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Locative mobile media and time:
Foursquare and technological memory
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Abstract

Foursquare is a location-based social network (LBSN) that can be used to explore locations and mark one's movements in the form of 'check-ins'. This paper investigates why some Foursquare users are choosing to record their locational past, and in so doing using it as a 'mediated memory object' (Dijck, 2009). The paper explores the different ways users then interact with their preserved spatial pasts, owing to Foursquare's mode of preservation. A close engagement with phenomenological theory on the importance of engagement with technology and technicity as a shaping force on the experience of time conceptualises the use of Foursquare as a memory object. The functionality of Foursquare is positioned as a key element in how the location-based social network is significantly different from older memory related practices, as well as signalling its importance for the individuals that employ Foursquare in this manner.

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Introduction: A digital memory lane

The transition to a mobile Web enables new embodied experiences and social connections in place. The use of smartphones and location-based social networking sites (LBSN) engages with what de Souza e Silva (2006) refers to as 'hybrid space'. This 'hybrid space' occurs when digital and physical spaces are combined. With the right devices and applications, users can interact with their whereabouts in a manner that improves upon pioneering mobile social networks like Dodgeball (Humphreys, 2010). Active between 2003 and 2009, Dodgeball involved users posting their location on its accompanying Web site, which would then be sent out to a defined list of friends as a series of SMS text messages. Foursquare, a LBSN that incorporates elements of play alongside features traditionally associated with social networking sites, is a good example of this [1]. Using the GPS functionality of smartphones, Foursquare allows users to share their location with friends by marking their location with a 'check-in'. Check-ins are then archived and can be accessed at a later date. Users can also read environmental recommendations and suggestions left by other users, as well as share their own. Lastly, Foursquare gamifies space and place, granting points, badges and mayorships depending on check-ins, combination of check-ins and number of check-ins. Foursquare, and other locative media have the potential to produce different embodied approaches to space and place (Richardson, 2005; de Souza e Silva and Hjorth, 2009), if space is understood as socially constructed (de Certeau, 1984; Lefebvre, 1991; Soja, 1996), just as it offers the possibility of extending social connections in new ways (Evans, 2015).

A body of research analysing how locative technologies mediate the relationship between technology use and physical or digital spaces supports this argument (see Wilken, 2008, 2012; Crawford and Goggin, 2009; de Souza e Silva and Frith, 2010; de Souza e Silva and Sutko, 2011; Wilken and Goggin, 2012). Research shows that mobile media alters the way users relate

to physical space in a confluence of location and digital networks that mediates geographic places [2]. The ubiquitous connectivity of mobile communications (Okazaki and Mendez, 2013), as well as the perpetual contact with social ties, creates a continual co-presence (Ling and Horst, 2011; Rainie and Wellman, 2012) and the possibility of instant interactivity with others (Campbell and Kwak, 2011). These are key features of mobile Internet use that create the possibility and affordance of a transformed experience of place when using mobile media.

Research in this area has, for the most part, concentrated upon the effects of using LBSN on space. Others issues related to the sharing of location, such as the impact on identity, have also been considered (Cramer, *et al.*, 2011; Schwartz and Halegoua, 2015), but to a much lesser extent. The temporal dimension, however, has not received the same degree of scholarly circumspection. The effects of technology are never merely spatial (in that technology remakes or reveals space anew); technology also has profound effects on the temporal aspect of human experience (Heidegger, 1977). While research on the effect of technology on temporality is, of course, numerous, the focus is often on the 'speeding up' or acceleratory properties of modern technology (particularly with regards to digital technology, see Lewis, 2014; Pasquale, 2015; Dormehl, 2014). However, regarding the effect of usage of computational mobile devices on the phenomenological experience of time, research is scant. This paper addresses this gap through an analysis of qualitative data derived from two studies on the LBSN Foursquare.

This analysis is allied to a close engagement with phenomenological reflections on the relationship between engagement with technology and time, with the aim of explaining the effect of LBSN use on the subjective experience of temporality. Here, we refer to how technicity [3] has a critical role in orienting humans to time (Stiegler, 1998). In essence, technology in its use shapes the present as a phenomenological experience as the element in the world that brings forth the past in anticipation of the future in its usage. This is a result of the encounter with an object, and that encounter itself has a particular character or mood (Evans, 2015). Borrowing from Heidegger, this position accepts that the temporal experience comes from an orientation to the future that allows the present to emerge, and as such the experience of the present as a view into the anticipated future is closely related to Heidegger's ready-to-hand/present-at-hand dichotomy. Heidegger's original analysis differentiated between an object (present-at-hand) and an object in use (ready-to-hand) that is withdrawn from our circumspection while in use. The object being used is projected towards a future in its usage when ready-to-hand. As such, the now or present is contingent upon what is present in the sense of available or ready-to-hand [4]. In the case of Foursquare, as a particular object with a manner of orienting the user both in time and towards time, the present or now will be shaped in a manner commensurate with that nature. The main focus of this paper is therefore to uncover what the particular orientation to time Foursquare enables. This will be done through an engagement with user's experiences of Foursquare and the manner in which it is used.

Broadly, reflections on technicity with regards to temporality position technicity as negative: time is reduced to quantitative measures and as such is annihilated in a phenomenological, experiential sense. One can consider Heidegger's reflection on clock time, where time from a clock is never past or future, but only shows the 'now'. This is the logic of the 'gigantic' (Heidegger, 1999) where the logic of modern technology is to encourage entities to understand the world in quantitative terms. However, this paper contends that Foursquare is not a modern technology in this sense; through its use as a 'mediated memory object' (Dijck, 2009) the orientation to time that emerges is far more complex than simple quantification. From *Being and Time*, Heidegger argued that care is both the temporal structure of *Dasein* (being-there) that orients present and future activity and the corporeal, affective dispositions that involve the training of gesture and comportment to complete particular tasks. When a user of Foursquare uses the application as a mediated memory object, that user is engaging in an activity that takes the application (or object) into care in a particular way, to record and recall events and places as mediated through the functioning of the device [5].

Stiegler's [6] concept of *epiphylogenesis* is useful in considering how one uses LBSN as a memory object. For Stiegler, culture becomes possible itself through the inorganic organisation of memory, and the use of Foursquare is a way of organising in this manner. In doing this, Foursquare makes a particular culture possible (and therefore the possibility of reflection upon said culture is possible). In exteriorising oneself technologically [7] through the use of Foursquare, there is the possibility of knowing being, by being able to project oneself from the past into future action. This point can be developed further in light of Chun's [8] argument that software is always embodied, and in being embodied it grounds memory; doing this creates an 'enduring ephemeral' that has the promise of lasting forever. In this case, that forever is temporally bound as the future. Parikka [9] also contributes to this line of thought, arguing that digital memory forces a re-thinking of memory, perception, collection and organisation. In the research discussed in this paper, concrete examples of the use of Foursquare to record events and recall memories from users are analysed to illustrate how LSBN (through the ability to record and recall space and time in a particular manner) act to shape the present through both a bringing-forth of past events (temporally and spatially) and projecting the user to the future through the possibility afforded to the user to record and log their movement and temporal location. As such, Foursquare does not simply annihilate temporality through quantification, but as the application inorganically reshapes memory it also reshapes temporality.

The use of Foursquare is primarily to mark physical presence in a place at a particular time. This spatial inscription could be done for a number of reasons. Certain users, for instance, choose to

check-in to document their day-to-day spatial movements. This archive then becomes a digital record that can be further furnished with images and text. Accordingly Foursquare becomes a way of remembering spatial engagements as well as their significance. For House and Churchill [10] '[a] visible shift in memory in recent years has been the increasing availability, sophistication, capacity and portability of consumer ... capture/record technologies'. Importantly, these changes have produced what Hoskins (2011) refers to as the 'connective turn', by which 'the formation of memory is increasingly structured by digital networks, [with] memory's constituting agency [being] both technological and human' [11]. So, in using Foursquare, the present is restructured by the projection of the event of checking-in into the future as a memory, and by past check-ins being recalled into the present. This duality of function marks the application as more than a mere modern technology, and as a particular memory enabling device that has its own character thanks to its functioning. The remainder of this paper will support this contention and add nuance to that character through an exploration of user experiences.

This paper reports on two original research projects designed to explore the spatial and social experience of Foursquare users. The first project was conducted between September 2011 and May 2012, using mixed methods including online surveys, face-to-face interviews, Skype interviews and email interviews — of 65 users of Foursquare geographically spread across the globe. The second project took place between August and December 2012, with 22 Foursquare users interviewed, all of whom resided in the southeast of Britain. Both research projects involved a post-research thematic analysis through the careful reading of full interview transcriptions, highlighting material that was of interest to the underlining research question regarding how usage affected the experience of time.

Recording and replaying space

In using Foursquare to record movement, the application acts to store the physical location and act as an *aide-mémoire* for the user. As such, the application (when ready-to-hand, to use Heidegger's term for an object in use) is both structuring the present (*i.e.*, the activity of checking-in) and projecting to a future event (recalling place). Spatial movements and the memory of these movements can be documented and structured by Foursquare, a process which is important to Henry, owing to his recent move to London:

> Yeah. So for like the last six months to a years I've used it to, one, keep a track of the places I've been to, especially since I moved to London last year, I like to keep track of pubs I really like or restaurants, so I can say in six months' time, this was that place I went to and liked, so I can go back there. When I first arrived to London me and some friends did a little pub crawl with some pubs, and I wanted to go to one of those again a couple of weeks ago, so I looked over my history, which took me a few minutes to figure out, and then I found it. (Henry)

Henry uses Foursquare to both keep track of his movements and to review his movements over time in the act of familiarising himself with a new, unfamiliar place. Here, Foursquare acts to structure the present by focussing on the future in one instance, and to structure the present in bringing-forth the past in the other. The orientation to time through the use of the application is therefore a function of the manner of use or mood of the user (Evans, 2015) rather than a fixed manipulation of temporality through quantification of time. This projection to the future is a familiar feature of responses from users across the research:

> How did I get in to Foursquare? I can't really remember. I've used it for a long time, because I like to collect data on myself, where I've been or if there is some interesting place that I would like to come back to in the future, so I can check from time to time. That was why I downloaded the app. I want to have the history of my own data; where I have been or what kind of TV programme I've watched. I just like to collect that kind of data on myself. (Robbie)

Creating a history of personal movements is a frequent use of Foursquare in the sample of both research studies reported. This use of Foursquare is rooted, in part at least, in a desire to keep track of where the user has been on a daily basis:

> Yeah, it's got to the point where, if it is anywhere new that I've been, or somewhere kind of nice, like a nice restaurant, or if I want to even just tweet something related to a place, even though you can tag you location in the tweet, I would do it via Foursquare. I guess, probably yeah, to keep a track of where you've been. When Facebook launched their places, I thought, I don't want to

use that, I'll just keep using Foursquare, because I've already got
a list of where I've been; I'll keep it all in one place. (Paul)

Yeah. I do quite like the idea of having a record of what I've done
and where I have been, in a kind of diary kind of way, in a digital
footprint kind of thing, even though I've never done anything with
that, and I'm not even sure how much they store. (Ryan)

For these users of Foursquare, the LBSN allows them to record their daily happenings: where
they've been and what they were doing. The notion of the 'digital footprint' in Ryan's response
illustrates the inorganic organisation of memory [12] and how the LBSN becomes a form of
cultural memory object within a culture of creating, storing and curating data on oneself. This
activity is indicative of the projecting forwards of one's activity in checking-in to Foursquare; the
check-in (present) becomes part of the memory of self, obtained from the application (future, to
reflect on the past).

Auto-recall: The algorithmic recall of location

The Foursquare application also acts in a curative manner to alert users to their past movements.
This activity takes the form of an e-mail message generated by the application to give reminders
of where the user was in the past, on that day:

There's also a weekly email from Foursquare that just lists
everywhere you were a year ago that day. You look through that
and more often than not it's the office, the train station, home sort
of thing, But then occasionally you'll be on holiday and you'll go, I
remember being there. It just jogs your memory. You wouldn't
think that was a year ago. (Dennis)

Here, the user touches on another way that locational past returns to him, detailing 'everywhere'
he was 'a year ago that day'. The generation of the e-mail note is automatic; Foursquare applies
an algorithm to collect all check-ins from the date in the past years of usage, and sends this
information out to the user. As 'Dennis' states, most of the information is everyday and not of
great interest, but the occasional update acts as a memory aide to specific events, drawing the
past into the present:

Like I said earlier, about having an email every day that tells me
where I was last year, and that's interesting. I saw that yesterday,
last year, I was going back to school, so that was interesting to
see. (Mark)

For 'Mark', the e-mail message is an interesting way of rediscovering the places he frequented
last year, and in informing users of specific events it helps form a narrative account of the past
that is co-constitutive of memory, and indicates the application's status as a mediating memory
object. Following in this vein, what is important to 'Amy' about receiving this kind of information
is that it 'transports' her 'back there'; it helps her to reconnect to her locational past:

Because it will do your tweets and I think your Facebook status as
well. I think it does all of them now. But I love that, seeing what
you did a year ago. Like this morning I found out this time last
year I was shopping for carpet, and there was just a whole list of
carpet shops, and it just suddenly does, it just does transport you
back there, and you think, God I remember that. (Amy)

The use of Foursquare, as a tool for recording day-to-day spatial movements, does affect how
users engage with their locational history. In these examples, the locational past can be seen as
permeating the present, in reminding the user of what they were doing on particular days in
previous years. Accordingly, it can be argued that this provides the user with a different kind of
locational experience: one where the past, locational speaking, is brought-forth into the present
and in doing so structures the present in a particular way. Foursquare then acts as an aide de
memoire that is used to deepen connections to the places that users used to frequent. At the
same time this also illustrates how Foursquare differs from other memory related practices, such
as diaries or photographs, as the digital information stored by the application can readily be
configured to provide information on the past. This is then delivered back to the user
automatically and beyond their conscious circumspection. This does not exclude the possibility
that users can go through older memory related pastimes on a daily basis, and then uncover
where they were on specific days. That would be a laborious task in comparison though.
Foursquare make this practice far easier. Users that employ Foursquare in this manner, as a tool
to recall their spatial past, don't have to search for it, rather their past finds them. Accordingly,
and stemming from this illustrated use of the likes of Foursquare, 'the boundaries between

present and past are no longer given' [13], but rather constructed along location-based lines.

As a consequence of this functionality, and symptomatic of the kind of past spatial connections Foursquare allows, for some users the accuracy of their check-ins are important:

> Most of my check-in history is to see when and what I've done. If I'm sat in my office and I've checked-in to every other office around me, I'm going to look back at that in a year and go, well I wasn't in these offices what's going on? (Dennis)

Here, the essential criterion for the user is the authenticity of the locational information documented. The user evidently keeps a truthful account of where he's been on a day-to-day basis. The desire of the user (and the motivation for use of the application) is to be able to look back at activity in the future, and reclaim locational memories that did happen, rather than being perplexed by erroneous spatial information that didn't. To this end, 'Dennis' desires 'real' check-ins. In this instance Foursquare does more than simply record significant locational experiences, instead it is used to archive all spatial movements on a day-to-day basis as and when they occur. The recording of both the significant and the banal is an important aspect in the authentic created memory of location. As a consequence of this the research highlights that for some users, Foursquare can function as a technological form of spatial memory:

> Yeah, it's just nice to keep a record. I think it is easy. I noticed the other day, when I was looking through it, when I knew I was coming, and I was like I remember when we checked-in there that day. It's kind of like a memory lane; a digital memory lane almost, related to places you've been. (Paul)

From 'Paul's' point of view then Foursquare is tantamount to a 'digital memory lane', related to the places he's been. This is an important metaphor, one that emphasises the use of Foursquare as a tool for locational memory, while also emphasising the aspect of day-to-day movements as and when they occur, with a view to attaining a form of spatial preservation. This use and understanding resonates with the following user:

> I'm an AFC Wimbledon fan, and so I have travelled to a lot of away games, going to these weird grounds in the middle of nowhere, and I was reading a book recently talking about some of the games, and I did not have any recollection of being at certain games, and as I was reading it I was thinking I wished I'd gone to that. It was only when I spoke to my dad, who seems to have a better memory than me, he'd say you did go, and then I'd do a Google search and find I'd written stuff about the match online. There was one when I'd done a whole report about being somewhere that I didn't even know. So I sort of see Foursquare as a way of recovering these lost moments. Some people may remember every moment of every game they go to, but I don't; I don't see the need necessarily. But when you forget entire chunks of being somewhere else, that's not good. (Doug)

The user not only records their movement with the application, but also acknowledges that the application acts as a mnemonic device in recalling events and locations that he could not consciously recall alone. What these extracts demonstrate is that for some users, Foursquare is employed as mediated memory object. As Dijck [14] explains, 'memory is not simply triggered by objects, but happens through these objects'. Consequently, for some users it is through their use of Foursquare that their spatial past is both stored and can subsequently be recalled. For 'Doug', this is important as he notably explains it allows him to recover experiences that would have otherwise been either forgotten or 'lost'.

This research also illustrates that for some users, Foursquare is seen as being a more secure way of preserving their day-to-day spatial movements; more secure than older less digital memory-related pastimes, as a function of its data storage capabilities. That said whether Foursquare is in actuality a better or more secure means of preserving the past isn't what is necessarily important. What is important for some users is that it feels more secure and enduring, which is where its significance lies in this instance, just as it allows individual to reconnect to the places they once inhabited in new and 'interesting' ways. Hoskins' [15] suggestion of a 'connective turn' provides a viable way of approaching how memory may be changing due to the 'potential of the digital archive', manifest in Foursquare, and the production of 'more complex temporalities of self and others'.

The locational past and its present potential

New media technologies and LBSN allow the self to the drawn-out and presented in innovative

and interesting ways (Cramer, *et al.*, 2011; Schwartz and Halegoua, 2015). As Hoskins [16] explains, '[smart phones] and other highly portable devices act as prosthetic nodes that extend the self across an array of communication and consumptions networks, personal and public'. Foursquare is employed by some users as a way of 'extending' themselves spatially and temporally, through the meanings attached to places they have committed to digital memory through a check-in. This point is borne out in the examples detailed above. What is additionally significant about the way in which Foursquare records the past is that it is digital. Accordingly, this allows users to then engage with their locational history in a number of ways, which then affects how they feel about their environment. Indeed, it is evident from research that for some Foursquare users, this provides them with different ways of both conceptualising and subsequently approaching their spatial past. This sense of possibility is demonstrated in the next extract, as 'Jane' discusses her plan to visualise her travels, using the similar (but now defunct) LBSN Gowalla [17]:

> So I'd stopped using it [Gowalla] by the time Facebook had
> bought, and I switched to Foursquare. So the reason that
> happened, I guess, it was actually the very start of this year that I
> stopped using Gowalla and switched to Foursquare, and the reason
> actually was because I didn't know anyone on Gowalla, because it
> was primarily used in Norway, where I don't really have many
> friends, and I had been using it, Gowalla, almost as a diary to
> keep a track of where I'd been, especially as when I first got it in
> 2010 I was doing loads of travelling and conferences and stuff like
> that, and I was thinking this is cool, I get to go to all these cities
> and all these countries, if I check in to each one, I can't remember
> what the Gowalla term is, then I'll get a little map sort of a thing,
> and there were various tools where you could export your Gowalla
> stuff, if you put in your user name and password, to a
> visualisation, and I thought this is really neat, I'm going to make a
> 2010 map or a 2011 map, and then do that. (Jane)

Gowalla and Foursquare offer 'Jane' the possibility of aggregating and visualising her spatial movements, positioning the application as a mnemonic geographic information system (GIS). The possibility of visualising one's past, and therefore transforming check-in information into a new media form with its own curative practices and possibilities for use, is also noted by 'David':

> Well they have this really cool visualisation where they link this
> app that is a big map of the world and you see all your check-ins
> as dots with lines coming out of them; it maps your whole journey.
> (David)

It is noteworthy that both users are engaged in occupations that revolve around data, which may be critical in why they may choose to employ LBSN in this manner, or why they might be interested in the potential for new ways of recording the self through the technologies it engages with. For these users, the digital preservation employed by the likes of Gowalla and Foursquare means that their archived memories have the potential to be re-structured and consumed in ways not possible when using other mediated memory objects. Certainly, it would be extremely hard to achieve the kind of visualisations touched on above, if users were attempting to do this with, say, written diaries. This is exemplified by 'Jane's' desire to digitally present her 2010 and 2011 travels, a strategy that would have provided her with a markedly different mode of conceptualising and recalling her locational past, as she could then approach it from a number of different vantage points and so on.

Accordingly, what is seemingly important to some users, such as Jane and David, is that LBSN provide them with access to an accumulated locational past, as opposed to fragments, endemic of older memory related practices. From this position the past, in its preserved state, becomes open to myriad pathways of exploration. 'Robbie' touches on a similar point as he discusses designers and their obsession with visualising data:

> I think I like it. I don't know, because I am a designer, I think a
> lot of designers are obsessed with data visualisations. There was
> this one designer and he tried to make an algorithm of himself
> [laughs]. So it has got all of the lines, and graphs, with data
> visualisation of where he has been during the last year, of how
> many beers he has drank, with the top three places he has been.
> So that kind of thing. (Robbie)

This suggests that, for some users, what is significant about Foursquare is its ability to record the spatial past in a fashion that can then be approached in fresh and interesting ways. This is a result of the digital means of storage of data, which through API provision allows for software designers and other parties to design complimentary applications that can allow the memory of location to be remediated into new forms. While discussing the reasons he thinks he uses Foursquare, 'Doug' details another way his locational past could be utilised:

> Well I think I've figured it out; I figured it out for myself when I
> last went on holiday. Let me give you my answer, because I was
> like I'm not sure why I'm using this. Initially it was research. My
> wife is not into social networking at all, Facebook or Twitter,
> whereas I check in to what beers I'm drinking, what locations I go
> to, tweet this that and the other, and she doesn't know half of it
> because she isn't on half of the networks. People often say your
> wife must know everything you are up to, and I'm like no because
> she doesn't use any of this stuff. Not that any of it is private. So
> she's always like what are you doing, why are you checking-in
> here and whatever, and I'd say it's quite fun you know. So I was
> trying to think about it, and lots of people would say why do you
> bother, because it seems quite pointless — on face value it does
> seems quite pointless — and then we went on holiday and we were
> checking-in at places; now I'm not very sentimental, but she is, so
> we went back, and we tried to stay in the place she went as a kid,
> and we took our kids, and we went to a lot of locations she had
> been to, and she had the whole lot, a photo album, and what we
> tried to do was find those places again and take up-to-date photos
> of the same locations, and at the same time I'm checking-into
> these various locations, and then it sort of dawned on me that if
> this data is public and my ancestors can see it, that same
> experience could be revisited by me 50 years later, or my family,
> 50 years later, with reference to the exact moments I was in those
> locations. I then started to think it is more about looking back; it
> isn't the checking-in process. (Doug)

It is useful to recall Chun's [18] argument that software is always embodied, and in being embodied it grounds memory. The embodiment of the software in this case is in the physical location of the user, which is coupled with the affective dimension of the specific event being chronicled. Here, the action clearly is intended to create the "enduring ephemeral" with the promise of lasting forever that Chun argues is the seductive aspect of digital storage. 'Doug's' understanding of Foursquare, as well as his motives for using it in this manner, revolves around how his locational past could be re-experienced at a later date. At the same time this illustrates another way Foursquare might correspondingly appease his fear of losing 'entire chunks' of his life, as 'Doug' isn't simply preserving his day-to-day movements for himself per se, he is also doing so for future generations to come, so that they can vicariously experience his locational past. Again, for some users Foursquare is seen as being a secure way of preserving their past, underlined by 'Doug's' suggestion that his past could be re-visited in '50 years'. A corollary to this desire for personal preservation is likewise rooted in the precise details of location that Foursquare archives:

> Now if I check-in to somewhere I've checked-in to before, I'm
> interested in the exact details, like how long ago was it that I last
> checked-in, what photos did I take of that moment. (Doug)

The granularity and detail of the information stored by the application shapes both the interaction of the user with that information, and the intentionality of the user in the present to store information for this kind of examination in the future. In a similar vein, 'Robbie' too exhibits an interest in the level of information Foursquare can seemingly document:

> I don't know. I don't know how I got that obsessed. I wanted to
> know when I had been to certain places, when was the last time. I
> like to take photos, so I like to keep data on the photos, the date
> and the location. I'm always keeping track of time. (Robbie)

The precision with which Foursquare can record the locational past is hence a critical factor in the use of the application. For these users who exhibit a desire to spatially document their movements, Foursquare's potential isn't only rooted in the forging of an accumulative past that can then be visualised in a number of different ways. The potential is also realised in how this or that experience may be shared with others on a durational plane, permitting '[the] very distant past [to be] projected into the present and the future' [19]. In this sense, the locational past isn't simply preserved in one form, but is at the same time open to being relived through various simulations. Put differently, Foursquare '[represent] a convergence of past experiences, current life, and future possibilities' [20]. The application acts not as modern technology, to annihilate time in a phenomenological sense through quantification, but as an object that restructures the experience of time for users that are consciously directed towards using the application in this manner [21]. The significance of Foursquare as a mediated memory object is in the functioning that allows users to record details of their life that could be re-experienced at a later date, which is, as 'Doug' puts it, 'fun'. Even when 'Doug' is fully aware that others are not able to quantify the value of his activity, and that frequent usage of the service is a potential (or actual) privacy risk, the use of the application as a mnemonic object for future, personal recall of situated events is worthwhile.

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Remediating the past as future recommendations

Alongside Foursquare's capacity to spatially record daily events, it is also used to provide alternative ways of exploring space through environmental recommendations. Users also check-in to receive personalised locational suggestions. These suggestions are algorithmically pushed to the user from the check-ins of other users. These algorithms assess the check-in histories of a user, and the check-ins of other users in that locale to assess the most suitable suggestions and push these to the user through the Foursquare interface. For 'Doug', the use of Foursquare to chart his own locational history is in tandem with a desire for Foursquare to 'get better' at applying the movements of his past to the movements of his future, as he explains:

> I'm kind of hoping that the 'explore' feature will get better as it looks at my history for me, and then starts to give me better and better recommendations. I don't want it to be too much at the forefront because it can narrow you. There are lots of studies that talk about how it narrows your field of vision. So I don't want it too much in my face, but if I go to a few places and somewhere similar clicks, because of the data they have collected, it would be good to see a little more of that. So I would probably like Foursquare to use my history more than me. When I review it is more that I need to recall something: did I do this or whatever. Maybe I am being sentimental and when I look at this in twenty-year's time I won't be bothered. (Doug)

The accumulated spatial past of the user is effectively folded back into Foursquare, before then being framed by its present potential in the form of locational suggestions. This illustrates how the application acts to shape the present by framing the future present as an idealised temporal domain where past activity refines possibilities of action. This complex temporal activity involves a shaping of past, present and future as an affordance of the way that the application acts as a memory object. The complexity is again beyond quantification, as such a complex reorganising of temporality and memory involves a strong affective domain where contextual information marks particular events as significant. For 'Amy', this makes Foursquare feel like an 'organism':

> It is almost like an organism, it learns from what you do, you know, if you use the top picks, it will always come up with the nearest Starbucks; always, whether I like it or not [laughs]. (Amy)

The employment of Foursquare to preserve the locational past also allows users to have an augmented relationship with their locational present, by way of bespoke locational suggestions rooted in their past. Users who employ Foursquare in this manner — a directed, intentional manner where the use of the application is for specific, life reviewing or lifelogging ends — then feel that the locational recommendations Foursquare provides are in some way more valid or authentic than what they would receive from other less personalised services, such as a guide book. The recommendations from Foursquare stem from their accumulated check-ins, which are the result of their own intentional desire to mark their location, and hence is personalised in a way that a traditional media source cannot offer. It is precisely this feature is significant for some users, as Foursquare is a personalised service ostensibly rooted in the locational memories of the individual:

> Admittedly, I'm one of those people who probably over-shares thinking someone cares about it. Like I said before, I use most social media for my own sake. I know I'm just some guy, and I'm probably quite dull, but I like to keep a memory of my life backed up somewhere. Plus, you never know who might get curious. Perhaps I'm relying on my dull nature to prevent someone malicious from stalking me? (Martin)

Martin's self-reflection frames check-in activity on Foursquare (and other services) as a means to review one's own life history through an externalisation to digital services. The acknowledgement of the 'backing up' of this history in digital databanks recalls again Chun's [22] notion of the enduring ephemeral nature of the perception of these services, and recalls Stiegler's [23] concept of epiphylogenesis through the inorganic organisation of memory in these cases. Social media data-streams are a way of organising in this manner. Through the exteriorising of oneself technologically [24], there is the possibility of knowing being by being able to project oneself from the past into future action. There is also the possibility of reviewing one's own history to reshape the present, and accordingly project oneself into the future based on this mediated past. While this activity is contingent upon both the permanence of databanks and the validity and integrity of their data, it is also contingent in the present (that is, in the action of the check-in) on the orientation of the user towards preservation of the moment and the desire to use that information in the future as part of their own narrative construction and history of their life. This

usage, and the possibility of Foursquare as a mediated memory object, is technologically and intentionally contingent. The mechanisms and operations of software and code are critical in both the possibility and actuality of this externalisation of memory, projection of activity, and externalisation of the self through digital means — but so is the intention to apply the application to this end.

Conclusions

For some users then, Foursquare does function as a form of technological memory, with the locational past permeating the present on a daily basis. Foursquare is also felt to preserve the past in a manner that feels secure and enduring, as a function of its digital preservation. A corollary to this is that the spatial past can subsequently be approached in various ways, which is significant for three reasons. Firstly, gathered memories can be considered accumulatively, through various applications, enabling users to effectively visualise periods of their past, before interrogating them from various vantage points, in line with the information required, as demonstrated by 'Jane' above. Secondly, the past in its collective and spatially detailed form has the potential to be shared with others, and thus re-enacted at a later date, with this potential being the significant aspect of curating personal locational and temporal histories using LBSN, as opposed to the reality of said re-enactments taking place. Thirdly, the spatial past is algorithmically remediated by Foursquare itself, as a means of then delivering personalised locational information. For some users this provides environmental suggestions that feel more pertinent, personalised and authentic than those from a guidebook or other media. The directed, intentional use of Foursquare as a mnemonic or mediated memory object — through an intentional turn to using the application to log one's own location over time — inorganically organises these 'memories' or data along the logic dictated by the code and algorithms of Foursquare.

This remediation works in the phenomenological present to shape that present and the future intentions of the user. As such, Foursquare — in a particular mode or usage — reshapes past, present and future as a complex digital technology object. Casual use of the game aspect [25] of Foursquare or its use as a recommendations service [26] for businesses and locations would lack the depth of engagement with the application and the practice of both logging information and reviewing the past that identifies the use of Foursquare as a memory object. However, Foursquare still collects these casual interactions in the same way that it collects the serious, and these could be reappropriated in the form of location-based suggestions to users, that could be used to shape the present or now for the user this is pushed to by the application. The design, digital infrastructure and functions of Foursquare combine to create a platform that is geared to usage as a memory object — but the intentionality and directed mood of the user towards the application is needed to realise this functioning. ▣

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Notes

1. In August 2014, the playful and social side of Foursquare split and into a separate LBSN, Swarm, with Foursquare becoming solely a locative application for spatial suggestions and recommendations.

2. Gordon, *et al.*, 2013; Martin, 2014, p. 180.

3. The role of technology in everyday life, Bradley and Armand, 2006, p. 3.

4. Stiegler, 1998, p. 222.

5. See Evans, 2015, pp. 41–50 for a detailed discussion of care with regards to LBSN.

6. Stiegler, 1998, p. 174.

7. Stiegler, 1998, p. 141.

8. Chun, 2011, p. 137.

9. Parikka, 2012, p. 90.

10. House and Churchill, 2008, p. 300.

11. Dijck, 2011, p. 402.

12. Stiegler, 1998, p. 178.

13. Dijck, 2011, p. 404.

14. Dijck, 2009, p. 168.

15. Hoskins, 2011, p. 25.

16. Hoskins, 2011, p. 26.

17. Launched in 2007 and closed in 2012, Gowalla was a LBSN similar to Foursquare, gamifying space and place, and allowing users to share their location with friends.

18. Chun, 2011, p. 137.

19. Urry, 2002, p. 116.

20. Rainie and Wellman, 2012, p. 285.

21. Evans, 2015, p. 44.

22. Chun, 2011, p. 137.

23. Stiegler, 1998, p. 174.

24. Stiegler, 1998, p. 141.

25. See Evans, 2015, pp. 117–121.

26. Evans, 2015, pp. 149–150.

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