me–dérive: toronto

Remediating the [AR]chival Impulse

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Archives
Archival Impulse
Counter-Archive
Evidence
Digitization
Ideology
In/Of Motion
Materiality
Memory
Multimodal
Participatory
Power
Remembering
Social Justice
Temporality

Augmented Reality
Algorithmic Turn
Augmented Experience
Cartography
Embodiment
Immersive
Invisibility
Phenomenological
Presence
Storytelling
Reality-Virtuality Continuum
User Experience

Cartography
Emplacement
Locative Media
Perambulation
Performativity
Political Power
Space/Place
Spatial Humanities
Thick-Mapping

Diversity
Cultural Heritage
Diaspora
Ethnocultural
Gentrification
Hyper-Diversity
Identity
Ideology and Preservation
Intersectionality
Multicultural
Power
Representation

Memory
Authenticity
Collective Memory
Counter-Memory
Crowdsourced
Embeddedness
Formal/Informal
Ideological
Mediated
Narratives
Public History
Sites of Memory
Social Remembering
Witnessing

Mobile Media
Code and Visibility
Embodiment
Infography
Interactivity
Interface Theory
Locative Media
Materiality
New Media
New Mobilities Paradigm
Screenspace
Software Studies
Systems
User Experience
Wearables

Phenomenology
Augmented
Embodiment
Emplacement
Human-Technology Relations
Immediacy
Invisibility
Flâneur
Psychogeography
Revealing
Technological Experience
Technological Mediation
Thingness
Worldvision

Rephotography
Digital Composition
Documentation
Evidence
In-Situ
Interdisciplinary
Memory
Juxtaposition
Past/Present
Prospective/Retrospective
Remembering
Repetition
Rephotography Process
Rhythmic
Temporal Equilibrium
Time-Space
Visual Methodology
Witness

Space
Architecture
Augmented Space
City as Interface
Code/Space
Frame Space
Hybrid Space
Infospaces
Navigation
Power
Production of Space
Psychogeography
Right to the City
Screenspace
Site-Specificity
Social Production
Time-Space
Urban Cartography

Core Thematics
Augmented Reality
Archives
Dérive
Digital Humanities
Embodiment
Flâneur
Immigrant Narratives
Interface
Cultural Heritage
Locative Media
Rephotography
New Media
Power
Screens
Situationists
Software/Code

categ
ories

Table of Contents

Chapter One

me-dérive: toronto
The Augmented Participatory Archive

"One of the defining characteristics of the modern era has been the increasing significance given to the archive as the means by which historical knowledge and forms of remembrance are accumulated, stored and recovered"
— Merewether 2006, 10

"One can say that the city itself is the collective memory of its people, and like memory it is associated with objects and places. The city is the locus of the collective memory"
— Rossi 1982, 131

Archives are satiated with voices and silences, operating as contested sites of inclusion and omission.

This dissertation is an innovative exploration of the intersections between participatory archiving and augmented reality (AR), rooted in the necessity to engage more fully with Toronto's historical and diverse cultural heritage. Foregrounded as research-creation, this work is the generative catalyst between the archival turn and the mobilities paradigm, and has resulted in the development of a distinctive software entity—*me-dérive: toronto*– the first AR visual archive of Toronto's diverse historical narratives. Over the last two decades the convergence of mobile media with locative capabilities, alongside the proliferation of participatory culture and visualization software has resulted in a transformation of the ways in which users interact with information in site-specific spaces. Physical landmarks that categorize urban environments including signs, plaques, monuments, and billboards alike require legal and spatial permissions. However, visual narratives using the pseudo-invisible interfacing of AR can be appended to physical space without the need to engage governing bodies and bureaucracies into a proprietary negotiation. As a multicultural global city, Toronto provides an interesting opportunity for an AR intervention at the intersection of cultural heritage and participation.

It's a curious thing to do— to analyze the city that has raised you intermittently, a shared custody between living in the suburbs for a significant portion of my life and seeking refuge in the accepting and tolerant persona of Toronto's many urban attractions. I adore this city— it taught me about relationships in their many forms, about public policy and social good, about sensory overload cultivated by the

gustatory and auditory, and ultimately encircling each of these things, about diversity. Toronto's biggest and best quality lives through its multicultural identity, one that is challenging to deny in many neighbourhoods across the city. It isn't perfect, but it exists simultaneously as a social and political emblem of global pride and as an economic marketable asset.

Nonetheless, this city maintains itself as a space of endless possibility, always already on the cusp of brilliance, but infinitely lacking a *je ne sais quoi*. While frustrating, this serves to promote a curiosity and a discussion of opportunities that frame the city. Replete with the 'coming soon' of something great, Toronto has been built by reinforced concrete and simultaneously by and through historical, social, and political ideologies that underpin the ways in which its citizens move through and claim spaces. Toronto's 63rd Mayor, David Miller (2005) declared that the biggest impediment to transforming a city is not its physical limitations but rather "the inertia that comes from historical legacy and a mentality of resignation" (9). The perceptions of a city, of a vast, shared, common space, require a tremendous amount of work to be reimagined and redefined. This is inherently correlated with the ways in which spaces and narratives are historically documented and remembered both personally, publicly, and institutionally. However, if we trust in cultural heritage institutions exclusively— museums, archives and libraries— to tell the extensively intricate and diverse narratives of Toronto's past, we must accept that this memoir will dominantly reflect the triumphs of white Anglo-Saxon Protestants, or simply put, those encompassed with the dominant ideologies (Williams 1961) of a respective era. Where then are

Miller, David. 2005. "Foreword." In *uTOpia: Towards a New Toronto*, edited by Jason McBride and Alana Wilcox, 9. Toronto: Coach House Books.

Williams, Raymond. 1961. *The Long Revolution*. Middlesex: Penguin Books.

the stories and photographs of our culturally diverse communities?

Archives are satiated with voices and silences, operating as contested sites of inclusion and omission. Offset by Jacques Derrida's (1996) canonical *Archive Fever*, the turn toward the archives has become indeed a 'feverous' and central obsession for the social sciences and digital humanities alike. Just as spaces are always in a state of becoming (Kitchin and Dodge 2011, Pred 1984, Relph 1976), archives too are process-based entities with no finalized or completed form. Archives have been traditionally regarded as secure spaces for valuable entities, whether documents, photographs, maps or ephemera. They feature respective guiding principles, priorities, and techniques. The records enclosed within these institutions shape the approaches to the spaces they represent— creating a lasting impression of who or what belongs in a community, neighbourhood, city or country altogether. This is especially true with photographs, which have a tremendous power to subpoena memories attached to both people and places alike.

Despite the legacy of archives, dominant principles associated with the institution have begun to be dismantled, and content has spread far beyond architecturally built space. Contemporary cultural heritage entities have been tasked with engaging audiences well beyond the confines of the archival walls, not only through digital media but also through mobile exhibitions and site-specific installations. This context shifts the notion of both *how* and *where* archives and museums alike will exist in the future (Arup 2014, Austin 2018). A report by Arup Foresight entitled *Museums in the Digital Age* (2014) asserts that cultural heritage entities have moved

Derrida, Jacques. 1996. *Archive Fever: A Freudian Impression*. Chicago: Chicago University Press.

Kitchin, Rob, and Martin Dodge. 2011. *Code/Space: Software and Everyday Life*. Cambridge: MIT Press.

Pred, Allan R. 1984. "Place as Historically Contingent Process: Structuration and the Time-Geography of Becoming Places." *Annals of the Association of American Geographers* 74 (2): 279–97.

Relph, Edward. 1976. *Place and Placelessness*. London: Pion Ltd..

Arup. 2014. *Museums in the Digital Age*. London: Arup.

Austin, Tricia. 2018. "The Designer's Role in Museums that Act as Agents of Change" In *The Future of Museum and Gallery Design: Purpose, Process, Perception*, edited by Suzanne MacLeod, Tricia Austin, Jonathan Hale and Oscar Ho Hing-Kay, 45–48. London: Routledge.

into a pattern of "collaborative curation" wherein the visitor is afforded a curated experience that gives the public "greater control over content and experience" (9). As a result, increased participation and engagement with cultural heritage institutions will allow the public to "reinvent the museum experience, enabling content that can adapt to the preferences of users in real time" (9). This content is often delivered through new media technology, including telepresence screens, responsive surfaces, virtual reality, and *augmented experiences*— the latter of which is cultivated out of the intersection between hardware and software in the contemporary mobile phone.

Smartphones encompass an amalgamation of already established communication modes and interfaces that append themselves to the human body, and saturate the human sensorium. Echoing Marshall McLuhan's (1964) notable phrase that "media are extensions of the senses," the widespread popularity of mobile apps reinvents the conventional smartphone camera, and subsequently broadens the senses, primarily that of vision and memory. Rob Kitchin and Martin Dodge (2011) reveal that while code is generally hidden, and invisible inside the hardware, it often produces visible and tangible effects in the world—the most critical of which is knowledge production (4). In the smartphone era, software protocols create the media that is now the message (Manovich 2014, McLuhan 1964), and accordingly, mobile apps are an interface between imagination and experience, and a collective language for environments to communicate. In this way, AR has become a critical technology for elaborating the meaning of a place through site-specific data overlays that appear onscreen in real-time (Farman 2012, Gómez 2014, Kee, Poitras,

and Compeau 2019, Szabo 2018). New media technologies and interactive experiences made possible by AR allow once analogue narratives and memories to become dynamically interactive and simultaneously appended to space through an intimate intersection between the mobile device, the content and the user's body.

Augmented Reality as Memory Interfacing Technique

At the center of this research-creation project is the socio-technical form of the mobile phone, with specific attention to the embedded camera. Once a low-resolution photographic medium, the mobile camera has been remediated towards a device that recognizes algorithms, theorizes place, extends the human sensory experience, and augments reality. Ronald Azuma (1997) first defined AR as a system that possess three critical characteristics— it combines real and virtual; it is interactive in real time and it is registered in three-dimensions (356). By way of such, AR apps technologize vision and make use of a blend of built-in smartphone features: GPS sensors to locate the user's position, the camera feed to exhibit the surrounding environment, and an Internet connection to import geotagged content – all of which is ultimately overlaid onto the user's field of vision (Verhoeff 2012b).

Advertisements, public plaques, urban signage, and architecture alike all share the common function— of inscribing places with meaning (Uricchio 2019). These physical and tangible urban markers augment an otherwise ordinary place, endowing it with information and enabling users to wander through a spatial narrative of the urban

McLuhan, Marshall. 1964. *Understanding Media: The Extensions of Man.* New York: Mentor.

Kitchin, Rob, and Martin Dodge. 2011. *Code/Space: Software and Everyday Life.* Cambridge: MIT Press.

Manovich, Lev. 2014. "Software is the Message." *Journal of Visual Culture* 13 (1): 79–81.

Farman, Jason. 2012. *Mobile Interface Theory: Embodied Space and Locative Media.* New York: Routledge.

Gómez, Marisa. 2014. "Augmented Archives: The Museum in the City or the City as Museum."

Kee, Kevin, Eric Poitras, and Timothy Compeau. 2019. "History All Around Us: Toward Best Practices for Augmented Reality for History." In *Seeing the Past with Computers,* 207–23. Ann Arbor: University of Michigan Press.

Szabo, Virespoctoria. 2018. "Apprehending the Past: Augmented Reality, Archives, and Cultural Memory." In *The Routledge Companion to Media Studies and the Digital Humanities,* edited by Jentery Sayers, 372–83. New York: Routledge.

Azuma, Ronald T. 1997. "A Survey of Augmented Reality." *Presence-Teleoperators and Virtual Environments* 6 (4): 355–85.

Verhoeff, Nanna. 2013b. "You Are Here! Playful Mapping and a Cartography of Layers." In *Proceedings of the 26th Cartographical Conference,* edited by Manfred F. Buchroithner, Nikolas Prechtel, Dirk Burghardt, Karsten Pippig, and Benjamin Schröter, Dresden: International Cartographic Association.

Uricchio, William. 2019. "Augmenting Reality: The Markers, Memories, and Meanings Behind Today's AR." *Leonardo Electronic* 22 (4).

environment. AR transcends this inscription of meaning into the digital realm; in its interactive state, it calls attention to itself not by asking users to watch or listen to it, but rather, it requires engagement in order to gain the experience it provides (Craig 2013, 2). As an interfacing technique, it bridges an almost imaginative connection between information and place, wherein information is appended to the physical world in concurrent registration with the *actual* world. While the information is preconfigured, it is often the place itself that communicates a dominant portion of the historical narrative.

Today, the constructed visualizations projected through the mobile camera lens pertain more to information than imagery, defining the proprietor with the designation of user, visitor or co-creator, rather than photographer. Like photography before it, AR has arrived as a novel technology delineated as a form of techno-magic that allows users to move through and document the world in new ways, inscribing and writing themselves into their immediate environments. In doing so, it interrogates conceptions of time and space, visibility, presence, and privacy. Further, the innovative visual capabilities afforded by the software within the smartphone consequently have the power to alter how we perceive the device altogether. The mobile apparatus is eclipsed by the application as it facilitates and creates new kinds of vision, other ways of seeing, and alternative worlds of experience (Robins 1996, 57). Erwin Panofsky (1991, 27) echoes Albrecht Dürer in conceiving that *perspective* signifies "seeing through," and like the affordances of contemporary mobile visual technologies, users are promised a sense of immediacy and augmentation of information spaces (Bolter and Grusin 1999, 25). In line with

Craig, Alan B. 2013. *Understanding Augmented Reality: Concepts and Applications*. Waltham: Morgan Kaufmann.

Robins, Kevin. 1996. *Into the Image: Culture and Politics in the Field of Vision*. London: Routledge.

Panofsky, Erwin. 1991. *Perspective as Symbolic Form*. New York: Zone Books.

Bolter, Jay David, and Richard Grusin. 1999. *Remediation: Understanding New Media*. Cambridge. MIT Press.

such, Nathan Jurgenson (2019) asserts that how and what we see, alongside what both social visibility and invisibility mean are changing rapidly at the hands of technology. The ways in which people make themselves visible to the world and in turn make the world visible to them have undergone a reorientation at the hands of devices that capture, decode and share (2). Surveying the range of AR apps that utilize the embedded mobile camera (ex: *Layar, PhotoMath, Pokémon GO, SketchAR, Google Translate, BBC Civilisations AR* etc.) illuminates a series of innovative perspectives and modes of engagement—one that has users looking *through* and *with* the device towards their immediate environments, rather than merely *at* it.

Addressing *where* modern digital culture is located elicits a rather direct and uncontested response—it is both ubiquitously anywhere, and invisibly *everyware*. Blending the sensory extending capabilities of new media technologies with the digital, coded world of information, urban space has become techno-synthetically produced (Drakopoulou 2013, McLuhan 1964)—and the mobile camera is a catalyst to this innovation. With AR, a simulated layer is appended onto the real environment and the user simultaneously interacts with both. In this way, AR positions itself as an interfacing technique to support memory recall through its capacity to layer space with relevant content. Under this framework, AR inaugurates a new visual paradigm for the production and consumption of digital archives as it intersects creative cultures of space and cartographies of place. In this, the focal point of archival musings collide with notions of urban diversity to ask not only *what* is in the archive, but also *where* the archive is located, and subsequently

Jurgenson, Nathan. 2019. *The Social Photo: On Photography and Social Media*. London: Verso.

Drakopoulou, Sophia. 2013. "Pixels, Bits and Urban Space: Observing the Intersection of the Space of Information with Urban Space in Augmented Reality Smartphone Applications and Peripheral Vision Displays." *First Monday* 18 (11).

McLuhan, Marshall. 1964. *Understanding Media: The Extensions of Man*. New York: Mentor.

how the archive is accessed.

When I commenced my doctoral studies, I was interested in the intersection between locative media and history, particularly fascinated by AR apps that allowed users to view cultural heritage content in space using the omnipresent mobile. In this context, heritage is defined as "a cultural process that engages with acts of remembering that work to create ways to understand and engage with the present" (Smith 2006, 44). Apps like *London Streetmuseum* (2010) and *MTL Urban Museum* (2011) perpetuate archival and museum processes while situating the user into a contemporary environment whereby they engage with the content in the present— in this case in the environment of original creation. Framed by the historical, both of these apps make use of records from the Museum of London and the Musee McCord respectively. *London Streetmuseum* offers a unique perspective of old and new as it mobilizes the museum's collection onto urban terrain, providing users the opportunity to physically visit a variety of geographically marked places throughout the city, corresponding with historical photographs and paintings in the museum's collection. Using parallel techniques, *MTL Urban Museum* offers a Canadian rendering of this experience, allowing users to revisit historical landmarks within Montreal's prominent communities through the superimposition of images from the Notman Photographic Archives. These apps assimilate a then-and-now paradigm by overlaying two-dimensional images onto the three-dimensional contemporary backdrop of parallel locations. Holding up the device to a designated point of interest results in overlaid visual data onto the material landscape, and the user is able to juxtapose images from the

past onto the present, based upon her location. This contrast of old collections across contemporary environments has the opportunity to produce new knowledge inaccessible via other methods (Hutchinson 2016, 48), particularly cultivating a physical, embodied relationship to records and space.

These apps allow users to look *through* and *with* the device in order to reimagine the world. This experience is post-phenomenological in nature— a philosophy of technology whereby which perception is mediated through an entity or object (Ihde 1990, Verbeek 2005, Wellner 2013). In this '*through-ness'* the screen simultaneously becomes a transparent window and an opaque display for content overlay (Verhoeff 2012a). Echoing Anne Friedberg's (2006) notion that we recall what we know in the world through what we see—*through* a window, frame or screen (1)—this does not exclude what we see through the dual frame of the app in the mobile screen during an AR experience. The mobile camera used for AR experiences then, encourages new ways of seeing and new performances of vision, making hardware a collaborator in perception and expression (Jurgenson 2019, 21). These AR apps proport an overarching return to processes and principles through the appendage of the prefix *re*. They *re*configure the city as a museum and archive alike; *re*imagining and *re*historicizing places as augmented archives. Further, they are a digital descendent of *re*photography— a visual methodology characterized by digital technology in-situ— *re*imagining space as both temporally and narratively layered.

As an art and natural science practice, rephotography (or repeat photography) is inherently linked with archival material both for purposes of

Smith, Laurajane. 2006. *The Uses of Heritage*. New York: Routledge.

Hutchinson, Jonathon P. 2016. "The Future of Digital Archive Collections: Augmenting Public Service Media Geo-Locative Archives." *Mobile Media and Communication* 4 (1): 37–51.

Ihde, Don. 1990. *Technology and the Lifeworld*. Bloomington and Indianapolis: Indiana University Press.

Verbeek, Peter-Paul. 2005. *What Things Do: Philosophical Reflections on Technology, Agency, and Design*. University Park: Pennsylvania University State Press.

Wellner, Galit. 2013. "No Longer a Phone: The Cellphone as an Enabler of Augmented Reality." *Transfers* 3 (2): 70–88.

Verhoeff, Nanna. 2012a. "A Logic of Layers: Indexicality of iPhone Navigation in Augmented Reality." In *Studying Mobile Media: Cultural Technologies, Mobile Communications, and the iPhone*, edited by Larissa Hjorth, Jean Burgess, and Ingrid Richardson, 118–32. New York: Routledge.

Friedberg, Anne. 2006. *The Virtual Window: From Alberti to Microsoft*. Cambridge: MIT Press.

Jurgenson, Nathan. 2019. *The Social Photo: On Photography and Social Media*. London: Verso.

me–dérive: toronto is an open–ended archive in an enduring state of becoming.

acquiring and enlivening dormant records, and for storing repeat images for future investigations (Boyer, Webb, and Turner 2010). If we consider that photography is in constant dialogue with history and memory, rephotography expands this exchange to encompass a multifaceted discussion of time and space. Pertinent to the narrativization of this methodology is its capacity to underscore not only what *is* seen— but also what is *not*. Like the popular 'spot the differences' puzzles found in children's books, rephotographs engage the viewer in a comparative activity that has the capacity to emplace them as embodied subjects of their respective environments. Rephotography becomes a social practice for remembering, a respective orientation to memory, and ultimately a being in the world (Kalin 2013, 168) to echo a dominant phenomenological axiom.

This act of 'revisiting,' afforded by cultural heritage AR apps and rephotography alike allows users to communicate unrealized information about a place, people, culture, an object or era (McLeod et al. 2015, 52). Rephotographing then, is an exploratory, process-oriented form of visual communication (52)—one that is complimented by the potentials of mobile software. At the intersection of cultural heritage and memory, AR apps can act as a remediation (Bolter and Grusin 1999) of rephotography in their capacity to layer content in-situ. These apps (ex: *London Streetmuseum, MTL Urban Museum*, etc.) imply that the way space is represented is linked to the way in which it is both embodied and practiced. For example, the materiality of a static photo contrasts the distinct embodied experience of accessing content in site-specific locations through the smartphone (Csordas

Boyer, Diane E., Robert H. Webb, and Raymond M. Turner. 2010. "Techniques of Matching and Archiving Repeat Photography Used in the Desert Laboratory Collection." In *Repeat Photography: Methods and Applications in the Natural Sciences*, 12–23. Washington: Island.

Kalin, Jason. 2013. "Remembering with Rephotography: A Social Practice for the Inventions of Memories." *Visual Communication Quarterly* 20: 168–79.

McLeod, Gary, Tim Hossler, Mikko Itälahti, and Tyrone Martinsson. 2015. "Rephotographic Powers: Revisiting Rephotography." In *Photographic Powers – Helsinki Photomedia 2014*, edited by Mika Elo and Marko Karo, 45–83. Helsinki: Aalto University.

Bolter, Jay David, and Richard Grusin. 1999. *Remediation: Understanding New Media*. Cambridge. MIT Press.

Csordas, Thomas J. 1999. "Embodiment and Cultural Phenomenology." In *Perspectives on Embodiment: The Intersection of Nature and Culture*, edited by Gail Weiss and Honi Fern Haber, 143–62. London: Routledge.

Farman, Jason. 2012. *Mobile Interface Theory: Embodied Space and Locative Media*. New York: Routledge.

1999, Farman 2012). Thus the reimagined access potentials of the mobile, augmented cultural heritage site, repositions the user's relationship to the content as it becomes more emplaced and embodied.

I began to imagine an immersive experience that would mobilize archival content from institutional archives— the City of Toronto Archives, Archives of Ontario, and Library and Archives Canada— to produce a visually stereoscopic, interactive encounter of Toronto's longstanding diverse history. Much to my surprise however, the digitized records found on online databases offer a one-dimensional, synthetic representation of Toronto's historical diversity— one that favors the history, impact, and triumph of the rich, white man across time and space. It is critical to note that photography has long been a technology of instability, staging a "play of the real and the simulated, the apparent and the contrived, the creative and the mechanical" (Jurgenson 2019, 7). Jurgenson (2019) notes that photography is always in flux, from plates to film and paper to pixels, these changes have ultimately impacted primarily who makes photographs, but simultaneously where, why, how frequently, and for what purpose (7). These considerations all undoubtedly play a role in the lack of diversity of institutionally collected images, particularly with regards to the availability and access to cameras over the last century.

Born out of what I would consider my preliminary delusion, I created *me-dérive: toronto*, as a concept and intervention, grounded in a participatory counter-archival solution to the lack of immigrant and marginalized narratives across our institutional archives. This counter-archive is informed and comprised through alternative archival sources (ex: daily newspapers, community centres,

Jurgenson, Nathan. 2019. *The Social Photo: On Photography and Social Media*. London: Verso.

cultural organizations etc.) and crowdsourced assets. These alternative archival sources, particularly newspaper collections (ex: *The Toronto Star* and *The Toronto Telegram*) are representative of the everyday, and offer a more accurate chronicle of both newsworthy and historical narratives pertaining to Toronto's multicultural identity. *me-dérive: toronto* is thus a catalyst of mobile culture, one in which ways of seeing *and* knowing are fostered out of the novel capabilities of AR technology. The technical merges with the historical to help counteract the prevalence of white settler vision, reframing cultural heritage as a participatory, inclusive, and more representative urban chronicle.

Initiating *me-dérive: toronto*

Research-creation perpetuates an alternative mode of knowing, guided by Owen Chapman and Kim Sawchuk's (2012) designation that a valuable way to *know* is *to do* (14). As a methodology, research-creation has enabled me to *know* and understand participatory archives and AR by *doing*, or put differently, by creating the participatory, augmented archive. *me-dérive: toronto* has been developed at the intersection of a series of technological, social, and cultural routes: the omnipresence of locative and app-based media; the spatial turn in social sciences; the use of mobile media for supplementary content in cultural archives and museum spaces alike; the critical importance of cultivating marginalized narratives; the political concern of privacy and safety in varying public spaces; and the duality of virtual and real environments that hold the potential to augment space and place.

Chapman, Owen, and Kim Sawchuk. 2012. "Research-Creation: Intervention, Analysis and 'Family Resemblances.'" *Canadian Journal of Communication* 37: 5–26.

me-dérive: toronto is an open-ended archive in an enduring state of becoming. It mobilizes archival power away from the institution and into the hands of the public, coding found and crowdsourced records onto their site-specific locations. Using the aptitude of locative media and AR, the archive provides a more representative visual record— it addresses solidarity in memory, a deep connection to cultural diversity, and a renegotiated relationship to space and narrative. The nomenclature for the app— *me-dérive* — is a portmanteau of the word mediation and mediatization (Bolter and Grusin 1999, Hepp 2013, Hoskins 2009, Silverstone 1999), wherein memory becomes embedded into digital technology, and the Situationist's concept of the *dérive* (Debord 1958). In the canonical study *Remediation: Understanding New Media* (1999), Jay David Bolter and Richard Grusin introduce the concept of 'remediation' as the "representation of one medium in another" (45), illuminating the ways in which "the formal logic by which new media refashion prior media forms" (273). *me-dérive: toronto* is a hypermedia application with an act of remediation— it imports earlier media of photography into an augmented space, in order to critique and refashion it (53). Taking the form of an *augmented experience*, *me-dérive: toronto* "refashions(s) the older media [of photography], while still marking the presence of the older media and therefore maintaining a sense of multiplicity or hypermediacy" (46). Of significance is the notion that remediation is reform, in that media reforms reality itself (61). As a media entity, AR reforms reality by providing an alternative layer of content onto place, recalibrating our association and relation to the surrounding environment. As such, through remediation and a recontextualization of the archival,

analogue photography travels through a variety of contexts and discursive formations, while archival and technological principles intersect (Brunow 2017). In this, it is clear that there is no mediation without remediation— "all representations of the past draw on available media technologies, on existent media products, on patterns of representation and medial aesthetics" (Erll and Rigney 2009, 4). In this way, Ann Rigney (2008) gestures towards a "shift from 'sites' [of memory] to 'dynamics' within memory studies" turning the focus away from cultural artefacts and ephemera to an interest in the ways in which these entities "circulate and influence their environment" (346). This fluidity is becoming more omnipresent in the structure of archives, particularly in their transition towards more mobile and dynamic approaches to content and records.

In theory and practice, this counter-archive has been a labour of research-creation persistence— countless outreach touchpoints, digitization of analogue content, cataloguing of records through a content management system and finally, coding content in-situ through a multidimensional technical process. Diverse from other research-creation projects, the counter-archive has no foreseeable endpoint; with every found photograph and submission alike the project multiplies both in volume and vigor to combat the archival silences that fail to narrativize Canadian immigrant identities. This counter-archive reclaims space through a participatory visual account of history, allowing for a techno-embodied knowledge to emerge and be embraced. As the scope of the records and overall scale of the project amplifies, it engages a layer of complementary principles— the accrual of diverse narratives, the opposition of

Bolter, Jay David, and Richard Grusin. 1999. *Remediation: Understanding New Media*. Cambridge: MIT Press.

Hepp, Andreas. (2013). *Cultures of Mediatization*. Cambridge: Polity Press.

Hoskins, Andrew. 2009. "The Mediatisation of Memory." In *Save as... Digital Memories*, edited by Joanne Garde-Hansen, Andrew Hoskins and Anna Reading, 27–43. New York: Palgrave Macmillan.

Silverstone, Roger. 1999. "What's New About New Media?" *New Media and Society* 1 (1): 10–82.

Debord, Guy. 1958/2006. "Theory of the Dérive." In *Situationist International Anthology*, edited by Ken Knabb, 62–66. Berkeley: Bureau of Public Secrets.

Brunow, Dagmar. 2017. "Curating Access to Audiovisual Heritage: Cultural Memory and Diversity in European Film Archives." *Image & Narrative* 18 (1): 97–110.

Erll, Astrid, and Ann Rigney. 2009. *Mediation, Remediation, and the Dynamics of Cultural Memory*. Berlin: de Gruyter.

Rigney, Ann. 2008. "The Dynamics of Remembrance: Texts Between Monumentality and Morphing." In *Cultural Memory Studies: An International and Interdisciplinary Handbook*, edited by Astrid Erll and Ansgar Nünning, 345–53. Berlin/New York: de Gruyter.

pre-prescribed history by governing institutions and the dynamism to employ technology to engage critically with heritage records beyond the confines of exclusive cultural heritage spaces.

me-dérive: toronto is a tangible tool in the sense that it operates as a *real* software entity used to document and add depth to our understanding of narratives in-situ. Simultaneously, *it* is also the making of a new paradigm to the archive— one that is altogether participatory and techno-informed. The participatory AR archive demands that the institution permeate far beyond the confines of the archive's built architecture, and into the governance and literal hands of the user-participant. *me-dérive: toronto* reflects an embodied representation of André Malraux's (1954) imaginary museum (*musée imaginaire* or 'museum without walls') in that the archive opens access potentials, wherein content is found not in the confines of an institution, but scattered throughout public space. Museums and archives possess unique challenges with regards to access, attendance, and participation, but collectively they are both facing a decline in active engagement with the public.

me-dérive: toronto is made up of crowdsourced photographs taken by citizens, once-citizens, and visitors of Toronto alike. In the user's perambulatory explorations, they foster an affective gaze towards their immediate environment, drawing connections and interacting with space and historical narratives in novel ways. While users may be distant from the time in which a photo was taken, or the creator of the photograph themselves, they enter into a relationship with both the image and the creator as they analyze *what once was* in juxtaposition to *what now is*. Analyzing historical

Malraux, André. 1954. *The Voices of Silence. Translated by Stuart Gilbert*. London: Secker & Warburg.

content– whether textual, visual or ephemeral in nature– requires the participant to look anew. Users may identify people and places lurking within the images; they may identify an old church, bar or storefront owned or frequented by a distant relative, friend or colleague; they may encounter a historical organization, establishment or protest on their route to work, inadvertently altering how they perceive that respective space. *me-dérive: toronto* draws on the parallels between photography and memory and uses participatory methodologies and AR interfacing techniques in an effort to provide a more fertile and accessible realm for collection practices.

Rationale For Creating *me-dérive: toronto*

Archives are comprised of deliberately constructed memories "about the past, about history, heritage, and culture, about personal roots and familial connections, and about who we are as human beings" (Cook 2013, 101). There has been no shortage of critique on the political structure of archives as spaces, and archiving as a process underscored by notions of power— power which grants authority to designated voices over others (Carter 2006, Derrida 1996, Foucault 1972). Prioritizing the preservation of certain memories or records prescribes value and merit to what is *worth* remembering. My augmented archival project seeks visual historical narratives from the bottom up, reversing the power dynamic perpetuated by institutional archives that favour dominant ideologies, and the history of the once-majority. My research addresses the gaps and omissions that exist in our institutional archives, while making explicit what is needed to make a more

Cook, Terry. 2013. "Evidence, Memory, Identity, and Community: Four Shifting Archival Paradigms." *Archival Science* 13 (2): 95–120.

Carter, Rodney G. S. 2006. "Of Things Said and Unsaid: Power, Archival Silences, and Power in Silence." *Archivaria* 61: 215–33.

Derrida, Jacques. 1996. *Archive Fever: A Freudian Impression*. Chicago: Chicago University Press.

Foucault, Michel. 1972. *The Archaeology of Knowledge*. Translated by A. M. Sheridan Smith. New York: Pantheon Books.

holistic, comprehensive archive of Toronto's history.

I created *me-dérive: toronto* to both acknowledge and memorialize the historical narratives of Toronto's citizens, ranging from events that are political, cultural and social in nature, alongside the commemoration of people and spaces who have contributed to Toronto's longstanding history. As stated, *me-dérive: toronto* is an open-ended archive. Here, open signifies that it is accessible to the public– it is not owned or possessed by a governing body, instead, it aims to provide a visual archive without restriction of race, ethnicity or class. Open also characterizes that the counter-archive invites donors to become archivists of their own memories. Records should not be 'neat'— they should not be confined to the moments that celebrate Toronto. Images of protests, demonstrations, declarations of opinion, and moments that express a multitude of culturally-driven sentiments are critical to historical narratives. The contemporary, digitally fueled archive affords archivists and users alike novel design approaches, research priorities, and policy decisions to help guide preservation and access to cultural heritage. Withdrawing from the institution, the intersection of digital culture and mobile media allow the archive to 'invisibly' weave itself into the fabric of everyday life. While appealing in its own right, this innovative archival approach is particularly useful for marginalized groups who need to be integrated into construction and operation processes of memory institutions—a facet of cultural heritage they have traditionally been excluded from. The success of *me-dérive: toronto* is contingent on citizens and visitors of Toronto entering into a negotiated time-space in an effort to rediscover the past— whether their

own, one they're connected to or simply one they are curious about.

The pursuit of knowing is often replete with discontinuities, gaps, and voids as certain historical records of individuals and cultures are favoured over others—whether it takes the form of prioritizing the digitization of specific materials or excluding a respective collection within an archive altogether. Similarly, archives shape cultural and political understandings of what cities are, and what they have the capacity to become; they make statements about citizens, services, and spaces embedded throughout urban environments, providing a layered and documented mode of reading and interpreting the world. This 'layered' notion is pivotal to the understanding of this project and carries a twofold meaning, signifying the very 'layering' of the historical image onto the contemporary landscape through the frame of the mobile, and simultaneously the production of a temporally 'layered' experience of space (Munteán 2016). When an AR marker is engaged through the app, the user is able to layer the archival image *onto* their real-time view of the immediate environment.

Through research-creation, this dissertation addresses the following questions that seek to describe, theorize and illustrate the intersections between archives, participatory culture and AR: in what ways has Toronto's cultural heritage and history been documented? Addressing the respective gaps in institutional memory, this leads to questioning how historical narratives can be reimagined in the digital era? More directly, what capabilities are fashioned by new media and digital technology that allow historical content to be uniquely explored? And in connection with such, in what ways can a

Munteán, László. 2016. "Rephotography and the Ruin of the Event." *Transformations: Journal of Media & Culture* 28.

What is the impact of augmented reality on the practice and production of history, space, and place?

participatory archive contribute to a more accurate and inclusive understanding of the past? Extending the 'digital' into a more concrete context, in what ways can interfacing techniques like AR reimagine the commodification of space? Put differently, what is the impact of AR on the practice and production of history, space, and place? Finally, as a mobile media scholar how can I foster research that extends beyond traditional knowledge dissemination, from passive to active, promoting a larger focus on showing rather than merely telling through mobile research.

By interrogating these questions, this dissertation presents useful principles for both archival scholars and mobile media practitioners, providing a practical and tangible example of the transformative potentials of new media technology and AR on the practice and mobilization of cultural heritage. Both the app and this dissertation as research artifacts establish critical perspectives and methodologies for creating a more dynamic, interactive, and inclusive archive. The impact of a participatory, augmented counter-archive proposes an interactive renegotiation of cultural heritage. A model wherein which citizens can actively participate in reimagining collective memories leads to a palpable tension between 'official' and 'unofficial' heritage, underscoring anew the power imbalances that have led to favouring certain records over others.

This work makes interventions into multiple academic fields, including but not limited to mobile media, visual culture, archival studies, digital culture, and digital humanities. The project and dissertation holistically contribute to each of these fields through an analysis of dominant theories, and through the development of a research-creation exemplar that personifies all of the subject areas. In order

to contextualize this work and lay the framework for *me-dérive: toronto*, in what follows, I outline the dominant areas of study associated with the project.

Locating the Literature for *me-dérive: toronto*

This literature review draws out themes that situate AR and participatory models within mobile and archival frameworks. Literature on archives is widespread and incredibly vast (Carter 2006, Cook 2013, De Kosnik 2016, Derrida 1996, Ernst 2013, Farge 2013, Merewether 2006), and the research topics are limitless— ranging from archives in motion (Blom, Lundemo, and Røssaak 2017), to institutional diversity and inclusion (Caldera and Neal 2014), to the archival impulse (Foster 2004). My primary focus, however, is on reimagining archival approaches through the use of new media technology and participatory frameworks.

A review of the affiliated literature not only underscores the project, but also situates my work, theoretical approaches, and principles within the emerging field of social and political AR interventions. I argue the critical viewpoints surrounding the realms of AR, archives and rephotography to inform the structure and theoretical underpinnings of *me-dérive: toronto*. I begin by positioning that the environment in which the augmented archive exists has been cultivated out of the intersection between the mobility and archival turn alike. This lends itself to a discussion of the deconstruction of archival practices. Defining archives allows for pointed arguments to be made and subsequently demonstrated through my research, with regards to memory, ideology, and power-relations as they pertain to the frameworks of the archives. This deconstruction also explores alternative and counter-archival processes heralded by participatory culture.

The participatory ushers in discussions of records, particularly those that are photographic and rephotography is introduced as an interdisciplinary methodology, encompassing discussions of image acquisition (production *or* procurement of records), and methodological approaches (presence of hand vs. digital compositions). From there, I draw connections between the layered process of rephotography and AR, particularly in the user's understanding of space *through* the device. An analysis of AR and *me-dérive: toronto* as a node on the reality-virtuality continuum (Milgram et al. 1994) is proposed, which allows for novel approaches to discussions of space and place through software. Here, the designation of 'mobile infography'— smartphone photography that is more information-focused than visual in nature— is taken up as it helps cultivate an understanding of AR's software translations. Connecting to research-*for*-creation, I situate images from archival databases as those that are useful for rephotography-style AR experiences. Finally, the literature review culminates with an overview of the flâneur and the *dérive* as critical aspects related to perambulation. Cumulatively, these ranging topics help create a theoretical system wherein which *me-dérive: toronto* is situated.

Intersecting the Archival and Mobile Turn

me-dérive: toronto has been born out of the intersection between the humanities and social science's archival turn and the mobilities paradigm

Carter, Rodney G. S. 2006. "Of Things Said and Unsaid: Power, Archival Silences, and Power in Silence." *Archivaria* 61: 215–33.

Cook, Terry. 2013. "Evidence, Memory, Identity, and Community: Four Shifting Archival Paradigms." *Archival Science* 13 (2): 95–120.

De Kosnik, Abigail. 2016. *Rogue Archives: Digital Cultural Memory and Media Fandom*. Cambridge: MIT Press.

Derrida, Jacques. 1996. *Archive Fever: A Freudian Impression*. Chicago: Chicago University Press.

Ernst, Wolfgang. 2013. *Digital Memory and the Archive*. Minneapolis: University of Minnesota Press.

Farge, Arlette. 2013. *Allure of the Archives*. New Haven: Yale Press.

Merewether, Charles. 2006. "Introduction: Art and the Archive." In *The Archive*, 10–17. London: Whitechapel Ventures Limited.

Blom, Ina, Trond Lundemo, and Eivind Røssaak. 2017. *Memory in Motion: Archives, Technology and the Social*. Amsterdam: Amsterdam University Press.

Caldera, Mary A., and Kathryn M. Neal. 2014. "Introduction." In *Through the Archival Looking Glass: A Reader on Diversity and Inclusion*, ix–xxiv. Chicago: SAA.

Foster, Hal. 2004. "An Archival Impulse." *October* 110 (Autumn): 3–22.

Milgram, Paul, Haruo Takemura, Akira Utsumi, and Fumio Kishino. 1994. "Augmented Reality: A Class of Displays on the Reality-Virtuality Continuum." In *Proceedings of SPIE 1994: Telemanipulator and Telepresence Technology* Vol. 2351: 282–92.

deriving from the mobility turn. It is a catalyst of active archival practices through the use of new media technology, and has been influenced by the silences and omissions within institutional archives.

'Mobility' emerged at the turn of the millennium to signify change with regards to the economy, culture, and globalization (Sheller 2017). Sociologist Zygmunt Bauman (1998) asserts that "mobility climbs to the rank of the uppermost among coveted values – and the freedom to move, perpetually a scarce and unequally distributed commodity, fast becomes the main stratifying factor of our late-modern or postmodern time" (2). By this, mobility is the contemporary paradigm that encapsulates the liveliness, non-static, and ambulation in some form. This characterization includes, but is not limited to, the movement of people (from mass migration to local perambulation), ideas (from major ideologies to micro-information bits), and things (from products to services). It correspondingly encapsulates the reverberating effects of these mobilities.

John Urry (2007) asserts that the post-disciplinary mobility turn connects an analysis of varying modes of travel, transport, and communications with the ways in which economic and social life are both organized and performed through time and across various spaces (6). Scholarship subsumed under the mobility turn spans across disciplines, but converges largely on the framing of connections, flows, networks, and movements (Cass and Faulconbridge 2017). The mobility turn also involves the examination of how the transportation of people and the communication of messages, information, and images may overlap, coincide and converge through digitized flows (Urry 2007, 9). This turn gave way to the mobilities

paradigm— involving the analysis of "diverse intersecting networks, relations, flows and circulation, and not fixed places" (Sheller 2017, 630). Mimi Sheller and John Urry (2006) categorize this paradigm into five key categories that produce social life and form its contours, including corporeal, object, imaginative, virtual, and communicative mobility respectively (Urry 2007, 47).

AR apps like *me-dérive: toronto* are underscored by corporeal, imaginative, and virtual mobility alike. Corporeal or physical mobility is organized in terms of contrasting time-space modalities (47). Users encounter corporeal mobility in their active perambulation across the city, in an effort to engage with the content of the augmented archive. Imaginative mobility is enacted through the images of people and places that appear and move across print and visual media (47). This mode of mobility is incredibly literal with *me-dérive: toronto* not only in the 'imaginative' potentials of AR, but also in the very act of the mobility of images away from the archives—both institutional and personal—and into the original spaces in which they were captured. At the intersection of AR as an interfacing technique then, imaginative mobility is amended to that of '*re*imaginative' mobility in that they are repeated through the users engagement with the device. These reimagined potentials are tied to virtual mobility which transcends geographical and social distance (47). Urry describes this as "the contemporary emergence of powerful, interdependent knowledge-based systems that through new software are increasingly organizing production, consumption, travel and communications around the world" (159). *me-dérive: toronto* is an example of virtual mobility in its coded composition— one that affords users the

Sheller, Mimi. 2017. "From Spatial Turn to Mobilities Turn." *Current Sociology* 65 (4): 623–39.

Bauman, Zygmunt. 1998. *Globalization: The Human Consequences*. Cambridge: Polity Press.

Urry, John. 2007. *Mobilities*. Cambridge: Polity Press.

Cass, Noel, and James Faulconbridge. 2017. "Satisfying Everyday Mobility." *Mobilities* 12 (1): 97–115.

Urry, John. 2007. *Mobilities*. Cambridge: Polity Press.

Sheller, Mimi, and John Urry. 2006. "The New Mobilities Paradigm." *Environment and Planning A*, 38: 207–26.

Fortunati, Leopoldina, and Sakari Taipale. 2017. "Mobilities and the Network of Personal Technologies: Refining the Understanding of Mobility Structure." *Telematics and Informatics* 34: 560–68.

Urry, John. 2007. *Mobilities*. Cambridge: Polity Press.

potential to access database content in-situ through the pervasiveness of code in space.

A decade after Sheller and Urry's characterization of the "new mobilities paradigm," Leopoldina Fortunati and Sakari Taipale (2017) proposed an alternative heuristic approach to understand the structure of mobility, including the designation of media mobility, wherein the smartphone gives mobility to media that had traditionally been fixed, and disembodied mobility which designates the transformations that have taken place within the social order and embrace the imaginative, virtual, and communication mobilities, as they intermingle (561). With media mobility, access to the Internet is no longer a sedentary activity, and users have the capacity to engage with and contribute to knowledge on the move. Similarly, disembodied mobilities combine many previously recognized modes of mobility (ex: photographs, video, etc.) and encompass the aforementioned categories of imaginative and communicative mobility alike by removing these assets from their traditional environments towards those that are virtual and transitory. Oleb Jensen (2009) asserts that mobilities research is about "producing and re-producing the city and the self in a complex relationship involving mobility cultures and different types of mobility knowledge" (152). One form of mobility knowledge is acquired through content in-situ made possible by the smartphone's locative media potentials— a catalyst of media and disembodied mobility. In this, locative media becomes an agent of the archival turn. This turn to mobility is not a product, but rather a process, parallel to the notion within archives where the archival turn is represented by a reimagined

Fortunati, Leopoldina, and Sakari Taipale. 2017. "Mobilities and the Network of Personal Technologies: Refining the Understanding of Mobility Structure." *Telematics and Informatics* 34: 560–68.

Jensen, Oleb B. 2009. "Flows of Meaning, Cultures of Movements – Urban Mobility as Meaningful Everyday Life Practice." *Mobilities* 4 (1): 139–58.

approach away from archives as products to archives as social, cultural, and political processes.

There is no figure more linked with the archival than postmodern French philosopher Jacques Derrida, who gave way to the omnipresent notion of 'archive fever'. Derrida theorizes the effects of archivology– a fictitious expression to designate an interdisciplinary science of the archive (34). Today, archivology's interdisciplinarity makes interventions into new media and digital technology. Grounding this research-creation project, I ascribe to the definition of 'archive' referring to a particular place— whether physical in built infrastructure or virtual by way of digitization— where documents are preserved. These archives contain collections that serve as evidentiary records of the past, whether focused on a specific person, entity, or place.

Of significance, however, is the shift that the digital (or in the case of this project, the augmented) archive perpetuates with regards to reproducibility of material culture. Where libraries are regarded as repositories for sharing generally mass-produced objects, archives have traditionally been regarded as storehouses that privilege material records. This approach has been reimagined at the intersection of the digital archive, as records are no longer handled in physical institutions with rigid handling procedures, and are instead made more accessible both through remote and simultaneous access by users. In line with such, Ann Laura Stoler (2002) argues that scholars need to "move from archive-as-source to archive-as-subject" (87), heralding the archival turn. This shift has led scholars to turn away from "the actual archival document to its functional process or context of creation; from the archive as a product to archive as a process; from the physical artefact

Derrida, Jacques. 1996. *Archive Fever: A Freudian Impression*. Chicago: Chicago University Press.

Stoler, Ann Laura. 2002. "Colonial Archives and the Arts of Governance." *Archival Science* 2: 87–109.

Ketelaar, Eric. 2016. "Archival Turns and Returns." In *Research in the Archival Multiverse*, edited by Anne J. Gilliland, Sue McKemmish, and Andrew J. Lau, 228–68. Clayton: Monash University Press.

Stoler, Ann Laura. 2002. "Colonial Archives and the Arts of Governance." *Archival Science* 2: 87– 109.

Cook, Terry, and Joan M. Schwartz. 2002. Archives, Records, and Power: From (Postmodern) Theory to (Archival) Performance. *Archival Science* 2: 171–85.

Ernst, Wolfgang. 2004. "The Archive as Metaphor: From Archival Space to Archival Time." *Open* 7: 1-8.

to the "very act and deed which first caused that artefact to be created" (Ketelaar 2016, 236–37). In this way, archives are regarded "not as sites of knowledge retrieval but of knowledge production, as monuments of states as well as sites of state ethnography" (Stoler 2002, 90). Thus, in this turn, the archive becomes the very site of critical examination, with attention to exclusions, silences, and omissions. These gaps in knowledge are often present in the historical narratives of marginalized populations.

Archives need to be reconceptualized as active rather than passive—abandoning the notion of the passive storehouse, in favour of the active site where power can be negotiated and contested (Cook and Schwartz 2002, 1). This impetus for a more inclusive and open institution aligns with the active participation with and through the archive. In this, new media technology provide a framework and a set of technological tools to afford participation. Nevertheless, the concept of the archive and the digital respectively are underscored by opposing contexts, both in theory and practice. Where archiving makes critical interventions into inscription, history, and material culture, digitization is a translation into numerical combinations, often distinct from materiality. Conceptualizing such, media theorist Wolfgang Ernst (2004) asserts that the archive is not about memory, but rather storage practices characterized by their calculated technical processes. He proposes that the authentic 'archive' is characterized by a very precise and limited institution, underscored by its basis as a storage agency in spatial architecture (3). Nevertheless, he maintains that the notion of the archive has become a universal metaphor for storage and memory simultaneously, urging for a reimagined "media-

critical theory of the archive, pointing at its definition as coded storage" (4). Thus, at the intersection of digital culture, the archive shifts from an archival space into an archival time, wherein the fundamental basis is the permanent transmission of data.

Interrogating this shift, Ernst explains:

> Contrary to the archives of physical memory media (paper records, celluloid film, magnetic tape) characterised by limitations of access due to the fragile nature of these documents [Prelinger 2009, 271], the current liberal, broadened, electronically-biased (thus liberated from spatial and material restrictions) use of the term archive, the online data collections labeled archives could in fact [...] be better characterised as perpetual transmission rather than permanent storage. What used to be sacred spaces, secluded from public insight – the arcana of political administration and of their archival memory – is now directly wired to the communication circuit of the present. The archive loses its temporal exclusivity as a space remote from the immediate present. (2016, 14)

Ernst, Wolfgang. 2016. "Radically De-Historicising the Archive. Decolonising Archival Memory from the Supremacy of Historical Discourse." *Decolonizing Archives*, 9–16. L'Internationale Online.

Ernst underscores that traditional archival memory has never been characterized by interactivity, whereas documents in networked space, such as digital and augmented archives, become time, and are in turn predicated on user feedback. Thus, the traditionally enduring 'time base' of the archive itself has been replaced with restless configuration (Ernst 2014, 94). Archival endurance or time has been undermined as records have the capacity to no longer be fixed to permanent material storage, but

Ernst, Wolfgang. 2014. "Between the Archive and the Anarchivable." *Mnemoscape* 1: 92–103.

The archive
was always
already the
site where
time became
space.

rather are engaged electronically where perpetual flow replaces the static inscription (94). As such, in the digital realm, the structure of archiving and subsequently of memory has been translated from the notion of a single, stable archive and memory site, to that of a dispersed network of respective sites with memory and data access potentials. In this, the archive is no longer associated with permanent storage, but rather of permanent transfer and updating. With this, archives become "cybernetic systems [and the] aesthetics of fixed order is being replaced by permanent reconfigurability" (Ernst 2013, 99). Where the traditional function of the archive was to document an event that took place in a designated time and place, according to Ernst the emphasis in the digital archive shifts to regeneration that is coproduced by online users for their own needs (2013, 95–97).

Ernst, Wolfgang. 2013. *Digital Memory and the Archive*. Minneapolis: University of Minnesota Press.

Responding to this state of reconfiguration in the contemporary techno-influenced world, Eivind Røssaak (2010) designates the paradoxical notion of the 'archive *in* motion'. Traditionally regarded as an entity that arrests time and stops all motion, the archive has been remediated towards a repository that confronts the mobility paradigm— both in theory and practice. The shift towards an archive *of* motion– one that was defined by film and audio records– is now designated as an archive *in* motion, largely influenced by the advent of computer and digital technologies and ultimately the Internet which enabled the capacity to update, transfer, and view records, while redefining the temporality of the records themselves (Røssaak 2010, 12). The archive was always already the site where time *became* space, in which records were kept in a dormant and static state (Røssaak 2010, 16). While traditionally

Røssaak, Eivind. 2010. "The Archive in Motion: An Introduction." In *New Conceptions of the Archive in Contemporary Thought and New Media Practices*, 11–27. Oslo: Novus Press.

archival content is in a halted state– literally static in archival boxes, displays, and fonds alike– today these records are theoretically and physically on the move. At the intersection of software and mobility, archival principles of memory, storage, access, and dissemination have been reimagined.

Deconstructing Archival Practices

Museums, libraries, and archives are engaged in the preservation of the past— a cultural and inherently political act of evaluating, amassing, and exhibiting that which is deemed significant to the public. More specifically, archives are defined by their designated prefix, *arche*– which represents origin and beginnings. In this, arche comes to signify foundational narratives, identities and artifacts. Archival investigations are linked with the act of learning about the past by way of material documents, wherein knowledge interrogation of the archive shapes our understanding of the present and past (Foucault 1972, Merewether 2006).

Archives are characterized by the trifold process of acquisition, description, and preservation of documents as emblems of evidence (Cook 2013). Distinct from library practices that provide access to assets individually and museum practices which thematically group exhibitions, archives consolidate acquisitions into 'collections' grouped by the history of ownership (Rinehart 2014, 93). Archives typically collect comprehensively— collections of photographs produced by a person or organization over a lifetime, for example. The individual items encompassed within a given collection are referred to as 'records'. The Toronto Archives defines these as

Foucault, Michel. 1972. *The Archaeology of Knowledge.* Translated by A. M. Sheridan Smith. New York: Pantheon Books.

Merewether, Charles. 2006. "Introduction: Art and the Archive." In *The Archive*, 10–17. London: Whitechapel Ventures Limited.

Cook, Terry. 2013. "Evidence, Memory, Identity, and Community: Four Shifting Archival Paradigms." *Archival Science* 13 (2): 95–120.

Rinehart, Richard, and Jon Ippolito. 2014. *Re-Collection: Art, New Media, and Social Memory.* Cambridge: MIT Press.

"information, however recorded or stored, whether in print form, on film, by electronic means or otherwise, and includes documents, financial statements, minutes, accounts, correspondence, memoranda, plans, maps, drawings, photographs and films" (City of Toronto Archives 2018a). While archival practices and collections span across documents and ephemera, the focus of this work is on photographic records that come to serve as emblems of historical memories of narratives, spaces, and places alike.

Archives are related to memory and place both in theory and practice. Together they cultivate a dynamic research realm wherein places gather things, thoughts, and memories in particular configurations (Escobar 2001, 143) as the fertile location and scene of the remembering people do in common (Casey 2004, 36). Contemporary spaces and places combine bodies, objects, and flows in innovative ways (Cresswell 2004, Massey 1994). Tim Cresswell (2004) establishes that one of the primary modes in which memories are constituted is through the production of places (85). The very establishment of archives, museums, monuments, and plaques are indicators of the "placing of memory" (85). *me-dérive: toronto* underscores the relationship between both the archive and memory, but also simultaneously fosters an understanding of the archive of place *and* place as an archive. In this light, the contemporary and multi-modal archive is considered to be an innovative cultural technology that reimagines memory, making it possible to simultaneously view and contribute to history. While the lexis for archive can refer to many forms and facets, for the purpose of my own investigation, I am concerned with the specific *locale* of the archive— whether tangible or virtual—where records are

City of Toronto Archives. 2018a. "Acquisition Policy for the City of Toronto Archives."

Escobar, Arnold. 2001. "Culture Sits in Places: Reflections on Globalism and Subaltern Strategies of Localization." *Political Geography* 20 (2): 139–74.

Casey, Edward. 2004. "Public Memory in Place and Time." In *Framing Public Memory*, edited by Kendall R. Phillips, 17–44. Tuscaloosa: University of Alabama Press.

Cresswell, Tim. 2004. *Place: A Short Introduction.* Oxford: Blackwell.

Massey, Doreen. 1994. *Space, Place and Gender.* Minneapolis: University of Minnesota Press.

stored (Tinkler 2013), and the access potentials that inform the content of these spaces.

Reimagined archival practices by way of interfacing techniques like AR allow for spaces to be reproduced through and with memory. This is demonstrated in the potentials of mobile software that dismantle perceptions of space as empty, when in actuality they are data dense and rampant with metadata and media flows. Adriana de Souza e Silva (2006) delineates this as a "hybrid space" – a physical space merged with digital information. *me-dérive: toronto* perpetuates a hybrid space wherein photographic records and memories are appended to space, altering both knowledge and relations to space, and making visible content that has otherwise been undervalued and underrepresented institutionally.

Modes of Memory and Archives

Alongside museums and libraries, archives represent one facet of the ultimate institutional triad that supports formal aspects of social memory— each with distinct practices (Rinehart 2014, 90). The cultural and social curation of the archival institution is the obligation of the archivist who ultimately becomes a conscious architect of social and public memory. The archivist is intended to exercise a sense of neutrality and objectivity, and while memory, identity and community are often associated outcomes of archives, they should not be facets that govern the institution (Cook 2013, 97). Opposing such, Adrian Miles (2015) notes that archives are collections actively policed by archivists; unlike libraries which are grounded in sharing reproducible

objects, archives are rooted in a deliberate privileging of material culture (39). Guy Pessach (2008) proposes that memory institutions are social entities that "select, document, contextualize, preserve, index, and thus canonize elements of humanity's culture, historical narratives, individual and collective memories" (73). These institutions carry the obligation to "underpin a narrative which seeks to overcome exclusions and silences on other dominant accounts," and then actively "create a space to allow people to explore and better understand the past in ways which might encourage a greater sense of belonging and identification" (Flinn 2011, 11). As such, embedded memories are dependent on legitimacy and accuracy variables, including traces, recordings or images that act as emblems of proof. Arguably, the process by which memories are captured, categorized, and preserved tend to be more monumental than the archival record that is produced out of them. In this, we see a focus on the political, social, and economic model that would need to exist to allow these memories to be processed and adequately supported. This is especially true of processes that govern collective and social memory and public remembering respectively.

Collective and Social Memory

The phrase 'collective memory' was first used by Hugo von Hofmannsthal in 1902 (Olick and Robbins, 1998) and later theorized by Maurice Halbwachs (1992) in his designation of memory as a social rather than individual phenomenon. Halbwachs (1941) described collective memory as "a reconstruction of the past that adapts the image

Tinkler, Penny. 2013. *Using Photographs in Social and Historical Research*. Los Angeles: SAGE.

de Souza e Silva, Adriana. 2006. "From Cyber to Hybrid: Mobile Technologies as Interfaces of Hybrid Spaces." *Space and Culture* 9 (3): 261–78.

Rinehart, Richard, and Jon Ippolito. 2014. *Re-Collection: Art, New Media, and Social Memory*. Cambridge: MIT Press.

Cook, Terry. 2013. "Evidence, Memory, Identity, and Community: Four Shifting Archival Paradigms." *Archival Science* 13 (2): 95–120.

Miles, Adrian. 2015. "12 Statements for Archival Flatness." In *Performing Digital: Multiple Perspectives on a Living Archive*, edited by David Carlin and Laurene Vaughan, 39–50. Farnham: Ashgate Publishing Community.

Pessach, Guy. 2008. "[Networked] Memory Institutions: Social Remembering, Privatization and its Discontents." *Cardozo Arts and Entertainment Law Journal* 26 (1): 71–149.

Flinn, Andrew. 2011. "Archival Activism: Independent and Community-Led Archives, Radical Public History and the Heritage Professions." *InterActions: UCLA Journal of Education and Information Studies* 7 (2): 1– 20.

Olick, Jeffrey K., and Joyce Robbins. 1998. "From 'Collective Memory' to the Historical Sociology of Mnemonic Practices." *Social Memory Studies* 24: 105–40.

Halbwachs, Maurice. 1941. *La Topographie Légendaire des Evangiles*. Paris: Presses Universitaires de France.

Halbwachs, Maurice. 1992. *On Collective Memory*. Chicago: University of Chicago Press.

of ancient facts to the beliefs and spiritual needs of the present" (7). He maintains that memory has an inherent social dimension, arguing that "it is in society that people normally acquire [... and also] recall, recognize, and localize their memories" (38). This argument takes a very literal form through *me-dérive: toronto*'s embeddedness and visualization of memory. Archives are tasked with migrating individual memories, to those of communities and collectives alike. Archival content, then, is used to configure memories "into narratives and to transform information and recollection from the individual to the collective" (Millar 2006, 119).

Millar, Laura. 2006. "Touchstones: Considering the Relationship Between Memory and Archives." *Archivaria* 61: 105–26.

Motti Neiger, Oren Meyers, and Eyal Zandberg (2011) summarize collective memory through a series of characteristics, the most pertinent of which maintains that it is a socio-political and continuously multi-directional construction (5). Collective memory does not reflect the "authenticity of a shared past" but rather a *version* of the past, selected by particular agents within a community "in order to advance its goals and serve its self-perception" (5). This form of memory is defined and continuously negotiated through changing socio-political power circumstances and agendas (4). Collective memory is reflected through this fluctuation as a constructed and defined process through "an oppositional yet complementary movement from the present to the past and from the past to the present" (5). In this, current events, beliefs, and morals guide readings of the past while learned frames of reference impact the present. This process is neither linear nor logical, but is rather dynamic and contingent (Zelizer 1995, 221).

Neiger, Motti, Oren Meyers, and Eyal Zandberg. 2011. "On Media Memory: Editors' Introduction." In *On Media Memory: Collective Memory in a New Media Age*, 1–25. New York: Palgrave.

Akin to the collective, social memory is lucid and expressive, organized, and compiled in an effort to benefit community narratives (Millar 2006, 119).

Zelizer, Barbie. 1995. "Competing Memories: Reading the Past against the Grain: the Shape of Memory Studies." *Critical Studies in Mass Communication* 12: 214–39.

As a catalyst, it is a vehicle by which individuals within a respective society are able to acquire knowledge and support of those surrounding them. Ultimately, the intention of social memory is to cultivate a mutual understanding, built on principles of respect and empathy (120). Richard Rinehart (2014) identifies that social memory can be divided into two categories— formal and informal. Formal social memory is characterized by the canonical, and is often stewarded by the cultural heritage sector (ex: libraries, museums, and archives). These institutions consolidate the memory banks of citizens and spaces alike (15). Informal social memory is characterized by folklore and distributed as popular forms of remembering. Informal social memory acts like "society's network system, preserving memory by making it a moving target" (15). The latter is aligned with participatory archival practices that are discussed later in this section, and reflective of the methodologies associated with *me-dérive: toronto*.

Millar, Laura. 2006. "Touchstones: Considering the Relationship Between Memory and Archives." *Archivaria* 61: 105–26.

Rinehart, Richard, and Jon Ippolito. 2014. *Re-Collection: Art, New Media, and Social Memory*. Cambridge: MIT Press.

Collective and formal social memories are ideological in nature— they are shaped by social, economic, and political circumstances, beliefs and values, and opposition and resistance (Climo and Cattell 2002, 4). In alignment with this ideological framework, these memories encompass cultural norms and issues of identity, authenticity, and power (4). They are expressed in a range of ways, creating "interpretive frameworks that help make experience comprehensible. They are marked by a dialectic between stability or historical continuity and innovations or changes" (4). *me-dérive: toronto* is a disruptor of collective memory through interventions of informal social and cultural memory. As the counter-archive acquires crowdsourced content from a multiplicity of stakeholders, it has the power

Climo, Jacob, and Maria Cattell. 2002. *Social Memory and History: Anthropological Perspectives*. Walnut Creek: Altamira Press. MIT Press.

to interrogate and reimagine collective memory. It is imperative to note that while *me-dérive: toronto* has collected and will continue to collect a stream of powerful and noteworthy photographs representing Toronto's historical narratives, the existence of the platform— the open augmented archive— supersedes all of the content. This is to say that the sum of the project, the AR archive, is greater than its parts (ex: individually coded photographs). The platform for the amassed photographic memories can assist communities in the construction and preservation of their respective collective memories, acting as 'touchstones' that uphold community values and rights (Battley, Daniels, and Rolan 2014, 155). In the case of *me-dérive: toronto,* these photographs are inherently tied with power dynamics, which are critical to discussions of memory and archiving. The impact of digital technology on collective remembering is a critical facet of contemporary archival research, particularly in the renegotiated disparities of power brought forth by the ability to control records through creation, interpretation, and access.

Battley, Belinda, Elizabeth Daniels, and Gregory Rolan. 2014. "Archives as Multifaceted Narratives: Linking the 'Touchstones' of Community Memory." *Archives and Manuscripts* 42 (2): 155– 57.

Cultivating Public Remembering

Hegemonic social acts of remembering and memory have been categorized by way of public memory, counter-memory, oppositional memory, and unofficial memory (Misztal 2003, 62). Public memory is represented as "a shared sense of past, fashioned from the symbolic resources of a community and subject to its particular history hierarchies and aspirations" (Browne 1995, 248). By its very semantic nature, the notion of 'public' in relation to memory

Misztal, Barbara A. 2003. "Theoriz-ing Remembering." In *Theories of Social Remembering,* 50–74. Maid-enhead: Open University Press.

Browne, Stephen H. 1995. "Review Essay: Reading, Rhetoric, and the Texture of Public Memory." *Quarterly Journal of Speech* 81: 237–50.

requests and begs a diverse group of stakeholders into the discourse of remembering. Anna Lisa Tota (2006) notes that the term itself contributes to "a more specific focus on the relation with the public sphere, and the capacity of memory to intervene and effect the public discourse of a nation" (83). Jane Greer and Laurie Grobman (2015) similarly characterize public memory as a fertile place for "democratic and social justice activities" as these aforementioned stakeholders settle on meanings and notions of the past, how these inform the present and ultimately steer the future (6). In this way, public memory is an entity up for review— it is always in flux, akin to the nature of the archive and place. Memories are "open to contest, revision and rejection" (Phillips 2004, 2) and often become a platform for spotlight and preservation of previously marginalized voices (Greer and Grobman 2015, 9).

In Toronto's multicultural environment the term "public memory" inadvertently integrates the notion of 'diversity' into the discussion. The very nature of Toronto's multiculturalism implores the cultural obligation to involve a multitude of voices in the processes concerning the establishment of said memory. Benedict Anderson (1991) popularly designated that "communities are to be distinguished, not by their falsity/genuineness, but by the style in which they are imagined" (6). Anderson's concept of the 'imagined community' depicts the social construction of a nation, as imagined by those who perceive themselves to be part of this group. Analyzing 'nationalism', Anderson defines a nation as "an imagined political community – and imagined as both inherently limited and sovereign" (6). Nations are seemingly 'imagined' because the members will never know most of their nation's other

Tota, Anna Lisa. 2006. "Review Essay: Public Memory and Cultural Trauma." *javnost-the public* 13 (3): 81–94.

Greer, Jane, and Laurie Grobman. 2015. "Introduction: Complicating Conversations: Public Memory Production and Composition and Rhetoric." In *Pedagogies of Public Memory: Teaching, Writing and Rhetoric at Museums, Memorials, and Archives,* 1–31. London: Routledge.

Phillips, Kendall R. 2004. "Introduction." In *Framing Public Memory,* 1–14. Tuscaloosa: University of Alabama Press.

Anderson, Benedict. 1991. *Imagined Communities.* London: Verso.

me–dérive: toronto is a tangible example of an archive in motion where once–stationary records within the archive are mobilized onto public space.

citizens, yet "in the minds of each lives the image of their communion" (6). In the context of Canadians, or Torontonians more specifically, our imagined community is one built on multiculturalism and the plurality of cultures and identities. The 'imagined community' of Toronto has also been propagated by the media and the government alike, who have codified diversity as an inherent characteristic and strength of the city.

In contrast to the imagined 'we' produced by Anderson's 'imagined communities', Wendy Chun (2016) maintains that 'imagined networks' are "collectives that link the social-historical to the physical, the collective to the individual. They are combinations that form definite, traceable lines of connection (or connections imagined to be so) between individuals across disparate locales" (27). The imagined network of *me-dérive: toronto* connects subjects and objects from the past with their contemporary environments and viewers alike. Nonetheless, in order to be a reflected node in an imagined network, the network itself must be inclusive and encompassing of an expansive audience. Derrida (1996) maintains that effective democratization can be measured by an essential criterion— the "participation in and access to the archive, its constitution and its interpretation" (4), enabling the archive to be seen as a tool for civic engagement (Flanagan and Carini 2012). In line with such, Katie Shilton and Ramesh Srinivasan (2007) uphold that cultivating participatory methodologies allow for a preventative measure over the distortion of cultural heritage, particularly with regards to marginalized populations. *me-dérive: toronto* then, serves as an archive built on emblems of public memory underscored by participatory methodologies.

Chun, Wendy Hui Kyong. 2016. *Updating to Remain the Same: Habitual New Media.* Cambridge: MIT Press.

Derrida, Jacques. 1996. *Archive Fever: A Freudian Impression.* Chicago: Chicago University Press.

Flanagan, Mary, and Peter Carini. 2012. "How Games Can Help Us Access and Understand Archival Images." *The American Archivist* 75 (2): 514–37.

Shilton, Katie, and Ramesh Srinivasan. 2007. "Participatory Appraisal and Arrangement for Multicultural Archival Collections." *Archivaria* 63 (Spring): 87–101.

The Role of the Participatory Archive

Participation in its purest form implies the action of taking part in an activity, event or experience. In connection to memory and the archival, participation transcends into the act of storytelling, bearing witness to events and ultimately contributing to a record of humankind (Presner, Shepard, and Kawano 2014). These records are both retrospective and prospective, simultaneously historical and future-oriented as the archive is no longer merely an analysis of the past, but is more critically a foresight into what awaits, an obligation to a future that embraces, knows and is informed by the past (141).

As a relational notion, participation has been embraced by digital technology and new media through participatory democracy, citizen journalism, social media communication, crowdsourcing, digital humanities, digital design, smart cities, gaming, and collaborative art (Barney et al. 2016, vii). In participatory culture, "not every member must contribute, but all must believe they are free to contribute when ready and that what they contribute will be appropriately valued" (Jenkins et al. 2006, 7). This approach is regarded as an inclusive model that possesses low access barriers, and a dominant support network for creating and sharing work. These methodologies reconfigure power and knowledge relations from the top down. Approaches and tactics provide an opportunity for power to be circulatory; it is not monopolized and is instead "deployed and exercised though a net-like organization" (Foucault 1980, 98). Finn Kensing (1983) argues that at a fundamental level participation requires access— access to information, to resources (including time, money and guidance), and to the means to influence decisions. Oftentimes, platform availability and vehicles for dissemination influence change and engagement.

Participatory archives are contemporary initiatives led by non-archivists, generally through new media technology, to contribute to archives or to comment on dominant archival practices (Eveleigh 2017, 299). They offer a space for "negotiating different perspectives, experiences and needs," and are "a mechanism for reconciling the dual nature of archives that been critiqued by scholars and distrusted by those who have been disenfranchised, silenced or otherwise marginalized or victimized by archives and recordkeeping more generally" (Gilliland and McKemmish 2014, 78). Participatory archives are born out of the rise in participatory culture and the simultaneous identification of existing gaps in content and narratives. Propelled largely by the self-publishing and narrativization of personal and private collections through social media, the approach to participation in archival practices is expanding. Presently, a range of new public stakeholders are redefining what needs to be collectively remembered. Thus, the traditional process wherein the archivist had exclusive rights to cultivating *how* and *what* a society remembered has been displaced by a more democratized approach (Pang, Liew, and Chan 2014). These are well aligned with community archives that are organized by communities whose historical experiences, identities, ideologies, and perspectives are not adequately reflected in official records (80). Together, these alternative archives, whether community or participatory, are categorized as DIY, grassroots, oppositional, independent and from-the-bottom-up (80). They overlap considerably with citizen-led crowdsourcing (Eveleigh 2014), Archives

Presner, Todd, David Shepard, and Yoh Kawano. 2014. *HyperCities: Thick Mapping in the Digital Humanities*. Cambridge, MA: Harvard University Press.

Barney, Darin, Gabriella Coleman, Christine Ross, Jonathan Sterne, and Tamar Tembeck. 2016. "The Participatory Condition: An Introduction." In *The Participatory Condition in the Digital Age*, vii–xxxix. Minneapolis: University of Minnesota Press.

Jenkins, Henry, Ravi Purushotma, Katie Clinton, Margaret Weigel, and Alice J. Robison. 2006. *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century*. NML White Paper for MacArthur Foundation.

Foucault, Michel. 1980. *Power/Knowledge: Selected Interviews and Other Writings 1972–1977*. Brighton: The Harvester Press.

Kensing, Finn. 1983. "The Trade Unions' Influence on Technological Change." In *Systems Design for, with, and by the Users: Proceedings of the IFIP WG 9.1 Working Conference on Systems Design for, with, and by the Users*. Amsterdam: North-Holland.

Eveleigh, Alexandra. 2017. "Participatory Archives." In *Currents of Archival Thinking, edited by Heather MacNeil and Terry Eastwood*, 299–325. Santa Barbara: Libraries Unlimited.

Gilliland, Anne J., and Sue McKemmish. 2014. "The Role of Participatory Archives in Furthering Human Rights, Reconciliation and Recovery." *Atlanti: Review for Modern Archival Theory and Practice* 24: 78–88.

Pang, Natalie, Kai Khiun Liew, and Brenda Chan. 2014. "Participatory Archives in a World of Ubiquitous Media." *Archives and Manuscripts* 42 (1): 1–4.

Eveleigh, Alexandra. 2014. "Crowding Out the Archivist? Locating Crowdsourcing within the Broader Landscape of Participatory Archives." In *Crowdsourcing our Cultural Heritage, edited by Mia Ridge*, 211–29. London: Ashgate Publishing.

Theimer, Kate. 2011. "What is the Meaning of Archives 2.0?" *American Archivist* 74: 58–68.

Anderson, Scott R., and Robert B. Allen. 2009. "Envisioning the Archival Commons." *American Archivist* 72 (2): 383–400.

Hanbury, Dallas C. 2014. "Build it and Will They Come?: Participatory Digital Archives, Hesitant Users, and the Emerging Archival Commons." *Journal of the Society of Georgia Archivists* 32 (1): 49–62.

Iacovino, Livia. 2015. "Shaping and Reshaping Cultural Identity and Memory: Maximising Human Rights through a Participatory Archive." *Archives and Manuscripts* 43 (1): 29–41.

Haskins, Ekaterina. 2007. "Between Archive and Participation: Public Memory in a Digital Age." *Rhetoric Society Quarterly* 37: 401–22.

McKemmish, Sue. 2011. "Evidence of Me... in a Digital World." In *I, Digital: Personal Collections in the Digital Era*, edited by Christopher A. Lee, 115–48. Chicago: Society of American Archivists.

2.0 (Theimer 2011), and the Archival Commons (Anderson and Allen 2009, Hanbury 2014).

Participatory methodologies help cultivate and establish a platform for informal social memories and public remembering. They acknowledge the rights of the subjects and their narratives, alongside the capacity to add records to public and private institutions, and to ultimately participate as co-creators in decision-making processes with regards to appraisal, access and control (Iacovino 2015, 29–30). The dominance of 'interactivity' in the digital era has been heralded as one of the primary democratizing features of new media (Haskins 2007)— thus the interactivity of public memory via archives has the potential to encompass a multitude of voices and narratives. These potentials allow social, collective, and public remembering to be widely reimagined and disseminated in the digital realm. *me-dérive: toronto* makes use of crowdsourcing in order to contribute to its counter-archive. Sue McKemmish (2011) maintains that new digital technologies can "represent multiple perspectives, parallel or multiple provenances; enable shared control and the exercise of negotiated rights in records; present government, alternate and contested views in parallel or together in a shared archival space; allow community organisations to integrate government records into their own knowledge and records systems, and individuals to interact with public and community archives" (142). *me-dérive: toronto*'s technical and interactive functionalities encapsulated through AR and the inclusive, participatory approach to archival memory not only reflect multiple perspectives, but they allow institutional records to coexist alongside crowdsourced records, producing a dynamic and

ongoing discourse on public and social memory.

While the orientation towards the citizen as an active agent and contributor to the archive suggests a revolutionary act in the face of tradition, participatory archives do not attempt to trivialize the role of the archivist *or* the critical importance of archival labour. Rather, the strategic participation between various stakeholders within cultural and technological frameworks are necessary to help mobilize the archive forward in improved directions (Grau, Coones, and Rühse 2017, 10). The photographs featured in *me-dérive: toronto* serve to provide a more robust and complete understanding of Toronto's diverse historical past, with augmented layers of content and meaning that help tell our shared urban history. The integration of voices helps respond to the cultural and content framework, however there is a need for access potentials to be reimagined through new media. *me-dérive: toronto* approaches this through AR as an interfacing technique for records across the city. When intersected with new media, memory takes on a new form, informed by the properties of the technical entity.

Grau, Oliver, Wendy Coones, and Viola Rühse. 2017. "Museum and Archive on the Move: Introduction." In *Museum and Archive on the Move: Changing Cultural Institutions in the Digital Era*, edited by Oliver Grau, 9–23. Berlin: Walter De Gruyter GmbH.

New Media, Memory, and [AR]chival Impulses

Archival theories and practices have transformed radically over the last century, largely influenced by digital and new media techno-innovation. Paradoxically, these entities simultaneous interrogate notions of stability, permanence, and rudimentary site-dependent access to collections. The digital era has altered the status quo of the archive, and new tools and methodologies reimagine opportunities to present, collect, access, connect, explore, research,

manage, and visualize data (9). In the shift towards digital culture, the ways in which social memories are created, transacted, experienced, and stored have been altered (Rinehart 2014, 18). New media then, impact social and public memory in two distinct ways, changing both the object and the means of social memory. This is to say that the cultural objects that serve as catalysts for social memory (ex: literary texts, artworks, census records, films, photos etc.) are themselves becoming digital (Rinehart 2014, 18). Further, both the tools and means by which social memory are practiced and enacted (ex: records, storage, communication etc.) are also increasingly becoming more digital. In this way, the contemporary augmented archive is transformed, mediatized, networked, and part of a renovated and accessible vastly connected new memory ecology (Hoskins 2011, 25).

The transition from an archive *of* motion that encapsulates interactive film and photographic content, to an archive *in* motion is associated with the rise of computer technology and networks, wherein the transfer of content and live communication redefine the temporality of the archival record itself (Røssaak 2010, 12). *me-dérive: toronto* is a tangible example of an archive in motion where once-stationary records within the archive are mobilized onto public space. This is reminiscent of Jean Baudrillard's (1983) process of "museumification,' where the museum "instead of being circumscribed in a geometrical location, is now everywhere, like a dimension of life itself" (15–16). Users of the app physically navigate through the city in an effort to encounter once two-dimensional records that have been extracted from the confines of the four walls of the archive. In this way, *me-dérive: toronto* emulates

Rinehart, Richard, and Jon Ippolito. 2014. *Re-Collection: Art, New Media, and Social Memory*. Cambridge: MIT Press.

Hoskins, Andrew. 2011. "Media, Memory, Metaphor: Remembering and the Connective Turn." *Parallax* 17 (4): 19–31.

Røssaak, Eivind. 2010. "The Archive in Motion: An Introduction." In *New Conceptions of the Archive in Contemporary Thought and New Media Practices*, 11–27. Oslo: Novus Press.

Baudrillard, Jean. 1983. *Simulations*. Cambridge: MIT Press.

André Malraux's (1954) 'museum without walls'— a true exemplar of the transition away from the archive within the city to the city as archive.

Musée Imaginaire and the Imaginary [AR]chive

Removing an object (ex: sculpture, painting, etc.) from its original context and importing it into a museum, alters the very nature of the object— adjusting it from utilitarian to aesthetic (Berry et al. 2013, 4). As a historian and philosopher, Malraux (1954) underscored this 'decontextualized' relationship with museum artifacts, in favour of recontextualizing them in a specific format for the purpose of a collection or exhibition. He first proposed the *musée imaginaire* (the imaginary museum) in the late 1940s, romanticizing the capabilities of photo-technologies to open up a more inclusive and accessible art world.

John Darzins (1957) exemplifies the imaginary museum is a modern thought, "brought forth by the improvements in methods of reproduction, [...] to familiarize the modern public with works of different periods and cultures. [...] Paintings, sketches, sculptures, ceramics are detached from their surroundings and thrust into a realm where they can lead an autonomous existence, unhampered by the laws of time and space" (107). Malraux argued that in opposition to artworks and collections, reproductions through photography perform parallel functions, only the delivery and openness to the work is more accessible. The possibilities that are opened up through this platform gesture towards a 'museum without walls,' one that is freed from the customary brick and mortar constraints of the traditional museum (Malraux 1954, 25).

Malraux, André. 1954. *The Voices of Silence*. London: Secker & Warburg.

Berry, David M., Michael Dieter, Baruch Gottlieb, and Lioudmila Voropai. 2013. *Imaginary Museums, Computationality & the New Aesthetic*. Berlin: Transmediale.

Darzins, John. 1957. "Malraux and the Destruction of Aesthetics." *Yale French Studies* 18: 107–13.

In the last decade, the 'museum without walls' has been used to describe cultural institutions in the Internet age, conceptualized by collections of art reproductions which comprise digital archives and online museums alike. When museums— or in this case archives— go digital and online, they fulfill a vision of both access and openness (Rinehart 2014, 106). There are many parallels between Malraux's prioritization of photographic reproduction, and concerns around access and inclusion that drove his conception of the imaginary museum that are even more germane in the contemporary digital and augmented landscape. Malraux noted:

Rinehart, Richard, and Jon Ippolito. 2014. *Re-Collection: Art, New Media, and Social Memory*. Cambridge: MIT Press.

> Not that these works on entering our Museum without Walls will disclaim history [...] Rather, they still link up with history, though precariously (the link is sometimes snapped); their metamorphosis, though infusing new life into history as well, does not affect it to the same extent as it affects the works of art themselves [...] It is in terms of a world-wide order that we are sorting out tentatively as yet, the successive resuscitations of the whole world's past that are filling the first Museum without Walls. (1954, 127)

AR allows the 'museum without walls' to come into being in a more literal and pronounced way as collections and records become strategically mapped on to physical spaces, away from the institutions that once made them static, site-specific entities. Markers positioned across the city translate into fleeting embodied memories inscribed simultaneously onto space and the periphery of the user, through the mobile device, cultivating the city itself as archive. The AR archive as exemplified by

me-dérive: toronto enables a space at the threshold of the physical and phenomenological in its capacity to consider the tetrad of the past, present, and future.

While photography became the catalyst for the imaginary museum to take shape, AR as a layering technique is the new revolutionary technology from which the imaginary museum becomes solidified, ushering in the augmented archive. As photographs become converted away from their tangible and digital means towards entities that are part of AR experiences, the traditional conception of the ways in which photos are viewed, curated and juxtaposed is perpetually transformed. AR as a remediation of traditional photography extends the imaginary museum into the three-dimensional. Much in the same way that the imaginary museum allows two reproductions to be juxtaposed and layered together in a decontextualized manner— for example, viewing a photograph of New York City next to one of Milan— AR experiences are structured through the layering of content. In the case of *me-dérive: toronto*, historical images are transported from their original creators, accessed via the triad of the user-software-network that AR cultivates, displayed on the screen of the smartphone and ultimately juxtaposed in place in a negotiated relationship between the then-and-now. Many museums are using AR to link content within the institution beyond the physical confines of built architecture and onto urban environments, including those identified earlier in this work. These apps act as emblems of the imaginary museum, mobilizing collections beyond the walls of the institution, and onto site-specific locations. As the collections become ascribed to space, they assume novel meanings and values, and by extension impact the spatial experiences of users.

A historical photograph [...] gestures towards the future with great uncertainty for its continued legitimacy.

me-dérive: toronto is an archive without walls— it is a collection of crowdsourced and underrepresented materials available to anyone with access to a smartphone and Internet connection, but it also possesses a spatial dynamic that enhances the user's connection and engagement with the immediate environment. Here the imaginary archive can be mapped to consolidate a contemporary discussion of imagined networks (Chun 2011, 2016) and communities (Anderson 1991) alike. The new visuality of AR reconfigures our relations with and to space. Røssaak (2010) asserts that the archive "used to be a place where time became space, where bits and pieces were exempted from the flow of time and safely stored away" (16). In this, the archive had traditionally been regarded as "the space outside time" where records are dormant (16). And yet, under the framework of the archive in motion, augmented archives like *me-dérive: toronto* conceptually and physically reimagine memory and records. While memory seemingly communicates a 'going back to' or a calling to mind of something from the past, it is also a future-oriented endeavour. The very act of archiving an image or collection underscores a relationship with *how*, *where,* and *when* that record or collection will be encountered in the future, and moreover by *whom* and under *what* context. At the intersection of new media, memory then encapsulates a more robust and approachable access method and a reimagining of how the concept itself is defined and contextualized.

Where history is typically regarded as impartial and accurate, memory is a recollective process, one that is fluid, continuous and subject to change (Greer and Grobman 2015, 18). Søren Kierkegaard (2009) delineates that repetition and recollection

Chun, Wendy Hui Kyong. 2011. *Programmed Visions: Software and Memory*. Cambridge: MIT Press.

Chun, Wendy Hui Kyong. 2016. *Updating to Remain the Same: Habitual New Media*. Cambridge: MIT Press.

Anderson, Benedict. 1991. *Imagined Communities: Reflections on the Origins and Spread of Nationalism*. London: Verso.

Røssaak, Eivind. 2010. "The Archive in Motion: An Introduction." In *New Conceptions of the Archive in Contemporary Thought and New Media Practices*, 11–27. Oslo: Novus Press.

Greer, Jane, and Laurie Grobman. 2015. "Introduction: Complicating Conversations: Public Memory Production and Composition and Rhetoric." In *Pedagogies of Public Memory: Teaching, Writing and Rhetoric at Museums, Memorials, and Archives*, 1–31. London: Routledge.

Kierkegaard, Søren Aaybe. 2009. *Repetition and Philosophical Crumbs*. Oxford: Oxford University Press.

are seemingly the same movement but in opposite directions— "what is recollected has already been and is thus repeated backwards, whereas genuine repetition is recollected forwards" (3). Through the integration of photographs as interfacing assets in AR, we do not simply *recall* a photograph, but rather we enact it through a process of repetition, projecting it into the future, and seemingly recollecting it forward. Derrida's omnipresent notion of a 'fever' surrounding the archive is characterized as a "repetitive, and nostalgic desire for the archive, an irrepressible desire to return to the origin, a homesickness, a nostalgia for the return to the most archaic place of absolute commencement" (Derrida 1996, 91). Public spaces have become fertile exhibition and showcase zones for archival images that gesture towards historical narratives of space. Developers, real estate agents, city organizations, restaurants, and storefronts alike are co-opting the use of archival records to cultivate a narrative about the shift in appearance, services, and offerings of a respective entity or neighbourhood. Here, there is a generative link between 'archive fever' and the 'archival impulse,' (Foster 2004) which contemporarily results in a stereoscopic engagement with archival content in-situ.

Derrida, Jacques. 1996. *Archive Fever: A Freudian Impression.* Chicago: Chicago University Press.

Foster, Hal. 2004. "An Archival Impulse." *October* 110 (Autumn): 3–22.

The Mobile [AR]chival Impulse

Mobilizing historical images beyond the confines of the archival walls ultimately affects the ways in which viewers relate to them. The production of cultural knowledge via historical collections is common in museums and art galleries alike; however, far less prominent in digital mobile spaces. Hal

Foster (2004) identified an 'archival impulse' that aids in the revelation of culture by investigating "particular figures, objects, and events in modern art, philosophy, and history" (3). In line with this impulse, archival artists seek to make historical information physically present, favouring that which has been lost or displaced (4). The found images, texts, and ephemera are elaborated on, typically through an installation. As records and collections alike are 'in motion' through digital technology and mobile media alike, they cultivate a new approach to the archive, and a substantial reimagining of the archival impulse (Foster 2004). This designation is critical to the intersections between cultural heritage and AR, and can be remediated away from modern art, towards mobile media.

Foster, Hal. 2004. "An Archival Impulse." *October* 110 (Autumn): 3–22.

The mobility turn and the subsequent increase in the use of location-aware technologies has enabled new questions about both the value and status of the image (Uricchio 2011). These technologies— including apps like *me-dérive: toronto*— rely on "algorithmically defined relations between the viewing subject and the world viewed, offering robust alternatives to the visual economies of the past" (25). William Uricchio (2011) designates the 'algorithmic turn' that stems from the digital, and has been born out of the "increased access to new ways of representing and seeing the world, ways dependent on algorithmic interventions between the viewing subject and the object viewed" (25). As an AR app, *me-dérive: toronto* enables an "algorithmically enabled navigational act" (32) wherein which the images and content that the user is presented with are laden with cultural and historical meanings. Here, the algorithmic determines not only *what* we see— but also *how* we see it. *me-*

Uricchio, William. 2011. "The Algorithmic Turn: Photosynth, Augmented Reality and the Changing Implications of the Image." *Visual Studies* 26 (1): 25–35.

dérive: toronto's AR interfacing techniques cultivate a window through which site-specific visual content is revealed to the user. The enabled interplay between the viewer's position in her immediate, *real-world* environment and this layer of augmented content has transformative potentials— it cultivates sites of meaning and enables action on the part of the user (33). This is fostered by and through the immersive potentials of AR.

The contemporary archival impulse takes on a stereoscopic persona, reimagined as an 'immersive archive' (Sæther 2010). Here immersion is defined as the "diminishing critical distance to what is shown and increasing emotional involvement in what is happening" (Grau 2003, 13). Immersive archives combine an examination of existing material with the experiences of being physically surrounded and absorbed in the records (Sæther 2010, 84). In this contemporary state of the archive, the user becomes literally immersed in the records while simultaneously engaging with them in a juxtaposed act of then-and-now. Through this duality, the immersive archive puts the user's experience of being "both 'inside' and 'outside' the archival material at its centre" (84). This is brought to life with *me-dérive: toronto* as a result of the relationship between the user and the historical archival image that requires the user to scrutinizes the then-and-now juxtaposition through the screen. This comparative act moves the user into a state of embodiment as her surroundings become analyzed and she becomes further embedded into the environment. A closer look at the ways in which photography changes through the interface of AR is critical.

Sæther, Susanne Ø. 2010. "Archival Art: Negotiating the Role of New Media." In *The Archive in Motion: New Conceptions of the Archive in Contemporary Thought and New Media Practices*, edited by Eivind Røssaak, 77–108. Oslo: Novus Press.

Grau, Oliver. 2003. *Virtual Art: From Illusion to Immersion.* Cambridge: MIT Press.

Defining (Re)photography

Photography is an emblematic form of witnessing, used to visually communicate information about an entity or place. It has and continues to be used as an apparatus of the state (Merewether 2006) to enact the "arrest of the referent" (Sekula 1986, 7). The materiality and visual legitimacy of photography plays an integral role in the conviction of the archive. Inherently linked to the practices of documentation and archiving, photography begs many of the same institutional and grounding questions: *who* and *what* is remembered and subsequently forgotten, *how* is the subject/object remembered and captured and *what* is the purpose of the documentation? As a techno-sociological tool, the camera captures the material indices of culture and society in a documentary process. Together, the camera and its ensuing images carry the potential to communicate a hegemonic, historical account from below, highlighting the commonplace experiences of the everyday citizen.

A historical photograph elicits a material relation to the past and present, and in some regard gestures towards the future with great uncertainty for its continued legitimacy. The content of the image or its subject perpetuate a temporal inquiry of memory; the image occupies a moment in the present in its juxtaposition to the past. Photography and other visual tools posit substantial authority within the archive— folding together "history as representation and representation as history" (Merewether 1997, 160). In this, both the archive and photography, as separate entities, are expected to "reproduce the world as witness to itself, a testimony to the real, historical evidence" (160). While this may be true

Merewether, Charles. 2006. "Introduction: Art and the Archive." In *The Archive*, 10–17. London: Whitechapel Ventures Limited.

Sekula, Allan. 1986. "The Body and the Archive." *October* 39 (Winter 1986): 3–64.

Merewether, Charles. 1997/2006. "Archives of the Fallen." In *The Archive*, 160–62. London: Whitechapel Ventures Limited.

in many instances, the act of witnessing and the evidence generated still ascribes to the dominant ideologies within a given society. Witnessing can be translated into a very engaging process through the methodology of rephotography.

Rephotography as a Methodology Of Memory

Rephotography is a rhythmic practice that encompasses the parallel spatial environment of a historical photograph and its contemporary landscape, whereby a newly generated photograph resembles "bookends to the time in between" (Klett 2011, 114). As a notable interdisciplinary methodology, rephotography has a range of outcomes varying from geographic observation, environmental conservation and nostalgic expression. The concept itself refers to a process by which the researcher generates a temporally ordered photographic record of a particular place or asset (Rieger 2011). The images produced can then be used as research tools, artifacts and instruments of knowledge production. Traditional projects have typically been focused on a mix of qualitative and quantitative evaluations of landscape changes. Mark Klett, Ellen Manchester, and JoAnn Verburg (1984) published one of the earliest instances of repeat photography investigations with the *Second View: The Rephotographic Survey Project* (see *Figure 1*)— a composition of diligently reframed iconic nineteenth-century photos of the American West (Rothman 2011) replete with visual analysis and comparative evaluations.

The visual composition of a rephotograph signals a particular engagement with memory, one that elicits moments of evidence, truth, and

Klett, Mark. 2011. "Repeat Photography in Landscape Research." In *The SAGE Handbook Visual Research Methods*, edited by Eric M. Margolis and Luc Pauwels, 114–31. Thousand Oaks: SAGE Publications.

Rieger, Jon. 2011. "Rephotography for Documenting Social Change." In *The SAGE Handbook of Visual Research Methods*, edited by Eric Margolis and Luc Pauwels, 132–49. London and California: SAGE Publications.

Klett, Mark, Ellen Manchester, and JoAnn Verburg. 1984. *Second View: The Rephotographic Survey Project*. New Mexico: University of New Mexico Press.

Rothman, Aaron. 2011. "Views Across Time: The Art of Photography (Mark Klett Interview by Aaron Rothman)." *Places Journal* (July).
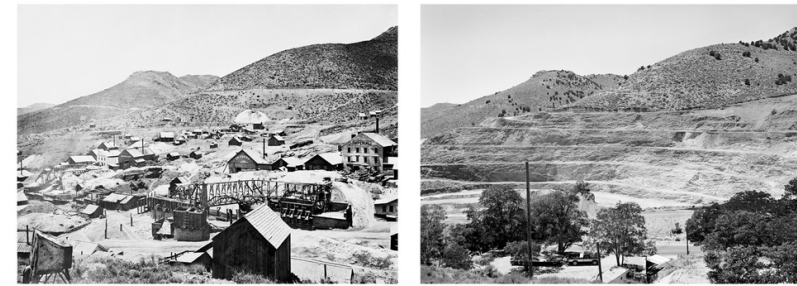
FIGURE 1: REPHOTOGRAPHIC SURVEY PROJECT, 1977
Timothy O'Sullivan, Comstock Mines Virginia City, 1868; Mark Klett for the Rephotographic Survey Project, Strip Mines Virginia City, NV, 1979 (Right). © Mark Klett. Use of this material is by permission of the copyright holder.

nostalgia. Interacting with memory prescribes a particular way of relating to and being in the world (Heidegger 1962, Kalin 2013), and more so mediates a worldview for the user—a tenant of post-phenomenological encounters. Situating oneself in the field to capture a 'rephotograph' becomes a technical and embodied practice of stationing the camera in position and meticulously matching the foreground and background features of both what is depicted through the camera lens and the original, historical photo. Locating the past *within* the present, rephotography underscores the capacity of the past to compile the contemporary. The images produced often serve to highlight the degree to which the locale has changed. In the act of composing the image, the photographer negotiates a novel boundary between their own body and the landscape in which they are situated. This phenomenological encounter between the self and space can be regarded as a "ritual of implacement, whereby space is experienced as temporally layered" (Munteán 2016, 5).

Urban locations are now popular sources for rephotography projects. Bridging the simultaneity of past and present, rephotography affords for the

Heidegger, Martin. 1962. *Being and Time*. Oxford: Wiley-Blackwell.

Kalin, Jason. 2013. "Remembering with Rephotography: A Social Practice for the Inventions of Memories." *Visual Communication Quarterly* 20: 168–79.

Munteán, László. 2016. "Rephotography and the Ruin of the Event." *Transformations: Journal of Media & Culture* 28.

Combining two time–spaces into one frame, rephotographs generate the paradox of perspective.

exploration of narratives related to people, places, objects, and events. As a form of photographic recollection, the visual methodology exhibits the embodied practice of "actively constructing and inhabiting memories and their times and places," while emplacing them into the present (Kalin 2013, 170). Each composed photograph intermingles the *then-there* in the same visual arena as the *here-now*, to echo Roland Barthes (1991) notable distinction of the rhetoric of the image. This underscores notions of bearing witness to time and memory. For Barthes, "what the photograph reproduces to infinity has occurred only once; the photograph mechanically repeats what could never be repeated existentially" (1981, 5). Rephotography elicits a renegotiated approach to memory, one that is both past and present, allowing the photographer and viewer to practice a sense of time-space polygamy by simultaneously being in two locations (both in time and space) at once.

As archival images are digitally mapped onto respective locations through geotagging practices, the environment becomes meta-imprinted under what Barthes (1991, 45) designates as a temporal equilibrium (*having-been-there*) or a "certificate of presence" (5–6) which underscores a level of presence within space. This posits a contested relationship between the past in which the photo was taken, and the moment in which it is viewed in the present. This relationship is further complicated by rephotography in that there is an added layer made up of when the image is *re*framed, *re*situated, and ultimately *re*photographed.

Image Acquisition

Rephotography projects require the author to either produce images in series or acquire images

Kalin, Jason. 2013. "Remembering with Rephotography: A Social Practice for the Inventions of Memories." *Visual Communication Quarterly* 20: 168–79.

Barthes, Roland. 1991. *Image, Music, Text*. New York: Noonday Press. Barthes, Roland. 1981. *Camera Lucida: Reflections on Photography*. New York: Farrar, Straus and Giroux, Inc.

Barthes, Roland. 1981. *Camera Lucida: Reflections on Photography*. New York: Farrar, Straus and Giroux, Inc.

from a source (ex: private collection, archive etc.). Most contemporary rephotography projects prioritize the second option, procuring images from databases, archives or collections of personal shoebox memories. Typically, then, successful rephotography projects are coded with some knowledge of where the original images were taken. These original photographs are interfaces between the rephotographer and the respective location (Munteán 2016). Here, the word 'interface' carries a layered distinction that extends beyond materiality. The interface of the photograph is an effect—it cultivates a transformation and simultaneously tells a story of the larger forces that have engendered it (Galloway 2012, vii). The interface then, is not something that simply appears before the user but is rather a gateway that opens up and allows passage to some place beyond (30). This designation offers a direct correlation to the underpinning nature of rephotography in its potential to transport the user to an alternate, historical time-space. In this way, the interface communicates information to the viewer, and gestures towards the imagined potentials of AR experiences that transcend the constraints of time and space.

Jon Rieger (2011) overviews five steps for researching visual change through rephotography: i) the selection of a subject that will act as a focus of the research; ii) locating and defining visual markers to be documented; iii) finding archival images or creating novel images as part of the 'time 1' marker; iv) taking the re-photograph when appropriate ('time 2'), and finally; v) analyzing the differences between the two instances in time (147–48) (see *Figure 2*). By layering the past and present into the same visual arena, a

Munteán, László. 2016. "Rephotography and the Ruin of the Event." *Transformations: Journal of Media & Culture* 28.

Galloway, Alexander R. 2012. *The Interface Effect*. Cambridge: Polity Press.

Rieger, Jon. 2011. "Rephotography for Documenting Social Change." In *The SAGE Handbook of Visual Research Methods*, edited by Eric Margolis and Luc Pauwels, 132–49. London and California: SAGE Publications.
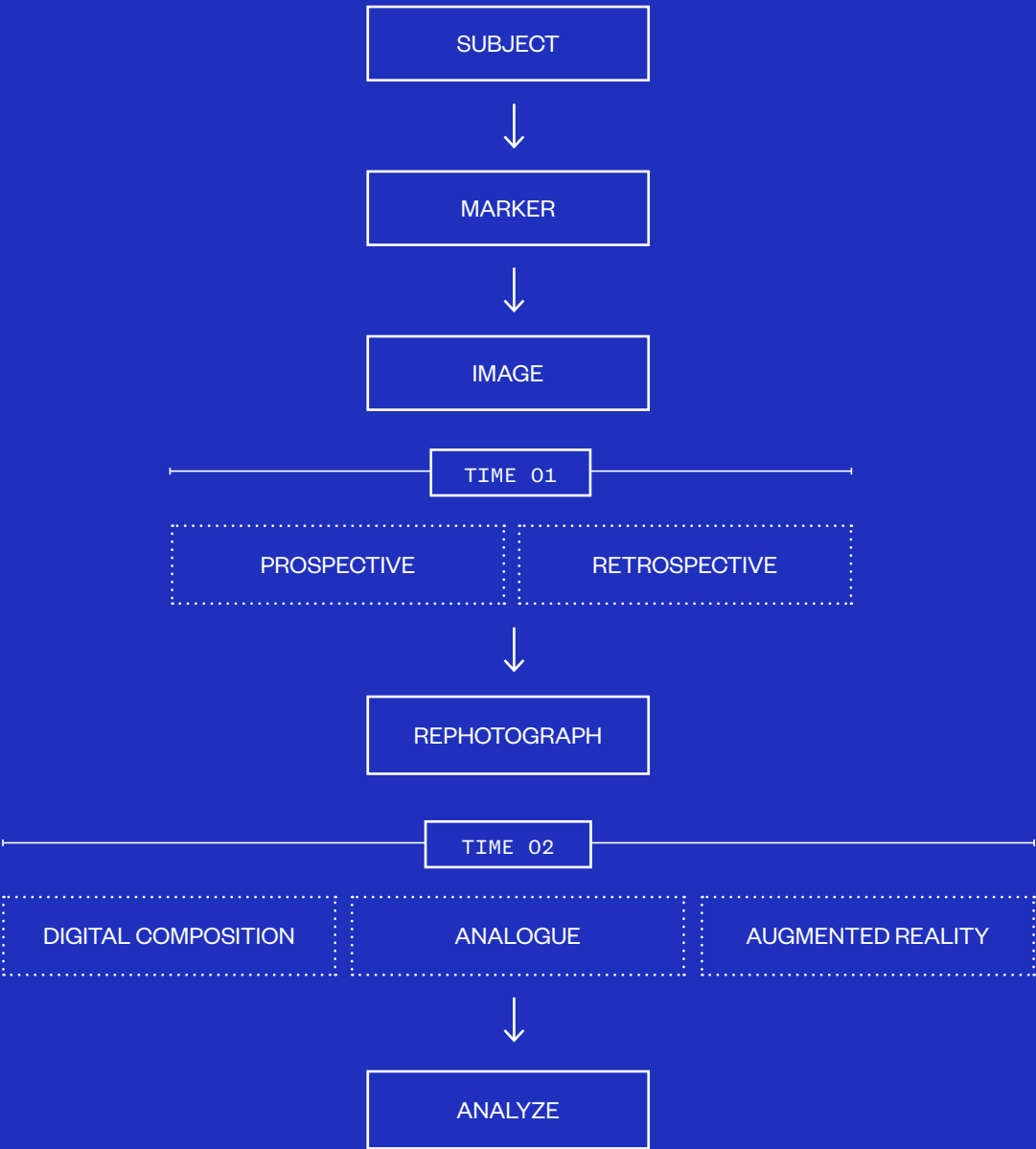
REPHOTOGRAPHY PROCESS

FIGURE 2: REPHOTOGRAPHY PROCESS
Diagram reflective of Jon Rieger's (2011) five steps associated with researching visual change through rephotography. Produced by Ana Rita Morais.

particular engagement with the past is generated– one that orients the time and place of memory (Kalin 2013, 172). In line with the third step of the model, Rieger maintains that there are two ways of approaching the time-based order of rephotography: *prospective* and *retrospective* studies. *Prospective* studies begin with the researcher taking photos at 'time 1', and following up with a 'time 2' image at a later, often predefined date. *Retrospective* studies, on the other hand, locate 'time 1' images in the aforementioned databases and archives. Using referential details about the location (ex: monuments, streets, buildings etc.) the researcher then comprises the 'time 2' image in an effort to draw a relational narrative between the two instances. Trudi Smith (2007) designates that *retrospective* rephotography projects are ethnographic as they turn the archive into a field site, one that initiates inferences about particular spaces and places as drawn from a respective photographic collection. In this, the archive is used to identify dominant ideologies, and to map the ways in which cultural groups, events, and locations have been represented (Smith 2007).

The composition of the rephotograph can take one of two forms—either an analogue image, typically featuring the photographer's hand within the frame, or a digital composition comprised through layering in image editing software. Within all of these images, past and present are no longer discrete, opposing eras, but rather are merged contemporarily. Combining two time-spaces into one frame, rephotographs generate the paradox of perspective (Kalin 2013). All of the precedents discussed throughout this project, including the AR apps, take a *retrospective* approach, extracting the 'time 1' content from the collections whether

Kalin, Jason. 2013. "Remembering with Rephotography: A Social Practice for the Inventions of Memories." *Visual Communication Quarterly* 20: 168–79.

Smith, Trudi. 2007. "Repeat Photography as a Method in Visual Anthropology." *Visual Anthropology* 20 (2-3): 179–200.

archival or crowdsourced, and subsequently visiting the documented sites for the production of 'time 2' content. By extension, AR archival experiences that use photographic content are also situated in the 'time 2' category, as the frame of the mobile screen delivers a novel dimension of rephotography.

Methods of Rephotography Production

While the two primary modes of rephotography equally curate a 'time-bridge' (Munteán 2015) between past and present, their methodological processes are quite distinct. Using an earlier, often older photograph, the image is either manually held up within the frame, or blended using editing software in an effort to align the content of the older image onto the current frame. The former, hand-held format underscores a critical relationship between the foreground and background interactions within the frame of the image. The second option employs the use of digital imaging software to overlay an older image onto the respective composition. The top image or 'layer' is manipulated to work in symbiosis with the bottom layer image; it is aligned, re-sized, cropped, and light corrected through opacity adjustments so as to not overpower the background layer. This digital process, although meticulous, offers a more composed, controlled image. While this project is not directly related to the ethics of image manipulation, it is worth noting that the indexical nature of the photograph becomes complicated by editing software whose sole purpose is to enhance and manipulate imagery. In an effort to ground *me-dérive: toronto*'s technical processes, it is critical to overview the methods of rephotography production

Kalin, Jason. 2013. "Remembering with Rephotography: A Social Practice for the Inventions of Memories." *Visual Communication Quarterly* 20: 168–79.

Munteán, László. 2015. "Of Time and the City: Urban Rephotography and the Memory of War." Observatorio (OBS*) *Journal Special Issue, Media City: Spectacular, Ordinary and Contested Spaces*: 111–24

in more depth.

The Presence of the Hand

In 2011, Taylor Jones launched *Dear Photograph*, delineated by NPR (2012) as a form of new-age nostalgia. The project invites visitors to select a meaningful photo, visit the location where it was taken and create a new image by holding it up and aligning it to the frame (see *Figure 3*). Jones' (2012) how-to guide urges participants to "get in the right position: align the photograph with the real-life scene," and "make sure to get your hand in the picture. It shows that you stood at the original spot where the old photo was taken" (5). The hand watermark acts as a stamp of 'proof' giving both legitimacy to the image and rephotographer. Here, the photographer's experiential embeddedness—their unwavering 'hereness'—is strongly represented and transmitted

NPR. 2012. "Dear Photograph: New-Age Nostalgia." *NPR*, May 14, 2012.

Jones, Taylor. 2012. *Dear Photograph*. New York: Harpercollins.

FIGURE 3: DEAR PHOTOGRAPH IMAGE
Gondar, Nogueira da Montanha, 2011 . Produced by Ana Rita Morais.

through the novel photo (Munteán 2017). Images are accompanied by a short narrative romanticized with the opening line "*Dear Photograph...*". While the presence of the foregrounded hand demonstrates presence in rephotographs like those produced for *Dear Photograph*, digital compositions rendered by software produce images that simultaneously draw attention to themselves in an interplay of reality and playfulness through aesthetic blurring and layering.

Munteán, László. 2017. "Double Exposure: Rephotography and the Life of Place." In *Spectral Spaces and Hauntings: The Affects of Absence*, edited by Christina Lee, 133–49. New York: Routledge.

Digital Compositions

Digital software extends the potentials for merging distinct images into one frame (Manovich 2001). In rephotography, software manipulations unify the content of the layered images into a harmonious composition. The elements within the image are blended and boundaries of distinction are erased; the hard edges and intentional white borders of the archival records are extracted (Manovich 2001). Lev Manovich (2001) argues that digital compositing aligns with other simulation techniques as a "general operation of computer culture [...] assembling together a number of elements to create a single seamless object" (139). As an "anti-montage" (143)— where montage refers to the creation of "visual, stylistic, semantic, and emotional dissonance between different elements," digital compositing seeks to "blend them into a seamless whole, a single gestalt" (144), by which they are "aligned in perspective" (137). The digital processing mode of rephotography does not make an attempt to pass as an accurate, contemporary perspective– but rather in its crafted superimposition, draws attention to itself. This allows the viewer to distinctly identify the

Manovich, Lev. 2001. *The Language of New Media*. Cambridge: MIT Press.

opposing aesthetic and content-specific differences between the two images. The *new* generated image is a 'hybrid reality' fostered through two different time-spaces (Manovich 2001).

An example can be found in Toronto photographer Harry Enchin's 'Toronto Time' series, a collection of photo-based collages that combine archival images from the Toronto Archives with contemporary images of these same locations (see *Figure 4*). The series operates by "blending infrastructure and persona, as if a staged performance, the collages interweave elements of the old and new whole offering social commentary" (Enchin nd). While *Dear Photograph* submissions are more affective in nature, possessing chronicles that are personal, intimate, and nostalgic, the narratives for Enchin's digital arrangements begin with an iconic asset—a building, landmark, or subject—by which the viewer can affectively relate to the space.

Digital manipulation processes affect

Enchin, Harry. nd. "About Toronto Moments in Time." Toronto Moments in Time. Accessed June 25, 2017.

FIGURE 4: HARRY ENCHIN'S TORONTO MOMENTS IN TIME
S Series: Yonge and College 2A 1948/2012, 2012 © Henry Enchin. Use of this material is by permission of the copyright holder.

the indexicality of the original images, and simultaneously amplify a novel indexicality built on a mix of algorithmic and pseudo-material indices. Daniel Rubinstein and Katrina Sluis (2013) maintain that "the materiality of the digital image is not to be found in its indexical adherence to objects in the world" (27). Rather, the digital image is understood to be algorithmic in nature, which suggests that it "has to be considered as a kind of program, a process expressed *as*, *with*, *in* or *through* software. When the photograph became digital information, it not only became malleable and non-indexical, it became *computational* and *programmable*" (29). AR software like *me-dérive: toronto* layers site-specific photographs onto the screen of the mobile— a remediation of the traditional rephotography methodology. The framed screen of the mobile comprises an altogether *new* image which features the real-time capture of the mobile camera, alongside the layered augmented content. The new images fostered out of the augmented-rephotography encounter cultivate an intricate, renegotiated engagement with place and space. Through rephotography projects we understand places as cultural sites built upon the accumulation of human interactions, imaginings and interventions (Rothman 2011). This understanding becomes embodied when the content extends into the interactive world of AR.

Walter Benjamin (1968) famously mused on the notion of the "aura"— ascribing value to an original work of art that had not been colonized through mass reproduction. Applying this concept to *me-dérive: toronto*, one might see cultural heritage AR interventions as a mechanical reproduction of narratives, experiences, and of urban life itself. This inadvertently reflects an aura back onto the

Rubinstein, Daniel, and Katrina Sluis. 2013. "The Digital Image in Photographic Culture: Algorithmic Photography and the Crisis of Representation." In *The Photographic Image in Digital Culture*, edited by Martin Lister, 22–40. London: Routledge.

Rothman, Aaron. 2011. "Views Across Time: The Art of Photography (Mark Klett Interview by Aaron Rothman)." *Places Journal* (July).

Benjamin, Walter. 1968. *Illuminations. Essays and Reflections*. New York: Schocken Books.

original photographs and moments reflected in these compositions themselves. As stated, through rephotography in the form of AR, we do not simply *recall* a photograph, but rather we enact it through a process of repetition, projecting it into the future, and seemingly recollecting it forward. The photograph then, is not merely an image, much like its painting predecessor, but is rather an interpretation of the real—a motif of truth in material form. By this standard, images are no longer exclusively representations of human life but are also information and knowledge sources. Consider then, the ways in which traditional notions of photography currently extend far beyond image production and into the informatic in their capacity to visually and technically react to environments, through entities such as rephotography, digital image compositions, and AR software. In this way, Susan Sontag (1982/1977) illuminates that photography is acquisition in many forms, including the designation that through "image-making machines" we can acquire something as information, rather than as merely visual, a correlated explanation for what I term "mobile infography".

Sontag, Susan. 1982/1977. *A Susan Sontag Reader*. New York: Farrar, Straus & Giroux, Inc.

Defining Mobile Infography

In the parlance of McLuhan (1964), Manovich (2014) asserts "software is the message," (80) conceiving that it posits a new interface to imagination, a collective language through which environments communicate and an engine on which the world functions. When a technologically sophisticated smartphone camera is used to frame a surrounding, the process is not merely reflected by the union of optics and a photo-sensitive service that define

McLuhan, Marshall. 1964. *Understanding Media: The Extensions of Man*. New York: Mentor.

Manovich, Lev. 2014. "Software is the Message." *Journal of Visual Culture* 13 (1): 79–81.

outcomes, as is characteristic of conventional cameras. Rather, the device exhibits the intricacy of a processor that administers a series of digital functions, including analyzing image data, performing algorithmic changes, incorporating and layering other data spaces, and archiving image files (Chesher 2012, 98). In this manner, the smartphone shifts from an interpersonal communication tool into a private, personal, and portable entity through which the user experiences and connects with the world. This posits a distinctive human-technology-world relation (Ihde 1990) in the user, blurring the boundary between where the body ends, and where the technology begins.

Chesher, Chris. 2012. "Between Image and Information: the iPhone Camera in the History of Photography." In *Studying Mobile Media: Cultural Technologies, Mobile Communication, and the iPhone*, edited by Larissa Hjorth, Jean Burgess, and Ingrid Richardson, 98–117. New York: Routledge.

Ihde, Don. 1990. *Technology and the Lifeworld: From Garden to Earth*. Bloomington and Indianapolis: Indiana University Press.

AR apps like *me-dérive: toronto* are characterized as mobile photographic information entities, or what I term "mobile infography"—a portmanteau of information and photograph, enacted by the intersection of the mobile camera and software (Morais 2018). Much of the literature on the camera-phone discusses its domestication into the new media landscape via modes of interpersonal communication and image sharing. A gap in the literature, however, is found in the intersection of these portable visual technologies into infospaces. Fundamentally, the nascent definition of mobile infography can be equated with the visual representation of information as projected through the mobile hardware of the camera, and subsequently translated via the smartphone software or apps. I acknowledge that the nature of this definition is comprised of varying computing concepts; borrowing from information visualization, pervasive computing, and everyware while contending the distinctive medium-specific variables that subsequently set mobile infography apart from these predecessors.

Morais, Ana Rita. 2018. "Towards A New Visuality Of 'Mobile Infography': Examining Contemporary Visual Applications As New Ways Of Seeing." In *Mobile and Ubiquitous Media: Critical & International Perspectives*, edited by Michael S. Daubs and Vincent Manzerolle, 109–25. New York: Peter Lang.

To understand technology is to understand its essence or its revealing of the world to its users.

Contemporary visual mobile technologies are reflective of innovative information and communication technologies (ICTs) that are frequently delineated as omnipresent and extensive in computing, and simultaneously as proliferating and embodied in human-centered design (Bowers and Rodden 1993, Farman 2012, Graham et al. 2011, Grudin 1990). These definitions are germane to both the invisibility and ubiquity of mobile infography, recognizing that the highly converged smartphone is equivalently a computing, networking, and processing device. Mobile infography ascends from the intersection between software and hardware. Where the software (the apps) produce the form, the hardware (the camera) dictates the content of what is produced. Revisiting Manovich's (2014) assertion that "software is the message" it is conceivable that mobile apps are the new interface to our imagination and the world; they are the form, and are distinct from the essence (the content) of what is being depicted. Parallel to the supremacy of form over content, and software over hardware, innovations in ubiquitous computing, everyware, and information visualization, alongside the capabilities of mobile and wireless technology, have encouraged the expansion of infospaces, and have subsequently broadened the informational possibilities presented to users as they experience and encounter lived space (Brewer and Dourish 2008, de Souza e Silva and Frith 2012, Greenfield 2006, Liao and Humphreys 2014, Manovich 2011, Rheingold 2002, Thrift and French 2002).

Where information visualization transforms raw data into visual forms, visual apps counter this process; they take images and subsequently convert or embed information within them. In this way, the images are rendered to communicate a designated

Bowers, John, and Tom Rodden. 1993. "Exploring the Interface: Experiences of a CSCW Network." *Proceedings of the INTERACT '93 and CHI '93 Conference on Human Factors in Computing Systems, (CHI '93)*. New York.

Farman, Jason. 2012. *Mobile Interface Theory: Embodied Space and Locative Media*. New York: Routledge.

Graham, Connor, Eric Laurier, Vincent O'Brien, and Mark Rouncefield. 2011. "New Visual Technologies: Shifting Boundaries, Shared Moments." *Visual Studies* 26 (2): 87–91.

Grudin, Jonathan. 1990. "The Computer Reaches Out: The Historical Continuity of Interface Design." *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '90)*. New York: ACM.

Manovich, Lev. 2014. "Software is the Message." J*ournal of Visual Culture* 13 (1): 79–81.

Brewer, Johana, and Paul Dourish. 2008. "Storied Spaces: Cultural Accounts of Mobility, Technology, and Environmental Knowing." *International Journal of Human-Computer Studies* 66 (12): 963–76.

de Souza e Silva, Adriana, and Jordan Frith. 2012. *Mobile Interfaces in Public Spaces: Locational Privacy, Control, and Urban Sociability*. New York: Routledge.

Greenfield, Adam. 2006. *Everyware: The Dawning Age of Ubiquitous Computing*. Berkeley: New Riders Press.

Liao, Tony, and Lee Humphreys. 2014. "Layar-ed Places: Using Mobile Augmented Reality to Tactically Reengage, Reproduce, and Reappropriate Public Space." *New Media and Society* 17 (9): 1418–35.

Manovich, Lev. 2011. "What is Visualisation?" *Visual Studies* 26 (1): 36–49.

Rheingold, Howard. 2002. *Smart Mobs: The Next Social Revolution*. Cambridge: Perseus Books.

Thrift, Nigel J., and Shaun French. 2002. "The Automatic Production of Space." *Transactions of the Institute of British Geographers* 27 (3): 309–25.

and preconfigured mode of information—often *spoken* through the metadata of the immediate environment. It is in these unconventional and unanticipated uses and functions of the smartphone camera—and what those uses and functions mean—where we uncover a new visuality (Flichy 1995). This new visuality is one in which cameras are increasingly able to distinguish and interpret settings and the resulting visual content enables users to "do" things (Palmer 2012, 94). While the extension of the senses and information through mobile media is nothing new, the visual, interactive, and real-time nature of mobile infography, offers innovative means of experiencing, navigating, interpreting, and enacting place (Graham, Zook, and Boulton 2012, Liao and Humphreys 2014). *me-dérive: toronto* exhibits the ways in which mobile media are capable of saturating environments with meaning, thus altering space by acknowledging it as a sense of place. In connection with mobile infography, space can be thought of as an abstract realm in which users, images and information coalesce. Place, on the other hand, is a socially constructed ideal that I argue may be fashioned by the influence of mobile infography. It is conceivable then, that mobile software *is* in fact "the message," as it offers users a new way of visualizing information, subsequently impacting their conceptions of space and place. This is the crux of mobile infography and moreover the premise of AR.

Situating Augmented Reality

In the last five years, several articles (Azuma 2016, Gould 2014, Liao and Humphreys 2014, Papagiannis

2014, Wellner 2013) texts (Aukstakalnis 2017, Papagiannis 2017, Peddie 2017, Wassom 2015), and edited collections (Barfield 2016, Jung and tom Dieck 2018, Morey and Tinnell 2017) alike have been published on AR—each ascribing to a refined approach towards the interactive interfacing technique. Collectively, however, the literature asserts that there is nothing new about using a device that reads an aspect of the world that one normally cannot interpret; consider thermometers that translate exact temperatures, carbon monoxide alarms that perceive levels of poison that are undetected by humans and monitors that test blood for diabetic individuals who cannot sense their own glucose levels (Pedersen 2013, 20). In the case of the smartphone, AR works by tracking a target or marker using the mobile camera and specialized software. The target or marker often takes the form of a barcode-like icon, an object, a sound or a geo-location. As the camera hovers in front of the respective icon or object, the software functions to identify it using a preconfigured object recognition algorithm; it is then compared against counter entities within its database. When there is a successful match or synthesis between the two elements, the content is subsequently overlaid onto the user's environment. The camera on the smartphone *registers* rather than *captures* or *imprints* physical objects on location, and thus transmits these images in real-time onto the screen (Verhoeff 2013b, 7). This is evidentiary of a mobile infography process.

AR apps often fall under the umbrella of locative media, which provide novel means for engaging with space. Locative media projects have traditionally combined three elements: i) location

Flichy, Patrice. 1995. *Dynamics of Modern Communication: the Shaping and Impact of New Communication Technologies.* London: Sage.

Palmer, Daniel. 2012. "iPhone Photography: Mediating Visions of Social Space." In *Studying Mobile Media: Cultural Technologies, Mobile Communication, and the iPhone,* edited by Larissa Hjorth, Jean Burgess, and Ingrid Richardson, 85–97. New York: Routledge.

Graham, Mark, Zook Matthew, and Andrew Boulton. 2012. "Augmented Reality in Urban Places: Contested Content and the Duplicity of Code." *Transactions of the Institute of British Geographers* 37 (4): 1–16.

Liao, Tony, and Lee Humphreys. 2014. "Layer-ed Places: Using Mobile Augmented Reality to Tactically Reengage, Reproduce, and Reappropriate Public Space." *New Media and Society* 17 (9): 1418–35.

Azuma, Ronald T. 2016. "The Most Important Challenge Facing Augmented Reality." *Presence-Teleoperators and Virtual Environments* 25 (3): 1–5.

Gould, Amanda Starling. 2014. "Invisible Visualities: Augmented Reality Art and the Contemporary Media Ecology." *Convergence* 20 (1): 25–32.

Papagiannis, Helen. 2014. "Working Towards Defining an Aesthetics of Augmented Reality: A Medium in Transition." *Convergence* 20 (1): 33–40.

Wellner, Galit. 2013. "No Longer a Phone: The Cellphone as an Enabler of Augmented Reality." *Transfers* 3 (2): 70–88.

Aukstakalnis, Steve. 2017. *Practical Augmented Reality: A Guide to the Technologies, Applications, and Human Factors for AR and VR.* Crawfordsville: Addison-Wesley.

Papagiannis, Helen. 2017. *Augmented Human: How Technology is Shaping the New Reality.* Sebastopol: O'Reilly.

Peddie, Jon. 2017. *Augmented Reality: Where We Will All Live.* Cham: Springer.

Wassom, Brian D. 2015. *Augmented Reality Law, Privacy, and Ethics: Law, Society, and Emerging AR Technologies.* Waltham: Elsevier.

Barfield, Woodrow. 2016. *Fundamentals of Wearable Computers and Augmented Reality.* Boca Raton: CRC Press.

Jung, Timothy, and Claudia M. tom Dieck. 2018. *Augmented Reality and Virtual Reality: Empowering Human, Place and Business.* Cham: Springer.

Morey, Sean, and John Tinnell. 2017. *Augmented Reality: Innovative Perspectives Across Art, Industry and Academia.* South Carolina: Parlor Press.

Pedersen, Isabel. 2013. *Ready to Wear: A Rhetoric of Wearable Computers and Reality-Shifting Media.* Anderson: Parlor Press.

Verhoeff, Nanna. 2013b. "You Are Here! Playful Mapping and a Cartography of Layers." In *Proceedings of the 26th Cartographical Conference,* edited by Manfred F. Buchrolthner, Nikolas Prechtel, Dirk Burghardt, Karsten Pippig, and Benjamin Schröter, Dresden: International Cartographic Association.

as the physical environment the user is situated in, ii) the electronic world of information, and iii) the system for interaction (Drakopoulou 2013). These apps can be visual in nature, and prescribe 'invisible' information onto space, allowing the user to interact with content in-situ. The invisibility characterization is relevant here as augmented content and experiences are not perceivable without the use of a technically-enabled device. The software becomes a translation tool that dismantles communication barriers and cultivates a novel sensory awareness that renegotiates traditional forms of seeing in a respective environment.

Site-specific content is coded into space using one of two predominant modes in mobile augmented media—marker-based and marker-less systems. Marker-based AR uses the mobile camera and the user's position to translate the object into information. Using image-recognition technology, marker-based apps identify prescribed markers or assets of infography—whether symbols, QR codes or patterns—using the camera. The software then pairs the marker against a database and when a match is found, content is initiated and delivered to the user. Marker-less AR uses a range of smartphone sensors, alongside the camera, GPS, gyroscope, and accelerometer to provide location-specific content and information. The augmented 'process' (see *Figure 5*) merges hardware, software, and the server to ultimately produce the *augmented experience* via the app. This demonstrates a form of unveiling or revealing (Heidegger 1977) that is grounded in providing the user with relevant information related to their immediate environment.

In *Postphenomenology: Essays in the Postmodern Context*, Don Ihde (1993) asserts that

Drakopoulou, Sophia. 2013. "Pixels, Bits and Urban Space: Observing the Intersection of the Space of Information with Urban Space in Augmented Reality Smartphone Applications and Peripheral Vision Displays." *First Monday* 18 (11).

Heidegger, Martin. 1977. *The Question Concerning Technology and Other Essays.* New York: Harper Torch Books.

"technological objects— [...] have ways of 'revealing' a world and belong in some way to the process called technē" (105). Ihde's characterization is born out of Martin Heidegger's (1962/1977) theorizations of tools and equipment, through a phenomenological view of technology grounded in the notion of 'revealing'. For Heidegger, to understand technology is to understand its essence or its *revealing* of the world to its users (Introna 2002). This "showing itself-in-itself" (Heidegger 1962, 27) relates to the meaning of technology— the possibilities it reveals to users in the world. For example, as Apple and Samsung moved into the realm of creating smartphones, mobile devices were no longer merely technical entities, but rather became tools for renegotiating our approaches to space through locative media potentials. Heidegger designates those entities that extend the hand, or in the case of AR apps the eyes and mind, as "ready-to-hand" (99). While in use then, the tool is not distinguished by the way it performs, but rather echoes Ihde's (1990) notion of a "good" technology, which does not call attention to itself. Thus, the goal here again is for technology to functionally disappear so that the user feels as though they are looking precisely at objects in their environment (Ihde 2008).

Reflecting this invisibility, Mark Weiser's (1994) influential essay "The World is Not a Desktop," maintains that "a good tool is an invisible tool" (7). Arguing, "the most profound technologies are those that disappear," Weiser accounts for the capacity of these tools to enmesh themselves into the fabric of everyday life, until they are indistinguishable from it (7). I equate this dematerializing nature of digital media with ubiquitous and pervasive computing, which often facilitates an environment in which the

Ihde, Don. 1993. *Postphenomenology: Essays in the Postmodern Context.* Evaston: Northwestern University Press.

Heidegger, Martin. 1962. *Being and Time.* Oxford: Wiley-Blackwell.

Introna, Lucas. 2017. "Phenomenological Approaches to Ethics and Information Technology." *The Stanford Encyclopedia of Philosophy (Fall 2017 Edition)*, edited by Edward N. Zalta.

Heidegger, Martin. 1962. *Being and Time.* Oxford: Wiley-Blackwell.

Ihde, Don. 1990. *Technology and the Lifeworld: From Garden to Earth.* Bloomington and Indianapolis: Indiana University Press.

Ihde, Don. 2008. *Ironic Technics.* Copenhagen: Automatic Press Publishing.

Weiser, Mark. 1994. "The World is Not a Desktop." *Interactions* 1 (1): 7-8.

AUGMENTED REALITY PROCESS

HARDWARE

SOFTWARE

SERVER

DISPLAY

INPUTS & SENSORS

UNITY

CLOUD

WEB

STEP 3: SEND PROCESSED
AUGMENTED CONTENT

SMARTPHONE SCREEN

CAMERA, SENSORS,
GYROSCOPE, GPS

[CREATE AUGMENTED OBJECTS]

STEP 1: DEVICE SENDS
CONTENT AND PROCESSOR
RECOGNIZES OBJECT
OR LOCATION

STEP 5: DISPLAY
AUGMENTED CONTENT

PROCESSOR

STEP 4: SEND
AUGMENTED CONTENT

STEP 2: PROCESSOR REQUESTS
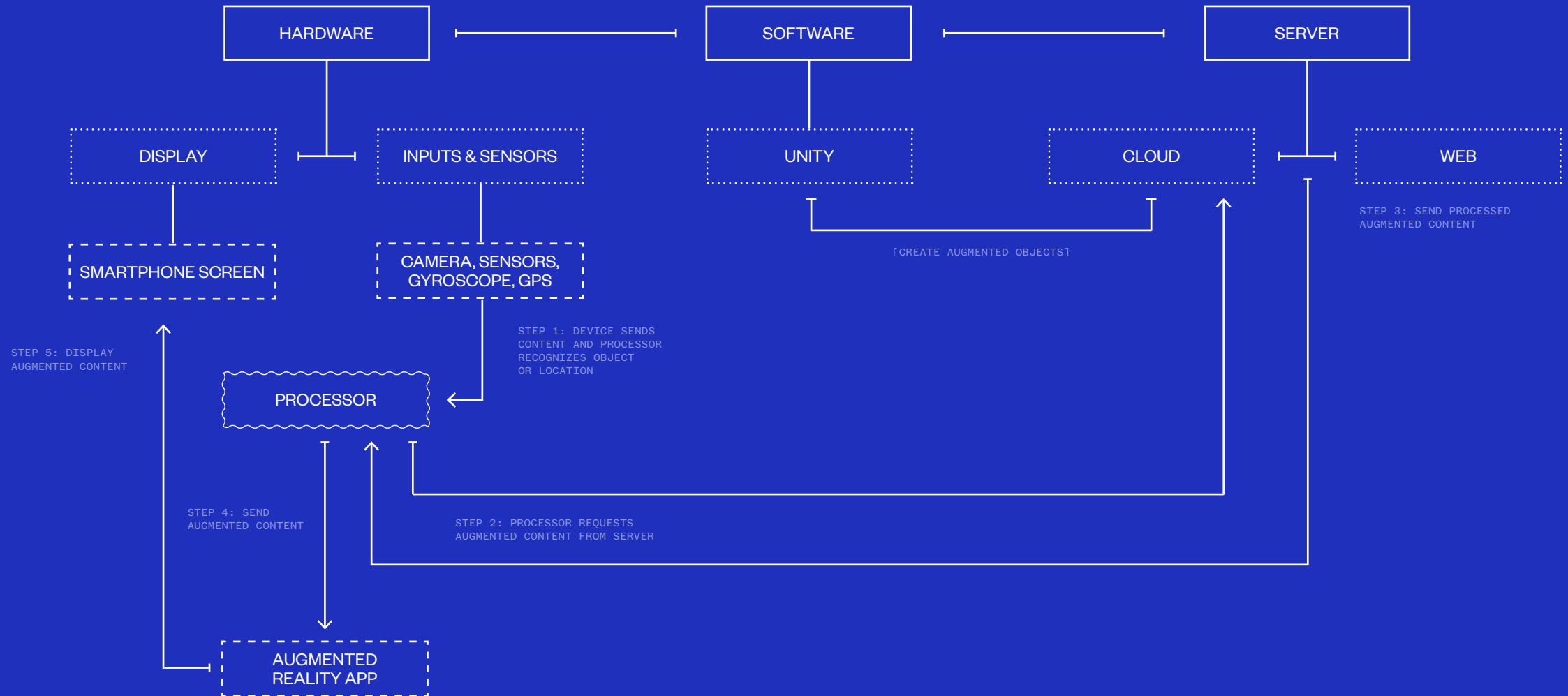AUGMENTED CONTENT FROM SERVER

AUGMENTED
REALITY APP

FIGURE 5: AUGMENTED REALITY PROCESS
Overview of the process and elements associated with both mark-
er-based and markerless augmented reality Produced by Ana Rita Morais.

interface recedes into the backdrop of the everyday. This familiarity often causes users to lose sight of the technology's materiality—its *"thingness"*. Heidegger (1962) reminds us that "the peculiarity of what is proximally ready-to-hand is that, in its readiness-to-hand, it must, as it were, withdraw in order to be ready-to-hand quite authentically" (99). Ready-to-hand stands akin to Bolter and Grusin's (1999) notion of "immediacy," as it strives to make the interface "'natural' rather than arbitrary" (23). Using AR software to read and interpret information spaces posits an exceptional example for the concepts of ready-to-hand and immediacy. As the camera is engaged and the screen begins to present the transcribed content, the interface vanishes, and the user is moved further into the information space.

With *me-dérive: toronto*, performativity transforms viewing into making, and the city becomes a traversable "screenspace" (Verhoeff 2012b) manipulated through the mediated perception of the camera feed and the user's haptic engagement with the device. At the intersection of code and software, the user's sense of place undergoes an even further construction—one that can be characterized as technological and mediatized in nature. Baudrillard (1993) famously stated that "the very definition of the real *is that which is possible to provide an equivalent reproduction* [...] At the end of this process of reproducibility, the real is not only what can be reproduced, but *that which is always already reproduced*: the hyperreal" (73). In this way, Baudrillard argues that reproducibility as a principle can be applied to artefacts in that they are only considered genuine if they can be reproduced. This notion is relevant to *me-dérive: toronto*'s *augmented experience* in that a photograph without

location-specific information cannot be appended to space, and thus lacks the capacity to be reproduced through the coded AR process.

AR is often discussed in relation to, or synonymously with virtual reality (VR). While both share principles of interaction, immersion and navigable space, their respective embodied and spatial properties are individually distinct. VR is dedicated to extracting the user away from the immediate environment, often in favour of emplacing them in a simulated and synthetic world. AR on the other hand, is reliant on the site-specific (or object-specific) environment of the user; content is made visible using the screen of a smartphone, tablet or wearable. The content or information is typically in multimedia form and is site-dependent, contingent on the user's location. While VR has the potential to transport the user to another place, world or dimension, AR makes use of the material world in which the user dwells. The augmented then, enhances the perceptions of the user and their interaction with the world (Azuma 1997). The complexity of deciphering the real in the virtual can be approached through a gradation model known as the 'Reality-Virtuality Continuum'.

Augmented Reality in the
Reality-Virtuality Continuum

Paul Milgram, Haruo Takemura, Akira Utsumi, and Fumio Kishino (1994) introduced the continuum in an effort to encompass a series of plausible configurations merging real and virtual entities (see *Figure 6*)— ranging from a virtual to an entirely real environment. The space between these two poles

Heidegger, Martin. 1962. *Being and Time*. Oxford: Wiley-Blackwell.

Bolter, Jay David, and Richard Grusin. 1999. *Remediation: Understanding New Media*. Cambridge. MIT Press.

Verhoeff, Nanna. 2012b. "Navigating Screenspace: Towards Performative Cartography." In *Moving Data: the iPhone and the Future of Media*, edited by In Pelle Snickars and Patrick Vonderau, 33–48. New York: Columbia University Press.

Baudrillard, Jean. 1993. *Symbolic Exchange and Death*. Sage: London.Azuma, Ronald T. 1997. "A Survey of Augmented Reality." *Presence-Teleoperators and Virtual Environments* 6 (4): 355–85.

Azuma, Ronald T. 1997. "A Survey of Augmented Reality." *Presence-Teleoperators and Virtual Environments* 6 (4): 355–85.

Milgram, Paul, Haruo Takemura, Akira Utsumi, and Fumio Kishino. 1994. "Augmented Reality: A Class of Displays on the Reality-Virtuality Continuum." In *Proceedings of the SPIE 1994: Telemanipulator and Telepresence Technology*, Vol. 2351: 282–92.

is known as 'mixed reality' and is comprised of AR and augmented virtuality (AV) (Milgram et al. 1994). The continuum is used as a metric to understand the embedded realness within environments. This designation of the real in AR characterizes the legitimacy of the experience, and its capacity to orient the user accordingly. AR is closer to the pole representing real environments, whereas AV is at the opposite border, aligned with more synthetic, virtual environments.

Pervasive in discussions of AR and AV experiences is the notion of presence. Akin to 'realness', presence is used to connote the consciousness and accuracy of reality within virtual environments. It is part of the dialogue of describing the degree to which the user feels embedded within virtual space, as though it were a real, material environment. As an opposition, *absence* unconventionally compliments presence by way of technological withdrawal— as the user experiences a heightened sense of presence, the technical entities that cultivate these conditions withdraw and become invisible. This phenomenological paradigm is one of the primary goals of mobile technology— to functionally disappear so that the user feels as though they are looking precisely at objects in their environment (Heidegger 1962, Ihde 1990).

While presence is more a metric for AV and the environments capacity to 'pass' as accurate, AR carries a range of presence related factors. In an *augmented experience*, the accuracy of the content (ex: location and context), alongside the precision to respond to the input of both the user and environment are critical for cultivating and strengthening presence. Through AR, photographs like those found in *me-dérive: toronto* are shared less as objects, but rather

Heidegger, Martin. 1962. *Being and Time*. Oxford: Wiley-Blackwell.

Ihde, Don. 1990. *Technology and the Lifeworld: From Garden to Earth*. Bloomington and Indianapolis: Indiana University Press.

REALITY-VIRTUALITY CONTINUUM

MIXED REALITY (MR)

REAL ENVIRONMENT AUGMENTED REALITY (AR) AUGMENTED VIRTUALITY VIRTUAL ENVIRONMENT

WORLD COMPLETELY UNMODELED   WORLD PARTIALLY MODELED   WORLD COMPLETELY MODELED
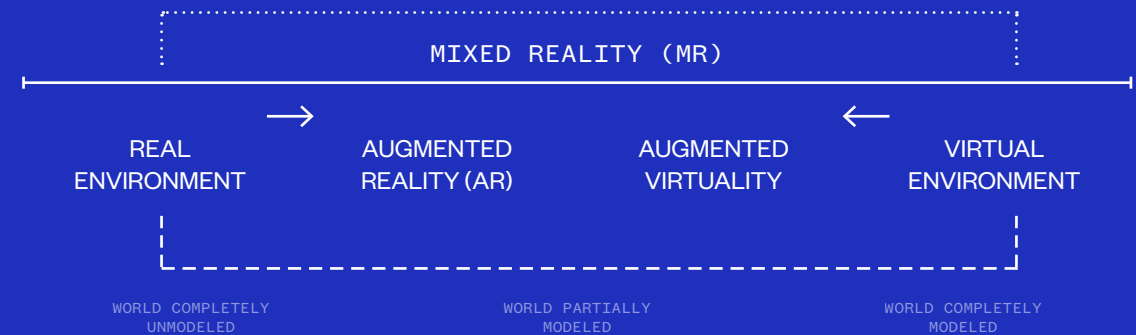
FIGURE 6: REALITY-VIRTUALITY CONTINUUM
Developed in 1994 by Paul Milgram, Haruo Takemura, Akira Utsumi, and Fumio Kishino. © Paul Milgram. Use of this material is by permission of the copyright holder. Reproduced by Ana Rita Morais.

as experiences (Kindberg et al. 2005, van Dijck 2008). For example, a user navigates to a point of interest on the *me-dérive: toronto* map and the accuracy of the geo-located content will play an integral role in the overall immersive experience. When the user holds up her smartphone to the respective point of interest, the corresponding content should appear quickly and accurately, ensuring that the background and foreground—the original image and the immediate environment—are aligned. An example of this alignment depicts the accuracy of finding a referential match between the then-and-now. While the background image ('time 1') may differ radically from the contemporary ('time 2'), the user's presence is heightened by finding a parallel element within the landscape, for example the matching window frames in this image of 128 Ossington Avenue in Toronto (see *Figure 7*). In this, AR is inherently linked to the perspectival—to the dominant forms of 'looking' which allow users to draw conclusions from the

Kindberg, Tim, Mirjana Spasojevic, Rowanne Fleck, and Abigail Sellen. 2005. "I Saw This and Thought of You: Some Social Uses of Camera Phones." In *Proceedings of the Conference on Human Factors in Computing Systems*, April 2–5, 2005, 1545–48. Portland.

van Dijck, José. 2008. "Digital Photography: Communication, Identity, Memory." *Visual Communication* 7 (1): 57–76.

FIGURE 7: 128 OSSINGTON AVENUE
Overlay of 'Time 1' (archival) image over 'Time 2' (contemporary) within me-dérive: toronto app. Produced by Ana Rita Morais.

content they encounter in space.

me-dérive: toronto users not only encounter a truly *augmented experience*, but they emplace themselves in an embodied experience, largely influenced by the historical point-and-shoot composition of a photograph. As the user aligns her smartphone to the respective point of interest photo on the screen, she experiences the image of the past in the present, as though she was the original composer. Photographs or layers in *me-dérive: toronto* are fleeting; they exist in the site-specific and are quickly abandoned as the user moves away from the designated point of interest. Again, photographs serve as material emblems of *'having-been-there'* under what is often a vague memory. They are fleeting emblems of permanence that provide an echo of the contours and content of urban spaces, and a visual analysis of what once was, whether related to architecture, people or objects. Today, AR renders these visual artifacts visible, pulling them from the depths of the archival storage boxes and shoe boxes alike so that they might have a remediated home in their original production spaces.

Users of AR apps like *me-dérive: toronto* employ their smartphones to extend their physical environments—they rely on the software to overlay information, or in this specific case, images of historical narratives. This augmentation does not extract the user away from their material environment, but merely extends their relation to the immediate space around them by appending virtual objects to it. There are no physical changes to how users move through space, and they are simultaneously *not* reliant on the smartphone to navigate the environment. With AV, the user's navigation of space is contingent on real objects or

In pursuit of the energy within the urban, the flâneur reshapes the city through the fluidity of the unplanned and the instinctive.

movements in virtual worlds; the technology creates a synthetic environment, and the user requires specific tools to navigate that prescribed space. The application of AV can be explained through an exhibition design scenario. Using specific technology, the curator can see and interact with virtual works, experimenting with multiple layouts and formats in a synthetic representation of the real exhibition environment. We regard technology, in this case the smartphone, not merely as a techno-entity or object, but rather as a possibility to accomplish a series of tasks or endeavours. The user exercises the agency to navigate and personalize their surroundings through the device. While deterministic, the device has the capacity to perpetually rearrange our surroundings and simultaneously define how, where, and why we move in space.

Redefining 'Space' through Augmented Reality

Through the work of McLuhan, Richard Cavell (2000) considers some of the dualisms within our communicational modalities, including sender-receiver, encoding-decoding, and production-consumption. Extending these dualisms into the realm of the production of space, Henri Lefebvre (1991) posits a series of similar double determinants, including imaginary-real, produced-producing, material-social and immediate-mediated (187). In an effort to situate the augmented investigation, it is crucial to update this binary inventory with concepts relevant to digital culture: software-hardware, digital-analog, real-virtual, augmented-virtual, and space-place.

Yi-Fu Tuan (1977) posits that tools and machines enlarge an individual's sense of space and

Cavell, Richard. 2000. *McLuhan in Space*. Toronto: University of Toronto Press.

Lefebvre, Henri. 1991. *The Production of Space*. Malden: Blackwell Publishers.

Tuan, Yi-Fu. 1977. *Space and Place: The Perspective of Experience*. Minneapolis: University of Minnesota.

spaciousness. In digital culture, and for the purpose of this investigation, smartphones and AR apps like *me-dérive: toronto* are reflective of these designated tools. Sara Ahmed (2010) explores the intersection between affect and objects, asserting that in order to be affected by something is to evaluate the *thing*; the appraisal is expressed in *how* bodies orient toward these artifacts (31). To give value to things is to shape what is near us. Objects or 'things' must be expected to shift from "things in space" to the concrete "production of space" (Lefebvre 1991, 37). It is crucial to assert that smartphone software functions in the production of space only when the user is positioned as looking with and through the device—onto information spaces—rather than merely at them. This distinction can be exemplified in the overall success and efficacy of the AR app.

Code and space have become mutually constitutive; the production of space is increasingly dependent on code, and code is inherently written to produce space (Kitchin and Dodge 2011). From this assertion Kitchin and Dodge (2011) propose the co-constitutive notion of *code/space* positing an innovative approach to digital culture, demonstrating *how* software departs beyond the material constraints of the computer, becoming spatially dynamic. In this way, *code/space* can be likened to Lefebvre's (1991) "dominated space," which implies an environment that is transformed and mediated by technology and practice (64). In order to dominate space, technology pioneers a new form into a preexisting space – evidenced through the ubiquity of invisible code and metadata in urban environments. Bound to the notion of domination are characterizations of power and authority.

The ability to write the durable layer of

information that tells the narrative of a place has often been reserved for those in positions of authority (McCollough 2008). Lefebvre (1991) too has merited this claim in the production of monuments that serve as narratives of the history of a place. AR apps provide innovative visual communication and inscription capabilities. Users are able to engage and contribute to information through the interface of the smartphone by pointing their device to a place or entity (ex: a store, object, monument etc.) and in turn develop a sense of embodied proprioception (Farman 2012, 14). Urban spaces are now digital data realms, where users become active architects or designers within space. Taking to the open canvas of the urban environment, users can digitally overlay content (ex: graphic, textual, video, or audio), into an interactive, real-time experience (Papagiannis 2017). This serves to illuminate the ways in which software have the capacity to alter social dynamics and simultaneously how space has been renegotiated through the intervention of digital technologies. AR provides an interactive and dynamic mode of engaging with content, whether historical, cultural or social. Overlaying the city's multipurpose surfaces with content results in an ongoing reference to its varying and complex histories, which are rendered empathetically public through the hardware and software of the smartphone (Uricchio 2019). This is well-evidenced in the intersection between cultural heritage and AR experiences, with particular attention to archives as content databases.

Cresswell (2004) asserts that "while space is amenable to abstraction of spatial science and economic rationality, place is amenable to discussions of things such as 'value' and 'belonging'" (20). It is common for individuals, groups, and organizations

Ahmed, Sara. 2010. "Happy Objects." In T*he Affect Theory Reader*, edited by Melissa Gregg and Gregory J. Seigworth, 29–51. Durham: Duke University Press.

Lefebvre, Henri. 1991. *The Production of Space*. Malden: Blackwell Publishers.

Kitchin, Rob, and Martin Dodge. 2011. *Code/Space: Software and Everyday Life*. Cambridge: MIT Press.

McCullough, Malcolm. 2006. "On the Urbanism of Locative Media." *Places* 18 (2): 26–29.

Farman, Jason. 2012. *Mobile Interface Theory: Embodied Space and Locative Media*. New York: Routledge.

Papagiannis, Helen. 2017. *Augmented Human: How Technology is Shaping the New Reality*. Sebastopol, CA: O'Reilly.

Uricchio, William. 2019. "Augmenting Reality: The Markers, Memories, and Meanings Behind Today's AR." *Leonardo Electronic* 22 (4).

Cresswell, Tim. 2004. *Place: A Short Introduction*. Oxford: Blackwell Publishers.

alike to ascribe value to places throughout the city based on their varying activities and engagements with these respective environments— consider the many parades, marches, and festivals that occur throughout Toronto. By extension, place-making capabilities are also cultivated through exploration, particularly through walking as a methodology. As a solitary or collaborative act, walking binds users with environments around them— literally connecting the body to the pathway of the physical space that surrounds it. Rebecca Solnit (2002) says "walking shares with making and working that crucial element of engagement of the body and the mind with the world, of knowing the world through the body and the body through the world" (29). Walking has also been critical to the act of protesting—consider Martin Luther King Jr.'s march from Selma to Montgomery, the Women's March on Washington, Take Back the Night, the Arab Spring, and Ghandi's Dandi Satyagraha to name a few. In this, walking becomes incredibly political, and not merely a neutral, leisurely act, but rather a means to subvert well-established paradigms and political ideologies. The act of walking has been theorized repeated through the figure and person of the flâneur and the act of flânerie—an urban spatial practice that augments strolling and the inhabitation of space (Shields 2015).

Solnit, Rebecca. 2002. *Wanderlust: A History of Walking.* London: Verso Books.

Shields, Rob. 2015. "Fancy Footwork: Walter Benjamin's Notes on Flânerie." In *The Flâneur*, edited by Keith Tester, 61–80. London: Routledge.

Re-Imagining the Flâneur

The flâneur originated in Paris—the capital of the nineteenth-century (Benjamin 1983)—and was regarded as a privileged, dawdling wanderer. He first appeared most notably in French poet Charles Baudelaire's (1863) infamous essay "The Painter of

Benjamin, Walter. 1983. *Charles Baudelaire: A Lyric Poet in the Era of High Capitalism.* London: Verso.

Baudelaire, Charles. 1863/1986. *My Heart Laid Bare and Other Prose Writings.* London: Soho Book Company.

Modern Life", as a novel urban subject characterized by his idling and observation. As an enthusiast of everyday aesthetics, Baudelaire (1972) distinguishes the flâneur as one whose vocation is to fuse with the crowd. He notes:

Baudelaire, Charles. 1972. *Baudelaire: Selected Writings on Art and Artists.* Cambridge: Cambridge University Press.

> For the perfect idler, for the passionate observer it becomes an immense source of enjoyment to establish his dwelling in the throng, in the ebb and flow, the bustle, the fleeting and the infinite. To be away from home and yet to feel at home anywhere; to see the world, to be at the very centre of the world, and yet to be unseen of the world, such are some of the minor pleasures of those independent, intense and impartial spirits, who do not lend themselves easily to linguistic definitions. (1972, 399)

This passion for unhurried observations underscores the flâneur's moral intent of absorbing the stimuli of the urban, and subsequently getting lost in the midst. Benjamin (1983) took up the flâneur in his investigations of the Paris arcades, lining the chaos of the streets and avenues alike. He asserts however, that the flâneur's serendipitously disorienting routine is not an act of playfulness but is a learned and mastered pursuit. Benjamin argues:

Benjamin, Walter. 1932/1979. *One-Way Street and Other Writings.* London: NLB.

> Not to find one's way in a city may well be uninteresting and banal. It requires ignorance – nothing more. But to lose oneself in a city—as one loses oneself in a forest—that calls for a quite different schooling. Then, signboard and street names, passers-by, roofs, kiosks, or bars must speak to the wanderer like a cracking twig under his feet in the forest, like the startling

call of a bittern in the distance, like the sudden stillness of a clearing with a lily standing erect at its center. (1932/1979, 298)

This dynamic ambling is primarily associated with public, pedestrian spaces in which the flâneur opens himself up to that which the city has to offer—the ordinary, arbitrary, temporary, imaginary, auditory, and visionary. Observation and reflection are the priority of the flâneur, conventionally from a visual perspective as he seeks "refuge in the crowd" (Benjamin 1983, 21). Benjamin asserts that the flâneur is at home in the crowd, "which is to say, in the city" (895). This act of flânerie denotes both privilege and liberty not afforded to all members of society. With this autonomy the flâneur observes from a distance, avoiding direct contact. In pursuit of the energy within the urban, the flâneur reshapes the city through the fluidity of the unplanned and the instinctive. In his ambulatory immersion, he acts as both witness and wanderer— "one who, through participant observation, simultaneously detached but aesthetically perceptive, experiences and appreciates the idiosyncratic modernity of an urban environment by strolling through, carefully observing, and interacting with components of that environment" (Barber 2014, 103).

Users of *me-dérive: toronto* witness and wander the city which has been invisibly annotated through AR markers, disrupting their habitual practices of perambulating explicitly in the *now*, in favour of exploring the layers of "vanished time" (Benjamin 1999, 419) throughout the urban environment. The app foregrounds historical representations of the city, enabling users to interrogate, contribute to and reimagine these

representations themselves. New media allows urban citizens to experience space in new ways through the apprehension and immersion of content in-situ. As a result, the figure of the flâneur transforms not merely as a perambulator of the urban environment, but simultaneously as a perambulator of the mobile screen. The flâneur has consequently informed contemporary discussions of the co-constitutive relationship between urban modernity and new media, whether in the form of photography, computer simulations or digital technologies (Presner, Shepard, and Kawano 2014, 30). Characterizations of the Parisian flâneur helped usher in methodological explorations of urban environments, through what came to be known as psychogeography.

Of critical significance, the label of 'walking' as an approach has been widely critiqued for overlooking racialized, gendered, and differently-abled frameworks and paradigms. The flâneur and *dérive* respectively leave little room for diversity, assuming that *all* bodies move through space equivalently. In these techniques, there is often little or no recognition of Indigenous roots and the complicated relationships with place-making, mapping and land. I have been impartial to describing the navigational act associated with site-specific AR in this way, using 'walking' as a primary descriptor for journey. The use of the word 'perambulate' over 'walking' is often preferred for its inclusive connotations. The Oxford English Dictionary definition for perambulate is "to walk, wander or travel from place to place; to move". The notion of wandering or traveling open up to different means of navigating space that are not exclusive to the ableist label of walking. For example, one can perambulate using crutches, manual and electric wheelchairs and

Benjamin, Walter. 1983. *Charles Baudelaire: A Lyric Poet in the Era of High Capitalism*. London: Verso.

Barber, John F. 2014. "Walking-Talking: Soundscapes, Flâneurs, and the Creation of Mobile Media Narratives." In *The Mobile Story: Narrative Practices with Locative Technologies*, edited by Jason Farman, 95–109. New York: Routledge.

Benjamin, Walter. 1999. *The Arcades Project*. Cambridge: First Harvard University Press.

Presner, Todd, David Shepard, and Yoh Kawano. 2014. *HyperCities: Thick Mapping in the Digital Humanities*. Cambridge: Harvard University Press.

motorized scooters. The product of a perambulation is knowledge that cannot be acquired through the studying of city guides, maps, annual reports or statistics. The act in itself embeds spatial knowledge about a place onto the participant, formulating a corporeal mode of knowing the world. Perambulating at the intersection of AR combines exploratory fieldwork and screen performativity.

Situationists, Psychogeography, and the Dérive

Plant, Sadie. 1992. *The Most Radical Gesture: The Situationist International in a Postmodern Age.* London: Routledge.

Wollen, Peter. 1989. "The Situationist International." *New Left Review* 174 (March/April): 67–95.

The Situationist International (SI) was established in 1957, underpinned by Marxist thought and the surrealist movement (Plant 1992, Wollen 1989). The SI was primarily formed out of the union of two former groups— the International Movement for an Imaginist Bauhaus and Guy Debord's Letterist International (LI). In its establishment, the SI extended many of the ideas that originated with Debord's French avant-garde Letterism movement including psychogeography. Many of these ideas were illustrated in manifestos (Debord 1957),

Debord, Guy. 1957/2006. "Report on the Construction of Situations and on the International Situationist Tendency's Conditions of Organization and Action." In *Situationist International Anthology*, edited by Ken Knabb, 25–46. Berkeley: Bureau of Public Secrets.

Debord, Guy. 1977. *The Society of the Spectacle.* Detroit: Black and Red.

Vaneigem, Raoul. 1972. *The Revolution of Everyday Life.* London: Practical Paradise Publication.

books (Debord 1977, Vaneigem 1972), journals, and techniques (ex: the *dérive* and *detournement*). The Situationists characterized modern capitalist society as an organization of 'spectacles': "a frozen moment of history in which it is impossible to experience real life or actively participate in the construction of the lived world" (Plant 1992, 1). As a response to this alienation, the Situationists saw themselves as psychogeographers—investigating topical and geographical characteristics on human behaviour and thought.

Debord, Guy. 1955/2008. "Introduction to a Critique of Urban Geography." In *Critical Geographies: A Collection of Readings*, edited by Herald Bauder and Salvatore Engel-Di Mauro, 23–27. Praxis (e)Press.

In his critique of urban geography, Debord (1955) defined psychogeography as "the study of the precise laws and specific effects of the geographical environment, whether consciously organized or not, on the emotions and behaviour of the individuals" (23). The primary emblem of psychogeography is an extension of flânerie known as the *dérive*— a form of conscious, political 'drifting' founded in Marxist ideology, as a means of criticizing the reign of capitalism and commodity-culture (Flanagan 2007). The *dérive* involves playful-constructive behaviour that distinctly sets it apart from the act of strolling or flânerie. In a *dérive*, participant(s) must relinquish their rooted obligations and habitual movement intentions, allowing themselves to be drawn to the attractions of the terrain and chance encounters. Here, the act of drifting characterizes the environment as a source of endless navigational possibilities, with a series of paths to help *re*-map the city (Tuters 2004). At the intersection of AR, the participant of the *dérive* is not only influenced by the attractions of the terrain, but also those represented within the screen. These elements guide the participant in her encounters with the archival content in-situ.

Flanagan, Mary. 2007. "Locating Play and Politics: Real World Games & Activism." *Leonardo* 16 (2–3): 1–13.

Tuters, Marc. 2004. "The Locative Commons: Situating Location-Based Media in Urban Public Space."

The Situationists encouraged experimental methods to inform their *dérive*, including for example navigating one urban space, with the map of another. Debord (1955) recounts the wandering of a friend through the Harz region of Germany while following directions of a map of London. He notes that this transposing can "contribute to clarifying certain wanderings that express not subordination to randomness but total insubordination to habitual influences" (26). Similarly, through AR navigational apps, the user has the sovereignty to walk the markers she desires as there is no prescribed or exemplary mode of reading the map. The

Debord, Guy. 1955/2008. "Introduction to a Critique of Urban Geography." In Critical Geographies: A Collection of Readings, edited by Herald Bauder and Salvatore Engel-Di Mauro, 23–27. Praxis (e)Press.

Augmented reality invokes a visual and spatially embodied practice.

user is free to begin or enter at any point of this psychogeographic map, walking the streets but relinquishing any preconceived notions about the environment, to allow for new discoveries of space that are often thwarted by our relationship with familiarity and experience.

The goal of the *dérive* is ultimately to endow space with a deeper and more robust significance using walking as a methodology. Michel de Certeau (1984) acclaims that those who walk experience space in its most basic form; they are *Wandersmänner* (or simply wanderers) and their bodies write this space, tracing the thick and thin of the urban text (93). The spatial field of the *dérive* may be delineated or indefinite, but the decision for one or the other will affect the goal of the participant. Where the defined *dérive* allows the ambulator to study the terrain, the vague pursuit affords the participant an opportunity to emotionally disorient themselves (Debord 1958). Exploring the fixed and designated spatial field demands that the participant establishes bases and calculates prospective directions. In this way, the *dérive* and the act of walking become intrinsically linked with the cartographic. This is reflected in AR apps like *me-dérive: toronto* that possess a guiding map to be used or ignored by the user in her *dérive*.

De Certeau, Michel. 1984. *The Practice of Everyday Life*. Berkeley: University of California.

Debord, Guy. 1958/2006. "Theory of the Dérive." In *Situationist International Anthology*, edited by Ken Knabb, 62–66. Berkeley: Bureau of Public Secrets.

Literature Summary

This literature review contextualizes the intersections between the mobility and archival turns, archives, rephotography, and mobile infography that inspires AR experiences and the remediated notion of perambulation, using a range of theoretical and

methodological approaches. Arguing the basis of each of these components has allowed me to foster an environment wherein my research can be situated. It is undeniable that archives carry monumental power and significance across cities and institutions alike; however, content should not merely be accepted as authoritative when it lacks depth, accuracy and the capacity to be reshaped and reimagined over time. This literature relies on methodological changes to distribution and dissemination models in an effort to make archives more democratic and participatory in nature. This approach is redefined through the lens of AR, which enables an interactive, immersive connection to content through a techno-body union.

Structure of the Dissertation

Based on the theoretical and methodological themes discussed above with respect to archives, rephotography, and AR, this dissertation deploys a research-*for*-creation project, in order to foster a more inclusive archive that provides an authentic representation of Toronto's longstanding, diverse history. Research-creation allows for an active engagement with archival and crowdsourced records, alongside the immersion within theoretical, methodological and creative pursuits and struggles of cultivating a counter-archive, as they arise. A subset of research-creation, *me-dérive: toronto* is a research-*for*-creation project— it both visualizes and embodies accumulated research records in the form of an AR app. AR invokes a visual and spatially embodied practice. The coded content makes interventions into social, historical, and political realms. AR projects in this realm allow for these explorations to shift away from traditional, two-dimensional environments (ex: stationary archives, museums, texts, libraries etc.) towards those that can reimagine and recharacterize space through content.

Research-*for*-creation signifies a gathering of material, ideas, concepts, collaborators, and technologies (Chapman and Sawchuk 2012, 15). This 'gathering' is identified as research in that it underpins a prospective 'revealing', enabled through "an artistic perception of technology as a practice or craft" (15). Research-*for*-creation aligns with Heidegger's (1977) notion that "technology is a way of revealing" (12). Echoing Heidegger and the potentials illuminated by AR's technical capabilities, '*technē*' reveals "whatever does not bring itself forth and does not yet lie here before us, whatever can look and turn out now one way and now another" (13). In creating *me-dérive: toronto*, I have researched, proposed, acquired, and designed not only a framework for the archive itself to exist, but have simultaneously created the techno-entity— developing the augmented, counter-archive as a social, political, educational, and knowledge translation tool. It is worth noting that *me-dérive: toronto* has *not* been designed to replace institutional archives. Instead, it was inspired by a persistent challenge within the humanities, namely, to include alternative memories into archival collections, or more precisely, how to provide a platform for historical erasures in order to foster and preserve memories of Toronto's citizens, and to narrativize cultural memories that move through time and space using AR.

In the first half of Chapter Two, I argue that Canada's immigration policies of the last century

Chapman, Owen, and Kim Sawchuk. 2012. "Research-Creation: Intervention, Analysis and 'Family Resemblances'". *Canadian Journal of Communication* 37: 5–26.

Heidegger, Martin. 1977. *The Question Concerning Technology and Other Essays*. New York: Harper Torch Books.

have had an impact on Toronto's settlement patterns, and in turn on how, what, and when narratives of newcomers have been documented across institutional archives, as well as those found in media archives. Simultaneously, Toronto's widely-disseminated urban slogan 'Diversity: Our Strength' is discussed through the lens of cultural diversity and critical multiculturalism. It is positioned against a contextualized example through a brief perambulation on Bloor Street. This act of flânerie perpetuates the notion that neighbourhoods across Toronto are underscored with critical narratives that have not been actively documented in our memory institutions. The second half of this chapter analyzes the vision, mandate, and priorities of notable institutional archives from a local, provincial, and national perspective with regards to Toronto-specific content. This provides an ideal context to argue the intersections of AR and participatory methodologies, in an effort to present a situated domicile for cultural heritage and counter-archival apps like *me-dérive: toronto.*

Chapter Three builds on these strategies and principles, focusing on research-creation as a methodology. Positioning *me-dérive: toronto's* visualization and research embodiment through the locative media app, the chapter explores the means and processes that were carried out in an effort to create the digital entity itself. I provide an articulation of my techno-critical approach to the visual in participatory research, analyzing photo-approaches, archival practices and rephotography as a critical methodology. Precedent research related to archives, locative media and rephotography projects alike usher in an all-encompassing structure of the crucial components

of *me-dérive: toronto*— participatory culture, archives and AR. Ethical aspects of the participatory visual archive are prioritized, including those that arise from photo-methodologies and a more privacy-focused discussion of AR and ethics from a user's perspective. *me-dérive: toronto's* collection development priorities and archival acquisition plan provide a basis for conferring the content of the counter-archive, and subsequently help strengthen the 'Digital Engagement Framework,' participatory heritage content and audience engagement. The chapter concludes with the application of the app walkthrough methodology (Light, Burgess, and Duguay 2018) to *me-dérive: toronto.*

Implicit throughout Chapter Four is the ongoing relationship between archives, memory, power, history and mapping in the digital era. Questions of what is preserved, in what capacity and by whom are interrogated, and intersect with the affordances heralded by digital technologies, including reimagined distribution and participatory models. Inherent in the discourse surrounding archives is the increasing significance given to the institution or entity as the means by which forms of remembrance and historical knowledge are simultaneously accumulated, stored and recovered (Merewether 2006, 10). The magnitude of memory and power as co-related entities is argued, both politically and through the archivist as an institutional power agent. This fosters a platform to analyze the vision, mandate, and priorities of institutional archives across the city, province, and country. The latter sections of the chapter are dedicated to positioning the remediated digital archive. The affordances of a participatory, AR archive like that of *me-dérive: toronto* are situated as a critical and

Light, Ben, Jean Burgess, and Stefanie Duguay. 2018. "The Walkthrough Method: An Approach to the Study of Apps." *New Media & Society* 20 (3): 881–900.

Merewether, Charles. 2006. "Introduction: Art and the Archive." In *The Archive*, 10–17. London: Whitechapel Ventures Limited.

novel way of engaging with records, and reinventing access models for users, projecting for a more democratic, accessible archive.

Chapter Five focuses on AR as an interfacing technique, bridging the connections between *me-dérive: toronto* as a product of the experience economy, particularly rooted in escapism. The tri-framing of the content (image frame, app frame, smartphone frame) gestures towards tactile and haptic vision as well as perambulation. The chapter then shifts into discussions of Situationism as ideology, psychogeography as methodology, the flâneur as persona and the *dérive* as practice— all of which coalesce and contrast to aid in defining the *augmented flâneur.* The latter half of the chapter is dedicated to arguing post-phenomenology as a philosophy of technology in relation to AR. It addresses the subject-object characterizations that arise through the embodied human-technology relationships. This includes asserting the type of users we become, and the environment the world becomes through the embodiment of the mobile phone and augmented reality. This post-phenomenological inquiry addresses critical queries including: i) how are AR technologies shaping our perspective and experience of the world ii) how are technological entities *both* peripheral objects and impacting objects and iii) how AR technology shapes our cultural, political, ethical understanding of everyday experience.

The conclusion of this dissertation reaffirms the original contributions of *me-dérive: toronto* as a research-creation project. It provides recommendations for the history of vision and future with regards to AR and cultural heritage institutions. Further, it echoes both the value of the theories and arguments of my doctoral work, and also provides limitations of the project. Future directions for practice-based research are also presented.