

# Mediated Spatial Narratives

## Experiencing Archival Material and Shared Memories in Urban Space

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### ABSTRACT

In this paper we report on studies we conducted focusing on the use of Augmented Reality to annotate real sites with relevant archival content. This is an interdisciplinary study of novel interactive technologies and supportive platforms such as geolocation-navigation and contextual digital augmentation of archival material in public spaces. We involved community volunteers, experts and public in a participatory heritage initiative. We designed an experience that supported a multi-platform participation, via an online geo-tagging portal and a mixed reality navigational experience. In an iterative design process we explored the use and preference of mobile devices, the controlled design of digital content anchored to real sites and the use of AR to support urban narratives. We did this by conducting a series of user walkthroughs with recruited participants and workshops with local experts related to the case studies. In this paper we argue on the importance of situating urban experience of digital archives and stories in the actual locations of the events they represent as to better support immersion, enhance place experience and reinforce situated learning. Our work contributes to the design of hybrid spatialities and experiences in urban space that relate to local memory and culture.

### CCS CONCEPTS

- Interaction paradigms → Mixed / augmented reality

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*Media Architecture Biennale 2018, November 2018, Beijing, China*

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- Computers in other domains → Digital libraries and archives

### KEYWORDS

Augmented reality, Digital heritage, Urban Space

### ACM Reference format:

A. Kostopoulou, A. Javornik, P. Koutsolampros, S. Julier, and A. Fatah gen. Schieck. 2018. Mediated Spatial Narratives: Experiencing Archival Material and Shared Memories in Urban Space. In *Proceedings of Media Architecture Biennale 2018, Beijing, China, November 2018 (MAB'2018)*, 10 pages.

## 1 Introduction

In the digital turn there has been a gradual interest in documenting people's stories related to their places of everyday life. Collating and further sharing with others such archival material has been in the core of coproduction initiatives by artists, researchers and everyday people who form groups and collaborations to support collective experiences, both as physical and digital. The widespread availability of personal computer technology, including desktop computers and smart phones, has reduced barriers to cultural heritage access. It has further allowed access to information in an interactive way. Although web sites provide a convenient front end, more compelling experiences make it possible to access this content in situ. This combination of physical and mobile elements has created hybrid spatialities in urban space [12]. In this paper, what we believe is that geolocation, mixed media and especially Augmented Reality (AR) technologies have the potential to significantly contribute in preserving, sharing and experiencing local stories and memories that matter to people. In particular we are interested in exploring how the two can be brought together, and how the public can use location-based awareness and mobile media to create access and

support information around cultural heritage. We set out to explore these issues, through iteration, and test the challenges with getting participants to actively engage with such systems, and develop the ones necessary to support them.

Mixed reality technologies can mix combine computer-generated content with real spaces. Augmented Reality, in particular, supports situated experience of digital content (images, text, audio and even 3D models) and it can facilitate the overlaying of digital on physical elements by tracking the position and viewing the real world through a camera [10, 14, 16].

The potential to use AR to unlock cultural heritage has been known for a long time. The very first mobile augmented reality system, the Virtual Touring Machine [5], provided information about the Columbia University campus, including the names of buildings, the locations and the appearance and purpose of long-demolished buildings. Further work extended journalism and a narrative of a student riot in the 1960s. Many systems have been developed since then. For example, ARCHEOGUIDE [21] and LifePlus ushered in the use of sophisticated ways to overlay solid digital content experienced in situ.

Latest applications annotating the real world with digital information include Urban Augmented Reality. Developed by Netherlands Architecture Institute this mobile architecture platform supported diversity of content such as text, image, film, archival material and 3D models (<https://nai.hetnieuweinstituut.nl/en/uar>). Users can reveal content about lost, current and imagined buildings and sites by pointing to selected destinations in actual places in Netherlands. Celebrating the first stage opening of the Battersea Power Station in London the Battersea Power Station Heritage Trail mobile application provides three experiences: a location based heritage trail, a game and an Augmented Reality experience which allow users to peek into some of the buildings that are currently under construction (<https://calvium.com/projects/battersea-power-station-redevelopment/>). Location based Augmented Reality was massively introduced to players of Pokémon GO, gamifying urban space [2] by bringing players to outdoors explorations. From tourism, journalism, architecture and gaming applications the last two decades a great number of location based experiences bring users outdoors, by creating hybrid urban experiences. However, almost all of these attempts have relied on the careful authoring of content by a curator.

The first VisAge prototype attempted to provide information about the social life of buildings in a three dimensional space (see Figure 1). It allowed people to peek into the front of a building. Selected characters were designed to narrate the challenges of their lives and the world, reflecting their local area between 1851 and 1901.

Through public demonstrations at the 2013 Brighton and Hove Open Door, together with many subsequent demos, it became apparent that the ability to discover information about everyday

life in a three-dimensional form was highly engaging and the prototype clearly demonstrated that AR could be used to provide a compelling local heritage experience. However, the content was carefully designed and authored for a single street facade of a building, making the experience a high quality end product. Unfortunately, the technical expertise required to build such an experience is prohibitive for people less technically inclined who are thus excluded from the process of content selection and authoring.



**Figure 1: First AR prototype. Figure 2: AR Experience: by pointing the mobile device to a predefined façade the digital content appears superimposed on the façade.**

The aim of this research was to expand on the original VisAge study by examining different aspects of spatially situated heritage. In contrast to the original study we aimed to better situate historical media by spreading them across relevant routes and engaging thus the user continuously instead of at specific points. Urban studies usually introduce time from a vantage point where they spread time across a radius that draws an interaction space. However, most of our everyday experience of places is via routes, traces and paths. Experience therefore becomes more fragmented and interrelation of points in a journey does not always support a well-defined continuity, especially in the expansion and rebuilt of our modern urban centres. Of paramount importance was also the involvement of the local community so as to allow contribution of historical information that is tied to the place where historical events occurred. We specifically aimed to remove the requirement for technical expertise by creating an automated system of authorship, which would allow uploads and updates by the main actors, the community itself. While this allowed the community to be involved in the content creation, it also provided us with a way to feed their reactions and responses directly into the iterative development process of the various AR prototypes, which we outline in detail in the next section.

## 2 Methodology

All AR prototypes were built using Unity3D and Vuforia and deployed on tablet devices or large mobile phones. Unity3D was used as the main underlying system for matching historical content to specific sites. Vuforia provided both the tracking capabilities but also allowed us to select the appropriate exact locations to display historical content. Across all case studies we chose to augment three to four different locations on a continuous urban route and a small number of textual accounts, related imagery and audio narratives that could provide sufficient stand-alone information, relevant to the augmented sites.

In two of the prototypes we designed and tested two to three versions of the experience with content variation, including text only, text and image, audio. In the text design we preserved the formatting in text bubbles (with one or two sentences) and only allowed the bubbles to grow in size in relation to the distance from the real-world element preserving manipulation of content reading via bodily movement. Thus the user may only get a closer look at the digital content by moving closer to the augmented site, instead of touching the device (i.e. by using 'pinching' gestures typical in map applications). Keeping the user engaged with the real space has been prioritised in all functionalities.

All testing with people was within controlled and semi controlled experiments with a researcher providing an introduction, but also guidance and support throughout the experience. That allowed us to design the applications so that the participants may primarily focus on content and context rather than other interface elements.

We organised a series of workshops with experts and community members who also contributed the space narratives. We further conducted a number of user walkthroughs with participants recruited via online university platforms. In the case of the workshops, we split the development in two stages; an indoors demonstration and testing and an outdoors exploration of the actual trail in space. In the end of the user walkthroughs and workshops we used questionnaires and semi structured interviews to collect feedback. In the very last prototype we tested a variation of think-aloud feedback throughout the journey. A qualitative analysis of discursive participants' feedback is presented in this paper.

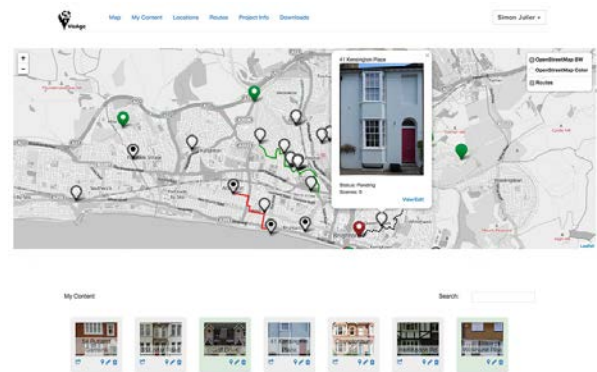
## 3 Iterative Process and Prototype Building

We carried out three experiments providing different experiences. All experiences were explored in urban contexts, involving the public realm in a quite diverse mode; a local town centre in a central neighbourhood in Brighton, a University campus public realm and a High Street artery in an East London neighbourhood and its adjacent urban convex spaces, such as a back streets and a park. Through the case studies we explored sites of various scales allowing us to set up dense or sparse routes that could be explored under controlled and semi controlled navigation and experienced within a timeframe of 20-30 minutes maximum.

### 3.1 Geolocation, Navigation and AR Experience of a Local Town Centre

The first study took place in Brighton. In response to the limitations of authoring we highlighted above, the first new prototype was developed to provide: 1) An authoring tool (the portal) and 2) a new AR experience.

The digital portal acts as the main centre for information. Its purpose is two-fold, as an authoring tool where people input material but also as a viewing tool. The portal behaves in a similar way to a wiki. Members of the public apply changes to a 'universal' body of text, with the occasional addition of other media such as images and sounds (figure 2). Information as input can be uploaded and attached to specific points of the 2D map through the portal. These points may lead to rich content, added in time by different authors, similar to Wikipedia articles. In our case the system makes it possible to assign images, text and audio.



**Figure 3: Online Portal: the people can see all the locations created on the map and they can create locations and add multi-media content.**

The rich content for each point is attached on a rectangular area that acts as a canvas allowing each element to be accurately positioned. Each participant can create a trail by indicating specific points on the 2D map and uploading their own content. The second component of the navigation system was based on geolocation. Guidance was designed through a series of three dimensional anchors for the stops to specific buildings and coloured footsteps that highlighted the virtual trail the user could follow. This prototype and experience was tested in Brighton with the Regency Town House volunteers.

An AR prototype was tested in the city of Brighton during the Heritage Open Days. Using a mobile tablet that offered an augmented reality experience, participants followed a trail, which revealed hidden content at three locations in the city. The trail consisted of three locations, which tell the story of the Croxson family who settled in the North Laine area of Brighton in the 19th century. The content had to be distilled to a small number of images and text, which was drawn from a huge array of sources

including textual data (census records, occupancy records, historic building plans, planning permission records, birth and death registries).



**Figure 4: Participant testing the application during Brighton Hove Open Days case study.**

Three locations were chosen for the trail to provide sufficient distance that people had to walk about. The content for the three locations is described below:

**Location 1:** This was the physical site of the Croxson's first family house, where they lived for nearly 20 years. The building was demolished in the 1960s. The content revealed is a hand drawing that shows the street façade of the house. We chose this site because it works well as a starting point for a route of historical significance (first house of an important local family) but also because it allowed us to work with the concept of a building that no longer exists. While the demolition of the house itself was an important historical event (it was part of the wider demolition that took place in the area during the mid-20th century) this choice also illustrates the capacity of AR to visualise a part of the city that does not exist anymore.

**Location 2:** This was outside of a terraced house in a residential area in Kensington Place. The numbering of the house serves as a clue through the digital application for ease of navigation. The rich media presented included a coloured photograph of the interior of a house typical of the period but also floor plans as technical drawings that show that the family as doing financially better and was thus able as to relocate there with their eight children in 1871.

**Location 3:** The last destination of the trail brings participants outside of the former Pelham Street Infant School, currently serving as a part of City College Brighton & Hove. In this way, it introduces a different building typology. Although the former building was demolished and rebuilt, there seems to be a continuity of character in land uses in the area. In this part of the trail, the user picks up from the previous location a different character of the story, this time a lodger of the Croxsons' second family house who is the Head Teacher of the school, Ellen Chambers. What the application (AR mode) reveals is a black and white photograph of the school photo of the time, with pupils and teachers posing, surrounded by toys and teaching material in the

nursery setting. This is used as an anchor, to further compliment the information material around this stop with references to infant mortality rates of the time.

### 3.2 University Campus AR Experience

For the second study we only focused on the Augmented Reality part and developed a new prototype providing information about the main campus of University College London. We developed a trail with three stops in front of three of the buildings of its complex, connecting via a trail its public realm. This prototype was tested using three distinct categories of content: text only, image and text, audio. The content revealed some historic information related to the origins of each building and/or its use. The content was based on the audio guide that has been designed and is available from University College London. We transcribed and abstracted the amount of text that we considered was sufficient to stand alone and create a compelling story. The text was placed in bubbles that didn't cover more than 20% of the screen. A number of images were used for the text and image categories and were carefully selected to illustrate directly the textual account. The prototype and experience was tested in the campus, as part of a controlled experiment where we engaged with a great number of participants who signed online to participate.

The AR experience for this occasion augmented three different sites at walkable distance within the university campus, keeping the trail within its public realm. That allowed proximity of locations but also minimized risks of safety which was very important given that participants would be immersed to the digital content and exposed to various stimuli due to the polyvalence of the locations and mediums in use. The first stop of the trail was the Darwin Building, where the marker for augmentation was a sign on the wall leading to its entrance. The choice of marker allowed the closest relation to the building site and its content. Brief and concrete statements provide information on Darwin's family but also the site's undisrupted views from North London dated back in time.

The second stop was the Medawar Building, providing some background on how it got its name but also on other architectural elements of the complex the building belongs to. The target used for augmentation included part of its façade and entrance. As the building is situated in a segregated smaller courtyard it forced viewers to position themselves right in front of the building entrance encouraging more social encounters. The last stop was outside the University museum. The target used was one of the windows facing the main University square. The content focused on a number of paintings of significant artists that form part of its collection.

We tested the experience with a large number of participants (87) evenly distributed to all three variations of content: text only, text and image, audio.



### 3.3 East London AR experience

Focusing on AR and content design we developed a third prototype through the collaboration with the AHRC 'Histories of Whitechapel project' (Survey of London and the Centre of Advanced Spatial Analysis at UCL). The experience we designed for this study augmented four different sites with historically relevant content in an urban area of East London. The sites and the corresponding content were carefully selected in collaboration with the Survey of London who provided us with an abundance of written and textual content relevant to the history of the area. This allowed us to select both the images and the text from the archives. We chose the points for augmentation at different sites on a continuous urban route in order to introduce a variety to the site exploration.

We designed an experience that augmented four different sites with historically relevant content: (1) a park, (2) a Bell Foundry shop, (3) a Bell Foundry workshop and (4) a disused Synagogue building with the addition of an old theatre site (excluded from the user journey due to its distance and the design of the journey's duration). Following the research focus of this study, we designed and tested two versions of the experience—one with text and one with the same text, but also added images. The text was formatted in bubbles and we varied its amount across the sites in order to explore users' reactions towards it. The content for the synagogue was dense with a lot of details and consisted of three bubbles with long or numerous sentences, while the content for the bell foundry workshop and shop was rather concise and displayed only two shorter sentences. Three participants used the digital experience that had both text and image and six used the app with text only.

## 4 Interviews Analysis

### 4.1 About Novel Technology

Both participants and experts were impressed with the use of the technology to annotate real buildings and destinations outdoors. They were pleased with the resolution of visual content and generally found the text quotations and its length enough to illustrate facts. That followed our revisions based on initial feedback during our second prototype testing, when some indicated they would like a story with more clarity. They believe that the visual content that has been selected and captioned needs to stand on its own, even if there is not much more information retrieved around it. They find it interesting but not as much as to go back and check on their own. They need the most information they think it can make sense to be presented in a meaningful and coherent way and they need to access it on the spot. They would like the application to give external links as an option if another website or portal can provide something more.

Moving closer and farther of the marker-physical structure in order to zoom in or out of the digital content attracted some positive feedback in terms of immersion, however, caused some

confusion to participants who were familiar with using only fingers on touch screen to conduct the same action.

On Augmented Reality technology some participants were new to this. What was suggested that would take the experience to a different level if accompanied with other media such as sound or moving image.

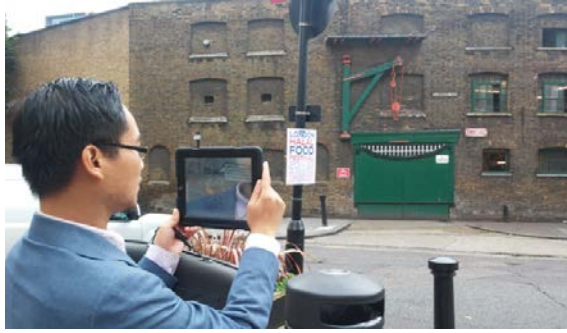
*'Having those other media with the AR would bring the whole magic...but the AR on its own, to me it's pretty special...but to me this is all new...'*

Most agreed on the fact that there are still technical limitations of the existing applications. Tracking outdoors might need repetitive iterations depending on lighting conditions. Positioning the device would make the material appear on the screen when the application was able to track the markers in the physical environments and their annotation as textual and visual elements would adjust to the distance of the device in relation to that marker (2-dimensional images of the façade interfaces). The flickering effect could further disturb their experience causing some frustration. That was not however the experience of the workshop participants that took place later in the afternoon when tracking was responding quite fast.

*'Sometimes it disappears. It would actually be a little bit frustrating if I were a tourist from the other side of the world and this was a really famous landmark, and I would come here and find that it's not working well.'*

During the workshop with the experts a tablet and a mobile phone were both used with the application installed. In the case of the user walkthroughs there was only a tablet for testing. What is interesting in both occasions there were references on the preference of the device. Users have preference for a small mobile device as it is more common to have available in a daily basis, whilst lighter and discrete to use, compromising in better visibility a bigger screen would offer.

Augmented Reality applications are still not very easy to use. Instructions of how to use them are limited, normally as brief graphic quotes, audio or in person guidance. As an active system, unless it works particularly well, people have to play around to understand how to use. The survey and workshop highlighted limitations of the technology as flickering effect, use of smaller versus larger and heavier mobile devices (phones, tablets) in particular in outdoors settings, zooming in the content via body movement albeit playful in engagement and immersion.



**Figure 5: Digital annotation in the actual space required participants to move closer or farther of the building in order to reveal digital content and zoom in / out.**

## 4.2 About Immersive Experience in Urban Space

Participants from the user walkthrough group stated that they saw an educational value in the content of the experience:

*‘It did really give me an insight into this part of east London which I didn’t know’ and ‘If you are doing a walking tour – you can do a self-walking tour that way. It’s really cool and far cooler than something like Pokémon, which I think is quite a waste of time.’*

They pointed out that the different factors that helped them with learning, such as the format of the content:

*‘It’s good, it’s a way to know a little bit more. Because, to be honest, I am not a big fan of reading a whole passage on a history or a back story. But if you can make something like that, short and simple, easy to understand, at least I know what’s it about without going through the whole passage’*

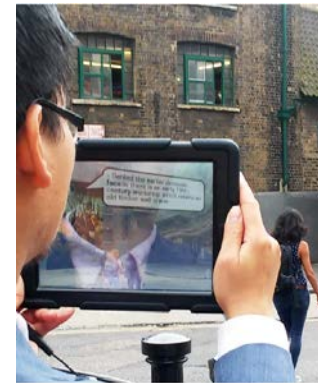
From a historian’s perspective the way information is conveyed to accompany an image for this application is very different to their practice. Normally an image is accompanied by richer textual account. Using a small mobile device and especially outdoors the text was advised to be kept as it was, concise in a sentence and in a small number of quotes, further recommending the importance of using an emotive image. That is how the actual view of the environment or the annotated image would not be overshadowed, allowing the user to have more context to interpret.

*‘...what you are doing is exactly the opposite, like inversion...it is more image heavy with less text...image takes more the importance of the content and the text is only a quote to me...’* (expert)

*‘...so if you’ve got people in it, from a certain time, doing particular things...that image about the bomb site...that’s really helpful, because it gives me something more human to respond to...so I think having both aspects somehow is the ideal and maybe it’s easier to give a human aspect in a photograph cause there is more to interpret...’* (expert)

The experts workshop took place in two stages; indoors and outdoors. Indoors most of the engagement was about the technology itself, try to unpack how it works and play with it. In the actual location the scale of the building and physical marker along with the context attracted more of the attention and bodily position and interaction drove a more engaging experience in the actual site. Situated outdoor experience along with good resolution seemed to support more immersion.

*‘The resolution looks really good...it makes me want to enjoy the resolution by zooming in...like on a detail...as an ornamental detail on the theatre... they’ve got these really nice columns and just at the base there is maybe like a flower ...if I can just keep going...I just want to enjoy it and look into the details...’* (expert)



**Figure 6: Participants in our East London study reveal digital historic content overlaid on the real environment through the use of the camera which is embedded in the mobile device.**

An important characteristic of the experience was that it contextualised and situated knowledge – the in situ and learning weren’t separated, but happened simultaneously: *‘It seems quite useful I suppose. There have been numerous occasions when I was walking around the city and I was looking for more information. You can read a guidebook in advance, but when you get there, you’ve forgotten what you’ve read and these useful bits of information bring it to life.’*

Participants were impressed with both the technology and with the story the system told using anonymous architecture.

*‘...lovely stuff...really good...excellent...oh, this was a house and a shop at the same time...that’s good, I like that...what date this would be? That’s about right...interesting...how many rooms this house would have?’*

Because of such contextualising, the physical surrounding can acquire a new meaning as some participants pointed out: *‘It’s certainly a positive step towards giving people cultural experience when they travel, explore areas’* and *‘It definitely feels like it’s opening up, this view. Unless if you have that knowledge, you are just looking at something and you are just getting that face value’*

image and the sense of what you are seeing. But this is opening it up and adding extra. It kind of reminds me about knowing how flowers are called or trees or birds. I am very good in knowing plants and trees and that always adds a bit of extra layer for me, birds. I have no idea really, so I go around and see all these birds and don't know what they are.'



Figure 7: Screenshot of historic content overlaid on the real environment. (archival content, Wikimedia Commons).

### 4.3 About Authorship

During the semi-structured interviews in the Brighton study, where we introduced to the application an authoring tool, participants were asked whether they would be interested in contributing content themselves and what would make the system sustainable for a community to use. Most participants consider that this application could be used for educational, cultural or commercial purposes for a city or organisation initiative. They can see it used as a complimentary guided tour for Brighton, for instance, with multiple layers of information and commercial interest to be added. They see schools, the library and the town hall as potential interested parties. However, for senior participants there is a clear positioning when referring to personal contribution:

*'Not me, no...but a lot of people would like it, town house, schools, but communities, not sure... how a community would put it together?'*

In an informal way, they raised the issue of management. What still seems dominant in their perception is a very top-down approach of how the system can be authored and managed to be sustainable over time. Other comments on sustainability raised technology issues and dependency on other platforms and their potential protocol updates i.e. Google maps, which bring again on board top down dependencies and hierarchies that people still feel are very strong.

Continuing the discussion on personal contribution with their own content on our portal but also usage of such digital applications, we found again a very different approach between different generations. Younger participants responded positively to both authorship and usage. As observed during a previous workshop

we ran with the community of volunteers [14] younger generations are less hesitant to contribute to online platforms since they are already familiar with other social media content input. Senior participants seem aware of these platforms and of its potentials. However, as two of them highlighted, they wouldn't seem themselves contributing or using them. Different reasons are given as a justification. For an older male for instance, visitor in Brighton on the day, there is the preference of teaching himself instead of being taught via a system. For a second one, there isn't an intrinsic motivation to contribute as such, unless they were really fascinated and triggered to do by another person, however, they would like to use the application. It is not the first time we get such feedback [14]. There seems to be a clear distinction between author and consumer of experiences with people not always being interested in both roles.

## 5 Content co-creation, Remediation and Situated Outdoor Experience

### 5.1 Supporting Well Designed Digital Content

Constructing a narrative using fragments of information that are found in varied modalities challenges the design process. In the case of Brighton study, in a process of constructing the family's story and the physical trail, different pieces of information were used as for documentation. For instance, in the first location, along with the drawing, a family photo is also displayed. Users are exposed to different forms of stimuli as archival material. From the documentation through a photo to a sketchy drawing along with text bubbles with a bit of narration to make sense of the story, they swipe to different modes of representation-documentation. This happens while they are situated in the actual site, in front of a building, and in the case of the first location, just a remnant wall which defines a boundary of the site, sharing also this experience between the place of their presence-physical but also the place of immersion through the digital AR application space.

The above are some of the challenges of constructive a narrative using the available material that is adequate to support it. Its variation in modality and format represent the real conditions and challenges of using archival material. From that second prototype is was very clear that a well-supported narrative with digital content for AR would have to balance the textual and visual content. That is what we set to explore in a series of focused tests with our second and third prototypes.

### 5.2 Spatialising Actions

From a technical point of view, the goal was to be able to have people point a tablet or phone at a structure and access information. This requires that the phone can track – it knows where it is, and what it is looking at. However, this is extremely challenging and requires an enormous amount of iteration between planning through our portal, and taking images of the site. For example, for the first location we could not track off of



the building remains at all, and so a target had to be artificially used.

*'It is not so bad...I am in front of the fence...what I say it was a house there...it leaves it up to the imagination...the house was there, it was where the cars are...it is that sort of thing...I think it is better than nothing...it is a way of telling the story...'*

Apart from technical matters, we found that working with existing facades raised a number of other issues. In particular, some residents were very happy to have their home features – albeit in an abstract form – on a heritage trail. Others objected. In a process of mapping a story in actual locations, community cooperation expands to consider local residents and their contribution in a different type of involvement, as more passive. Therefore, availability of the location itself further raises issues of consistency for mapping content.

### 5.3 Actual Site of Encounters

Beyond the technical challenges of spatiality in the design of a trail experience we are interested in the instances of encounter between the user and the site but also user and passers-by. The design of a trail entails exploration and discovery of a place through the stories and visualisations. Despite the designed elements of content via text, audio, image and their combinations, we identified two types of aspiring encounters: a/ the digital variations for the immediate interaction and feedback as extra layers of information b/ the physical real encounters with other people as social encounters for knowledge exchange.

Digital layers can be any further links to pieces of information that could provide deeper knowledge and understanding of the site or building. This can create depth to the application with further hyperlinks to internal pages or external websites and platforms. It can also be an assistant support as wayfinding, to direct their attention. As for the real encounters with other people as previous research observed with other situated media [13, 15] using mobile devices like tablets in situ or having situated media, can trigger the honey pot effect, albeit in different numbers.

That is what we observed for instance during our third prototype around the second stop the Medawar Building. The description in the case of the Medawar Building, was more detailed and focused on the built environment which triggered curiosity and queries. Particularly, for this building, the difficulty to match what they listened to what they could actually see on site, generated many questions towards the guide-researcher. That is the very moment where participants identify the importance of having something to refer, someone to ask, or something in the application itself to point to them where to look at.

*'...the idea that it can point somehow to a location, it can replace the guide...only when you have a question you really need them...'*

When they learn about something that it is already there in space, they are even more intrigued to explore. In spite of content categories, many participants tried to find what they read or listened. Observations highlight the case of the blue dot in Darwin building and the handles in Medawar building. Some would move heads around to see, others would move closer to the point. (see figures 8-9). In the case of the Art Museum some participants wanted to go inside and visit or actually see what they read or listen about. It was more frequent when we run the sound only content, since it allowed participants to move around without losing content flow. In some cases finding windows to reveal some visual reference to the inside of the building was a very satisfactory moment for the participants.



**Figures 8-9: A participant in front of a building in the University campus reveals content as text and image about the special design of the handrails at its entrance. That makes her move closer to look at the actual object.**

What we further observed is when encounters with passers-by lead to sharing of information via social interactions. What this noticeable experience brings is more probabilistic encounters [7]. In the case for instance of the Medawar Building a professor stopped approached one of the participants to give some more insight behind the handles of the entrance. He further invited the participant and researcher inside the building to show a plaque with information about Medawar-the Nobel Prize winner. Another passer-by, stopped another participant to share another piece of information about the same site as it was used in filming (Batman-Gotham City). Previous research suggests that emergent narratives relating places to hidden information trigger more exploration [1, 6]. Places with rich memories and stories, therefore, call for more



attention when situating experience on the actual site, to allow richer encounters.

## 5.4 Actual Site of Encounters

When working along with the community of volunteers to develop an appropriate digital platform, we were very interested in allowing the overlaying of different recommended trails to take place over time. What this act could really bring is a process closer to the organic notion [9]. This could be a way to enable an open system of saving and preserving things that really matter to the contributors of the system. When tested the application and asked participants to reflect on issues of contribution and viability of the project we got some really interesting feedback.

*‘Well, I used to work in this building...supposing you have a nice story and you are here and I am telling you this ...you have a box and a guide tells me add something here... I added here...maybe for someone else is a box in their memory...yes, you can always say record this now, might be rubbish, but who knows what is interesting...maybe just record it and then people can sort it themselves...’*

The issue of managing content was further raised through the user walkthroughs. Overriding is one way to allow organic content creation. Other projects have developed different ways for dissemination of information [3, 17]. Annotation can be used with the user selecting her preferred elements of narrative to override her own (for instance, when a better quality image can be found to replace a similar one which is uploaded).

The aspiration of our Brighton prototype was to develop a system with both authoring and viewing tools. The ideal scenario would have been people grasping the opportunity to appropriate both roles which would lead to a cooperative system and management. However, our observations show that not everyone is interested in being in the position of the contributor based on their experiences of how information and knowledge is produced and distributed. In contrast, some participants would enjoy more experiencing something new rather than authoring it themselves. That is a clear distinction between passive and active role. This might be a result of a dominant top-down approach, particularly in documenting heritage, with heritage and knowledge been assigned to specific institutions. Previous studies in the area of geo-located mixed reality projects have raised the issue as an aspiration of a more bottom-up, co-operative approach for a system to deliver [11, 14, 20]. All the efforts have been from the perspective of changing behaviour by asking users to experiment and take over different from the common everyday roles they are used to have. Beyond the system and its design, in a very people centric approach, it is important to understand who our authors and managers-to-be are. In this occasion, it initiates with a specific community built around cultural heritage matters.

From researcher and designer’s perspective, it is important to consider for what type of communities we design for. The most challenging though is how co-creation can produce something

meaningful and satisfactory for all different stakeholder parties. On one hand, we have researchers in an interdisciplinary initiative with different scopes for what deliverables should mean. On the other hand you have a community with its diversity of people and their motivations. One’s aspiration would be a wider audience for participation. This would include both the community of specific interest (in this occasion the RTH), but also the general public. The latter is very much a generalisation, which can include from local residents, to visitors and other types of community interests that could team up in the process. As much as the aspiration is for something open, inclusive and fulfilling for all, might end up to something highly framed, very much depended on different events and tensions on the course of time. It is a dynamic process which becomes organic on its own right.

## 6 Conclusions

This paper critically reflected on an iterative process of creating a situated experience via the design of content and appropriate digital tools to support the stories and the narratives of places. Through a series of prototypes we argued on the importance of experiencing stories in situ, through the use of geolocation and AR technologies, by creating trails based on stories. We varied locations and scale of connecting spaces via trails, from a town centre, to a University campus, to a High Street. The overlay on fragments with further layers of information via various forms of annotation, in our case a digital/virtual one, called for special attention to how we design content but also how we situate the user to the complexity of outdoor networked sites to support affective narratives. Setting that in a media architecture perspective, of the medium in use -here mobile devices- we explored through prototype iteration the components of affective immersive experiences for place narratives. In a discursive process we conducted user walkthroughs with recruited participants and experts’ workshops. Feedback that we collected reinforces results of previous studies [8] of the growing interest in using new technologies for cultural purposes, its current technical limitations but also the advantage and potential of particularly Augmented Reality to support situated experience of heritage content. Factual information is important to make sense of the event and site. However, the importance of the story behind it, and in particular of the supportive mechanism as narrative via the use of accompanied technologies for visual and audio material with good resolution are key to the level of immersion. AR is a different medium that needs suitable content and great balance among different modalities when using archival material. Deploy space in the design process is not to be limited as interface for annotation but critically consider that interaction spaces are created among the user, the mobile device and the annotated interfaces where urban encounters can lead to more meaningful engagement and sharing of knowledge.

## ACKNOWLEDGMENTS

We would like to thank the Regency Town House in Brighton and the Survey of London and CASA at Bartlett, UCL for supporting

the studies with providing access to archival material and content, along with their very insightful comments.

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