



## Embodiment, meaning, and the augmented reality image

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# Embodiment, meaning, and the augmented reality image

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## #Abstract#

This paper investigates the augmented reality (AR) image as an embodied and interactive experience of image “in” location. The analysis of the AR image is specific in this paper to the *rediscovery iPhone* app developed by the author. Operating to support a technologically mediated locative-based experience of the *Titanic Quarter* in Belfast, *rediscovery* leverages the potential of the birthplace of the Titanic as the locus of an intervention to make known the symbolic value ascribed to a particular geographical space.

To analyze the interconnectedness of meaning in the AR image constructed and the embodied interaction of the user, this paper first traces the historical trajectory of technology mediated projects in visual arts practice where visual perception and meaning have been turned into a condition of embodied interaction of the viewer, both spatially and temporally. This includes Krueger's *Videoplace* (1969); Rokeby's *Very Nervous System* (1986); *Sancho Plan* (2010); *Murder on Beacon Hill* (2010), and Cardiff's *The Telephone Call* (2001).

Using Bergsonian notions of intuition (Kennedy 2000; Hansen 2004) as a basis for analysis of how these visual arts projects demonstrate the capacity of the body to receive, process and make meaningful visual arts practice, this paper subsequently resolves a language of embodiment by which to assess the *rediscovery* AR images, in terms of how the images create a distinct model of the world, and one that requires an embodied presence in it.

## #Abstract#

## #Keywords#

Embodiment, augmented reality, visual perception

#Keywords#

## 1. Introduction

This paper investigates augmented reality (AR) visual methods that require embodied interaction through a practice of vision and system of envisioning created by a technologically mediated locative based experience. Using a model of transference between past and present as the basis for the design and practice of an AR based locative media project, the analysis of the AR image and embodied interaction with it, is specific in this paper to the *rediscOvery* iPhone app developed by the author. Operating to support a technologically mediated locative based experience of the *Titanic Quarter* in Belfast, *rediscOvery* leverages the potential of the birthplace of the Titanic as the locus of an intervention to make visible the symbolic value ascribed to a particular geographical space. As such, the AR project is also a counter to the recent urban redevelopment of this geographical site that has been criticised for failing to address how place operates within an embodied cultural imagination and the poetics of lived space (Neill 2006, 2011; Coyles 2013).

The practice of the technology in this project deploys photographic archives of the *Titanic* as the digital informational layer to form part of the representational rhetoric connecting the present to the past. As such, the politics and aesthetics of the photograph operate through very deliberate strategies to inform the interpretive methodology in this project. Operating as a visual sign on which a system of transference is generated to communicate the historic and cultural symbolism of this place, the photograph is both a tool for documentary and the basis for interpretation through embodied interaction. Understanding the photograph to contain a visual system of signification that communicates meaning through an internal temporal characteristic, the ability of the photograph to stand in for an absent moment of the past (Barthes 1964), the objective of the photograph in the AR visual system is to create in the viewer an embodied image consciousness of the representational rhetoric connecting the history of the *Titanic* to modern day Belfast.

## 2. Embodiment in socio techno discourse

The viewing experience of the AR image operates as a form of spatial practice that is an embodied and interactive experience of image “in” location. Thus, by establishing a new situation for how we know the world by emphasizing the role of the lived body, it becomes necessary to understand the affects of actions and activities of the body when used as the framing mechanism in the production and consumption of meaning in the system (Massumi 2002; Hansen 2004; Featherstone 2006).

Mobile applications and their delivery platforms that form the technology apparatus upon which *rediscovery* is dependent, operate as part of a techno cultural discourse that draws upon cognitive psychologies to understand how human interaction operates between the human and the computer (HCI, Human Computer Interaction). Such approaches make explicit the human values in the system development process required to create an effective relationship between the technology’s design and its use (Schuler and Aki 1993; Dourish 2001). These frameworks do not assume a static relationship between the user and the technology, but one that is embodied, where the body frames and gives meaning to the computational data (Ascott 1998; Heim 2003; Hansen 2004), and largely invest in phenomenological approaches to technology methods.

Geolocative media technologies create conditions where communication technologies become recontextualized through embodied interaction in geographical relevant spaces. Understanding that these informational technologies operate in virtual spaces, but access to them is dependent on embodied interaction in physical places, information flows between technology and the user are thus understood as a product of both real world environmental dimensions and virtual algorithms (de Souza e Silva 2006; Kabisch 2008; Kluitenberg 2006). Analysis of geolocative computing methods has consequently been extended to include how users of the technology are psychologically and behaviorally engaging within the physical and socio cultural setting in which the technology is encountered (Dourish 2001; Bolter and Gromala 2003; Kozel 2012). The framing experience of the body in the *rediscovery* project is therefore also connected to wider phenomenological aspects of how it is we engage in the physical world. Embodiment in this project is

consequently linked to a wider phenomenological approach of understanding the social and cultural strategies that capitalize on our familiarity with the everyday world and how it operates as a framework to understand our ways of being in the world (Heidegger 1967; Merleau-Ponty 2002).

### 3. A history of embodiment in visual arts practice

To ascertain how the role of the lived body impacts on the meaning and representation of the AR system, there are a number of projects in the media arts domain to draw analogies from, where a language of embodiment has evolved to understand the body-image visual event that is created. While the development of media arts practice over the last fifty years has been influenced by profound changes in science and technology and transformed cultures associated with a range of disciplines, the historical link between the projects under discussion in this chapter is the evolving relationship between the participant and the image system and the aesthetic reception and response to the image system. This historical trajectory begins at a time of influence of algorithmic art in the 1960s (and its associated rediscovery of 1920s kinetic art) and computer art in the 1970s. Whilst these origins reveal experiments in participatory practice within fixed networks, this historical trajectory continues to more recent contemporary practice where informational technologies with the ability to provide participation in mobile and located networks emphasize the roles of social and cultural agency in participatory practice (Galloway 2010).

The projects under discussion are analyzed using Bergsonian notions of intuition (Kennedy 2000; Hansen 2004) where the durational perception through which the body engages with the art form, demonstrates the capacity of the body to receive, process and make meaningful the experience of such visual practices. The analysis of these projects explores the possibilities created by embodied practice in both fixed and expanded networks to attempt to position the experience of the *rediscovery* AR images in the domain of reactive environments that

negotiate meaning through fusing spatial and temporal elements that are connected to the practice of the body.

Media artist Jeffrey Shaw's career from cinema to interactivity reveals the beginning of the shift of the image as a contained frame of meaning to interactive environments that liberate the space beyond the image, and subsequently shape the relationship between the image and the viewer through embodied practice. Creating an image in which the user's participation becomes essential, Shaw's *Legible City* (1983) creates an interface between the simulated and real world that deploys tactile methods to synthesize the active body with the media artifact. The viewer of the *Legible City* is seated on a stationary bicycle and pedals to "move" through the street image projected onto the screen in front of them, with the rate of movement through the virtual world corresponding to the rate of motion dispensed in the cycling activity. The pedaling action of the viewer continually alters the point of view from which the visual elements are consumed, placing the moving image within the context of navigable body space. Therefore although the visual aspects of the motion generated are explored within the projected picture plane, a dynamic frame is activated by the viewer's physical movement and associated exploration. To understand the role of the users in such installations, they are considered as actively participating in the construction of the artistic meaning (Ascott 1998; Grau 2004; Hansen 2004; Dixon 2007). The concern of artists using these methods is not the technological and aesthetic aspects of the art form but the exploration of the medium of interactivity itself. The perception of the image is a sensory experience of the body as the viewer of the *Legible City* physically senses a feeling of movement conveyed by the projected image.

Whilst such projects raise further questions about the relationship and the gap between interactivity and content (Krueger 2004), the ontology of embodied practice in such structures is both functional (contributing to the medium of interactivity) and material (determining the point of view at each duration in which the visual system subsequently consumed). This methodology points to a reframing of consciousness in the viewer through the process of interaction (Livingstone 1999), where meaning derived from the visual system is a

product of the interaction between the viewer and the tools and visual methods distributed by the artist.

While Shaw's approach to expanding image meaning through the centrality of the actions of the body ties visual perception to real world aspects of space and time, Myron Krueger, one of the pioneers of interactive art, used embodied practice to redefine the body's relationship with reality. Krueger's *Glowflow* (1969) is a reactive light and sound installation in which conventional visual perception is challenged by embodied interaction. The walls of the darkened installation space hold transparent tubes of different colored phosphorescent liquids. Motion sensors that trace the visitor's movements through the exhibition space activate the glowing particles in the phosphorescent tubes through a strategy that visually distorts the shape and perspective of the exhibition space. The movement of the visitor's body becomes synthesized with the visual environment, shifting the aesthetic experience away from the object, to one that is given meaning by the role of the body.

Understanding this interpretation from a technology perspective, Heim (2003) locates the interpretive aspects of embodied practice in reactive installations within the realm of the computer. The tracing methods and visual synthesis of the visitor's movements are located within the procedural structures of the computer where the movement of the body becomes the "text" (Heim 2003, 546) for the computer to read. Participating in the installation space places the viewer within the circuit of information to be processed and requires the visitor to both interpret the affectivity that their motion has yielded, and respond through deliberate and considered aspects of their movement. Hansen's (2004) thesis underlining this process of modification between the visitor, the visual and the body-mind relationship in interactive environments, approaches the body as the framing mechanism in the subject object relationship, where the frame is the method by which perception is fixed. The embodied affectivity, where the body frames and gives meaning to the computational data, turns the aesthetic experience away from the object, to that of a durational subjective experience that can only be felt. Perceiving the image transcends the medium (the technological apparatus that supports it) and becomes embodied to the point where its affectivity "forms a bond between perceptual event and

temporal flow, and as such, attests to the embodied basis of time-consciousness” (Hansen 2004, 252).

Embodied practice in Krueger’s *Videoplace* (1969) exhibition space also engages with this durational responsive aesthetic. The installation contains a number of individual interactive art compositions that augment the reactive movement of the viewer with what is rendered visible in the installation space. In the composition *Critter*, the viewer is confronted with a video projection of his or her silhouetted body image to which is added a green creature (*critter*), whose computational methods require it to move about the screen seeking the highest point of the viewer’s projected body image. Whilst the technologies that render the silhouetted figure of the viewer controls the movement of the viewer, (who through responding to the movement of the *critter* adjusts the position of their body so as to elude the intentions of the creature), these methods also perceptually amplify the movement of the spectator (Krueger 1997). Creating a real-time exchange between the participant and the image creates a consciousness of the role of the self in the spectator precisely because they perceive techniques that are not normally part of the perceptual process in visual interpretation. Representation conventionally operates from objects that are fixed in time and space. Rendering the significance of the temporal aspects of the responsive environment visible, communicating to the user that the role of the body is both the creation of the visual and the medium through which the visual is consumed, thus imposes a new visible and aesthetic logic within the space of the installation (Manovich 2001).

Whilst the physical apparatus through which embodied activity is negotiated is made visible to the viewer in *Videoplace*, David Rokeby’s *Very Nervous System* (1986) renders the interface between physical activity and outcome, invisible. Here, movement in the installation space creates audio responses using a combination of various technologies including video cameras, image processors, computers and music systems. The movement that is detected in the participant is analyzed according to its direction and momentum, and subsequently activates specific sound responses through the audio system. Operating exclusively within the spectrum of a nonvisual system removes any physical presence for the interface. The participant is instead encouraged to respond intuitively to the sounds activated by their movement and create new musical forms

linked to their gestures and movement in and around the installation space. The removal of any nonvisual aspects and the positioning of embodiment in both intuitive and responsive capacities, form a uniquely immersive quality within the installation. To understand this through the language of immersion, Grau (2004) highlights that media forms in which a closed circuit of action and event is produced, has considerable affects on the aspect of immersion experienced by the user. In the instance of Rokeby's *Very Nervous System*, the movement of the participant in the installation space is simultaneously both directing and responding to the audio elements. Such overlapping of cause and event creates a substantive relationship between sound and movement and thus establishes a greater awareness of the role of the body within the installation space, producing a more intuitive and intimate experience.

Deploying similar tactics of engagement, the *Sancho Plan*<sup>1</sup> (2010) uses AR to create an interactive musical performance at the interface between the body and space. Standing in front of a large display screen on which their image is video streamed, participants hold up large image markers that are read by a computer program. The program translates the symbol held by the different participants into its associated computer generated character that subsequently appears visually augmented onto the streamed image of the project participants. Each augmented character is assigned a different audio signal, which alters and responds to the movement of the participant. In a similar vein to Rokeby's *Very Nervous System*, sound and vision become synthesized in a closed loop of cause and effect, with the AR image operating at the intersection of task, communication and digital content.

#### 4. Embodied practice of place

In contemporary approaches to visual arts practice that have the support of locative media technologies, the emergence of platforms that displace the physical architecture that have accrued around fixed media and their

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<sup>1</sup> The *Sancho Plan* was created through a collaboration between the BBC and the Pervasive Media Studio in Bristol.

networks, have created new possibilities for representational modes connected to aspects of embodied practice. In approaching these hybrid spaces, where simulated worlds and geographical worlds become aspects of each other, the consumption of the media text becomes not so much related to spatial aspects of body movement, but connected through an embodied practice of place, where place is understood as that which embodies a set of values from which people can derive significance and meaning (Gieryn 2000; Meetham 2001; Entrikin 1991).

Walking cinema is an emergent form of media practice where the narrative elements in the cinematic experience are unraveled through engaging audiences with plot elements that are revealed by an embodied practice of place. *Murder on Beacon Hill*<sup>2</sup> (2010) tells the story of the disappearance and murder in 1851 of Dr. George Parkman, and the subsequent trial of the accused Harvard professor, John Webster. Downloaded and accessed via a smartphone, the story guides its audience through the streets of Boston, prompting them to experience and investigate the places, features and artifacts to which they are directed. Interpretation of these objects and places forms both the material connection to the historical story that is being told, and the evidence required to unravel the murder mystery. This includes interrogating photographs in the halls of the Harvard Medical School, playing board games held by the concierge at a Boston Hotel and inspecting ink stamps and books on sale in local shops. This form of roleplaying activity in the storytelling event, invites a type of theatrical intervention by the spectator, and subsequently the narrative becomes dependent on physical place operating as embodied diegetic space (Rieser 2002). The narrative and the journey through Boston become mutually supportive, helping to construct and reproduce each other.

Setting out a general theoretical perspective on the significance of the role of the lived body relevant to place using de Certeau's rhetoric of walking, highlights the activity that walking through places privileges. Positioning the act of walking both physically and cognitively, the activity becomes "a spatial acting-out of the place" (de Certeau 1988, 98). The view of the place is fixed at any given moment by the position and

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<sup>2</sup>The *Murder on Beacon Hill* interactive cinema experience is an adaptation of a made-for-television documentary *Murder at Harvard* (Spy Pond Productions 2004).

direction of the walker, revealing a continually unfolding projection of the city upon which the spatial order of the place is determined. The act of passing by makes evident the visible tropes, ambiguities, displacements, contradictions, intersections and complementary incidents that weave together to create a literal meaning in the spectator. Whilst traditional cinematic structures present a fixed and determined viewpoint for the place in which a story is set, walking through the cinematic setting creates a new dynamic viewpoint for the observer of the cinematic experience. Place, conceived traditionally in cinema as an element of representation becomes a strategy of direction and projection, and the journey through it becomes the embodied practice upon which a narrative text can be constructed. Embodiment performs a spatial narrative of the landscape and the story.

Where paths through place are understood to operate as traces of movement created by the walker's journey, Tilley's (1994) photographic essay exploring the topography of the phenomenological landscape highlights the importance of the paths that structure the relation between the subject and the environment. Paths formalize the experiences of places that they link, helping to establish a sense of order in the spatial acting out of place. These paths are fixed by the *Murder on Beacon Hill* interface with a cartographic map image visualizing the paths through which the journey and plot are dependent. This predetermined substantive engagement is used to unfold the plot through a more or less linear chronological narrative.

In contrast to this substantive approach, Janet Cardiff's audio walks<sup>3</sup> use ontologies of design that structure participation in a more accidental manner. The audio tour that guides the listener through Washington's Hirshhorn Sculpture Garden layers real space with a fictional parallel world created by Cardiff's narration. The listener is led by the ear through the garden and invited to respond to what they encounter and hear; creating an intersection of reality and fiction that is more meditative than determined. Without a path to follow Cardiff's interplay of suspenseful fictional stories and subtle commentary prompt rather than direct audiences through the surrounding landscape, which as

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<sup>3</sup> Examples of Janet Cardiff's audio and video works are curated at <http://www.cardiffmiller.com/artworks/walks/>.

Gopnik (2005) highlights creates a more ambiguous sense of place. Objects and random encounters within the place reformulate the user's experience, creating an embodied diegetic space that is less linear and more exploratory. Strategizing through less substantive approaches, Cardiff creates an experience that privileges the processual model of genre in landscape studies as described by Stewart and Strathern (2003) that positions landscape as having no absolute, no fixed mode of representation; engagement with the landscape is understood as embodied by those that travel through it (Hirsch and O'Hanlon 1995).

Although embodiment of real world spaces can add to our understanding of the world around us, perception can in some material and symbolic spaces form more complex negotiations in the body-mind relationship. Cardiff's video walk *The Telephone Call*, shown as part of the *Art in Technological Times* exhibition at the San Francisco Museum of Modern Art (2001), layers video and audio content with museum space to create an alternate reality of a physical space. Drawing the visitor through the museum's galleries and stairwells, the video walk uses cryptic clues and suspenseful narrative to psychologically draw the spectator into someone else's psychological fears. The work is reported as having deep psychological affects in those who participated. Curator of the exhibition John Weber reported that, "a number of visitors observed that they needed to cry in the elevator after finishing the piece."<sup>4</sup> The intensity of this experience is echoed by artist Peter Petralia responding to Cardiff's Whitechapel. Returning from the journey created by the audio walk, Petralia (2010, 108) describes how:

"Everyone I passed, every building, every car suddenly seemed a container of hidden world, mystery. Although I no longer had Cardiff in my head, I was disorientated and dizzy, coming down off a strange aural high."

Petralia attributes this affect on physical and spatial awareness to what he refers to as the headspace<sup>5</sup> created by these creative interventions. These

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<sup>4</sup> Curator John Webb responding to *The Telephone Call*, available at <http://www.cardiffmiller.com/artworks/walks/telephonecall.html#>.

<sup>5</sup> Peter Petralia's (2010a) PhD thesis, *Reshaping Spatiality: Cognitive Perception and the Fracturing of Theatrical Space*, identifies *headspace* as a feature of performance work that takes place largely in the head of an audience member.

affects are congruous of both the immersive qualities of audio and strategies of embodiment that position the audience cognitively closer to the evolving performance. Regarding the immersive qualities of audio, it is interesting to consider affects of the nature of sound in Cardiff's work, to understand the opportunities that sound and oral media afford an embodied practice. Considering the phenomenology of sound when transmitted as the spoken word Walter Ong, exploring the difference between oral and literal cultures through the examination of the nature of the spoken word and how it connects us to others, describes the experience of word as "always momentous in psychic life" (Ong 2002, 71). This significance is attributed to the both the unifying power of speech:

"Because in its physical constitution as sound, the spoken word proceeds from the human interior and manifests human beings to one another as conscious interiors, as persons, the spoken word forms human beings into close-knit groups. When a speaker is addressing an audience, the members of the audience normally become a unity, with themselves and with the speaker" (Ong 2002, 72).

And what Ong refers to as the interiority of sound:

 "When I hear...I gather sound simultaneously from every direction at once: I am at the center of my auditory world, which envelops me, establishing me at a kind of core of sensation and existence. This centering effect of sound is what high-fidelity sound reproduction exploits with intense sophistication. You can immerse yourself in hearing, in sound (Ong 2002, 

Contrasting the experience of sight with that of the unity created by speech, Ong (2002, 70) identifies sight as a "dissecting sense...that situates the observer outside what they see," requiring processes of vision to piece together the sum of all glimpses of the world outside the body.

Thus within the arts space created through Cardiff's projects, processes of sound and vision that create experiences of what is seen and what is heard, may be understood to operate through varying perceptual sensorial modes; one that unites the audience with the narrator, and one that situates the user outside what they are viewing. However, while Ong's topology of the senses privilege perceptions that are aurally

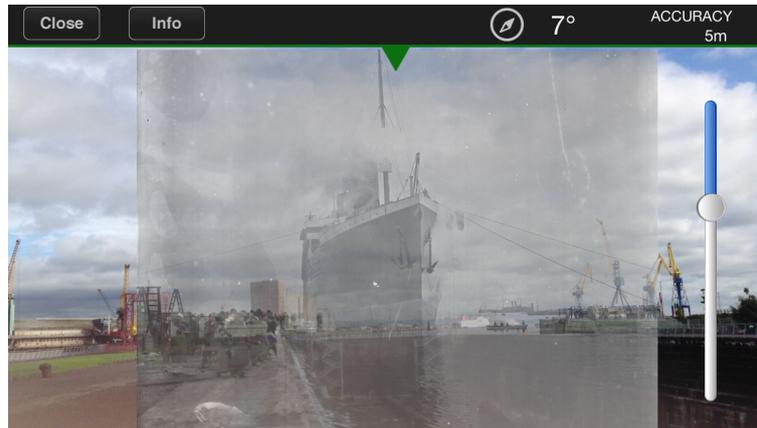
mediated, Ingold's (2005) attempt to position seeing and sight within a similar symmetrical relationship to that which Ong creates between sound and hearing, resolves autonomies of vision within phenomenological aspects. Rather than approaching sight through the science of optics that involves the behaviors and properties of light to connect the eyes and the brain, Ingold approaches sight as a phenomenon of experience that unfolds in the perceiver "by way of his or her presence in a certain environment" (Ingold 2005, 99), thus approaching vision as a medium of experience, rather than a process. Sight and vision argues Ingold, cannot be incongruous, as our perception of what we see is based on our experiences of inhabiting the world. Therefore while it cannot be denied that the aural qualities of Cardiff's projects create significant resonance and emotive condition in the user, placing the listener/viewer in the center of the arts space and connecting sight phenomenologically to place when linking the aural aspects of the audio project to what is experienced through sight, makes meaningful and relevant the visual system created.

Such strategies also cognitively position the user closer to the unfolding visual and aural project; the activity prompted by the directions that are heard, physically connects movement in the media arts space to what the user sees. Therefore in returning to a wider understanding the body-mind relationship, whether perception is mediated aurally or visually, or is considered to flow between the body and the brain, or vice versa, these projects position the centrality of the embodied practice of place as central to the ontology of the body-mind relationship.

##### **5. *rediscOvery* as embodied practice**

The *rediscOvery* AR browser provides visitors to the birthplace of the *Titanic* with interpretive digital content to connect the audience to the historical and cultural significance of this urban space. Applying strategies of embodied practice, the application uses geolocate technologies to first direct the participant to the relevant geographical viewpoint upon which context specific information has been embedded

through global positioning coordinates, and then reveals this information to the audience through AR methods. This involves layering a transparent digital archive photograph of the historic scene over the view through the mobile phone viewfinder, juxtaposing the two images of alternate moments in history by means of an identical spatial relation<sup>6</sup>.



*Image 1 - Titanic's sister ship, Olympic entering Thomson Graving Dock*

As with all media forms that operate to create a representation of the past, the photograph in this project is not a neutral indicator, nor a neutral representation. Leveraging the potential of the bias in which photography operates, the affordances of the photograph in this project are gained through how both the material and visual aspects of photography re-represent and materially reform the evidence connecting modern day place to its historical past. Tagg's critique of the currency of the photograph identifies how the processes of vision connected to photography act upon the viewer to resolve a sense of fascination and absorption as they look upon the photograph; the photograph "holds us by the force of 'the Past'" (Tagg 1978, 115). Thus as an embodied image, the photograph operates to form a bias in both how we see ("holds us"), and what we see ("the force of 'the Past'").

<sup>6</sup> As the rediscovery mobile application insists on a location-based experience, this locative experience has been curated for viewing at <http://www.titanicrediscovered.com>.

To understand in the first instance “the force of the ‘Past’” leveraged by the photograph, Roland Barthes (1964) argues that the visual markers contained within the image enables a sense of time consciousness in the viewer. It is this aspect, as Barthes identifies in his essay *Rhetoric of the Image*, which is unique to the medium:

“The type of consciousness the photograph involves is truly unprecedented, since it establishes not a consciousness of the *being-there* of the thing (which any copy could provoke) but an awareness of its *having-been-there*. What we have is a new space-time category: spatial immediacy and temporal anteriority, the photograph being an illogical conjunction between the *here-now* and the *there-then*” (Barthes 1964, 278).

As an embodied image, the act of looking at the photograph creates a conscious bias through establishing a temporal equilibrium between the past and the present. Through its projective power the photograph is able to create in the viewer, an internal temporal characteristic, a sense of “having-been-there-ness”. Consequently in providing the viewer with a visual stimulus that can operate to reveal the tensions between the past and the present, the consciousness created by the photograph reveals its ability to act as a material referent that can stand in for the absent subject or moment of the past.

To understand how the photograph “holds us”, film theorist Peter Wollen (1984) takes up Barthes’s aspect of time consciousness in relation to the photograph to promote processes of seeing related to the photograph that reveal the additional affordances of this temporal consideration. As he highlights, the moment of looking at the photographic image has no fixed duration since the material form of the photograph does not impose any time based limitations to reading the image. This characteristic allows the viewer to “veer away on a train of thought, circle back, traverse and criss-cross the image” and viewing to extend “as long as fascination lasts and endlessly reiterated as long as curiosity returns” (Wollen 1984, 76). Kondo goes further to define the potency of this durational viewing process created by the intensity of the photograph by theorizing that “the more we see the object of our obsession, the longer we want to hold such a view with both our eyes and our imagination” (Kondo 2014, 52).

In this study, there are two fundamental representational aspects to be considered in relation to embodied practice: the virtual map image, and the AR image. To consider first how the map image is positioned as an embodied image practice, the map is approached as a system of relationships between both image and information in virtual worlds, and people and objects in the real world. If the image produced and consumed in the virtual map is bound up with physical presence in location, this then will undoubtedly involve an understanding of the how the image relates to the person that is present in the location, their connection to the environment that they are moving through, and the data space the mediated system is connecting them to. Sarah Pink's (2011) perceptual analysis of the consumption of images in relation to multisensorial aspects is particularly useful in considering the map image, as her hypothesis is anticipated by a theory of place. Building upon Tim Ingold's (2000) understanding of the visual and vision as inseparable from the experience of place, Pink rethinks the photographic image with reference to its interconnectedness of the visual sense with other senses.



 Image 2 – rediscOverly map image

As a multisensorial image the map image, a digital composite of image and flexible data sets, responds to the permanent flux of information from both data space and the viewer's physical movement in real space. The physical space is negotiated by both responding to the flow of digital information displayed on screen and, by identifying how this virtual display relates to the physical space, the schema mapped out by

the body in the physical space. Hence the orientation in the physical space is part of an engagement in the larger hybrid space that encompasses both the physical (landscape and body) and virtual (push of surveilled digital data to the mobile interface). As the user negotiates both real and virtual space in their trajectory toward the fixed viewpoint, perception of the mediated system requires a continual switch between the real and the virtual. The trajectory navigated through the site is negotiated through the cognitive analysis of the spatial order as interpreted both virtually on the interface and physically moving through the real world. This is what Katherine Willis refers to as “co-location”, a condition that enables interaction “in represented models of the real world whilst simultaneously being physically present in the real world (Willis 2008, 16).”

Direction and meaning are not static systems of information; they are results of continuing interaction with the system. The embodied interaction is not merely perceived as a single directional action in the system, but through how meaning is generated from moment to moment. There is constant engagement between the virtual and the real as physical reactions refresh the virtual data, and vice versa. The processing of the data by the mobile device is removed from consciousness as data finds the user and is pushed to them, capturing all the possibilities of the in-between states as the user navigates the scene. In contrast to the fixed Internet, the in-between states of the mobile digital network become core to the interpretation and reception of the data flows. As the computational methods disappear, the virtual space in its processing becomes fused with the physical space, and real space becomes the medium through which virtual space is being explored. Therefore perception is not merely bound up with the image generated by the processual components of the virtual map but how this relates to the real world.

My subjective experience of the virtual map image that acts to provide wayfinding in this project, considering both the affectivity created by movement and the embodied sense of place, is broadly consistent with analysis provided by the theoretical strands discussed in this chapter. Navigating through the site to the different viewpoints, all sense of computational methods disappears from my consciousness as the map image becomes consumed through alternatively considering the

spatial realities of the real world and the corresponding spatial virtual reality of the digital space. Even though as I transverse between the geomarkers available in this project I am cognitively disconnected from the AR image systems created in each of these geomarked locations (as my focus is on navigation as opposed to interpretation in these instances), I have a strong sense of inhabiting the world as my actions in the real world have consequences in the virtual world, and vice versa. Furthermore, the interconnectedness of the sensorial aspects elicited by a sense of embodied connection to the map image, in how what I do relates to what I see, has a pleasurable, intimate quality, with movement consciously understood to act as the interface between the real and the virtual.

The consumption of the map image not only operates to provide wayfinding, it also contributes to a spatial acting out of place that intervenes in the place making experience. However, the scale of the project does place some limitations on the ability of the landscape to construct a spatial narrative on which to bring greater depth to the *Titanic* story. Unlike the progression of the *Murder on Beacon Hill* experience, that has the advantage of embodied practice through a wider geographical area, the journeys between the alternate viewpoints in this project are spatially and temporally too brief. However, there are enough opportunities for a spatial acting out of place to leverage the potential of the act of passing by, for example walking around the vacant form of the empty graving dock in which the *Titanic* was built, helps to establish a sense of scale in the form of the absent vessel.

Acting upon the imagination the experience of the empty dock is twofold. It is at first the footprint left in the sand: the spatial evidence of “it-was-here”. Secondly, in offering up a physical trace of the ship, it also imparts as a sense of loss created by what was once there; to see the empty dock is to experience profound absence. It reminds me that the tragedy on which the legacy of the *Titanic* is built began at this geographical location, and that once released from this place, her voyage ended in loss and tragedy. As an open and empty grave, to view the graving dock is a sobering experience, evoking a sense of loss and inviting contemplation on this aspect of absence.

The spatial acting out of the graving dock location also brings into view the visual forms of the shipbuilding cranes (*Samson* and *Goliath*),

seen protruding above the surrounding buildings. In what is a fairly enclosed space where the forms of contemporary architecture inhibit any view of the wider locative landscape, Samson  *Goliath* connect the experience of the content displayed through the AR browser to wider shipbuilding provenance of the area.

While the embodied practice of the map image reveals how mobility frames the consumption of the physical and the real through both wayfinding and a spatial acting out of place, less consistent is the application of mobility to the operation of the AR images. Once the digital photographic archive is drawn from the server into the browser window, additional graphical devices (green orientation slider and degrees of position) are deployed to aid the successful alignment of the browser window with the point of view from which the digital document has originally been captured. Aligning the visual markers in the landscape with those in the archive image is part of the rule-based interaction between the technology and the user. The geomarker and the orientation devices act to determine both the position and orientation of the user in a specific locus, and to deploy any movement in the sense of speed and momentum in this locus is to disrupt both the image montage and the embodied gaze. Only once the convergence of the identical viewpoints has been achieved, does the cultural resonance of the *Titanic* in the digital layer become arresting, moving the gaze away from establishing spatial similarities between the virtual and the real scene, to connecting to the scene through temporal methods. This is where the view lingers and considers what was once there, and thus the overwhelming sense of the affective experience of the AR images is both presence and stillness.

Farman (2012) identifying this characteristic of locative media projects that act upon the user to inhibit movement argues that stillness is in fact a form of movement. Hypothesizing that a static body deploys muscle action to act against gravity in order to keep the body still, Farman argues that stillness is always accompanied by movement. Farman takes this concept further to claim that stillness is a practice of dwelling in our everyday lives; the potential of stillness is that it is able to create a mode of movement that requires us to pause and consider our surroundings more intently:

Dwelling is an active engagement in your surroundings and the people and objects within those surroundings. Instead of being the

absence of movement, dwelling is the practice of a particular kind of movement (Farman 2012, 140).

Therefore while the AR images deployed in the photograph “hold” the gaze, and the mode of display collapsing temporally alternate spatial assemblages through exact point of view visual strategies requires the user to become still and focus on the visualization provided in an exact locus of location, dwelling is subsequently achieved through how symbolically the *Titanic* exceeds the pictorial framing to collapse temporal distinctions between past and present, and resolve the emotional connection to what was once there.

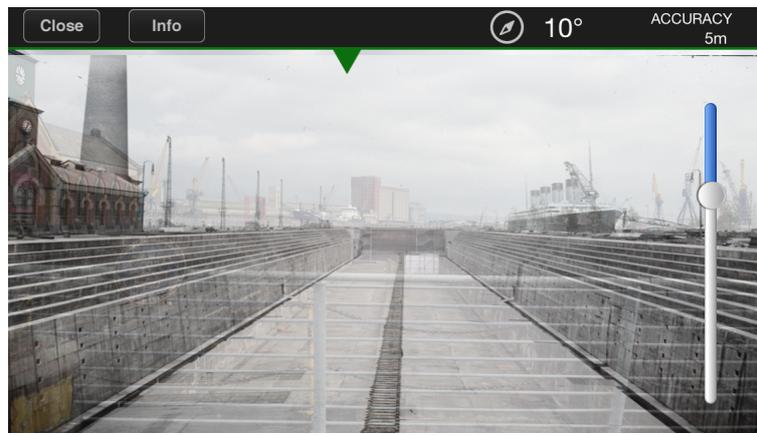


 Image 3 - Thomson Graving Dock with the Titanic on the horizon

Consequently, as embodied practice, the AR image engages with the location through a strategy of stillness, and it is through this stillness a sense of dwelling evolves. And through dwelling I experience a sense of intimacy between what I know and what I see. I know more of the *Titanic*, because of what I can see. This sense of immersion created by the technology places a physicality, both in terms of the place and my place in it, and on the meaning of the history that is being told through the visual system of transference between past and present. This embodied locative position in relation to its history, privileges a material connection between the locative space and the *Titanic*.  erating new meaning it communicates, “the *Titanic* was here”. Yet significantly, the

image connects the consciousness and spatial imagination to the *Titanic* in the present. The perception although mediated through historical references, is related to both the present and presence; “the *Titanic* was here, where I am now.”

The algorithmic logic of the AR browser is central to understanding this embodied experience. Operating as an algorithmic frame, the computational logic of the AR browser, its procedural rhetoric (Bogost 2007) is the means by which the informational flows between data-space and real space are made visible. The visual system constructed by the data flows from the virtual to the physical requires an embodied vision; the body through both its presence and locus in the physical location become part of the organizational logic on which the information flows are initiated and dependent.

Operating as the tool that mediates the production and consumption of the augmented image in real space and during real time, the AR browser can therefore be understood to create and control a system of temporal and spatial informational relationships between user, space and data. The content of the informational layer offers up a trace of what is absent, and the visually perceived spatial equivalence between this virtual visual signifier and the visible spatiality of the landscape connects what is signified to a substantive spatial material form.

While the visual documents collected during this project (the illustrations in this chapter) might allude to a ghostly spectral quality of visual perception, the mode of visual experience is inherently real. In the system of transference between past and present that is determined by the perceived sense of equivalence between what is seen in the photograph and what is viewed in the landscape, the photograph as a discrete temporal and perceptually bounded unit of inquiry becomes encoded with an authentic spatial reference. It is the logistics of sight that creates the validation for what is already known, and consequently there is the sense of the actual rather than the imagined relating to the existence of these histories in this place. Creating a substantive embodied focus on the here and now, the informational layer does not signify a ghost of the past. The signs and symbols correlate to aspects of what can be seen and the knowledge that is subsequently constructed engages in a sense of the actual and the real.

## 6. Conclusions

At its core, the AR rendering as an embodied image works through alternative yet interrelated strategies to provide a visual system of signification. In terms of the content, the materiality of the informational layer, the photograph, in revealing the subject object through a referent that can stand in for the absent subject while acting as a locus for vision, clarifies both what is to be looked at and a frame of actuality for the interpretive experience. As a documentary practice of place, the embodied practice of the AR image brings into the realm the institutions of power and sight: the role of what is seen and how it is to be seen. This visual system created through the algorithmic frame moves beyond the mere visualization of data to deploying a strategy of procedural algorithmic embodiment in order to reveal a distinct model of the world. While discourses around algorithmic cultures highlight that such computerized models of control reveal the political realities of the information age (Galloway 2006), understanding the AR system as an embodied image within the context of an algorithmic culture, where the internal logic of the computational process both controls the visualization process and enfolds human thought into the logic of the visualization process, enables the user to consider a history of place by acknowledging their embodied position in relation to this history.

This is what is so compelling about the *rediscovery*'s AR image system, that the experience is profoundly self-conscious. To experience the technology is to be conscious of a personal affective experience; "what I know is dependent on what I can see, and what I can see is dependent on where I am in the world." And it is this sense of the self as both witness and situated, that enables the geographical location of the site to exist more consciously as a tangible place of the *Titanic*. There is a distinct and overwhelming sense of the site operating as an authentic place of history that is ~~both~~ visible, material, and framed in the present. The AR image  as an embodied image precisely because of how it consciously emphasizes the logistics of sight that then creates the validation for what is already known, and consequently there is the sense of the actual rather than the imagined relating to the existence of these histories in this place. The past is not understood as being made visible by the AR image, rather the past is made meaningful through how the

operational logic of the AR browser creates a narrative for an embodied vision in the present.

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