

New Media Collaboration Centre (NMCC) to support Augmented Reality Research, Digital Archives of Canadian Culture and Canadian Digital Policy Initiatives

Principal Investigator: Caitlin Fisher

Project Overview

The infrastructure to be acquired is a digital lab supporting the research needs of both the proposed Canada Research Chair in Digital Culture and the CRC in Law, Communications and Cultural Studies, Rosemary Coombe. The infrastructure will house 1) an Augmented Reality lab (AR lab) to support Fisher's research into the future of narrative through an exploration of storytelling in Augmented Reality and 2) a Digital Archiving lab (DA lab) to support Coombe's "From Portal to Policy" project, including Coombe's Centre for Canadian Digital Policy Initiatives, and Fisher's research into the epistemological status of digital archives. The infrastructure will be divided into two adjacent rooms: the AR lab and the DA lab, and will be housed on the 5th floor of the Technology Enhanced Learning (TEL) building at York University. Together, these two labs and the associated projects will form the New Media Collaboration Centre to Support Augmented Reality Research, Digital Archives of Canadian Culture and Canadian Digital Policy Initiatives (NMCC).

The establishment of the AR Lab dedicated to explorations of the dramatic and entertainment potential of AR will not simply bring a unique physical asset to York – it will position York University as a pioneer in the field and represents a unique opportunity to contribute to the development of a new artistic genre. Faculty at Georgia Tech's Graphics Visualization and Usability Center working on technical prototypes have offered technical assistance and committed to collaboration. The AR lab will consist of a wireless IS-900 Intersense ceiling-mounted electromagnetic tracker system, nVisor headsets, and DragonFly firewire video cameras. We will upgrade to video tracking in year 3. A Trimble Ag132 GPS system and portable PC laptops provide support for outdoor AR experiences. The facility will be installed and supported by Intersense. Mac G5s, production software, video and sound equipment will be acquired for content production.

The DA lab will support Fisher's "Art of Archiving" project. This project will provide insight into the ways in which diverse information architectures underpinning digital archives make meaning and into the epistemological status of digital collections themselves. Ultimately, the Art of Archiving project will capitalize upon the possibilities of representing not only digital artifacts but also human experience in new ways.

The DA lab will also provide essential support to Chairholder Rosemary Coombe. The DA lab will serve a key York multi-sectoral collaborative research initiative spearheaded by Coombe: the "From Portal to Policy" project. Equipment will be installed collaboratively by the Graduate Program in Communications and Culture, the Faculty of

Fine Arts and the Instructional Technology Centre at York. IT will include a series of high-end G5 workstations supported by a cluster of Apple Xserves. New workstations, servers and RAID arrays will be added to the infrastructure each year, enabling the system to accommodate streaming audio/video and videoconferencing capabilities in order to facilitate national and international collaborative projects. The Xserve cluster will run a flexible, extensible custom software application, designed by Communications Studies personnel and built on the open-source Drupal content management system.

Coombe's "From Portal To Policy" project lab is a virtual space where York researchers will collaborate with Canadian cultural and entertainment industries, community arts organizations and academic partner institutions. It will also host a centre for Canadian digital policy initiatives, exploring intellectual property issues posed by the digitalization of cultural content while developing and disseminating best practices in IP management. In concert, the components of the "From Portal to Policy" project will act as a crucible for the creation of progressive public policy and may serve as a lever to instigate social and legal change.

Appropriateness of Infrastructure

The proposed infrastructure is essential to the proposed research and will establish a unique regional research capability which would not otherwise exist.

Each component of the infrastructure is an integral and essential aspect of the proposed research programme. Both the Augmented Reality lab (AR lab) component and the Digital Archive lab (DA lab) component will help to forge new directions in digital culture research at York University. Together these two components will form the New Media Collaboration Centre to Support Augmented Reality Research, Digital Archives of Canadian Culture and Canadian Digital Policy Initiatives (NMCC). The infrastructure will support visionary thinking about digital **textuality** in order to shape, not just react to, changes in the academy and in the wider culture.

No other AR lab devoted to explorations of the dramatic and entertainment potential of **AR** exists in the region. With the establishment of this AR lab, York University will be uniquely positioned to establish conventions for the future of **storytelling**. The AR lab will not simply bring a unique physical asset to York University – it will position York University as a pioneer in the field and make possible a whole new set of research questions and creative possibilities. This component of the infrastructure is modeled on an existing and successful AR lab in the United States at the **Wesley Center for New Media at Georgia Tech**. All hardware and software has been selected so as to integrate **seamlessly** with the initial work already being undertaken by our research partners. Because the AR platform is the same, York will benefit from the technical solutions and expertise already in place at the Georgia Tech. The infrastructure will enable visual artists, **filmmakers** and writers in York's Faculty of Fine Arts to collaborate with scientists and technicians to develop and suggest possibilities for technological as well as aesthetic innovation. Graduate students working on this project will be trained on state of the art technologies in an experimental research context. They will be amongst a first generation of graduate students and scholars developing new theories and research methodologies around this emerging digital form. Given the nature of the programme of research and the innovative infrastructure that will support it, York will be able to attract the best graduate students and scholars in the country. Moreover, the establishment of the AR lab will provide a case study for the ongoing research of Canada Research Chair in Art, Digital Media and **Globalization**, **Janine Marchessault** who is interesting in theorizing precisely this kind of **multidisciplinary** collaboration between artists and scientists.

The digital archive component of the NMCC is essential infrastructure for Fisher's "Art of Archiving" project that will interrogate knowledge representation as concretized in digital archives through the study, exploration and possibly development of visualization software. The archive will be researched as another possibility for the future of narrative – perhaps its replacement.

The DA lab is also essential to support the ongoing research of York's Canada Research Chair in Law, Communications and Cultural Studies, Rosemary **Coombe**. This lab and its

servers will house a key York University initiative spearheaded by Coombe: the “From Portal to Policy” project. The “From Portal to Policy” project will provide a physical home for Fisher’s digital texts and will also serve as a resource for Marchessault’s ongoing project to document and archive the work of artists in the context of globalization. While there may be some overlap with computer-related equipment provided for by the CFI for Marchessault’s CRC in Art, Digital Media and Globalization, the NMCC and Marchessault’s lab will be complementary; where appropriate, usage will be shared. The crucial difference between Coombe’s “From Portal to Policy” project and other online archives is that content will be continually developed by and available to collaborators through various public licensing systems and in the process of hosting these collaborations the centre for Canadian digital policy initiatives will be developed to explore intellectual property issues posed by the digitalization of cultural content while developing and disseminating best practices in intellectual property management.

In the first three years of Coombe’s CRC in Law, Communications and Culture, she has continued to explore the cultural impact of intellectual property laws and their exercise and expansion in global and digital environments. In particular she has explored the ethics of intellectual property management in digital contexts and the emergence of new forms of publics and politics of publicity around issues of intellectual property. She has also been leading a group of York researchers (from Arts, Social Sciences, Law, Education, and Fine Arts) as director of the York University Strategic Research Group in Culture and Entertainment (the Research Group). This group is one of four strategic research groups forged on the initiative of the Vice-President—Research and Innovation to recognize key areas of research strength in the university and to serve as priority areas for development of multisectoral, interdisciplinary, collaborative research networks. The culture and entertainment research field is designed to further Strategic Research Plan objectives of “consolidating and building upon York’s strengths in liberal arts research” and “to develop and diversify interdisciplinary research initiatives.”

From Portal to Policy has been developed to meet needs established by the Research Group to advance research in this area of institutional priority. The capabilities it provides are unique in Canada in that it develops new software, provides new pedagogical tools, enables collaborations between the public and private sectors in culture and entertainment research while providing a means to assess the impact of intellectual property laws on cultural activities while developing new tools for intellectual property management.

Potential Benefits Of The Research To Canada

The proposed infrastructure will support research that has the potential to contribute to increased economic activity in strong or emerging areas of the Canadian economy and/or yield a major benefit in terms of society, quality of life, health, or the environment.

This research asks questions about the future of narrative and will explore **storytelling** in an Augmented Reality Environment (**AR environment**) and in the context of digital archives. These questions are urgent for us as Canadians because cultural production through digital technologies is transforming the way we relate to language in all its facets—the way we read, view, compose, communicate; the way we understand our increasingly complex literacy skills; the way we encounter digital texts, but also poetry, cinema and fiction. There is a pressing need for research that asks what it means to read and write now – **non-linearly**, visually and **cinematically** in the context of digital culture. How do we speak to one another, now? Research at the New Media Collaboration Centre to Support Augmented Reality Research, Digital Canadian Cultural Archives and Canadian Digital Policy Initiatives (**NMCC**) will lead to a new understanding of the place of narrative in the context of digital media and an understanding of emerging digital literacies. Canadian society will benefit through a better understanding of the ways in which digital culture is changing us and the way we make meaning.

Technical research into AR solutions is ongoing in part because of the huge industrial potential of **AR**. But emerging technologies have a cultural dimension and consequences, too, and this research will interrogate this emerging technology’s grammar, possibilities and poetry and contribute to the development of a new artistic genre. Research into the **epistemological** status of digital archives and the relationship of the archive to storytelling is organized around similar questions about the future of narrative and is particularly timely. Digitization is dramatically increasing the amount of media data being created, stored, manipulated and accessed. Building on the capacity of digital technologies to bring digital cultural heritage resources to the attention of a wider audience, large-scale digitization programmes are now ubiquitous, many funded through programmes like the **CFI**. This research asks questions about how to make intelligible the vast quantities of digital artifacts being generated by digital cameras and scanners, by the relentless stream of “digital archive” and “digital library” projects now underway around the globe. What is the public significance of these knowledge systems? And what new literacies are demanded to make them intelligible? What is really at stake – practically and philosophically?

The research **programme** “will facilitate research techniques in a digital environment, improving cultural **dissemination** and providing better models for **e-learning**; provide insight into the digital literacies demanded by both augmented reality and digital archives as a new cultural form which will enable **curators** of digital heritage and collections to better communicate with their intended audiences; catalogue best practices of digital archiving that may include semantic navigation, improved expert access, new ways to aggregate content at levels of segmentation meaningful to intended audiences. Ultimately

the research programme made possible by this infrastructure will capitalize upon the possibilities of representing not only digital artifacts but human experience in new ways.

The expected benefits of this research programme will have an impact on Canadian society throughout the programme's first five years. Results of the research will be disseminated to relevant research and artistic communities and it is hoped that effects will filter through to Canadian society and its quality of life in the longer term. The research infrastructure will produce highly qualified personnel trained on state of the art digital media equipment. They will receive both practical and theoretical experience that will prepare them for a number of possible careers as digital storytellers, communications and media analysts, university researchers, digital designers and creators of new cultural forms.

The infrastructure will be shared with Canada Research Chair Rosemary Coombe whose "From Portal To Policy" project is essential to several areas of research at York University focusing on the capacities of digital technology to enable research collaborations across public, private, and nonprofit sectors. Despite the capacities for multi-participant collaborative research activities that the Internet affords, and the commitment of both levels of government to the use of digital technology to make Canadian cultural content more widely accessible and available for research purposes, current intellectual property laws in Canada (especially when compared to jurisdictions like the United States that have a well-developed fair use exemption rather than a narrow, restrictive, and often censorial fair dealing defence) pose unnecessarily punitive prospects for potential legal liability. The current administration of intellectual property protections in Canada exerts a chilling effect on Canadian cultural exchange and the development of a vibrant public sphere without adequately serving the needs of Canadian creators or the interests of Canada's burgeoning cultural industries. For example, at least four of York's CRCs (Coombe, Innes, Marchessault, and Vosko) are engaged in projects involving the digitalization of Canadian cultural content with partners in the arts, media, labour and library sectors but have encountered intellectual property issues that have operated as significant obstacles to making valuable research materials more widely available for public education. Public licensing arrangements and the development of lender's rights using open-source software are the focus of social movements and creative legal activity in other jurisdictions but have yet to be tailored and developed for widespread use in the Canadian legal environment. The development of unique software enabled by such legal arrangements has yielded new forms of value and economic efficiencies as well as spin off industrial activities. In conjunction with industry partner Open Flows, the portal project is producing unique software for pedagogical and collaborative research use in Communications Studies and Fine Arts programmes that would otherwise be unavailable. Canadian universities face funding shortfalls at the same time as students require and demand the enhanced learning capacities that digital technologies afford. Unfortunately, the available software for university pedagogical use is proprietary, expensive, and lacks the necessary flexibility for adaptation to local university environments or for collaboration with community partners, cultural industries, or academic affiliates.

Research Collaborations And Partnerships

The proposed infrastructure will create and/or enhance partnerships among researchers, among research institutions, across disciplines, and between sectors. (These may give rise to broad and sustained partnerships among researchers and among research institutions by the end of the five year term).

The infrastructure has taken its shape precisely as a result of fruitful collaborations and in order to effect productive and innovative partnerships.

The Augmented Reality Lab (AR lab) represents a formal agreement to collaborate between faculty at two institutions in two countries: Jay Bolter (James and Mary Wesley Chair of New Media, Director of the Wesley Center for New Media and Director of Communication Programs, with the Graphics Visualization and Usability Center) at Georgia Tech and Fisher at York University. While Georgia Tech is involved in developing technical prototypes for AR research they are keenly interested in having visual artists, filmmakers and writers extend the systems they are developing and suggest possibilities for technological innovation. Bolter and Fisher envision mutual campus visits to discuss further collaboration and eventually joint interdisciplinary projects or classes to develop content for the system. Faculty from both Georgia Tech and Intersense will provide training on the system at York University and invitations will be extended to researchers in computing science and applied mathematics at York interested in collaborating on the augmented storytelling project.

The “From Portal to Policy” project lab, supported by the Digital Archive lab (DA lab) component of the proposed NMCC infrastructure, was first envisioned and developed by an interdisciplinary team of researchers in close consultation with cultural industry actors, including non-profit community arts organizations. Several partnerships have been established on the basis of the prototype “From Portal to Policy: A Multi-Sectoral Multi-Media Pedagogical Initiative” which has been under development by researchers at York since the spring of 2003. The collaboration between Coombe and Fisher is one of these new partnerships. This “test-pilot” lab was designed to enable select community partners to digitally archive cultural materials and to make these available to researchers at York. Several unique existing archives of Canadian cultural material were also identified by CRC Janine Marchessault to be digitalized for research purposes as part of the “From Portal To Policy” project lab.

In the process of digitalizing these cultural materials and making them available for teaching and research purposes, York researchers will be monitoring the portal project lab to ascertain what intellectual property issues pose particular difficulties for the cultural industries, what uses they wish to permit and under what conditions, and to what extent existing licensing systems in open-source environments alleviate these concerns. This is the heart of what we have tentatively titled The Centre for Canadian Digital Policy Initiatives. This data will provide unique insights into the processes of creative cultural exchange and enable researchers (including those at Osgoode Hall Law School and the new Centre for Intellectual Property Policy at McGill University with which we

hope to collaborate) to publicize and further develop new means of sharing, licensing, and lending intellectual property while documenting these legal methods (and contractual clauses) as best practices to be shared more generally amongst cultural industry actors and community arts organizations (a form of technology and know-how transfer). The successful hosting and development of culture and entertainment content will act as a crucible for the creation of progressive intellectual property management practices and potentially serve as a lever to eventually instigate legal change.

The “From Portal To Policy” project lab has established relationships with a Canadian publishers, two major literary festivals, a music video archiving group, a theatre troupe, a political journal, several arts magazines and journals and a Canadian film education centre, all of whom will be archiving materials with the portal project lab for these purposes. Other Toronto-based cultural industries (including players in the film and television industries) have been identified as potential partners and have indicated an interest in becoming involved with the portal project lab after the prototype is up and running, more archival space made available, and the long term viability of the infrastructure secured through the provision of an infrastructure grant such as this one. There is no inherent reason why such partnerships need to be limited to the GTA area, however, and more geographically expansive partnerships are envisioned, particularly as new academic collaborations are established and researchers at other institutions bring their own research affiliations with local cultural industry actors into the portal project network.

Academic collaborations are underway. For example, Coombe has written a grant proposal with Department Chair P. David Marshall to develop a collaborative teaching and research relationship with the Communications Studies program at Northeastern University. Access to the portal project network was a determining factor in making this relationship possible and attractive both to Northeastern and to the Canadian Embassy in the United States. Northeastern is interested in developing and sustaining a Canadian Studies component in their new graduate program but has no convenient access to Canadian cultural materials or current information about the activities of Canadian culture and entertainment industries. The Canadian Embassy in the United States has an interest in funding projects that develop enhanced Canadian cultural content in universities outside of the country, strengthening Canadian Studies programmes, furthering transnational research relationships, and taking advantage of the capacities of digital technologies to do so. The portal project lab is a unique way to further all of these objectives. Thus we can anticipate the development of more research collaborations between York University and U.S institutions being established on the basis of the synergies the portal project lab enables, in terms of the unique and otherwise unavailable Canadian cultural materials it allows researchers to access, the cultural industry partners with whom it enables communications, the pedagogical platforms it provides for use in training future researchers, and the funding available from the Canadian Embassy to help American researchers put these resources to use. Faculty member Jerry Durlak has secured funds from York to travel to Scandinavia to explore research and teaching partnerships using the portal. Visiting Professor Sean Cubbitt is also interested in exploring a transnational research partnership with Waikato University in New Zealand.

Other Canadian academic partnerships may emerge as Communications and Cultural Studies programmes grow in number. For example, both Wilfred Laurier and McMaster are planning new Masters Programmes in Communications. They might benefit from the pedagogical software being developed and having research access to the Canadian cultural archives being created.

In the longer term, “From Portal to Policy” might also assist First Nations and other indigenous groups who are anxious to find means of sharing, controlling, and benefiting from their traditional environmental knowledge and traditional modes of cultural expression but are wary both of commodifying these as forms of intellectual property and of placing them in an unrestricted public domain. Coombe’s research illustrates that indigenous peoples worldwide are beginning to experiment with the creation of digital databases and new modes of managing issues of confidentiality and access in the wake of initiatives being undertaken by nation states to fulfill their obligations under the Convention on Biological Diversity and commitments made by the World Intellectual Property Organization (both of which are legal processes Coombe is ethnographically observing). As Canada is a party to the former Convention and actively involved in policy-making processes of the latter organization, support for research exploring and promoting new forms of intellectual property management also supports international obligations and commitments. As a co-investigator on a large SSHRC MCRI studying evolving indigenous protocols for managing cultural and intellectual property (run by Catherine Bell at the University of Alberta), Coombe would be in a position to develop the portal to meet the specific needs and objectives of indigenous peoples as these evolve through community consensus building and to build partnerships with indigenous NGOs developing best practices for the digital management of indigenous cultural materials.

The research infrastructure will provide benefits to Canadian cultural industries and arts organizations, Canadian universities and students, fostering unique forms of research collaboration that promise to influence digital practices and public policy while effecting new forms of multi-sectoral technology and knowledge transfer.