Chapter 7
Digital Borders and the Virtual Gallery

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7.1 Introduction

This chapter develops my previous work and thoughts arising from the exhibition of augmented reality artwork (Garbe 2013), specifically in how digital mediums are in dialogue with physical space. As one enters the world of exhibition, it becomes apparent that the challenge of new media interactive artwork in general has become more and more familiar to the conversation of exhibition practice. These works have required new notions both of effective curation, as well as preservation. But while radical in many ways, for the most part these pieces still establish their interactivity within a statically delineated physical space: a gallery, an installation, or an area created through the formulation of specific environmental parameters. They break down the fourth wall of passive experience through interactivity, but still – for the most part – partake of traditional exhibition space, and leverage that to provide boundaries for acceptable behavior. In many cases they are in active dialogue with that space, and are engaging, co-opting, or subverting those spaces and their accompanying expectations. But for all this, they remain concerned with a specific physical location.

Augmented reality art, as a new media subset, distinguishes itself through its peculiar mechanics of exhibition and performative re-contextualization. It allows the artist to translocate the borders and constraints of the experience from physical to virtual, expressing the piece onto spaces in a way that is independent of physical or locative constraint, yet still tethered to the real world. This practice of anchoring virtual assets to the physical world allows artists to make use of virtual properties such as mutability and replication, while engaging with issues of embodiment, performance, and presence. In this way AR pieces show themselves as dynamic

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both in content due to their performativity, and in physical location of experience due to their mediation. This has led to the perception of AR art as being subversive or independent of curatorial practice.

However, these qualities demonstrate not so much a removal of curatorial boundaries, as a translocation of them from the physical to the digital. The art installation occurs not in the gallery, but on the hard drive of mobile devices. In this way AR artworks align themselves more perhaps with movements like net.art, where one must look to the loading screen as the gateway to the gallery, a space which – while mutable and infinitely configurable – is still proscriptive. AR may allow the artist to set many more of the work's boundaries than in more traditional media, but even that freedom is still subject to the affordances of the software composing the work.

7.2 Borders of Experience

Engagement of the fourth wall occurs when an observed artwork changes or speaks directly to the audience. Many new media interactive artworks already challenge traditional notions of the fourth wall in that the viewer's participation is an integral part of the performativity of the piece. Artworks for their part are concerned with perlocutionary acts, which is to say acts described from the vantage point of their affect on the viewer: scaring, angering, beguiling. Specifically, perlocutionary is also a useful term in describing the actions required of the piece from its viewers – and the performances the pieces in turn respond with – and how this process creates an emotional affect in the viewer. The perlocutionary qualities of such new media pieces create a feedback loop of continual engagement that is only broken when the participant has exhausted the piece's ability to perform, or the engagement offered cannot compete with their diminished attention span. Dourish explored this in his investigation of 'engaged interaction' (Dourish 2001).

But how is this different from experiencing a non-interactive piece of artwork? While a painting or sculpture may seem different to a viewer who steps closer or spends longer with the piece, the critical point is that the artwork asks nothing from them in terms of embodied action. All demands are perceptual, ones they can comfortably respond to from their position behind the passive "fourth wall". In this method too one could consider a non-interactive work conceptually complete when sitting in a gallery space unobserved. Interactive works, however, have a critical component missing that robs them of their expressive voice when they are sitting unengaged within an exhibition space.

AR complicates this even further by adding intermediary devices into the interpretive and experiential mix. Augmented reality artworks provide a way in which the fourth wall of passive viewing is enriched by, at the most basic level, technology which is appended to the senses of the viewer. The "performances" or "texts" of the piece are first mediated through a device, usually a video feed computationally modified and then displayed. This can take the form of a computer

Fig. 7.1 A gallery viewer interacts with *From Closed Rooms, Soft Whispers*, wherein printed collages are made interactive through digital projection and AR, providing an experience mediated through several screens simultaneously

with installed gallery displays, or in the case of locationally diffuse works, the more and more ubiquitous smart phone (Fig. 7.1).

The most passive level of interaction takes place purely on the level of the machine, which provides a virtual frame for the interaction, with the viewer then moving or changing the view/focus of the machine, but not interacting with the primary components. The viewing device for the user becomes a digital prosthesis which allows them to "sense" artwork in a variety of ways unapparent to the unaided senses. The work required just to experience the artwork entails a kind of performance, albeit one which is passive in the sense of changing the piece's state. Viewers are "performative observers" (Morrison 2010) who can be affected by the piece, and even be receptive to it in a perlocutionary way, but they do not affect significant change on the piece.

A good example is Camille Scherrer's *The Haunted Book* (Scherrer et al. 2008). Exhibition of this piece entails a book, a lamp modified to contain a video camera, and a computer screen. Through the experience of this piece viewers see short movies overlaid on different pages of a physical book. It is a beguiling artwork that provokes a whimsical state of interaction with the viewer – one that is focused on the aspect of hidden content revealed through the appropriate digital prosthesis.

However, we see here that while people interact with the book by turning the pages, they are not performatively engaged as co-producers of the piece. The singularity of its experience is mirrored in the singular experience of traditional artwork exhibited in a gallery or museum. Furthermore, the custom hardware necessary for its display means that this piece is tied to the place of its exhibition.

Not all augmented reality artworks are constrained through the physical embodiment of piece-specific hardware, however. One of the sub-genres of augmented artworks that takes advantage of those proclivities are locative literature pieces, such as those authored by StoryTrek software, which use smartphones as their artistic substrate.

In one such piece, entitled *Crisis 22*, viewers experience a story spatially, tied in physical location to a street in Ottawa. Viewers use a mobile device as a prosthesis for the communication of narrative, and exhibit agency in the story through an exploratory framework: re-tracing their steps reveals backstory, while heeling off into an alleyway provokes narrative digression (Greenspan 2011). In this way the piece leverages augmented reality for an artistic experience that is closely tied to a specific place with precise boundaries, yet whose borders of experience are not clearly defined to the participant. Additionally, nothing more is being asked of the participant other than the exploration of physical space to yield narrative. They change nothing in the work for others through their interactions. They have agency only as far as their own experience and interpretation of the work goes – much like a viewer of a non-interactive work in a gallery. The key point of interest in pieces like *Crisis 22* is its engaging use of specific space, which at once seems delineated, yet open to ambiguity.

Another example of such work is *Frontera de los Muertos* (Freeman 2013), an AR piece that re-contextualizes the space of the US/Mexico border in Arizona. Freeman uses augmented reality to overlay effigies of human skeletons on locations where immigrants died in the process of attempting to cross into the US. Again, it is enough with this piece that it engages in that re-contextualization, and the interactivity is restrained to perlocutionary acts of driving to the space, downloading the app, and starting up the channel in Junaio. In the sense of a curated space, the power of this piece derives directly from its location, and as such it would lose its critical context if the asset locations were moved. Therefore, while it partakes of very different parameters from traditional curation, it is still nonetheless a piece with explicit specifications.

7.3 Art Installation

Intrinsic to the unbound physical locativity unique to particular forms of AR is the concept of active perceptual re-contextualization, which is accomplished through viewer interaction. For example, in works such as Manifest.AR's gallery interventions (Veenhof and Skwarek 2010) or Phoenix Toews' sculptural app Pyrite

(Toews 2013), the artistic interface becomes invasive in its deployment. Participants are engaging the real world through a mediated context which dramatizes spaces that are otherwise mundane. This not only breaks down the "fourth wall" in terms of active participation, it also eliminates the physical boundaries in which this art is experienced. Pyrite allows viewers to create and find persistent sculptures anywhere, turning even mundane locations into opportunities for artistic display. Manifest.AR's gallery interventions allow visitors to their website the ability to submit art and have it virtually displayed in any number of galleries worldwide. Thus the performative approach that these pieces foster contextually redefines not just the conventional interactive spaces, but potentially any part of the real world.

It's tempting with focus on such work to see the medium of AR as one that's breaking down or eliminating the privileged space of the gallery in favor of more pervasive and revolutionary implementation. The interactivity which actively engages viewers both in the viewing of the piece and the expression of it through their creative action seems to break down most if not all of the gallery's proscriptions. Arguably however, the blurring of lines for exhibition space when considering AR is not so much the removal of the wall, but the translocation of it. Explanation or revelation of the experience's border parameters is always deferred, until the performative and perlocutionary components of the piece are exhausted. Only then do viewers, if they engage for an appropriate period of time, grasp the borders of what the piece can offer. In other cases the borders may be more apparent, in the affordances of where one can see the work, the degree to which manipulation or sensing of its elements is restricted by granularity of GPS sensors (for non-marker-based AR) or even short-comings of the technology itself, such as the quality of cameras and their ability to compensate for a variety of conditions.

But even setting aside these restrictions, there is still the underlying architecture, the operational logic of the piece which remains implicit, not explicit, to the viewer (Wardrip-Fruin and Mateas 2009). There is a body of computer code, one could even argue language, that is just as valenced and proscriptive as the visual language of curation in physical exhibition. But compiled programs can only be explored experientially, in a virtual manner. Thus through the lens of software development, works which in terms of physical space seem limitless and inexhaustible are actually very clearly delineated on a code level. They have acceptable, supported forms of interaction (with all the affordances those entail) even if only visible to the artist. Indeed, there's much to be said about the parallels between gallery art installation – resulting from the configuration of elements in precise manners for an intended aesthetic effect – and art software installation – the arrangement of a computational device's physical states into precise configurations for an intended aesthetic functionality. What confuses our perception of AR borders is that it is a medium seeking (or in dialogue with) embodiment. It inscribes a specific domain from the riot of virtual expressive possibilities, touching the physical world. And it asks of its audience that they engage these virtual elements in an embodied way.

7.4 Ergodic Performance

Espen Aarseth coined the term "ergodic literature" to refer to written works that require significant effort by the reader to decode in order to experience (Aarseth 1997). As touched on earlier, AR is arguably an especially ergodic artform – requiring real work from the viewers (usually in the form of technical proficiency) that can mean some succeed and others fail in grasping its embodied rules and thus exploring the piece to full expressivity. This challenge set before viewers gives rise to another layer of consideration when thinking about the performativity of AR pieces.

In non-interactive artworks there is generally one level of engagement the audience participates in. The differing layers and contexts of analysis each person brings to a piece of artwork may differentiate them when they are placed in dialogue, but for the most part the experience is a uniform level of engagement, even if there are different times and styles of attention and engagement on that level. The varying valences of content can go privately unresolved, while the only thing made public within the exhibition space is the piece of artwork itself.

For viewers of participative interactive artwork, however, interaction can change the perception of the piece for other viewers. Those who come forward to impact the work through interaction become part of the display, and their ability to tease out the performative, perlocutionary subtleties of the work can open them to critique from other viewers, giving rise to performance anxiety. This segments viewers into groups based on their willingness to interact, their willingness to perform the piece (Reeves 2005). Thus, there's an undeniably relational aesthetic element to these projects, especially since the mediation through a technological framing device demands – as a base requirement – perceptual performance from its audience. Holding the device just so, downloading this app, scanning that QR code, knowing to perform a specific sequence of actions, even outside a gallery setting, creates a Bourriaudian "state of encounter" (Bourriaud 2009). While at an installation there's a sense of being part of a group, but even in one's home or outside a physical gallery, when accessing AR there's an element of being privy to secret knowledge, a hidden virtual world, that creates a sense of being "in the know". There's a feeling of membership in a distinct group of people, accented by the very fact that AR viewers literally see the world differently than those unaware of the virtual content anchored around them.

The technical demands for artwork utilizing augmented reality are fairly high, requiring either sophisticated software making use of machine vision algorithms, or software and hardware which can make available to the creator the GPS position and heading of the viewing device. These technical hurdles were overcome for the most part first by companies seeking to monetize AR as a new media platform. As such, artists seeking to work in the medium frequently find themselves first needing to choose a software platform, which comes with its own set of constraints. It is here perhaps that most obviously one can see the restrictions and affordances which control the exhibition of AR work. Outside of licensing fees, the differences in the platforms become the differences in the artworks, much in perhaps the same way

that galleries and exhibitions coalesce into a common aesthetic sensibility. Works created in one platform may tend to focus more on marker-based AR, or perhaps more easily incorporate different forms of media as their overlay.

Furthermore, many of these platforms, such as Junaio or Layar, frequently embed their pieces as "channels" which are found through a browsing section of the app. This in turn affects the artwork, whose code is encompassed by that of the framework, by placing it in context beside other pieces. The artist may create their own context independent of the platform, but it is also very likely that a channel used for artwork is listed alongside promotions for a new movie, or an interactive ad in a magazine.

7.5 Physical as Subscriptive

This concept of "channels" is one that is used in many different digital media services, providing a way to aggregate content viewers show interest in, or want to be continually exposed to as more is authored. The interesting twist that AR potentially provides to this arises through its conflation of digital assets and physical, both of which comprise the artwork in totality.

In works that use physical artwork (such as prints or sculpture) as their AR anchors through markerless tracking – such as *From Closed Rooms, Soft Whispers* (Garbe 2013) – the digital is overlaid to provide the second part of the piece (Fig. 7.2). Prints can be distributed, and the work experienced in a variety of locations outside the gallery once the exhibition is concluded. However, exciting new capabilities arise from the fact that the digital assets for AR pieces can be stored on a server, or in project files which remain on the artist's computer. Subsequently, the AR content can be modified, remixed, or even changed wholesale at a later date by the artist, and those changes can be propagated out to the prints or physical objects owned by gallery viewers. This adds an entirely new valence to the idea of the print or reproduction as an art object, allowing it to function itself as a sort of "channel" to the artist, totemic or not, where new work can seep out from the artist's central server to affect the display and experience of their work long after the art object was acquired. This gives unprecedented control to the artist to affect work already existent in the world, but may also come with a price, in the increased ephemerality endemic to all work relying on the more transitory substrates of digital media.

7.6 Closing Thoughts

Interactive new media works challenge traditional interpretive methods in many ways – their exceptions and special cases are as variegated as the artists and mediums used in their composition. The addition of interaction complicates audience reception and segments viewers into active participants, and more passive

Fig. 7.2 A digital print from *From Closed Rooms, Soft Whispers*, which serves as an anchor for the augmented reality assets hosted on a central server

receivers of the perlocutionary actions enacted by the piece. Augmented reality artworks, situated as pieces re-contextualizing the perceptions of the viewers through intermediary devices, further show themselves as challenges – in the perception of the viewer if not in actuality – to not only the fourth wall of audience passivity, but to the borders and accepted limits of interaction. They accomplish this by translocating those borders into the more numinous virtual world, whose affordances provide a bewildering array of compelling expressions to artists. But although in content they partake of the digital, there is always an element of the physical to augmented reality artwork, something to tie it to the viewer and their embodied experience of the piece. In this way the borders are still very much so present, the affordances and proscriptions built into the very code of the work. Yet the ability to customize those boundaries, to draw one's own curatorial borders and parameters, is in itself a freedom drawing from augmented reality's strengths, inviting a model of the world as not one in which art happens, but one which is conditionally defined and experienced as an integrative work of art.

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