The Cultural Life of Maps: Everyday Place-Making Mapping Practices

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Tori

Like many of us, Tori now uses a range of digital maps as she navigates her way through contemporary life in the city. It was not uncommon to find her using a Sat-Nav device while driving, examining maps within popular smartphone applications or exploring the planet on Google Earth via her laptop at home. And yet, in her journey-making practices through London, the popular A-Z pocket atlas held a permanent place within her day bag; thrown in alongside her smartphone, purse, notepad, pens, jewellery, fresh and fading receipts.

Tori had grown quite attached to the atlas. It was an object she had come to like, not only for its practical purposes in navigation but also as a material artefact with a tactile and aesthetic quality that she found appealing. She saw no reason to replace it, for it had been her trusty guide in getting to know London for the last ten years, long before digital maps had become the popular choice of city map. She had learnt how to use it by cross referencing what she saw out of the top deck windows of buses with what she saw on the page. Over time she had used this method to build up a navigational system and spatial imaginary of London, which was very specific to her own experiences of living in the city. She did not consider her method any better than using digital alternatives. On the contrary she often said that her method was time consuming and would certainly be made easier if she bothered to learn the

digital way. Rather, she had simply become accustomed to this way of use; it had become a habit, which she saw no reason to change at this point.

Tori's affection for the A-Z map was made clear by its state of appearance. It was a map made through many years of use. Taking it from her bag, "where it lives", she showed me its dog-eared corners, tatty pages, its out-of-date tube map printed on the back page, and where she had scribbled annotations across many of its pages. Personal meanings were inscribed all over the map, many of which only made sense to her during the time they were made. Whilst Tori could easily recall what some of the arrows, numbers and circles penned on the map referred to – places of work, bus stops, tube stations, estimated journey times - in most cases she had forgotten their significance. These pages were littered with a permanent record of forgotten journeys. Although digital maps may be similarly annotated, this particular type of personalisation is only made possible by the form of the pocket atlas. There is a freedom to this type of personalisation which is not available to her when using the digital map.

(Notes taken from field diary, June 2015)

Maps are constituted by a collection of lines, symbols, words and numbers. These attributes are layered and meshed together to form the common appearance of a map. Gridlines intermingle with contour lines, place names, street names, road numbers, lines representing rivers, roads, railways, footpaths, borders, buildings, and symbols representing stations, churches, pubs and parks. As Denis Wood and John Fels suggest, these graphical forms wield great power, which feed into our understanding and experience of space, and how we imagine the territories, terrains, people and places that are represented on maps.[1] It is often said that when we use maps in everyday life we are confined by the cartographic logics of these forms; that there is no way to escape the gleaming grid lines of cartographic reason.[2] There is a widespread belief in the map as neutral and transparent, which is made all the more believable by the fact that what is represented on a map has a striking resemblance to what we see in the world and a remarkable ability to work in the world.[3] These cartographic logics are understood, produced and reproduced as they circulates through the material and cultural practices of everyday life.[4] Indeed, it is a belief that is reinforced and verified when maps works; when we reach our destination on time

and without getting lost, and when that road on the map corresponds with that road ahead.[5] Despite the misgivings of some maps, we are not put off by the idea that cartographic logics are the best way of ordering and navigating the world in which we live. This goes for the layperson as well as those schooled in subverting the power of maps.[6] We are all susceptible to the lure of the map.

Nevertheless, as the opening vignette suggests, maps may also be constituted through practices of everyday place-making. Maps don't simply go out into the world as finished graphical forms wielding great power; rather they also become part of cultural practices that are often far removed from the uses envisioned by their makers.[7] Maps have a cultural life. Or rather, maps and mappings become deeply embedded into cultural life as artefacts *and* practices.[8] In the case of Tori, the A-Z atlas has become bound up in her daily practices of navigating and getting to know London. Her practices of annotating the map have become an important part of this process. Indeed, it could be said that she made the map her own through acts of inscription, for such scribbles and marks may be useless to anyone else not familiar with her particular way of working. These annotations offer her a personalised way of knowing and documenting her place-making in the city.

This paper offers a commentary on the cultural life of maps by describing how they become intertwined with everyday place-making practices. It also provides an insight into how the cultural life of maps is changing in world increasingly perforated by digital maps. I will demonstrate how the map is both an artefact to be worked with to produce knowledge of place, and a 'quasi-object' (following Michael Serres [9]) used to inform social relations in place. In describing what and why everyday users inscribe onto and into specific types of map, I build on the notion that knowledge of place is produced and accumulated *through* and *with* the map in a social context,[10] as a performance,[11] and that uses of the map must be understood by examining the cultural contexts in which they take place.[12] Moreover, I highlight how repeat practices of annotating the map may constitute a sense of place for the user, which further confirms the notion that we come to know place by returning over and again to specific locations and undertaking specific practices.[13]

I develop these arguments through an ethnographic study of contemporary mapping practices in London and the South East of England between October 2013 and May 2016. Focusing on participants from this research, I give descriptive snapshots of place-making mapping practices in order to show how contexts of use matter in practices of annotation, and to highlight how maps extend beyond their envisioned uses and become folded into the cultures of daily life. In the first of these cases, I build on the ethnographic account of Tori, outlined above, by describing how and why the popular London A-Z mapping atlas is used and annotated in the everyday navigational practices of another London resident, Sally (aged twenty-nine).[14] The second case, that of a road cyclist named Barbara (approximately forty-five), illustrates how place-making practices unfold with digital maps. Focusing on popular cycling mapping software I show how digital maps are used to produce routes and social experiences for her and her cycling club mates.

Collectively, these empirical examples seek to demonstrate the diversity of place-making mapping practices and offer some insight into the different ways in which paper and digital maps come to be used and annotated in everyday life. Moreover, I use these examples to illustrate how the textual and technical capacities of each form have an impact on how users may annotate the map. These differences, I argue, are important to note for they show that place-making with paper and digital maps are fundamentally not the same. Users of digital maps are far more restricted in terms of the annotations they can make, which I suggest can have an impact on how place-making practices unfold.

The paper is split into two primary sections. The first section explores how maps are used beyond the original use envisioned by their author in the context of place-making. I focus on paper maps, describing further how marking-up an A-Z map constitutes a repeat place-making performance. In the second section I focus on how digital maps are used in practices of place-making. Following Sybille Lammes,[15] I make a claim about the textual and technical composition of maps as artefacts, and argue that there are fundamental differences to the ways that paper and digital maps may be annotated and put to use in everyday practice. In laying out this argument, I make a clear distinction between annotations made to paper maps and those made to digital maps, suggesting that the former offers a more permanent juxtaposition to the common cartographic form than the latter.

Lines, maps, movement: place-making paper mapping practices

Tim Ingold has noted that the lines of sketch maps are the etchings of movements from the past; previous experiences of journeys within the world retold in a graphical form.[16] For Ingold, every line on a sketch map is the trace of a gesture that is a retelling of an experience of movement through the world. Nevertheless, not all mappings are necessarily inscribed as artefacts, with most remaining only gestural or fleeting as they are retold through storytelling (for example, in giving directions). What Ingold does so brilliantly here is to put maps into contention with movement. Maps, he suggests, cannot be separate from the movements (mappings) we make throughout the world because they are representative of these movements and because the making of sketch maps is a performative act of movement itself as gestures are traced or etched. We can, however, take this claim further and suggest that maps, sketch maps or otherwise, are never finished, their lines never finally drawn. Maps, like mappings, are always coming into being as they a put to use in everyday life.[17] Thus, practices of mapping are produced anew each and every time a map is called upon. These practices unfold as assemblages defined by specific contexts of use, which I suggest are deeply embedded in specific cultural and technological practices. In the following I show how specific these contexts can be, beginning with unpacking Sally's relationship to her London A-Z.

Knowing London through the map: Sally

Sally's pocket sized A-Z atlas (2005 edition) is a well-worn artefact
that has been used in her place-making practices around London. Like Tori's atlas, it tells a number of social and material stories of how Sally came to know and make sense of London's sprawling landscape. Unlike Tori's continued use however, Sally's atlas sits upon her shelf in a way that suggests that it doesn't get much use any longer. And it doesn't; like many people, Sally migrated long ago to using digital formats –

Figure 1. *Sally's pocket London A-Z map Atlas, pictured with permanent annotations in pen and individually stuck down pieces of paper, some of which are stuck down with glue whilst others are attached by post-it note* (Author 2016)

mostly Google Maps - on her smartphone or laptop. Looking at the atlas, having reached down to take it off the shelf, she tells me it holds great sentimental value; not for now, but as a material reminder of how she came to know this place (London). Many pages are littered with scribbles, crosses, small paper markers and loose scraps noting addresses and inserted on specific pages (see Figure 1). They point to work places, shops, art galleries, friends' houses, social spots and nightclubs, all of which speak to the daily practices of her early adulthood in the city. As she flicks through it she tells me a little about what each annotation represents, which shops and galleries she was going to and who was playing at that gig, *that* night. At first she is reluctant for me to take a look, and frequently reminds me to be careful not to pull out pages as I make my way through its narrative. It is clearly precious to her now, but I do question if that would have been the case at the time of its daily use as it made its way in and out of bags into hands and onto tables and laps in preparation for a journey or in a hurry during a journey. She tells me that it

was, but that it is more so now, like a series of diary entries from the past, all of which evoke a sense of nostalgia about place not especially present in my discussion with Tori.

By writing and sticking points of personal interest on to the map, Sally and Tori have effectively defaced the map. Pen and paper obscure places all over these maps, making them irrelevant and unimportant, at least for them at these times. Their practices literally reorganise the map. Through these material practices of place-making they have inadvertently renegotiated the authority of the map's gleaming grid lines in ways that would not be permissible or even possible on other maps. This is partly down to the maps and contexts in question. The pocket-sized A-Z atlas encourages personalised use in ways that other maps do not. They are sold on the premise that they are for individual use and their paper form allows for annotations to be made with ease. Scribbling addresses over public street maps or sticking pieces of paper onto London's tube maps would not be so easy, nor would it be a socially acceptable alternative.[18] Such maps are displayed in public spaces and made of a different material, where different rules apply. One may trace routes and pinpoint locations with their fingers without any trouble, but to apply ink or paper would be socially inappropriate. This goes to show that the cultural life of maps is heavily dependent on the spaces in which they are used.

Like Tori, Sally made the A-Z her own over time in the daily cumulative acts of getting to know London. The slow accumulation of this knowledge, presented on the same pages over time had become bound up in their practices of place-making. By adding notes and points bit by bit, they both layered their own spatial understanding of London in a way that could now be done instantly using a digital map. However, it was exactly the speed in which these annotations could now be added which was a problem for Tori. To add everything at once is to add nothing. Tori assumed the clarity of her spatial understanding was only made possible by the slow accumulation of knowledge, which was added to the map over a long time, after multiple experiences navigating the city. These insights reflect Tim Ingold's notion that we build up a knowledge and understanding of places in practices of repetition over time.

Sally's annotations have become part of a map of her own making. They build upon a familiar pre-existing cartographic form but do not fit so neatly within the same cartographic style. In effect, they offer a juxtaposition, a disruption to the cartographic norm. Moreover, having made these additions in pen and with paper stuck down by glue, they have become permanent features of this map and cannot be removed without any further defacing. Such a record no longer exists in the same the way now that Sally uses digital maps on her phone and laptop. Nor is such personalised permanence technologically permissible in the same way. Any annotations or notes Sally makes on Google Maps, which is possible but not often done by Sally owing to the convenience of making repeated searches with this technology, must be recalled computationally each and every time she uses them. The algorithmic, codified and electronic processes that come to produce the representation of digital-map-with-annotation must be re-collected from where they are stored (a data centre) and re-produced each and every time they are requested to load.[19]

All cartographic information may be stored and recalled for use. Sally and Tori both made notes on their maps and then recalled this information each and every time they used them, albeit in a specific context of use that would have shaped how this information was asked to be used. As Rob Kitchin et al. note, maps have a great many uses, any number of which may emerge depending on the contexts of their use.[20] A-Z maps and Google Maps are no different in this respect, for it is the context of use which determines how and why each map is used in any given practice. However, what *is* different about the way in which Sally brings the cartographic form of her annotated A-Z into being and the way she brings Google Maps into being can be aligned with the textual and technical properties of each mapping artefact. The paper A-Z annotated by Sally is immutable in ways that Google's digital maps are not. Pages may tear, get a little damp and loose colour in the rain, and her stuck down inserts may begin to peel in the heat, but within a relative time frame her particular A-Z can be expected to remain more or less the same, allowing Sally to revisit and recall the same information time and again. As Sybille Lammes has suggested, digital maps work differently.[21] They are mutable in ways that offer something different each time they are called to use. The interfaces on which they

are represented enact different performances, have a capacity to produce different events and fundamentally mediate place-making practices in novel ways.

When Sally opens Google Maps on her phone prior to or during a journey she cannot expect to view the same information as when she last opened the application. Whilst the map aesthetic is likely to be the same,[22] giving her an impression that the map is indeed the same as when she left it, all manner of changes to the software may have been made in the code used to produce the map in this time. The capacity of the paper surface to retain information is therefore not equivalent to the capacity of digital maps to do the same. Paper surfaces needn't be refreshed or reloaded upon every new encounter. For instance, yesterday's Google map and today's Google Map could be very different as changes were made by software developers looking to add new points of interest, cartographic styles or test new routing algorithms. Were Sally to look back upon Google Maps in five years' time in an effort to remember her place-making mapping practices of today, the personal details afforded to her by the annotated A-Z would not be accessible and therefore not likely to produce similar feelings of nostalgia for past journeys made. Besides her memories of these events, all that would be left would be digital traces of searches made, routes taken and places visited, available only to Google and partners, used to feed future product development with the ultimate goal of producing further profit for the company.

The mutability of digital maps is often bound up with the profit driven models of capitalist logics.[23] Whilst maps have long been produced and sold to make a profit, the complex computational systems behind today's popular for-profit digital maps ensure that profits from maps are generated in different ways. Let's take Google Maps as an example. Revenue is not generated by user purchases (though it is through selling its Application Programming Interfaces (API) as a business service). Instead, Google Maps are freely given away to everyday practitioners in the form of a download or web service. Using this model, revenue is generated through a computational system of advertising in which the user becomes targeted by increasingly personalised adverts in their use of the map, rather than by direct payment for the map.

Digital transitions

Sally continues to use maps on a daily basis as she discovers new places and new routes through the city, but crucially, the mapping technologies she now uses offer her different place-making possibilities. As digital maps and mobile technologies made possible previously latent capacities of place-making, Sally's experiences of using maps in London has changed. Discussing her use of Google Maps and City Mapper she tells me that digital maps allow her to make judgements on the move about journey times, modes of travel and places of interest in ways that her paper A-Z could not. Previously, Sally added notes and paper inserts onto her map before making a journey, making searches online using a laptop and adding details onto the pages of the map, before using these permanent features as a static map when making journeys across town. Her mapping practices were constituted by a hybrid of analogue and digital technologies in this respect. Now, whilst she continues to make online searches before taking a trip, she has access to mapping technology that allows her to make adjustments to these plans on the move, easily search for new points of interest and provide her with time and travel information as and when she needs it. Her current mapping practices have an added layer of dynamism and temporailty which changed the hybridised system that she had previosuly used.

This is to say that digital mapping practices have long replaced the majority of her analogue mapping practices. The analogue which remains, and will perhaps always remain, is embedded in the contexts of her journey-making practices, which are assembled by a multiplicity of digital and non-digital maps that constitute contemporary experiences of being in the city. Like many she remains a user of tube maps on station platforms and those slotted into carriage interiors, as she does a user of analogue you-are-here street maps and gallery maps.

Sally is, what some people call, an *early adopter* of technology and therefore it is perhaps little surprise that she has made this shift away from paper to digital. The digital maps she is now familiar with allow her to make searches, creates routes and mark places in far more convenient manner than she was used to. According to Sally, the digital maps available to her do a better job than those of old. One example she gives relates to finding bus stops in areas of town that have multiple

stops. Using digital maps she is no longer required to correlate her A-Z with that of a localised bus stop map, which indicates what buses stop at which stops. Google Maps does much of the work for her, for which she is grateful, having considered it a great success when she had managed to navigate London's buses previously. Nevertheless, it is clear from our conversations about the A-Z that Sally considers something lost after making this switch, albeit something that is draped in a sentimentality for the past which is not entirely bound up in her use of maps, but instead in her life's history. What is clear is that maps once played a different role in her place-making practices than they currently do.

Lines, maps, movement: place-making digital mapping practices

Planning cycle routes with Barbara

Tori and Sally make for specific case studies. Rarely do they bother with making annotations to digital maps. In other cases, drawing on the digital map is a daily practice undertaken by many. Journey trackers, fitness apps and location-based mobile games are all common examples of digital products which trace movements onto maps that may be viewed and analysed by users during or after the fact. Much of this software allows users to also produce their own routes to be downloaded onto mobile devices to be followed by themselves or others. These actions have been said to be both serious and leisurely efforts for the purposes of training bodies and reaching goals.[24] In others contexts these actions have been described as playful mapping practices, for instance in artistic practices and community mapping projects.[25]

Barbara, a keen road cyclist, is one such user of digital maps. Bound up in her training plans are precise journey planning practices in which she produces cycling routes in accordance with specific training goals. When we meet, she is training for an epic non-stop 600km ride across Norway. The digital technology she uses (a computer and mouse) permits her to draw on a base map where she wants to go. This then gives her precise data about how long a route is, how much elevation gain/loss there is in the topography of the land, how long this route is expected to take based on her previous average speeds uploaded onto the system and how

many calories she is expected to burn. The base map itself provides the cartographic form and styles one expects from a map, giving her place names, road types and points of interest, all of which she works into her calculations (see Figure 2).
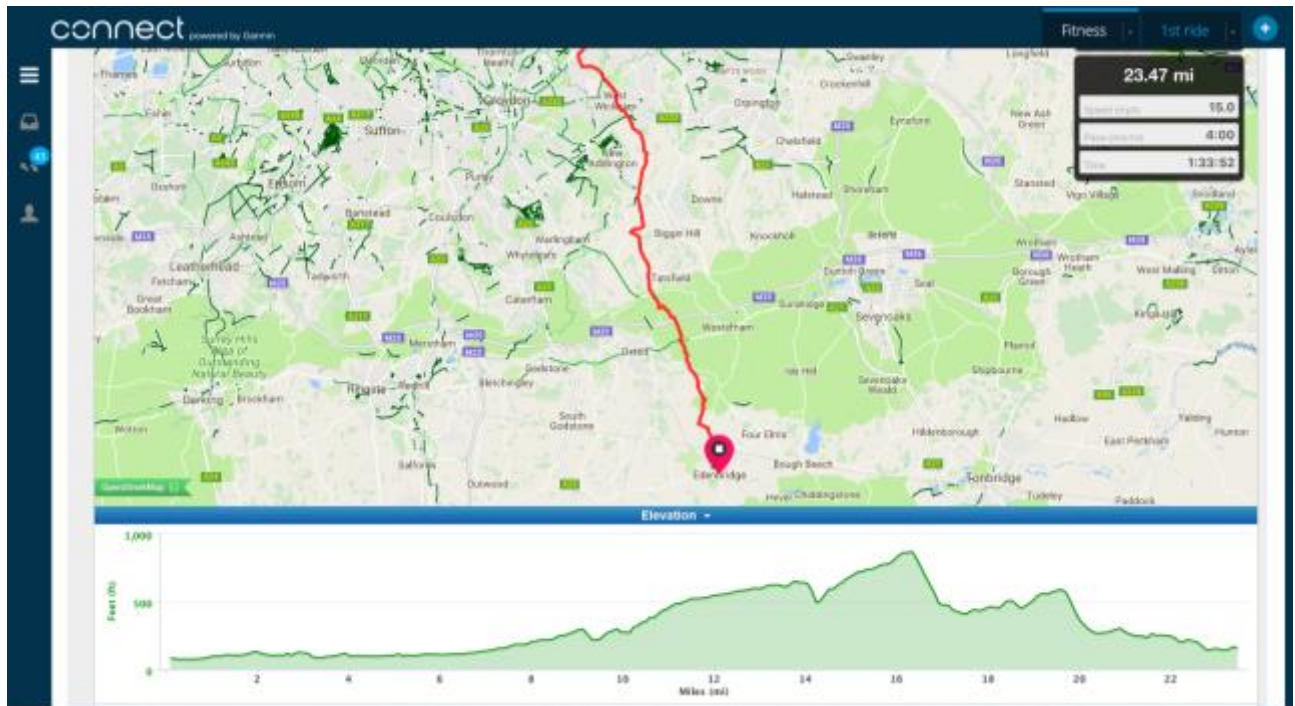

Figure 2. *A screenshot showing one of Barbara's training routes laid over a digital base map on the Garmin Connect website* (Author 2016)

The process by which Barbara creates and updates routes using various software and websites available is something that can be extremely fiddly, frustrating, and time consuming. We frequently discuss the pros and cons of .gpx (digital map) files, storage capacities, the limits of Garmin's Connect software and the advantages of Strava and Google's route planning services.[26] Each platform offers some advantage over the other and each has its own specific environment that takes time to master. And then there is the task of getting it on the device; a case of plugging in, updating firmware and freeing up the disk space needed for storage. All in all, route planning is "a fine art" says Barbara, "not as easy as you might think". And like an artist, it has taken her a while to hone her craft. After a number of years practicing she is now quite capable and has a large number of routes (or courses as they're known on the Garmin software) stored on her home computer, which she can then upload, put into rotation, edit, and share with others on her cycling club's online forum or via social

media. Barbara tells me this sharing has become an important part of her cycling practices in recent years, as it has fostered new social relationships with other members of the club. Through the exchanging of routes Barbara and her maps have become part of a sub-culture of her cycling club that regularly discuss, question and build home-made digital routes with the aim of sharing and riding them together.

The purpose of making these routes at home is tied up in Barbara's training plan, but also in her practices of place-making from a distance. Like Sally, Barbara chooses to plan routes ahead of making journeys, albeit for different reasons. She doesn't want to repeat the same routes week in week out, and enjoys that fact that she can discover new places using this technology. She purposefully produces routes that will direct her through unfamiliar places on unfamiliar roads in the hope that she will discover something new and interesting whilst riding. It is the routes that she has found to be particularly interesting that make it in to the sharing that goes on within the online and offline spaces of her cycling club. She is especially proud to contribute routes that take in places of historic interest as well as good training on quiet roads.

Barbara's annotations to the map are different to that of Tori and Sally. As I suggested above, inscriptive practices may appear ethnographically similar across different mapping platforms, but digital and paper maps are textually and technologically distinctive due to the different ways in which they have been produced and the different ways that they are called into use. Barbara's route making practices are bound up in a computational system whereby all her annotations are subject to the parameters set by the software she is using. If one was to look at a finished route, it may appear as though she has drawn freehand onto the map using a computer mouse, but what is represented is not the same, for her actions have been processed and represented through software and an interface. Tori and Sally's practices escape these systems of software control and therefore can be said to offer a different kind of annotation, one they are both free to choose and not one predetermined by software. Following Clancy Wilmott,[27] I suggest that Tori and Sally's annotations sit within and beyond the cartographic logics of software, whereas Barbara's are more constrained by the rules set by the software.

This becomes clear when she demonstrates how she plots a route on the map. Where Sally and Tori are able to annotate a route in a free-flowing manner, Barbara must click and drag the screen to move around the base map and then intermittently click on points on the map and wait for the software to generate a route between them. During these brief load-times the software is processing all manner of things unbeknown to the Barbara. It is processing the routes she is making based on a pre-formulated system of parameters and not simply on her own judgments about where to draw on a route. In doing so the map emerges into being in a textually and technically different way to that of Sally and Tori's marked-up A-Z atlases. The ethnographic result is that her route planning practices stutter along as she is made to check each segment of the route to see if it has been marked properly, and redo certain sections if she notices something that needs addressing, such as an indication that she is to cycle on a busy A road. The advantage of this laborious process, she says, is that when finished she can quickly upload it onto a device to be used as a route map when cycling rather than having to stop too often to consult a paper map to check if she is on course. Moreover, she tells me it will give her a route with added contextual data about her ride which she can incorporate into her training plan. Nevertheless, it cannot be said that Barbara's practices of inscription are altogether equal to those of Sally and Tori, precisely because of the different maps that they are using. Unlike Sally and Tori, Barbara is not free to choose how to annotate the map, for her inscriptions are confined to the rules set by the route planning software.

Conclusion

Place-making practices are constituted within complex socio-technical, spatial and temporal assemblages. In this article I have sought to demonstrate how just one common everyday mapping practice, that of annotating the map, contributes to this complexity. I have argued that maps don't simply go out into the world to be used as their makers intended them to be. Instead, I demonstrated how maps have cultural life whereby they become bound up in everyday navigational place-making practices.

Using ethnographic examples taken from a study of mapping practices, I showed how map users accumulate knowledge of place, in part, by working *with* the malleability of graphical maps, whether this be working with paper materials or within digital systems. In this regard, place-making mapping practices are said to be co-produced by material, social and technical practices. In the case of two London A-Z users, it was shown that maps were marked-up with pens, pencils, sticky notes and folded pages in order to inform and keep a note of journey-making practices that could be revisited and revised for future trips. Similarly, in the case of a popular route planning software for cyclists, routes were shown to be digitally etched onto (or into) base maps as a way of planning and sharing cycling trips which suited specific cycling needs. In these cases maps were inscribed as means to discover new places, revisit past experiences and create a sense of social cohesion between a groups of riders. Together, these cases illustrate how place-making in everyday life may be continually made and remade by repetitive and culturally specific practices of inscribing the map. This reasserts the notion that maps are 'quasi-objects' (after Michael Serres) for they enact social relations and inform everyday experiences of practice. To quote Serres:

> *Our relationships, social bonds, would be airy as clouds were there only contracts between subjects. In fact, the object, specific to the Hominidae, stabalises our relationships, it slows down the time of our revolutions. For the unstable bands of baboons, social changes are flaring up every minute….The object, for us, makes our history slow.*[28]

The cases of Tori, Sally and Barbara all illustrate how the map itself has become enfolded into their social and place-making practices. In describing these cases, I have also drawn attention to the performative, textual and technological differences between annotating paper maps and annotating digital maps. I argued that whilst maps are indeed brought into being anew each and every time they are used, the ways these emergences must be understood differs fundamentally between paper and digital maps. This, I suggested, has an effect on how the cultural life of maps is folded into the context of everyday life. As we saw with the two A-Z users, their practices were evidence of minor disruptions that went beyond the original intentions of the map maker. Although these disruptive practices were not always (or ever) intended to be against the maps, they did constitute a permanent change to the map

that would not be possible if using digital maps. As was shown with the cyclist using route planning inscriptions, digital annotations are always subject to the control of the dynamic systems of software used to produce them. Although annotations can be made to both digital and paper maps the freedom as to what can be added is determined by the mapping form.

This is to say that the way in which digital maps and paper maps are brought into being in the contexts of our everyday place-making practices are not the same if we compare the technical and textual make-up of these maps. Nevertheless, as my accounts of inscriptive practices show, they may be ethnographically equivalent, for users of maps are often not aware of, nor do they particularly care about the composition of maps. What they are concerned with is whether the map will work effectively for them in their everyday contexts of use, and as such they will pick whichever map works best for them for a particular task. This goes to show that the cultural life of maps extends beyond the textual and technical composition of maps. Ultimately the differences lie in how the relations between the map and the user emerge.[29] It is therefore the contexts of a maps' use which are key to highlight, for it is context that will tell us why a map is brought into being and the reasons for why it is being annotated.

[1]   Denis Wood and John Fels, *The Power of Maps* (New York: The Guilford Press, 2002).

[2]   Jeremy Crampton, *Mapping: A Critical Introduction to Cartography and GIS* (Oxford: Wiley-Blackwell, 2010).

[3]   John Pickles, *A History of Spaces: Cartographic Reason, Mapping and the Geo-Coded World* (London: Routledge, 2004).

[4]   Cosgrove, D. (2003). *Apollo's Eye: A Cartographic Genealogy of the Earth in the Western Imagination* The Johns Hopkins University Press, Baltimore. Gunnar Olsson, *Abysmal: A Critique of Cartographic Reason* (Chicago: University of Chicago Press, 2007); Pickles, History of Spaces

[5]   Nevertheless, such a belief is sometimes challenged when the map fails in our expectations of it, such as when the Sat-Nav leads us down a dead end or when the new road layout has not yet been updated on our map. Although such cases ask us to question the map and its worth, our scepticism is short lived if we find another map to work for us.

[6]   Crampton, J. (2010). *Mapping: A Critical Introduction to Cartography and GIS* Wiley-Blackwell. Oxford.

[7]   Chris Perkins, 'Cultures of map use'. The Cartographic Journal, 45, 2 (2008) 150-158.

[8]   See also Sébastian Caquard and William Cartwright, 'Narrative Cartography: From Mapping Stories to the Narrative of Maps and Mapping'. The Cartographic Journal, 51, 2 (2014) 101–6.

[9]   Michael Serres, *Genesis* (Ann Arbor: Michigan University Press, 1995) p. 87.

[10]   Barry Brown and Eric Laurier, Rotating Maps and Readers: Praxiological Aspects of Alignment and Orientation. Transactions for the Institute of British Geographers, 33 (2008) 201-216.

[11]   Veronica Della Dora, Performative Atlases: Memory, Materiality and (Co-)Authorship. Cartographica, 44 (2009) 241 - 256.

12   Chris Perkins, 'Cultures of map use'.150-158.
13   Tim Ingold, *Lines* (London: Routledge, 2007).
14   The London A-Z has been the subject of much public and academic interest in recent years. See, for example: Richard Hornsey, 'The Cultural Uses of the A-Z London Street Atlas: Navigational Performance and the Imagining of Urban Form'. Cultural Geographies, 23 (2016) 265-280; Do You Still Love You're A-Z? Londonist (11/2/11). Available at: http://londonist.com/2011/02/do-you-still-love-your-london-a-z; Tern Productions for BBC Scotland, 'Mrs P's A-Z (1936)', Map Man, series 2, episode 7. First aired on BBC2, 17 October 2005.
15   Sybille Lammes, 'Transmitting Location: Digital Cartographical Interfaces As Transformative Material Practices'. Aether: Journal of Media Geography, 11 (2011).
16   Tim Ingold, *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. (London: Routledge, 2000); Ingold, *Lines*.
17   Martin Dodge, Rob Kitchin and Chris Perkins, *Rethinking Maps: New Frontiers in Cartographic Theory* (New York: Routledge, 2009). Rob Kitchin, Justin Gleeson and Martin Dodge, 'Unfolding Mapping Practices: A New Epistemology for Cartography'. Transactions of the Institute of British Geographers, 38 (2013) 480 - 496.
18   Nevertheless, acts of defacing public maps do occur, and have a political and historical context. See, for example: Joe Austin, Taking the Train: How Graffiti Art Became an Urban Crisis in New York City, 1970–1990. (New York: Columbia University Press, 2001); Andrea Ballatore, Defacing the Map: Cartographic Vandalism in the Digital Commons. The Cartographic Journal, 51 (2014) 214-224.
19   Lammes, 'Transmitting Location'
20   Rob Kitchin, Justin Gleeson and Martin Dodge, 'Unfolding Mapping Practices: A New Epistemology for Cartography'. Transactions of the Institute of British Geographers, 38 (2013) 480 - 496.
21   Lammes, 'Transmitting Location'
22   That is unless any significant changes to the product have been made. For instance, if one was to compare the aesthetic qualities of Google Maps when launched in 2005 and Google Maps in 2017 they would notice some significant changes to the cartographic form. During this time gradual changes are frequently made. Of significance is the changes made in 2013, which saw the form of Google Maps to change distinctly overnight.
23   Lammes, 'Transmitting Location'
24   Deborah Lupton, *Digital Sociology* (London: Routledge, 2014). Deborah Lupton, 'Foreword: Lively Devices, Lively Data and Lively Leisure Studies'. Leisure Studies, 35 (2016) 709-711.
25   The Playful Mapping Collective, *Playful Mapping in the Digital Age*. (Amsterdam: Institute of Network Cultures, 2017).
26   These are all popular mapping technologies that may be used to plot routes on, which may then be transferred onto mobile devices such as smartphone and portable GPS units.
27   Clancy Wilmott, 'Living the Map: Mobile Practices in Postcolonial Cities'. PhD Thesis. (University of Manchester, 2017).
28   Serres, *Genesis*
29   Chris Perkins, 'Plotting practices and politics: (im)mutable narratives in OpenStreetMap'. Transactions of the Institute of British Geographers, 39, 2 (2014) 304-317.