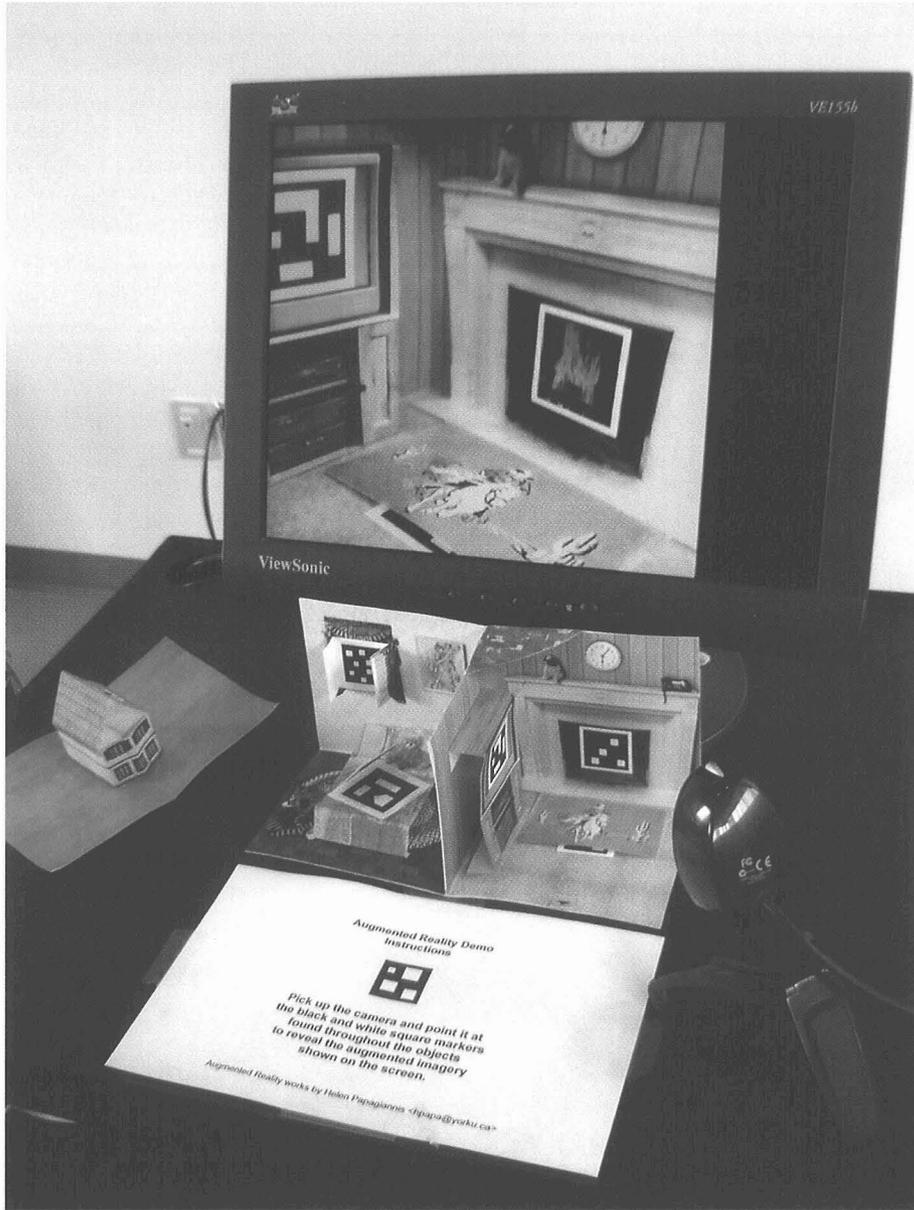
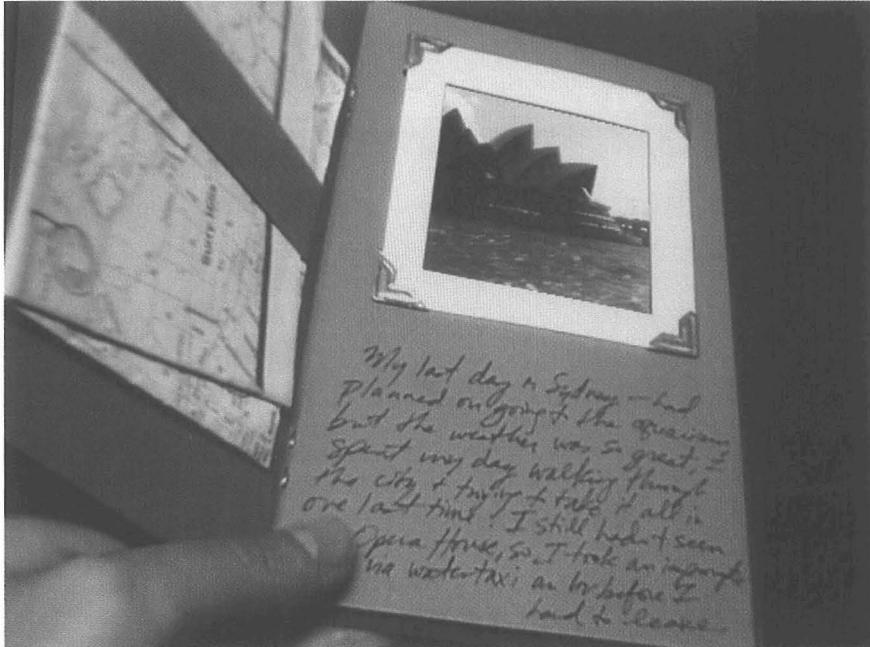


Augmenting Digital and Analog Memory

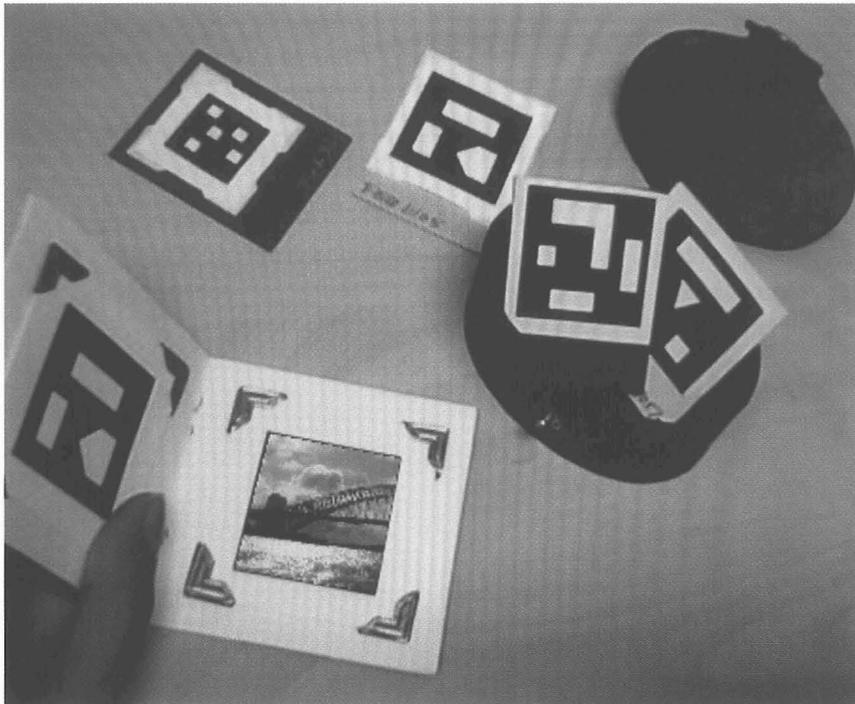
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My work in augmented reality (AR) began with the creation of a series of memory albums and paper-based objects which presented digital video footage from my travels. My interest in creating these works was, in part, due to a desire to capture “live” moments from my sojourns that were beyond still photographs, which would aid in temporarily transporting me back to these foreign and exotic locales to relive those instants. These moving images assisted in the evocation and recollection of my memories by rearticulating a past vision of a particular location: once again seeing how the waves crashed, how the wind blew, how my body moved within a space to which I no longer had physical access. Unlike digital photographs, which I would eventually print and place in an album, these moving images (MPEG format) most often remained archived on disc or on my computer, never to be experienced again. I wanted to create a tactile object that, alongside my still photographs, would allow me to hold and view these “live” moments again—offering an opportunity to move through the still images in a way that extends into, and beyond, their virtual viewing space.

I created a series of small handheld objects, including a palm-sized memory album: a series of paper slides cased in a petite box; a postcard that included a pan of the same space that appeared as the card’s frontal image; and, a travelogue which, alongside video clips accompanied by handwritten stories, included actual objects from my journeys, to enhance the aura. None of the moving images I chose



to include featured people; they were all pans of landscapes of the sites I visited. (This is interesting and important to note, as the work I've created recently, specifically the paper dollhouse, departs from this and will be discussed further.) I viewed this as an opportunity to document the physical places I visited, as a form of souvenir that would allow me to visually virtually revisit and enter that space again via a moving image that captured my field of vision in a horizontal pan. The absence of other people in the footage aided in creating an intimate, uninterrupted space, as though that particular moment was for me, undisturbed by anyone else: a private memory, between that place and me. My works further exhibit a level of intimacy in their miniature scale.

Of particular interest to my work in AR is how emerging technologies have allowed us not only to see, but to see again that which is no longer, to recollect and to remember, and to recreate the past with verisimilitude. In their book, *Memory Trade*, Darren Tofts and Murray McKeich refer to philosopher Henri Bergson's text, *Matter and Memory*, in a discussion of memory and recollection in cyberculture. Tofts and McKeich write, "The apparent problem of how the past remains with us and yet is in actuality no longer present, is resolved through the identification of recollection as being virtual" (66). In Bergson's words:

Whenever we are trying to recover a recollection, to call up some period of our history, we become conscious of an act *sui generis* by which we detach ourselves from the present in order to replace ourselves, first in the past in general, then in a certain region of the past—a work of adjustment, something like the focusing of a camera. But our recollection still remains virtual; we simply prepare ourselves to receive it by adopting the appropriate attitude. Little by little it comes into view like a condensing cloud; from the virtual state it passes into the actual; and as its outlines become more distinct and its surface takes on colour, it tends to imitate perception. (quoted in Tofts and McKeich, 66)

My thoughts turn to the technology of AR, particularly the process within which the images and memories I have presented in my work come into view via the fiducial markers, and how this aligns with the action of recollection described above by Bergson as “virtual.” As the camera “focus[es]” to view and read the patterns of the fiducial, “little by little” the image the fiducial is replaced with “comes into view like a condensing cloud,” blurring and shifting, becoming “more distinct” as the new “surface” image adjusts to the outlines of the marker’s container. This technical process imitates the act of perception Bergson describes. At times, the new augmented image may “break” if moved, or be temporarily interrupted revealing the background image of the fiducial marker, which may be thought of as a moment of distraction in recollection or the difficulty in attempting to place a memory or envision a particular image. These breaks, or fractures, as I will later describe them, also serve as reminders of how fragile and fleeting these past moments were and are in their temporary and instable state of (virtual) recollection.

Although the primary subject matter of my initial explorations in AR were panoramic landscapes and vistas from my travel expeditions, my recent work has focused on building miniature fictional environments, including a hand-sized, folding, pop-up paper dollhouse. The dollhouse integrates fiducial markers throughout its constructed environment, which are replaced with short video clips that appear on the screen when a handheld camera is pointed at the markers. This includes such miniature objects as a television screen, a fireplace, a window that opens and closes (offering a viewpoint outside of the house), a 3-D stereographic image book (a pun on AR’s connection to the stereoscope), and a hidden element (a rat), which appears from underneath a rug when a paper lever is pulled. This work was inspired by my love for children’s pop-up books and the magic and wonderment such (analog) devices can create.

All of the video files which appear in the dollhouse project (with the exception of one clip to be further discussed) are stock footage, unlike the video clips in the memory album series, which embody a personal and private quality. The stock footage utilized is slick and polished, almost machine-like in its idealized perfection, which helps to uphold the illusion and spectacle of the dollhouse, whereas the videos featured in the memory objects have a certain roughness and human quality in their jerking movements and pans, evoking a more personal and



intimate experience. Although the memory books and pop-up dollhouse are both handcrafted, the dollhouse was built and designed to be primarily illusionistic (using such tools as Photoshop). The memory books, on the other hand, feature personalized details to highlight the trace of the human hand. The dollhouse was meticulously created to scale by carefully resizing and digitally manipulating found photographs of objects (often taken from furniture catalogues on the Internet), to build a realistic-looking environment which is intended to be believable. (In fact, at the Film Studies Association of Canada's annual conference, an image of the dollhouse was projected onto a wall and a viewer asked, "Where is that house?" not knowing that the miniature pop-up dollhouse was what was being displayed, rather believing that this was an image of an actual, or "real" house.)

The polished appearance of both the digitally manipulated photographic elements and the video stock footage utilized in the dollhouse recall Susan Stewart's description of dollhouses in *On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection*, in their presentation of "the illusion of a perfectly complete and hermetic world" (62). This can be said for the most part about the AR dollhouse project, however, there are a few instances in which the perfection and hermeticism is temporarily fractured. The first instance is in the case of the one exception to the sleek stock video footage used in the dollhouse, which was a home video posted on YouTube.com of a pet rat. The feducial marker

on which this video clip appears is hidden beneath a rug in the second room of the dollhouse, which can be seen by pulling a paper tab to reveal the concealed image. The hermeticism was also ruptured in unintentional and unpredictable, yet welcomed moments; this was due to momentary glitches in the marker tracking system, when feducials were mistaken by the software for another similar pattern, and different augmented images were substituted. Examples include a video clip of fire (intended for the fireplace) coming from the bedroom window rather than the programmed image of a friendly pair of young people knocking at the windowpane, and the pattern of the rug under the bed (an actual photo, not feducial)—mistakenly interpreted by the software as a feducial marker—displayed as a video clip of fire coming out from under the bed.

Stewart continues her discussion of the dollhouse in respect to the topic of the miniature, in the chapter, “The Gigantic”: “In approaching the miniature, our bodies erupt into a confusion of before-unrealized surfaces. We are able to hold the miniature object within our hand, but our hand is no longer in proportion with its world; instead our hand becomes a form of undifferentiated landscape, the body a kind of background” (70). In fact, it was the sight of the disproportionate hand invading the dollhouse to interact with the elements, as shown on the projection, which served to shatter the illusion for the viewer who believed it to be a “real” house. Stewart continues, “Once the miniature world is self-enclosed, as in the case of the dollhouse, we can only stand outside, looking in, experiencing a type of tragic distance” (71). The dollhouse project can be seen as exhibiting a cold distance which limits the viewer as an outsider “looking in” at an artificial and idealized space that in fact, exists only virtually. In contrast, the memory albums and objects create an environment that offers an intimate and personal perspective within which the viewer becomes an insider looking out.

My current and future work explores integrating lenticular-based imagery with AR markers. My intent is to create tactile objects that store and display multiple moving images, combining both analog and digital modes of memory. I have always been mesmerized by the magical quality of lenticulars and their ability to contain and reveal multiple images with a slight shift of hand. I have recently created an AR marker within a lenticular lens that contains two separate patterns. Each of these patterns reveals a different AR image when the object is moved slightly to display the lenticular-based markers.

I have been experimenting with various applications for lenticular-based AR, one of which explores the ability to display memories over time from past to present, combining archival footage with contemporary moving images. This technique may be used to show growth over time, or various stages of one’s life memories. A recent lenticular AR prototype I have created first displays a black-and-white film clip of two children playing and shyly kissing each other on the cheek; the second marker reveals a video clip of the two children, now grown up, playfully behaving in the same manner as they did in the previous moving image. The

lenticular-based markers may be used to display a before-and-after of sorts. The viewer can “flip” between the two moving images in the same handheld object, mid-clip, reverting between the two, crossing over time with a slight hand gesture. Another prototype demonstrates the ability to change the direction of the moving image, between forward and reverse, when the handheld lenticular object is slightly shifted.

I am particularly interested in the dual memory of the physical object and virtual imagery in lenticular-based AR. Although the augmented image is stored digitally within the software, activated upon recognition of the AR marker in the pattern file, the physical lenticular lens also contains an analog-based memory system to store and reveal the two different markers. The direction of my current and future work looks to combine these two methods, utilizing both to create a final output where the digital and analog coalesce.

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