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Interfacing as embodied practice: journeys between print, screen and beyond

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ABSTRACT

This paper develops a concept of interfacing as a heterogeneous zone of interaction, a relational space created by users as they bring together interact with and draw on a range of digital and analogue materials, sources and technologies. It examines the ways tourists and travellers access, engage, use, transfer and blend multiple media sources drawing across both analogue and digital sources as they plan, execute and reflect on the trips and visits they make. It derives from a series of in depth 'show and tell' style interviews with 18 participants recruited in the UK. It contributes to the growing literature on digital geographies by exploring the relational spatiality by which individuals build interfacing activities around specific tasks and experiences as heterogeneous and contingent socio-material spaces. It develops a conception of interfacing around two interrelated and iterative sets of embodied practices. These are firstly, assembling and mobilising and secondly intermediating and sense making. Using this twin conception of interfacing as an active making, the paper discusses how and where a conception of interfacing as embodied practice might contribute to understandings of human digital relationships within complex poly media situations and environments.

La interfaz como práctica encarnada: viajes entre la imprenta, la pantalla y más allá.

RESUMEN

Este artículo desarrolla un concepto de interfaz como una zona heterogénea de interacción, un espacio relacional creado por los usuarios cuando interactúan y aprovechan una variedad de materiales, fuentes y tecnologías digitales y análogas. Examina las formas en que los turistas y viajeros acceden, interactúan, utilizan, transfieren y combinan múltiples medios de comunicación a partir de fuentes tanto análogas como digitales mientras planifican, ejecutan y reflexionan

sobre los viajes y visitas que realizan. Se deriva de una serie de entrevistas a profundidad al estilo de "mostrar y contar" con 18 participantes reclutados en el Reino Unido. La investigación muestra cómo los encuestados eran expertos en mezclar y combinar una variedad de materiales, fuentes y tecnologías como parte de la planificación, ejecución, registro y presentación de experiencias de viaje. Contribuye a la creciente literatura sobre geografías digitales al explorar la espacialidad relacional mediante la cual los individuos construyen actividades de interfaz en torno a tareas y experiencias específicas como espacios socio materiales heterogéneos y contingentes. Desarrolla una concepción de interconexión en torno a dos conjuntos interrelacionados e iterativos de prácticas encarnadas. Estos son, en primer lugar, reunir y movilizar y, en segundo lugar, intermediar y dar sentido. Utilizando esta concepción gemela de la interfaz como una creación activa, el artículo analiza cómo y dónde una concepción de la interfaz como práctica encarnada podría contribuir a la comprensión de las relaciones digitales humanas dentro de situaciones y entornos de multimediáticos complejos.

L'interfaçage comme pratique concráte: trajets du papier ál'écran et au-delá de ceux-ci.

RÉSUMÉ
Cet article développe un concept d'interfaçage en tant que zone hétérogène d'interactions, un espace relationnel créé par les utilisateurs quand ils rassemblent, interfacent et utilisent un éventail de matériels, de sources et de technologies numériques ou analogiques. Il étudie comment les touristes et les voyageurs abordent, s'engagent, utilisent, transfèrent et mélangent une variété de sources médiatiques, choisissant des bases analogiques aussi bien que numériques, quand ils préparent, organisent puis remémorent leurs pérégrinations et leurs visites. Il découle d'une série d'entretiens du type « show and tell » (« *montre et raconte* ») avec 18 participants recrutés au Royaume-Uni. L'étude montre que les répondants savaient comment mélanger, associer et assembler une gamme de matériel, de supports et de technologie pour la conception, l'élaboration, l'enregistrement et la présentation de leurs expériences de voyage. Il contribue au nombre croissant d'études sur la géographie du numérique en explorant la spatialité relationnelle par laquelle les personnes élaborent leurs activités d'interfaçage autour de tâches et d'expériences spécifiques comme des espaces sociaux et matériels hétérogènes et contingents. Il développe un concept de l'interfaçage autour de deux groupes de pratiques concrètes. Ceux-ci sont, tout d'abord, l'assemblage et la mobilisation et deuxièmement, l'intermédiation et l'interprétation du sens. L'article utilise ces deux concepts de l'interfaçage en tant que création active pour exposer de quelle façon et dans quelles situations un concept d'interfaçage en tant que pratique concrète pourrait aider à comprendre les relations numériques humaines au sein de situations et d'environnements poly-médiatiques complexes.

Introduction

As more information, reading and entertainment is accessed online, paper-based technologies such as books and maps are sometimes characterized as outmoded. Yet, rather than foreshadowing a simple erasure of older ways of storing and transmitting information, there are currently many areas of life where analogue and digital technologies operate side by side as part of complex and heterogeneous media landscapes (Hay & Couldry, 2011; Jenkins, 2006, 2008; Madianou & Miller, 2012). Travel and tourism are areas where paper-based and digital information are mixed and blended for planning, executing and recalling trips. This paper examines the ways tourists and travellers access, engage, use, transfer and blend multiple media sources drawing across both analogue and digital sources as they plan, execute and reflect on the trips and visits they make. Evidence used in the paper derives from a series of in depth 'show and tell' style interviews with 18 participants recruited in the UK.

Research concerning human interaction with digital technologies (HCI human-computer interaction) has very largely been understood using the concept of interface. Interfaces are the screens, keyboards, touchpads, mice, joysticks and paddles through which for example information and instructions are passed between the digital and the human. Geographers have also adopted this approach to HCI, often taking their lead from the pioneering work of Lev Manovich (2001) whose work was usefully informed by critical cultural studies (see for example Ash, 2015; Ash et al., 2018; Rose et al., 2014; Sumartojo & Graves, 2021). However, the increasingly polymedia environments which make up everyday experience taken in the context of the ongoing persistence of analogue sources and their use alongside the digital suggests the need to rethink conventional understandings of digital interfaces. With this in mind, this paper develops a conception of interfacing as embodied practice appropriate to the study of spaces and situations characterized by heterogeneous polymedia.

After an introductory ethnographic vignette setting out some of the issues at stake, the paper critically examines the concept of interface and develops a notion of interfacing appropriate to the study of situations characterized by heterogeneous poly media. The paper then considers the ways study participants access, engage, use, transfer and blend multiple media sources drawing across both analogue and digital sources as they plan, execute and reflect on the trips and visits they make. The paper moves away from ideas of interface variously conceived as screen or hardware, context or content, technology, information, or simply experience. It contributes to the growing literature on digital geographies by exploring the relational spatiality by which individuals build interfacing activities around specific tasks and experiences as heterogeneous and contingent socio-material spaces. Using a twin conception of interfacing as an active making, the paper discusses how and where a conception of interfacing as embodied practice might contribute to understandings of human digital relationships within complex poly media situations and environments.

Interfacing travel experiences

> Louise lives in North London, she works in marketing, and she is from Lille, France. 29 years old. She has recently travelled to Chile and Argentina, and to Canada. She has made multiple trips in South America. She also travels for work in the UK, and she also makes city trips (her last one was to Edinburgh with a friend). During the interview, she lays out on the kitchen table all her travel guides and personal photo albums she has in London (back in France she has even more of them). Also, three cameras, a smart phone, her notebook, her collection of physical maps, receipts, tickets and so on.
>
> She has a thorough approach in planning her holidays. First, she goes online to gain inspiration, particularly looking at travel packages of the company Intrepid. But she never books the travel with them. It is just for inspiration, because they have interesting multiple country trips. She picks parts of those journeys, and books it herself. She then buys a Lonely Planet guidebook relevant for the country she will be travelling to. She also makes use of Instagram, and googles travel blogs, to get inspiration, and to get up to date tips about her destination. And she books flights and accommodation online. Mainly through booking.com and Skyscanner. She also uses Skyscanner for city trips and is guided by the cheap flights currently on offer. This influences the destination she chooses for a trip. Furthermore, she brings a small paper notebook, in which she has outlined her travel itinerary and keeps a diary of what she has done during the day.

Louise certainly takes planning and executing travel very seriously, and she is clearly experienced and adept at using the affordances of different print and digital media when planning and executing her trips. Yet in many respects her practice is commonplace and unremarkable. Accumulating an eclectic range of holiday mementos, using different sources to plan a visit, or deploying various technologies to record and document travel are actions and activities that many will recognize from their own experience. Yet the thoroughness and dexterity displayed by Louise moving between media and materials pulling these together to create an integrated narrative is in itself worthy of more detailed consideration.

Literatures concerning polymedia (Madianou, 2015; Madianou & Miller, 2012; Tandoc et al., 2019) and convergence culture (Hay & Couldry, 2011; Jenkins, 2006, 2008) begin to address the multiply mediated communicative practices of the present exemplified by Louise's use of a range of digital-based technologies. A common thread in much of this literature is their stress on the simultaneously social and technological making of this increasingly complex media and communicative landscape. The idea of polymedia developed within anthropology, for example, posits that with the proliferation, ubiquity, access and widespread use of new media the key issue in media choice is based on 'communicative intent' (Madianou & Miller, 2012, p. 169). In this way, choice and usage of different media become inextricably linked to the ways in which interpersonal relationships are experienced and managed rather than simply determined by the availability of technology. From this perspective, polymedia is ultimately about a new relationship between the social and the technological, rather than merely a shift in the technology itself (Madianou, 2014). Somewhat complementary are ideas of convergence culture developed to examine the flow of content distributed across and between the various intersections of new media and problematizing binary divisions between producers and consumers Originator of the term convergence culture, Jenkins (2006) argues that:

> Convergence does not occur through media appliances alone - however sophisticated they may become. Convergence occurs within the brains of individual consumers. Yet, each of us constructs our own personal mythology from bits and fragments of information we have extracted from the ongoing flow of media around us and transformed into resources through which we make sense of our everyday lives.

Ideas of polymedia (Madianou, 2014) and convergence culture (Jenkins, 2008) are centrally concerned with ways in which media and content can be linked together, combined and translated from one medium to another. These processes bring into consideration those points, places and zones of intermediation where different media, humans and technology intersect and through which they interact. A key literature here is the growing body of work theorizing digital interfaces. As Drucker (2013) shows, interface theory derives from interface design, behavioural cognition, ergonomics, and approaches to reading and human processing. It also draws on the history of graphic design and communication with a specific attention to the semantics of visual form. Though authors working from the perspectives of industrial design and human computer interaction studies (HCI) have been keen to confine the theorization of interfacing in terms of the tools for transferring information between humans and various forms of digital processor, such keyboards, touchpads and screens, others recognize the broader potential and implications of interface as a concept (Keramidas, 2015, pp. 12–14). The term certainly predates the development of the electronic computer. These pre-computing ways of thinking about an interface remain useful for conceptualizing both what happens at an interface and the characteristics and qualities of interfaces found in such boundary locations. Amongst the earliest recorded uses of the term is in fluid dynamics, where the term 'interface' was used in the later 19th century to describe the shared boundary where two different types of fluids or a fluid and a solid meet (Keramidas, 2015, p. 7). In this context, an interface is a zone of interaction, exchange and possibility defined by the nature, intensity and reach of interactions themselves (Hookway, 2014, p. 4). Whilst in garment making, as Keramidas (2015, p. 7) shows, the term describes material sewn or fused to the unseen side of fabric to make it more rigid. When the interfacing material is brought into contact with another piece of fabric and attached to it through heat or sewing, the two pieces benefit from the aesthetic qualities of the outward-facing fabric and the structural characteristics of the interfacing. Taking these two senses together, an interface might be understood as a structuring that supports an arrangement of materials facilitating a zone or zones of interaction, exchange and translation between these materials.

Conceptions of interface as either a zone of interaction or as a structuring of exchange and use certainly speak to the present-day experience of many using digital devices and media. As Keramidas (2015, pp. 14–15) argues, critical engagement with the concept of interface, or what should be included when interfaces are examined and discussed, has most frequently failed to engage with broader definitions of interface. Keramidas (2015, p. 13) traces this to the pioneering work of Jef Raskin (1943–2005) working at Mackintosh. Most compellingly, this is reflected in defining studies of the field exemplified by work on the language and typology of interfacing developed by Manovich (2001) in his pioneering book Languages of New Media. Keramidas (2015, p. 15) argues that Manovich's consideration of interface focusses completely on what he describes as the metaphorical, aesthetic, and semiotic conditions of the desktop. Conceptually, Manovich explicitly

aligns computer screen experience with that of the cinema and understands human-computer interaction primarily through screens and surfaces. This move was useful at the time because it drew the attention of those concerned with new media towards the wealth of scholarship providing a critical cultural perspective on a subject otherwise thought primarily in terms of practical design issues. However, as more recent critics have suggested Manovich also established an agenda for interface research which privileges the visual symbolism of graphic and textual surfaces to the exclusion of tactile, haptic, and affective interactions with objects and communicative technologies (Hansen, 2004, but also see; R. Galloway, 2011; Hookway, 2014; Keramidas, 2015).

More recent key texts centrally concerned with human-computer interfaces have drawn explicitly on ideas of interface which predate the computer age to conceptualize these as key points articulating human-technology relationships in modernity. A. R. Galloway (2012), directly responds to Manovich, rejecting his formalist focus on texts, symbols and surfaces. For A. R. Galloway (2012, p. 22) 'the computer is not an object, or a creator of objects, it is a process or active threshold mediating between two states'. Galloway uses 'interface' as a broad term to highlight practices and effects that extend throughout culture and society, and which articulate and shape a wide range of political and ethical effects (see Keramidas, 2015, p. 15). Whilst for Hookway (2014, p. 44), the point where the interface happens is 'neither fully human nor fully machine, rather it separates human and machine while defining the terms of their encounter'. In these formulations, interface is more than just an object, rather it is a relationship with wider social and political effects and consequences that manifests itself only when human and machine interact (see Keramidas, 2015, pp. 15–16).

Galloway and Hookway are certainly useful for thinking about the example of Louise planning and executing her travel plans that begins this section. They move the study of interfaces towards the consideration of multiple media and materials. Most importantly, both authors work with a practice and process conception of interface as spaces of relation in between humans and technology which engender change in each and have wider effects and consequences. Yet both Galloway and Hookway continue to work from a substantially cultural theory-based perspective, which ultimately derives its critical purchase on the world from the analysis of text and imagery. Though for example Drucker (2013) endeavours to move beyond this way of thinking by arguing for a framing she calls 'performative materiality', in practice her focus remains on coding, intertextuality and hermeneutics within the digital sphere. Thinking of interfaces as performative certainly engages with the idea that they are made in embodied practice and process. Yet, it seems this formulation fails to engage with the way interfaces occupy and energize spaces in between humans and technology whilst engaging and shaping each of its constituents. Munster's (2006) pioneering and provocative argument for studying the body in relation to the digital adopts a conceptual vocabulary from Deleuze which she argues is better able to engage with the spatio-temporality of digital experience. For Munster, Deleuze's formulation and the 'baroque' sensibility on which it draws, offer a way to understand complexity, connectivity, emergence and the non-linear nature of digital systems and the internet. Munster (2006, pp. 21–23) suggests three vectors of spatio-temporal relationality. These are firstly 'proximity – distance' which speaks to the intensity, stretching and distanciation of relations in terms of locations and sources; secondly, 'lag' where temporal delays contingently disrupt the potential for

immediacy and homogenization in the experience of global information culture; and thirdly 'distribution' which concerns the ways in which the digital reorganizes and by implication reworks inequalities in the experience of time and space. Together she argues, these vectors provide conceptual tools to examine the social and perceptual conditions produced by living 'digital' lives (Munster, 2006, p. 21).

In this context, it might be most useful to think of interfacing as a verb rather than interfaces as self-contained objects in and of themselves. Though the literature on interfaces makes significant gestures towards this, it is instructive that there is a clear imperative within the interface literature to hold on to the idea of the interface as an identifiable stable object with a defined set of limits and possibilities. However, if we take Jenkins (2008, p. 2) claim seriously and agree that '[c]onvergence does not occur through media appliances alone' then it is evident that in the present-day polymedia environment suggested by the term 'convergence culture', there is a lot of interfacing taking place that is not captured by a conception of interface imagined as objects and surfaces. Following Jenkins' argument, it is arguable that a great deal of interfacing is undertaken by humans engaging through a diversity of embodied practices with multiple technologies, objects and media of communication.

With this in mind, it is useful to think about interfacing rather than interfaces per se as an active engagement with sources, resources and technologies and the decisions and choices, affordances and shapings activated by these spaces of intermediation. A key requirement here is to think about these intermediations not merely as a shuttling between, but as actively created assemblages; relational spaces which inform the task in hand, its outcomes and experiences. In this context, what seems lacking in the broader HCI literature is recognition of the sort of socio-material relationality that might be found within socio-technical studies, actor network theory and more than human perspectives on materiality. Here Munster (2006, p. 13) adopts Deleuze's conception of the 'machinic' in order to think beyond the traditional understanding of machines as mechanical devices. The 'machinic' allows her to encompass a broader and more dynamic conception of interconnected systems and assemblages operating in a non-linear, emergent, and transformative manner across various domains of existence. To this extent, we agree with Munster's (2006, pp. 18–19) argument that human engagement with the digital does not simply result in a loss of or retreat from embodiment, but rather initiates a multiplicity of extensions, remakings and transformations that shape the experience of the body in the world in sometimes unexpected ways. Munster adopts the Deleuzian term 'faciality' to spotlight the presencing and presentation of interfaces in terms of modalities of mutual recognition and identification between humans and technologies. This is also useful to the extent that it recognizes the role of embodiment in human – machine interactions (Munster, 2006, p. 20). However, it retains a focus on reading surfaces and screens that is heavily influenced by Manovich and is less helpful when thinking of heterogeneous collections of devices, and objects in relation to paper texts and images. In this context we are sympathetic to the post-phenomenological approach adopted by Ash et al. (2018, p. 178) in their broadening of the conception of interface to include a wide variety of affects, effects and sensations. However, even though their work is concerned with active doing rather than symbolic representation, focus remains on interfaces as discrete portals for digital information and their wider effects. Our

concern with interfacing as embodied practices of doing approaches the performative effects of technologies as but one component of interfacing, where interfacing is understood as simultaneously, making, practice and experience. By doing this we are following Rose's (2015) call to map (or at least trace) the complexities of digitally-mediated cultural production, circulation and interpretation.

Thinking about interfaces as socio-material entanglements involving humans, technologies and other materials including objects, images and texts for instance would help move debate beyond binary conceptions focussing either on technological apparatus such as screens, surfaces and keyboards, or human effort in terms of manual dexterity, intellectual activity and imagination. In this context, we draw on approaches to geography and embodiment that take their lead from geography's engagement with post-phenomenology (see Ash, 2020; Ash & Simpson, 2016; Kinkaid, 2022). We argue that geographical approaches to interfacing would recognize an interface as a mutually constituted processually made space or zone, shaped and given scale and form by the affordances and agencies of heterogeneous material, social practices and processes rather than simply a more narrowly defined boundary layer. It would also recognize the multiplicity of agencies and affordances working through animate and inanimate materials, digital and analogue, human and non-human alike. Together, these shape the experience of interfacing as one of heterogeneous encounters between humans, objects and modes of communication. This suggests that interfacing cannot be thought of simply in terms of textual or symbolic representation and equally cannot be understood solely through the lens of human engagement with screens and keyboards.

The next section examines the way participants in the travel media ethnography worked across multiple media, objects and devices both analogue and digital to plan, execute and reflect on their travel experiences. The paper adopts a conception of interfacing drawing on its conceptual and practical application in fluid mechanics and garment making. This paper examines participants' experience of interfacing in terms of two sets of embodied practices. Firstly, in terms of a more or less formal structuring of materials assembled for a specific purpose. This is understood through the practices and processes of assembling materials and mobilizing them for use. Second, as a set of interactions which make such collections meaningful within the terms and contexts of their collection. This is understood through practices and processes of intermediation, where the mediator plays an active role in shaping and creating meaning and meaningful experiences through and across diverse materials.

Interfacing as assembling and intermediating

After setting out some of the key points of the methodology used in the ethnographic study, this section considers the ways in which encounters involving mixed multiple media, objects and items both analogue and digital were shaped structured and made meaningful through two highly interrelated but distinctive sets of practices. These are firstly, assembling and mobilizing and secondly intermediation.

Methods

The interviews for this research were conducted between 2018 and 2019 and reflect circumstances before the COVID-19 pandemic. In order to a get a qualitative understanding of participants' interfacing practices and how they shape their polymedia environment, participants were invited to perform their engagement with print and digital media during the interview encounter.

This paper understands these conversations as a new form of interview that combines the affordances of both photo-elicitation interviews (Harper, 2002; Rose, 2016; Scarles, 2010, 2011; Warren, 2005) and object-elicitation interviews (Abildgaard, 2018; Barton, 2015; Meckin & Balmer, 2021; Willig, 2017) in which participants perform the 'interface', and the materiality and agency of respondent-selected photographs and objects become prompts for and integral to the flow and subject of conversations. The 18 research participants were recruited through a variety of strategies both offline and online in order to increase the chance of a more diverse sample of participants. Before the interview, participants were encouraged to share a set of examples of media and technology that they had used before, during and after travels, such as relevant websites and travel guides, social media and blogs, holiday photos and videos, paper and digital books, smart phones, tablets and notebooks, photo cameras, paper and digital maps, and any other resources and documentation that were meaningful to them as travellers. These items were spread out over a table, and participants were encouraged to talk about them, and to show how they made use of print books, smart phones, and so on. Particular attention was paid to how they talked about selecting and combining different media and technology and the various ways in which they annotated and personalized these.

During the conversation, the interviewer made short close-up videos and photographs of how participants handled devices, scrolled through webpages, unfolded maps and traced trajectories, and flipped through photobooks and travel guides. Rather than using images as mere illustration, this paper sees these photographs and video stills of hands, arms, and fingers interacting with travel materials and devices as 'visual fragments' that help to formulate an argument (Van Duppen, 2020) on interfacing as embodied practice. Furthermore, participants were asked to take 'screenshots' on their phones and/or laptops and share these with the research team. The interviews were audio recorded and transcribed. Additionally, fieldnotes were made immediately after each interview. These notes would summarize the conversation, and highlight the spatial setting of the interview and the particular ways in which the participants interacted with materials. The interview transcripts were subject to an iterative coding process (Bryman, 2004). The analysis of interview transcripts, fieldnotes and the visual material distilled into three themes: (1) assembling a journey, (2) creating travel memories, and (3) switching off and tuning in, each of these themes shed light on interfacing as an active engagement with resources and technologies.

Assembling and mobilising materials: journey preparation & navigation

Jenkins' conception of polymedia figures individuals making imaginative connections between items and fragments of media received from screens, interactive technologies and audio devices. Yet to arrive at this important point we need to understand how media are collected together prior to the making of connections. In this context, a conception of

interfacing as embodied practice must start with the active assembly of materials, devices objects and sources of information that will form the collection to be interfaced with and consider how these are mobilized and made available for use. In our study, collections were assembled and purposefully structured for a variety of reasons including, journey and itinerary planning; way finding and navigation; communicating travel experiences to family, friends and wider publics; documenting and remembering experiences for personal consumption. Whilst preparing for a journey, research participants consulted, engaged and became enmeshed with a wide array of media and technology. As they assembled assortments of analogue and digital materials to serve particular purposes, study participants engaged in a variety of activities, including: an initial scoping and framing of the task or tasks in hand; assessing the affordances, capacities and potentials of each item; marking and collating materials for future reference; and ordering and prioritizing materials in relation to their potential usefulness at the time and place required. Such structuring organizes and distributes the materials assembled as distinctive spatialities which as Munster suggests stretch out, gather and collect in particular times and spaces. These spatialities are both specific to the task in hand and change and evolve as participants progress through their travel experiences. This section showcases the testimony of research participants Sally, Maria, Nadia and Marion.

Sally is seventy-four years old and a frequent enthusiastic traveller. Whilst sitting on her sofa, she talks about the preparations for an upcoming camper van trip through Europe towards the Peloponnese. She demonstrates the processes of scoping and framing a trip by drawing together digital- and analogue-based materials, she firstly shows the specific ASCI guidebook for camping sites in Europe, which is a service to which she subscribes. On the coffee table, there is also a paper map of Southern Europe, and Sally points out to the interviewer how she uses the map, the ASCI camping guide map, and camping guide catalogue in combination to plot and think through her itinerary. Sally not only makes use of paper-based media to prepare for the trip, but also goes online to consult the digital map service website *viamichelin.com* to plot out the best routes for the van. As the long drive involves crossing the channel, she cashes in on her collected Tesco vouchers to book Eurotunnel tickets online for the crossing from the UK to France. Whilst driving, they have a smart phone and a tablet attached to the dashboard to provide immediate directions, and in addition they make use of paper road maps. Stressing the different affordances of various digital and analogue sources, she emphasizes the importance of being able to consult the print maps as a backup, whilst emphasizing that they also function as an important tool to plan an itinerary across countries. In this case, the paper maps and camping guide help Sally to think through the trip and its multiple stopovers beforehand. Its tangibility and scale making it easier to comprehend connections between places, and then when on the road, the paper maps become an invaluable back-up in case the technical navigation devices malfunction.

Besides planning itineraries, specific routes and booking tickets, packing bags is another important part of preparing for a journey. Maria in her later twenties is a keen traveller, who often visits friends and family abroad, and likes to explore local food cultures. She used to make long structured lists for packing by pen and paper, but she now prefers to list everything in the smart phone application *Wunderlist* as it allows her to recall previous lists and revise them. In this practice, marking and collating materials are frequently associated with both scoping and framing tasks and ordering and prioritizing materials for future use. Reflecting on her practice Marion says:

and then what you do when you've done it you just tick it off, but then also you can go back and bring them back, so I use it a lot of packing for the trip because, you know, the base for packing is always the same so it helps me, it helps me to save time.

During the practice of packing for instance, the phone is repeatedly picked up, activated, a digital box ticked off by tapping the screen, a new item read from the list, and then the phone is put down again to land the next item in the bag. Additionally, by returning to saved packing lists in the smart phone app, previous travels get folded into the present journey. In this way the smart phone engages and co-ordinates the objects that are placed in the suitcase.

Similarly, regular traveller Nadia's smart phone is also engaged to order, prioritize and pack materials taken on the journey. Here, the social media platform *Instagram* pro vides her with a sense of potential activities she can undertake at a destination, as well as informing her decisions for what clothing would be suitable to pack for the place to be visited soon. Nadia explains:

> just before the trip, I also do a weird thing. I go on Instagram. Exactly what I showed you before. I can show you this again. So, this helps to see what's going on there right now. Because Twitter is good for sharing statuses and, like, short things but Instagram is good for imagery, and imagery can translate, like, weather conditions. It can say, like, what people do there. Like, occupation as well.

Thus, the clothes that Nadia takes on her travels are mediated through the social media platform *Instagram's* functionalities of 'locating tags' and 'stories'. During the interview, Nadia rapidly dragged, swiped and tapped away at her smart phone touch screen to show how she consults various apps such as Foursquare, City Mapper and Trello, and in performing these actions, she evaluates in very precise terms what each *app* would do for her during her travels. It is clear that research participants carefully selected and consulted different sorts of resource, to address specific tasks and goals and were deeply aware of the affordances of each.

Whilst 'on the road', assembling materials is informed as much in scoping and imagining future locations, arrangements and spatialities as it is shaped by immediate uses and priorities. This is illustrated by Maria's way of using the application *Google Maps* on her smart phone before and during travels as she scrolls through the food places she has saved in her personalized Google Maps. She first shows three favourite restaurants in Vancouver, then she zooms out, swipes across, and zooms in again on Kiev, another place she has recently visited and has tagged food places. She uses this application both to prepare for a trip and also whilst visiting places. She tags food places yellow and accommodation green. For choosing restaurants, she regularly makes use of Tripadvisor reviews. Food plays a significant role in her travels, especially during trips with her family. Maria thus assembles her journey out of saved places in *Google Maps*, recommendations from friends/family, and reviews from *Tripadvisor*, in a more or less continuous engagement with the interface of her smart phone and the different functionalities specific apps bring to her. In this instance, *Google Maps* becomes both a personal archive of 'good' food places, as well as a tool to navigate unfamiliar city streets.

For Sally, Maria, Nadia and Marion assembling materials for specific interfacing purposes involved processes of ordering, placing and prioritizing in order to address the tasks of preparing for travel, navigating, communicating to others, documenting and

remembering. Participants assembled journeys out of a rich array of materials and resources, including texts, images, maps, objects and digital devices. They structured these by carefully considering the capabilities of particular media, objects and technologies, combining and recombining resources and technologies. They did this at specific moments and as an adaptive on-going flow as tasks and situations changed over time and from location to location in a continuous remaking and reordering of the content of interfacing during the trip. Yet in each case the respondents body remained at the centre of interfacing with materials distributed around them, arranged on tables, lodged in cars, or indeed packed for travel in accordance with information from online and real time sources. Participants embodied the practices of interfacing by demonstrating skill, dexterity and creativity; swiping, pinching, pointing, clicking, framing, writing, typing, stacking, sorting and packing as they shaped and mobilized collections of assembled materials to address specific tasks and situations. These gestures were reflexively orientated in relation to the task in hand yet the gestures themselves remained habitual and on the periphery of reflexive consciousness until described to the researcher through practical demonstration.

Intermediating and sense making - creating travel memories

Intermediation can be understood in terms of the processes and practices used by respondents to extract, collate, compare, contrast and compose from the sources, material and devices they have assembled for a particular task, journey or travel project. Intermediation draws attention to techniques used by participants working with and across collections of digital and analogue materials to accomplish specific activities or tasks in ways they find meaningful. Such practices include: making links and associations between materials and information lodged in different items, objects and media; transferring and translating text, images and information between devices; framing and curating meaningful events, places, actions, information, objects and representations; presenting and displaying these both for self-consumption and for other audiences. In this context, the term intermediation emphasizes the active role played by these actions and activities curating, extracting, editing and interpreting materials into something new. In turn, this highlights the diverse complex relational spaces produced by interfacing. As Munster suggests these are inhabited differently according to circumstances of participants and demonstrate digital reach at a variety of scales from the immediate, local and personal to the highly curated public and distanciated. This section highlights the testimony of Charlotte, Maaike and Giusseppe to show how their interfacing practices involved complex relational spatialities involving multiple negotiations of public and private spaces, disclosures and withholdings, both proximate and distant.

Participants not only worked with digital and paper media to create travel memories, but also collected physical objects such as stones, shells, souvenirs, receipts, stickers and postcards. Making links and associations between these diverse materials allowed objects and ephemera to became gateways to travel stories. Participants did not stick to one particular medium or technology, but instead engaged with and combined multiple media as appropriate to capture their travel experiences. Often this did not take the form of a fixed or sequential use of media, rather participants used several technologies at the same time and revisited and edited materials multiple times and for different

purposes and audiences. Some participants for instance, shared photos with their smart phone on social media whilst travelling, and then on return home would also assemble printed photobooks from the same photos in conjunction with collected entrance tickets, receipts and other ephemera. In these ways, participants managed multiple complex spatialities and negotiated a variety of personal, private, and public arenas as they curated and presented materials for consumption by themselves and others.

Many participants turned their digital photographs into printed photobooks by making use of various online print services and software applications to transfer and translate images and information between digital and print media. Some participants also continued to print out photos and stick the prints into photo albums. Maaike for example combined digital photography, video, and written accounts uploaded to a blog. She also made a scrapbook of their honeymoon trip. During her interview, Maaike points to a business card from a restaurant they visited in Japan. The card is stuck in their honeymoon scrapbook. For Maaike, it arouses fond memories of the delicious food they had there: 'Ah, red snapper, so tasty'. She explains further: 'No, we didn't take photos of the food, no. The only memory I have is this card and just remembering what good food it was'. Her partner discourages her from this as he detests the tourist practices of making images of food. Thus, for Maaike the business card itself evokes the memory of a delightful meal.

Creating travel memories often means multiple translations and curations across media, technology and the traveller's embodied experience in situ. This point is reflected by Giusseppe during his show-and-tell interview. Thinking about the ways intermediations negotiate public and private realms, he talked about the travel diary he kept during his 300-kilometre walk along the canals between London and Birmingham. During the trip, he wrote an entry every evening, whilst sitting in the pub after a day of walking. During the day as he walked, he would 'write' in his head the Facebook post he would type up at the end of the day. Whilst walking, he would sometimes get out his smart phone and type in very short notes. In the evenings, he sat down and wrote by hand in his diary the story he had composed to put on Facebook. In the privacy of his diary, he would expand it and also include more private reflections. The notes made in the smart phone were useful for this write up by hand. Then, from the hand-written text, he typed up a post for Facebook, whilst also adding some photos to the post taken during the day. Giuseppe thus mixed paper and screen-based media, each suited for particular circumstances and audiences. The smart phone was useful, because he did not have to take off his backpack to take out his notebook in order to write things down by hand, instead he could just very quickly type in some key words on his phone. In the evening whilst sitting in a pub, however, he would write by hand longer texts and have more space for reflections. Then, he made further edits to the text, so that it was suitable to be shared on Facebook where he wrote daily posts for his friends, whilst also receiving feedback in the form of 'likes' and comments.

The study found many instances of translations across media in addition to in-situ editorial processes like those suggested by Giuseppe's experience. Access to and use of social media platforms frequently mediated participants travel experiences, and they often attempted to manage their interfacing around such activities. Specifically, text and images created during the day undergo several edits and selections before being uploaded on social media platforms. More often than not this uploading took place in the

evening on the same day in their travel accommodation. As Nadia's use of Instagram as a travel diary illustrates:

> I uploaded it the same day I was there, but it wasn't immediately, because immediately I was at that moment . . . I didn't want to go on Instagram and like obsess about naming the picture or choosing a filter. I just made, like, millions of photos and then I would choose it later.

Hence, study participants were able to creatively deploy technologies at specific moments in the day and kept themselves busy by carefully constructing versions of public self through images and texts shared on social media platforms.

It is evident that for Charlotte, Maaike and Giusseppe, intermediation acts as a series of negotiations and improvisations forged within and between the spaces created by assembled networks of materials, objects, sources and devices. As the example of Giuseppe and Maaike show, strategies of interfacing can demonstrate cyclic rhythms extending across a whole day or indeed longer time periods in relation to a specific trip. These are complex and relational spaces where multiple times and spaces are brought together, real time data concerning the weather or traffic conditions, restaurant reviews and images uploaded over months and maybe years, information for future planning such as opening times and entry costs, together with objects and ephemera reminding the participant of past experiences, sometimes lending those memories a tangible sense of immediacy and presence. Further complexifying these spatio-temporalities, interfacing is also shaped and made meaningful by the real times and places in which it is accessed and experienced. This might include circumstances where the research participant was on the road; searching for somewhere to eat; telling social media followers around the world about a current experience; or remembering past trips in the comfort of their home. In each case, the spatiality of the assembled materials and experience of the specific place in which it is consulted and deployed shape each other as participants seek new and different information to inform immediate or changing situations as they travel. In this way, intermediation as a dimension of interfacing can be understood as a series of translations that work back and forth between ongoing lived experience and the affordances and information that constitute an assembled collection. Thus, interfacing is not only embodied in the gestures, practices and skills used to access, manipulate and process, sources and materials that have been assembled and mobilized, but also in the flow of experience, thoughts and feelings of the body sensing and making sense of the world in which it is situated.

Interfacing as embodied communicative practice

It is clear study participants found multiple ways of comparing, blending and switching media that suited their specific, purposes, objectives and situations. Participants proved adept at using the affordances of different digital and paper-based media to meet their needs and requirements in particular circumstances and at specific times. As the discussion shows, research participants were highly aware of the different affordances offered by multiple digital, paper-based technologies, objects artefacts and resources, used to both create and execute their travel plans, record and communicate experiences and make memories. They consciously shaped and reshaped their interfacing activity, drawing

variously on particular technologies and materials to suit different tasks and communicate with various groups and individuals in different ways sometimes sequentially and sometimes concurrently. This took place both as part of the experiential moment of travel and as a conscious and subsequent artful reflection on places, events and experiences. For these research participants at least, the notion of interfacing might be thought of as constituted through highly flexible and heterogeneous assemblages of technologies and resources drawn on variously, selectively and creatively for specific planning purposes and for recording, making sense, and remembering parts of their travel experiences. In this context we find that a conception of interfacing understood through Deleuze's concept of the machinic following Munster, does not give sufficient emphasis to the high degree of human creativity and improvisation at the core of these engagements with materials and technologies.

The research for this study took place before the COVID-19 pandemic disrupted travel patterns and changed traveller behaviour. It also represents participants' engagement with specific travel media and technologies at a particular moment in time in terms of equipment, technologies, apps and websites used in conjunction with paper-based information, other objects and ephemera. Many respondents in our study were experienced and adventurous travellers keen to record and make public their experiences through a variety of digital channels and platforms. It may be legitimate to argue therefore, that at the time of this study their behaviour and use of mixed and multiple media represents some of the more complex and advanced use of blended technologies for travel. However, we argue that in more general terms, the evidence provided by respondents provides useful insights into the ways multiple digital and analogue media, resources, objects and stores of information are assembled, organized, navigated and made meaningful in terms of specific goals and tasks. Key to these embodied and creative practices is a conception of interfacing as actively created and dynamic relational space. In this context, interfacing might be thought in terms of two sets of practices and processes. Firstly, socio-material practices such as assembling, organizing, navigating and framing which entangle humans with a heterogeneous variety of digital and paper-based media, materials and forms of information structured to address particular tasks. Secondly, processes and practices of intermediation, making links and associations, transferring and translating, framing and curating, presenting and displaying collating, comparing, contrasting and composing from the sources, materials and devices they have assembled for a particular task, journey or travel project.

If human interaction with digital technology has very largely been thought of within geography and indeed within HCI studies, digital design and elsewhere as articulated through interfaces such as screens, keyboards and touchpads, what does a move to thinking about interfacing as sets of embodied practices add to our understanding? We would like to highlight the following:

Firstly, it better enables us to think about the capacity to manage and utilize the increasing density, proliferation and interconnection of digital and mobile media within everyday life in terms of culturally performative practices. As this paper has shown interfacing understood through processes and practices associated with assembling and mobilizing, and intermediation and sense making, can be more fully recognized as culturally creative. Thinking of interfacing as embodied practice helps us to understand more fully as Jenkins says, that convergence culture does not occur

through media appliances alone but rather through suites of embodied socio-technical relations as we engage with multiple technologies, objects and media of communication. The result as Jenkins suggests in terms of bringing together multiple devices and technologies is that the whole is much more than the sum of its parts. Rather than understanding individual items of technology as isolated entities defined by their own terms of use, it is helpful to think in terms of the possibilities and capacities they afford in combination with other technologies as they are creatively adopted and adapted by users in a multiplicity of sites and contexts. Such a sense of embodied contingency and possibility is important for unpacking the notion of interfacing as a socio technical assemblage built on situated sets of relations between humans and technology. Though it is also important to remember that such possibilities are also actively shaped by the power of commercial interests seeking to create path-dependencies linking, encouraging and foreclosing the use of particular suites of technologies and software.

Secondly, the idea of interfacing helps us move beyond a conception of interfaces simply as surfaces, screens, or keyboards and beyond a substantially visual and symbolic conception of interfacing. It suggests the need to understand these socio-technical relations as embodied practice involving a wide variety of skills and competencies from the haptic and affective to the dextrous, rational and reflective. Interactions with digital interfaces are clearly designed in terms of reading, symbolic recognition, typing, switching, scanning, gesturing (swiping, pointing, sweeping, pinching and spreading). Evidence from this study suggests we should pay greater attention to the ways these practices work together whilst also including a range of practices not normally associated with digital technology. In this way practices of interfacing might be understood to include embodied actions such as place, stack, arrange, lay out and frame; in addition to digital competencies such as tap swipe, drag, pinch, spread; communicative practices such as read, look, listen and touch; and intellectual activities such as extract, collate, compare, contrast and compose.

Thirdly, thinking of interfacing as suites of embodied practices built on situated sets of socio-technical relations enables us to draw out the spaces and times of interfacing. In this context Munster's three vectors of proximity-distance, lag and distribution certainly provide a useful for informing a sensibility based on spatio-temporal relationality. Though we would argue that theorization of this solely through Delueze's conception of 'the fold' remains overly reliant on thinking through surfaces and by implication the screens, input devices and displays conventionally associated with interfaces. In this context interfacing is a spatial structuring of materials to the extent that devices, paper-based sources, objects and ephemera are chosen because they contain, link, present and refer to information relating to specific sites, times and locations both proximate and distant. The arrangement, ordering and sequencing of devices, information, materials and objects produce their own spatiality as these are assembled by the user in the course of realizing the task at hand. This can be thought of as a creative making of situated knowledge about journeys and places rather than simply a collection of materials and information. In turn, these spatialities help elucidate interfacing as a structuring of experience for users to the extent that in use, the sensorium of users is more or less shaped through knowledge of place created from specific mixes of information collected from proximate and distant sources. In turn these are framed by the affordances of various

technologies and devices used. In this way one might recognize the extent to which travel experiences described by study participants could not be lived with the same perspective and intensity without the specific mix of technologies assembled through interfacing. This is so even when interfacing is being used to undertake quotidian tasks in prosaic contexts, such as navigating around a city. In this context, the idea of assemblage informing this paper needs to be thought through the rather more active conception of assembling suggested by what Barad (2003, 2007) terms 'intra action'. In Barad's formulation assembled materials are not so much things in themselves, but the conditions of possibility for an ongoing iterative making of the world.

Conclusion

This paper has been concerned with the way people mix, combine and move between digital technologies, paper-based sources of information, objects and ephemera. It is based on a series of in depth show and tell interviews in which participants explained how they used multiple digital and analogue sources as they plan, execute, represent and recall their travel experiences. It has argued that the idea of a digital interface based solely on a conception of screens, surfaces and keyboards, particularly that derived from the highly influential work of Manovich is inadequate for the task of understanding the way people work with and across media in the sense captured by ideas of polymedia and convergence culture. Drawing on conceptions of interfacing with origins prior to the digital era; as a more or less unnoticed structuring and secondly as zones of interaction, the paper has developed a conception of interfacing around two interrelated and iterative sets of embodied practices. These are firstly, assembling and mobilizing and secondly intermediating and sense making. Using this twin conception of interfacing as an active making, the paper has explored Jenkins (2006, 2008) claim that convergence culture does not occur through media appliances alone and responds to Rose's (2015) call for geographers to map the complexities of digitally-mediated cultural production, circulation and interpretation. It has shown how an approach through embodied practice helps us understand interfacing as creative practice. It has argued that working with interfacing as a verb helps us move beyond a conception of interface simply as surfaces, screens, or keyboards and understand the socio-technical relations involved in interfacing as embodied practice involving a range of skills and competencies from the haptic and affective to the rational and reflective. The paper has also stressed the extent to which interfacing polymedia is a spatial structuring of materials. Devices, paper-based sources, objects and ephemera contain, link, present and refer to information, specific sites, times and locations. By making these connections interfacing creatively shapes knowledge, experience and the densities and intensities of relations that facilitate negotiations of past, present and future, public and private spaces, disclosures and withholdings, both proximate and distant.

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