Title – Portable projections: analyzing co-created site-specific video walks

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Abstract – The author discusses key findings of a series of video walks developed as part of her practice-based PhD research (2011- 2014). Four video walks were produced for handheld projectors and tested in four different public spaces. The first video walks (*The Surface Inside* – 2011; *I-Walk* – 2012) were guided and only one handheld projector was available. The latter (*Walk-itch* – 2013; (*wh)ere land* – 2014) were created for multiple handheld projectors, offering participants a co-creative role. On-site observations revealed a shift in participants' engagement between earlier and later video walks. A three-fold method for analyzing audio-visual documentation also emerged during the research.

<1> INTRODUCING VIDEO WALKS </1>

Following a project that involved interventions with wool in the streets of Edinburgh and the videoing of these interventions for later projection indoors, I started thinking about how to move away from fixed media installations in architectural spaces. The pressing question at the time was: Why confine artworks to fixed spaces when digital devices allow us to move while media unfolds around us?

The first attempt (pilot) was producing a piece for a screen-based portable electronic device (PED) that allowed people to walk while looking at and listening to the artwork. Through this experiment, I realized the limitations of a screen-based approach. So, before committing to developing a series of works for screen-based PEDs, I invited three people to walk with a video-walk devised for an iPod (video and audio) and to report back on their experience. Independently of whether the images (or audio) synchronized with the city environment or not, overall the feedback was consistent: looking at the screen while walking was difficult, often dangerous, and failed to deliver a convincing augmentation of the environment; screen content and tangible environments did not merge. Participants reported safety issues: on-coming traffic, both human and motorized, conflicting with the screen-based approach. While walking, they struggled when the audiovisual content stimulated both aural and visual senses simultaneously, causing sensorial overload.

From the distance, I observed participants perform a common gesture: looking at the screen at the start and soon putting the device away in their pockets. This meant sound accompanied them while they were free to look around to safely navigate the environment. Besides the fact that it was winter and that holding the device while walking meant not being able to shelter their hands in their pockets, participants' comments supported the observations: looking at the screen while being deprived of sonically perceiving the surrounding was not feasible while in motion. I was simply asking too much of participants.

If the issue was the screen, we needed to move away from it. Could handheld projectors offer a better experience? As seen in Figure 1, these projectors are bright enough to cast images onto surrounding surfaces, meaning that participants could pay attention to the projections that illuminate their paths. The first test with a portable projector was in a park at night. This allowed me to assess the type of images that displayed clearly on surfaces (e.g. tree, ground) and how the distance between projector and surface affected the sharpness and brightness of the images. I then embarked on producing four site-specific video walks for handheld projectors, for safer sites. These video walks were the core of the research [1], and audiovisual data derived from each of them can be accessed online [2].

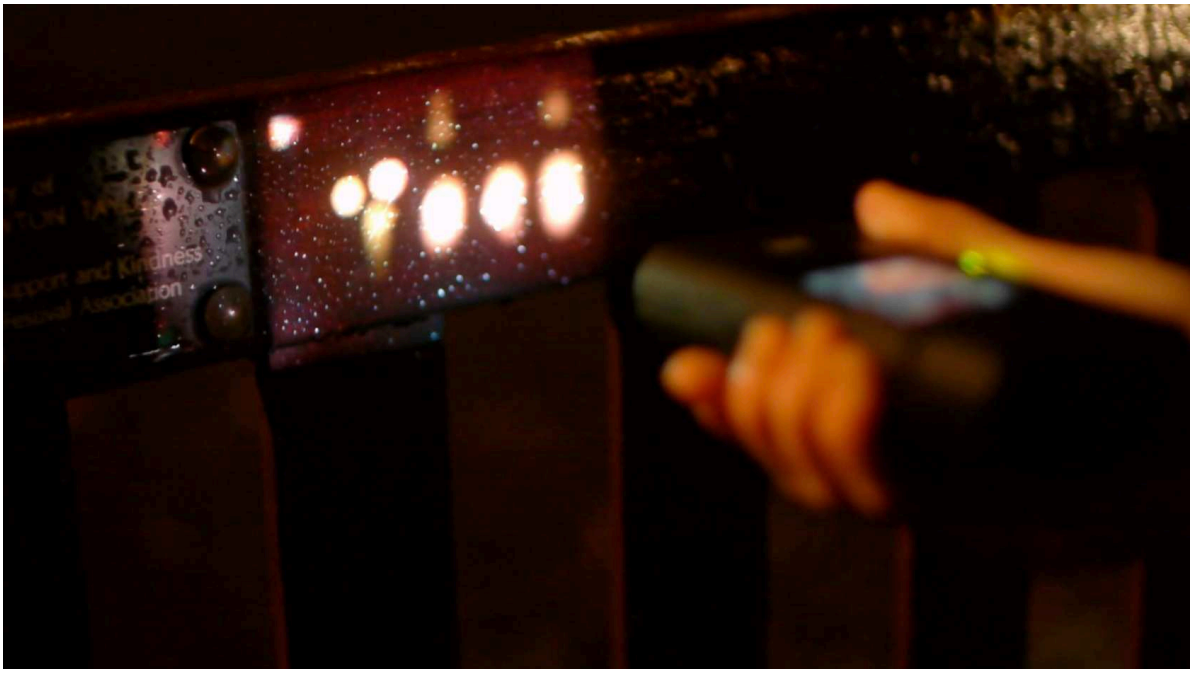

Fig. 1. Handheld projector casting image onto the wet surface of a wooden bench (Edinburgh, UK). Image credit: Chih-Peng Lucas Kao.

<1> DEVELOPING VIDEO WALKS </1>

Reflecting now on the process of developing the four video walks is easy, the connections between the theoretical aspects of the project and the practice are clear, but while producing the video walks the connections were hazy. There is a striking difference between making and linking theoretical discourses and practice. While immersed in the making process one is concerned with the conceptual and technical aspects of the artwork: Where and how is it going to be presented? How will the video walk relate to the site and public? Which formats can portable projectors play? What are the best compression algorithms for these formats? Which surfaces could be used as projection-screens? How long will it take people to walk from A to B? The list could go on, but you get the point. When you are immersed in the production process, the theoretical underpinnings fade (not disappear) into the background.

It was prior to and after production that issues regarding the textural composition of environments, the perception of spatio-temporal relations, the formation of media cocoons [3] around PEDs, and other questions tended to occupy my mind. In the process of making the four video walks (*The Surface Inside* – 2011; *I-Walk* – 2012; *Walk-itch* – 2013; (*wh)ere land* – 2014), new strategies for bringing video content out of the screen, walking with people and PED in a specific site, and sharing projections with others were developed.

The first video walks (*The Surface Inside*; *I-Walk*) were guided and dealt with the textural qualities of environments and the embodied experience of walking. Only one handheld projector was available, so the group followed one projection. The guide led the group through the site while the actions of participants were limited, the group stretching and contracting as it moved and stopped. Amongst other things, useful reflections about trail following [4] and path making [5] resulted from these guided video walks.

The latter two (*Walk-itch*; (*wh)ere land*) were designed for multiple handheld projectors, offering participants a more active role as co-producers, and addressed the notion of positioning oneself in relation to others and the environment. Participants grouped and regrouped, explored the site and projections on their own terms, freely sharing the textures generated by the superimposition of moving images onto physical surfaces.

Although the last video walks were more in tune with the discourse developed in the thesis [6], it is worth emphasizing that they built on the scaffolding provided by the first two video walks (portable projector) and the pilot (iPod). When the research started, I did not know how many video walks I would produce; how they would be connected; which aspects of each

video walk would feed into the next one; or which compromises I would have to make in relation to the site or the available PEDs. If I had known, I would not have been doing practice-based research, or research full stop [7].

Practice informs the research as it develops. There is no formula, but there is a sense of directionality in practice-based research. It is like jumping on a train without knowing its destination: you would not know the stops along the journey. You just have to trust there will be some stops you can explore and an end station where you can, eventually, get off.

<1> TWO GUIDED VIDEO WALKS </1>

***The Surface Inside* – 2011;** Building on observations and participants' feedback from the pilot, I set to produce video walks where visual content could be projected instead of restricted to flat screen surfaces. For the first guided video walk for portable projector, I collaborated with composer Shiori Usui.

First, we recorded audio and video content in the site, and edited it to create a coherent audio-visual composition that could be projected back onto the site. An elaborated discussion of the site and its visual-textural representation and perception has been thoroughly explored elsewhere [8], but the key idea is that a site is composed of different textural surfaces, some of which are more permanent than others, and that in every attempt to collect the textural qualities of an environment using an apparatus (e.g. audio, video) it is the past that is being preserved. However, if an image or moving images depicting the textures of a particular site are projected back onto the site, then different temporalities are superimposed and converge (see Fig. 2). When the superimposition is video-documented, this adds another layer of temporality and 'remediation' to the discussion [9] which we do not have time to go into.

The most relevant lessons learned from this video walk were from on-site observations and the subsequent analysis of video documentation (an ethnographic method used in walking research [10]) which provided supporting evidence for the observations. In this video walk only one device was used, but each participant carried their own PED to listen to the soundscape. The key issues were: 1. projections were more visible to participants at the front; 2. asking people to pre-load sound files was impractical and caused synchronization issues; and 3. the soundscape, although an effective immersive tool, isolated participants from one another and reinforced their media cocoons [11].

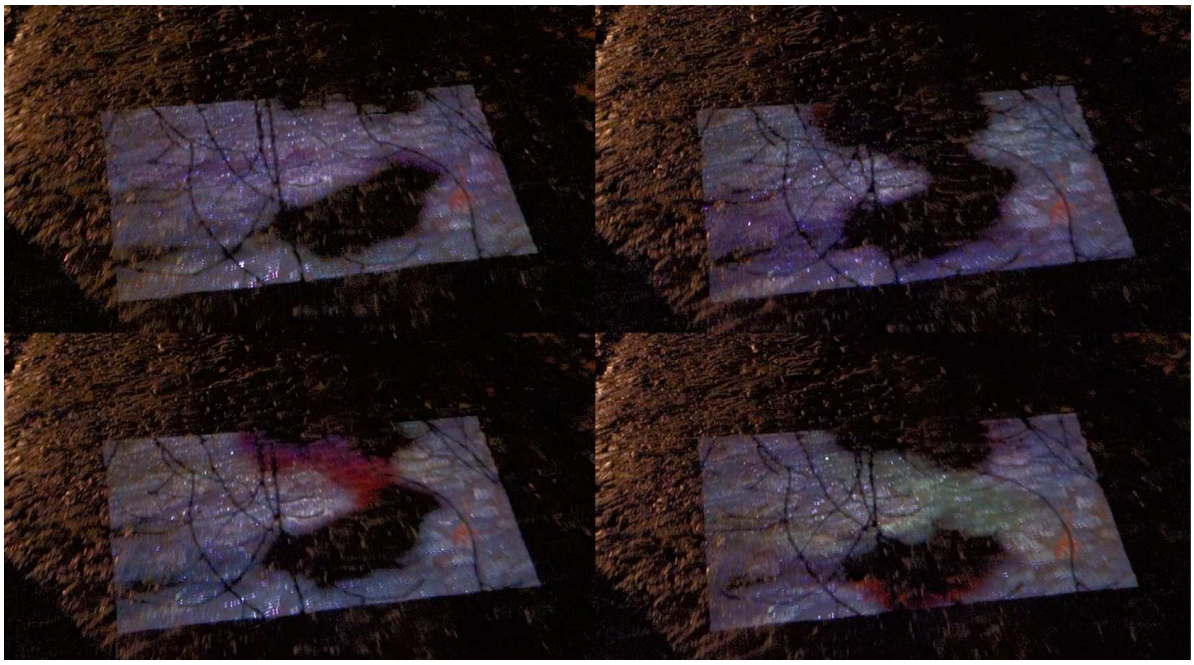

Fig. 2. Sequence of images depicting the superimposition of textural temporalities (Edinburgh, UK). Image credit: Chih-Peng Lucas Kao.

***I-Walk* – 2012;** In this video walk the aim was to conceptually explore the production of environments and place using threads and movement [12], while building on insights gathered from previous video walks. To avoid media cocoons, this video walk was silent, allowing surrounding sounds to compose the soundscape. The video walk was conceived for outdoors and to take place in a cold winter night.

A large group participated in the video walk, so the challenge was ensuring access to the projections. I embedded several stops along the walk, giving people time to regroup. The stops happened when projecting onto walls, landmarks (e.g. stones or trees), or more obviously, the large origami houses I had strategically setup along the walk.

Prior to the public presentation, I invited a fellow I-Park resident to play with the handheld projector indoors. What I noticed was that he seemed closer to the artwork while holding the projector. As the I-Park resident featured in Figure 3 mentioned, the connection between him, the site and the projected content was stronger, which relates to discussions of embodiment and extended cognition [13], and contrasts with the experience of guided video walks.

Without the projector at hand, the experience (although shared) is co-produced but to a lesser degree. Similarly, when walking a path, you step into someone else's footsteps but when walking across a field you create a new path (*wayfaring* vs path finding) [14]. All existing

paths are walked anew because it is impossible to walk in another person's footsteps with precision. But there is a difference in terms of agency: freedom to explore vs ability to follow. In video walks, *wayfaring* works with small groups, but with larger groups the projections are not available to all, and the ability to follow may be compromised. Also, if the connection between participants, site and projection is stronger when people hold the device, then this convergence needed to be explored further.

Fig. 3. Fellow I-Park resident hand holding and testing the projector (Connecticut, US). Image credit: Rocio von Jungenfeld.

<1> TWO CO-PRODUCED VIDEO WALKS </1>

***Walk-itch* – 2013;** The observations from *I-Walk* hinted at solutions for dealing with bigger groups and at the possibility of moving away from guided towards self-organized, distributed video walks. So, the question was: what if we have more handheld projectors and give participants the opportunity of playing with them? And, what if participants could project onto surfaces and textures and mediate the environment in real time?

On one hand, the challenge was sourcing enough devices to hand over to participants; on the other, was proposing an open-ended mediation approach that was engaging.

In previous guided video walks, media were fixed. Content was produced weeks, days before participants arrived. I edited a video and decided where to project during the guided video walks. Conversely, in this first self-directed video walk, portable projectors were handed over to participants who then decided what textures were projected where, how and for how long.

The devices were bundled in sets: handheld projector, radio frequency receiver, and spy camera. The sets were to be used in pairs: one person carried the spy camera (one hand); while the other held the projector and receiver (two hands). Participants had to collaborate to pick up content and project live visuals onto the site: reacting to each other's gestures and presence using their bodies (see Fig. 4); and combining their efforts to superimpose multiple projections (see Fig. 5). By handholding these PEDs and as a result of spontaneous body gestures, participants were able to modify and co-create the content that was projected during this collective video walk performance.

Fig. 4. Multiple live-feed projections (Edinburgh, UK). Image credit: Rocio von Jungenfeld and Chih-Peng Lucas Kao.

In line with Material Engagement Theory, while holding the devices, participants actively experienced their relations with the site, video walk and people. The handheld devices served as "enactive cognitive prostheses" [15], that expanded participants' agency, enabling them to embody, manipulate and co-create the video walk as they experienced and moved in the site together. Holding the projector and spy camera offered haptic experimentation of visuals, a way of touching in the distance, of connecting materials (e.g. furniture, fabrics) and people.

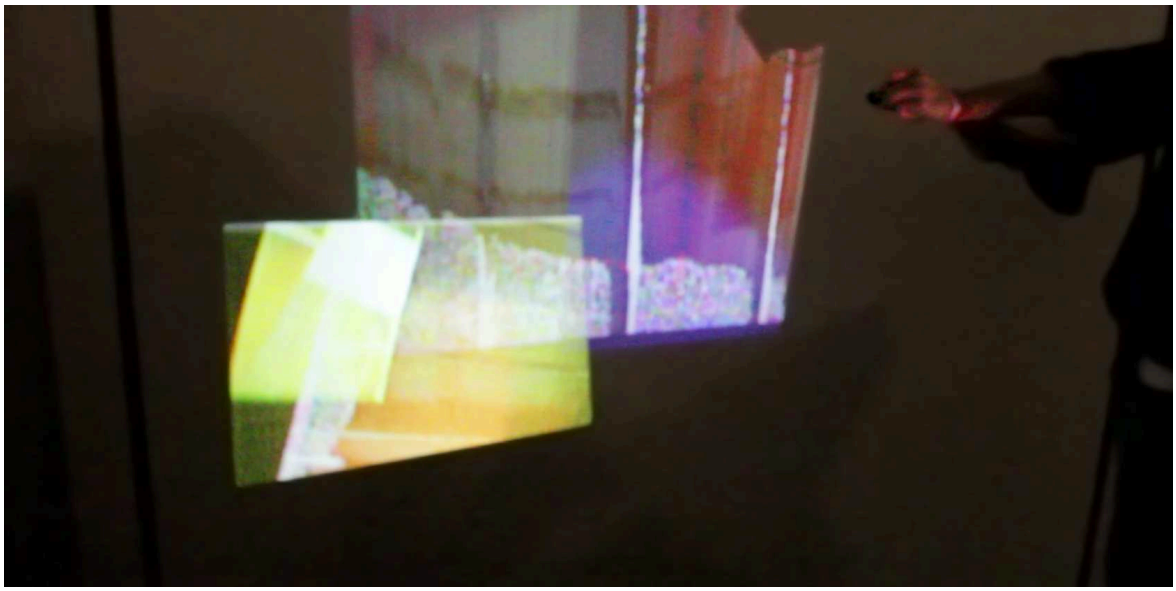

Fig. 5. Participant holding spy camera feeding content while two projections are superimposed (Edinburgh, UK). Image credit: Rocio von Jungenfeld.

(*wh)ere land* – 2014; The multiplicity of projections and sense of collective production observed in *Walk-itch* were themes that needed to be explored further, but live-stream projections were discarded for the last video walk. The challenge was having multiple devices spread across a large site with insufficient illumination, which would result in poorly lit moving images (projections). Hence, a return to the initial fixed-media approach was needed, and projected visuals were edited beforehand. But by giving participants the chance to operate the handheld projectors as they move across the site, the projections were not fixed. Participants had agency to explore their connections to the artwork, site and each other in their own terms.

Handheld projectors were given to small groups (3-5 people) and people were invited to negotiate and share the PEDs amongst themselves. Together, participants decided where and how the moving images were projected. This approach minimized the issue of isolation (media cocoons) and of being too far away from the projections, enabling participants to collectively (and intimately), manipulate and combine the projections.

Some of the actions that participants performed during the video walk were documented from different people's perspectives (multiple angles). The audiovisual documentation showed participants exploring the possibilities that handheld projectors offered, for instance: projecting onto cloths, handbags (Fig. 6), the ground, benches, bins, skin, trees, stones, walls.

Fig. 6. Handbag of participant serving as portable projection surface (Hawick, UK). Image credit: Chih-Peng Lucas Kao.

Occasionally, the explorative efforts of different groups converged, as shown in Figure 7, when two groups brought their projections together, co-creating a hybrid digito-tangible space where textures – physical (asphalt) and digital (projections) – were superimposed.

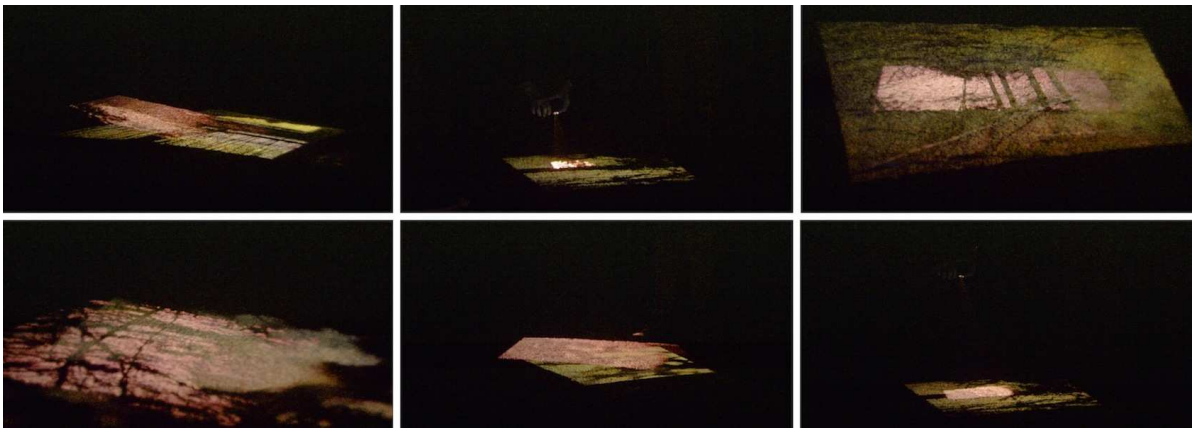

Fig 7. Two groups converging and performing the projections (Hawick, UK). Image credit: Chih-Peng Lucas Kao.

As part of their group, each participant had the opportunity of having both a first-hand (path finding) and a *wayfaring* experience. Participants could merely observe the actions and walk along (*wayfaring*), or be actively involved while projecting, acting as projection surfaces (e.g. skin, cloths) or holding projection surfaces (e.g. handbags). Their agency within the *assemblage* of things that constituted the video walk was performed across the site and changed over time [16]. Participants could partake in various assemblages simultaneously and shift alliances to move from one assemblage to another (for a more detailed discussion see thesis).

<1> ANALYSING THE DOCUMENTATION </1>

The video walks were ephemeral, performed onsite only once or twice, so what remained from these creative research experiments was their audiovisual documentation. Where possible, I documented the video walks myself, but often had help from colleagues and occasionally participants who had documented the experience shared their data with me.

Over the lifetime of the project (2011-2014), I realized how challenging the site's low-light conditions were. Images and footage were generally dark or unfocused, and I had to work with these constraints during the analysis phase. In the last video walk, several participants documented their experiences on their mobile phones. Having access to these multiple perspectives opened the doors for developing a method to analyze audiovisual documentation which I had not envisioned when I started the research.

Further insights into how participants engaged with the video walks were possible thanks to the multi-perspective method I developed, which involved analyzing the audiovisual documentation through three lenses:

1. a *SPIDER view*, following Tim Ingold's discourse around lines and how these are produced as we experience and at the same time produce the world around us [17];
2. an *ANT view*, based on Bruno Latour's actor-network-theory approach where instances or frames are used to analyze different relations between actors (anything can be an actor) [18];
3. and, an *ASSEMBLAGE view*, drawing on Manuel DeLanda's *assemblage* of assemblages' theory, where connections between agents (actors) are contingent and change over time [19].

By using this three-fold method, it was possible to analyze the audio-visual documentation by following an individual trail over time (*SPIDER*), by describing all possible actors and their relations in a particular instance or visual frame (*ANT*), and by combining these two approaches and following groups of actors as they moved, converged and changed over time (*ASSEMBLAGE*).

This three-fold multi-perspective analysis method [20] could be applied in other research contexts where audio-visual documentation is a primary data source. I developed this method towards the end of the research process, when the theoretical discourses I had been engaging with and the practical outcomes converged. When I started the research, this three-fold approach was not available to me, firstly because I had not had the time to study the three crucial theoretical discourses in detail, and secondly because I did not know how the video

walks were going to evolve and how they were going to be documented. It was the practice-based research methodology that enabled me to develop the artworks and this particular analysis method.

<1> CONCLUSIONS </1>

In this practice-based research, I have investigated the creative potential of handheld projectors to become agents of co-produced mediated environments. Bearing in mind that screen-based PEDs such as mobile phones or iPods can isolate people from their immediate surroundings, in this research I have attempted to disrupt and break through these isolating media cocoons, and to invite people to become co-producers of shared mediated spaces using projections. During the research, the pilot, guided and self-directed video walks and the three-fold visual analysis method were all intertwined. None of these aspects – neither the theoretical nor the practical outcomes – could have been achieved in isolation without the experimentation and critical reflections that resulted from the practice-based research process.

My intention with this article has been to highlight the importance of the different methodological components of any practice-based research project, and how both practice and theory are integral parts of the process, happening in parallel but also continuously influencing each other [21]. Furthermore, the rationale has been to put practice at the heart of the research, and to examine how, through a sustained period of practice, it is possible to identify issues and propose creative solutions, building upon the experience and theoretical discourses with which the researcher engages throughout the whole research project.

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