is critical in assessing the value of the means. The concept of appropriate technology, which contributed to the early discourse of sustainable development, provides one critical framework. It encourages us to reconsider the relationship between a technology and its local environment, economic capacity and cultural traditions. This framework becomes a useful perspective for assessing the ongoing value of our built technological heritage. This can then expand our conservation objectives, to include creating better adapted, and more affordable community-oriented places.

11. **Erin Harrison** is an urban planner who has worked both publicly and privately across the country. She obtained a Bachelor of Environmental Studies in Planning at the University of Waterloo in 2011 prior to pursuing a Masters in Canadian Studies (Heritage Conservation) at Carleton University. A contributor to the Nova Scotia Heritage Trust's quarterly publication, *The Griffin*, Erin will be interning at Contentworks Inc. in 2013. Her research interests include the study of industrial heritage, and the impact of slum clearance practices of the mid 20th century on Canada's built heritage.

Ontario's Industrial Heritage: Conserving Technologies Past and Present

Until quite recently, 'heritage' and 'technology' weren't often words heard in the same sentence. With 'technology' carrying a forward looking, evolutionary connotation, and 'heritage' often perceived as backward-looking, and static, many would see the concepts as incompatible if not contradictory. But what about when technology is heritage?

Technology is constantly under threat of being replaced with something newer, more efficient, modern, or 'better.' This is particularly true of industrial technology, where its rapid and ongoing advancement is key to economic viability. The conservation of industrial heritage therefore poses

a number of unique challenges. How can we ensure the conservation of industrial processes, artefacts, machinery, and landscapes once a particular technology becomes obsolete?

To begin answering that question, this presentation will examine the policy direction provided by the International Committee for the Conservation of the Industrial Heritage (TICCIH) in the Draft Joint ICOMOS – TICCIH Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes. Relevant Canadian federal and provincial legislation will then be situated within the framework provided by these principles. Their policies and guidelines will be evaluated and used to assess the success of several case studies in which the artefacts of an obsolete industrial technology have been conserved.

Session 5: Heritage Charette: Rethinking Victoria Island

March 9-10, 2013

The First Annual Carleton Heritage Charette challenged students and young professionals in multidisciplinary teams to analyze and rethink the Victoria Island by examining its natural features, industrial heritage, cultural and aboriginal significance. Site tours, presentations and question and answer sessions with professional and community advisors assisted the teams in their task to reimagine the site and propose viable solutions for the revitalization of site as an urban park. The difficulty of the task consisted in reconciling and acknowledging the many layers of values associated with the site as well as the many stakeholders' interests and aspirations. Key issues addressed include: the notion of palimpsest; the relationship between preservation and design; industrial heritage; conservation techniques and adaptive re-use; land use; water management; ecological revitalization and respect for the aboriginal communities and their relationship with the site. The winners of this juried competition will be announced at the annual ICOMOS Canada Congress, in May 2013, when prizes for the best proposals will be awarded by the ICOMOS Canada Martin Weaver Memorial Fund. This session will feature participants from the 1st Annual Carleton Heritage Charette planned for early March 2013. More details to come.

Closing Speaker: Victoria Angel (Willowbank School of Restoration Arts)

Poster Category

1. Drew Graham and Desirée Valadares (Landscape Architecture, University of Guelph)

Mountain Locks Park: A Trail by Fire (2011) is a design response to a cultural landscape located in the Merritton Ward to the south of Glendale Avenue in St. Catharines, Ontario. This 11.33 hectare park features a staircase of stone locks from the second Welland Canal. This project was part of a graduate level studio course at the University of Guelph's Landscape Architecture Program led by Dr. Robert Corry, which integrated landscape ecology and an application of aesthetic and ecological principles from site to regional scale.

Our re-design strategy featured an analysis of the local landscape character through an extensive site analysis and study of the site's rich history. Our overall goal was to create a responsive design that addressed the needs of the flora, fauna and humans while aiming to fulfill the goal of Mountain Locks Park achieving National Historic Site status in Canada. For this reason, cost-effective Quick Response Technology was incorporated as both a way finding and interpretive tool. It functioned to disseminate ecological and historical information about the site, engage the community, and foster connections with local institutions. In addition, long term rehabilitation,

trail management initiatives, planting design and phased development would be further communicated to visitors and the general public using this technology.