1. INTRODUCTION

Recent research in the geographies of health and wellbeing draws from a wide range of in-situ and mobile methodologies (Carpiano, 2009; Finlay & Bowman, 2017). These methodologies refer to data gathering techniques and modes of analysis carried out *with* research participants as they experience and *move through* settings that form the context of the research question together (e.g. a walk through a woodland when examining experiences of health with 'green space'). They include varied technologies and techniques that have been developed and applied across diverse, generally outdoor settings, including geo-narratives, walk/run/bike/swim-along interviews, mobile and video ethnographies (Bell et al., 2015; Jones et al., 2008; lisahunter, 2018; Spinney, 2011). Such methodological developments reflect wider methodological and theoretical thinking across human geography, especially relating to mobilities, performative and co-productive ways to access and produce knowledge (Hein et al., 2008; Evans & Jones, 2011; Spinney, 2015).

Mobile and in-situ methods hold particular appeal within geographies of health and wellbeing through enabling researchers to engage with embodiment and emotion at diverse temporal scales; from momentary more-than-human encounters in the 'field' opening up new bodily capacities to feel and act (Gorman, 2019), to more repetitive emplaced practices that become imbricated within therapeutic accretion over time (Foley, 2017). Through being with participants – in person, or remotely through growing access to geo-spatial technologies and tools – researchers can begin to understand the significance (to health, wellbeing, impairment and illness) of diverse patterns of movement and pause, sociality and solitude in place (Bell et al., 2015), alongside embodied, emotional and physical transformations that unfold as people transition through the networked spaces and places that constitute everyday life (de Leeuw et al., 2018).

The experience of using such in-situ and mobile methods, and their effectiveness in specific settings and with specific participants, has produced a valuable base of researcher experience for

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new and emerging researchers in the field to draw upon (Bell et al., 2015; Kaley et al, 2018; Osborne & Jones, 2017). These methods are capable of producing important new knowledge concerning the emergence (or foreclosing) of health and wellbeing in and through place. Yet the logistical and ethical implications of embarking on such – at times, messy and unpredictable – forms of research are rarely reported (Brown & Durrheim, 2009; Latham, 2003; Simpson, 2011). As noted by Adams-Hutcheson (2017, pp. 90), in-situ and mobile fieldwork typically unfolds in 'contingent and dynamic open research environments' rather than more traditional researcher-controlled environments, such that unforeseeable challenges can develop quickly. The benefits of negotiating such uncertainty to gain deeper insights into experiences of health and wellbeing can be challenging to convey to traditional research ethics committees. Building on conversations initiated by Fuller et al. (2017) regarding ethical gaps in discussions about the use of geo-located mobile sensing methods, this paper foregrounds the benefits of navigating the ethical and logistical challenges of using mobile and in-situ methods within contemporary and future research in the geographies of health and wellbeing.

Informing this paper are a series of discussions that developed during an in-situ and mobile methods workshop that was organised by the lead authors in London in July 2018. The workshop brought together a range of in-situ methodologies used in health and wellbeing geographies, encouraging honest and open discussions about their effectiveness, the dilemmas emergent in their use and how to negotiate these. Through a mix of early and mid-career researcher presentations, interactive discussion and field trials of different technologies in a nearby parkland (including mobile applications, 'Ramblr' and 'Ubipix', and 'E4 Empatica Wristband' biosensing technology), the workshop aimed to develop and share new knowledge on how best to utilise these methods to enhance robust and high-quality research in the sub-field.

Despite the primary focus on geographies of health and wellbeing, the workshop strongly emphasised inter-disciplinarity, including the notion of 'undisciplined work' both in terms of its

cross-disciplinary ethos and also the fundamental opportunities of working 'out-situ' (in-situ outside) (Kusenbach, 2003). The openness and potential of such work was identified, alongside more critical questions of rigour and methodological robustness. We acknowledge that 'in-situ' methodologies have well-established ethnographic and qualitative research foundations across a range of subjects and sub-disciplines, especially anthropology, mobilities, gender studies and wider critical health geographies (Finlay & Bowman, 2017; Parr, 2004; Paterson & Glass, 2018). What we suggest as novel is the opportunity to more closely examine the experiential and ethical implications and potentials of using such research methods within geographies of health and wellbeing, incorporating new and more routinely available technologies and tools in an increasingly digital and connected age. To do so, we focus on three core themes that permeated the workshop discussions, concerning the value of mobile and in-situ methods in: (a) supporting an ethic of care; (b) attending to more-than-human dynamics of health and wellbeing; and (c) integrating matter and meaning to understand how health and wellbeing unfold and accrete in and through place.

2. SUPPORTING AN ETHIC OF CARE

Given the remit of this type of 'in/out-situ' research – outdoors in public settings, often incorporating expensive equipment, and sometimes explicitly designed to work with, and support the voices of, more marginalised communities – it is important to acknowledge ethical tensions and values that can surface in its use. When faced with mobile and in-situ research proposals, university research ethics committees often raise the safety implications of stepping out of traditional researcher-controlled environments (Adams-Hutcheson, 2017). Beyond efforts to establish 'buddying' systems of reporting when entering/leaving the field, or carrying precautionary alarms, there are broader questions around risk and responsibility to consider; when in an environment that is unfamiliar to the researcher, to what extent is the researcher

responsible for the safety of the participant, and at what point does this responsibility end? How can in-situ and mobile methods work best for both parties to elucidate emergent aspects of participant health and wellbeing?

Research into the geographies of health and wellbeing is often underpinned by an ethic of care; 'a guiding principle that all relational practices should be done in a more *care-full* way' (Power, 2018, pp. 166, original emphasis). This principle extends to practices of mobile and in-situ research. Ensuring safety and minimising risk needs to be continually negotiated with all people present within in/out situ research. This emerged in our workshop when discussing go-along interviews conducted with older adults in Dublin. The research aimed to explore how older people interact with their local environments, and to identify everyday barriers and enablers to 'ageing well' in place. Embarking on such research required a shared understanding between researcher and participant that neither would place the other in any situation that might make them feel uncomfortable, emotionally, physically or socially (Macpherson, 2016). For older adults in this study, it was important to respect participant boundaries in terms of physical strength, fitness and embodied dispositions. Open discussions were required to ensure participants did not feel obligated to push themselves too far for the sake of the research, and to develop appropriate strategies regarding how to respond should the participant fall or become unwell during the interview. Such tensions are always at the heart of an ethical review document, but are often hard to predict until active in the 'out situ' field (Van Cauwenberg et al., 2012). Is it better (or more ethical) not to conduct this type of research with people whose risks may be higher (for example, where participants have mentioned specific health conditions), or does this do them a disservice? Should participants express a desire and confidence to take part, their exclusion risks undermining the integrity of the study, failing to recognise or account for detrimental dynamics of ageism and/or ableism (Blewett & Hanlon, 2016; Finlay & Bowman, 2017). Conversely, researchers should remain alert to the potential effects of endorphins from walking outdoors and recognise that a

person's positive sense of wellbeing conveyed whilst walking may mask deeper feelings of anxiety that would be captured in a traditional interview (Macpherson, 2016). As noted by Adams-Hutcheson (2017), ethical review boards perhaps need to move beyond discussions of what *should* be regulated, and who is or is not 'able' to participate in such methods, to more pragmatic considerations of what *can* and *cannot* be regulated within more mobile, unpredictable research terrains, and what adaptations can be made to support meaningful participation regardless of one's embodied priorities and needs.

An ethic of care demands that researchers conduct and adapt their research in care-full ways, embracing 'an expanded concept of listening as a form of attentive being-with and responding to a person in non-verbal (as well as verbal) ways' (Macpherson & Fox, 2016, pp. 372). As highlighted by another workshop participant, in-situ methods can offer important ways of 'being with' individuals with learning disabilities (Kaley et al., 2018), who are often overlooked or 'spoken for' as research participants through their distinctive communication styles and priorities (Macpherson & Fox, 2016). This workshop participant used participatory 'out situ' visual methods and video ethnography to examine therapeutic spaces of care farming amongst adults with learning disabilities. While care is needed in the use of video – respecting people's preferences not to be viewed in this way – introducing participatory videoing activities in the context of long-term and trusting research relationships helped to foreground commonly overlooked non-verbal, embodied and gestural forms of communication, moving beyond the tendency of more traditional research methods to prioritise *verbal* expressions of experience. In attending to these broader experiential dimensions, this particular video ethnography was able to capture the flow of care farm encounters, fostering critical attention to the multisensory therapeutic possibilities that emerged and ebbed within fleeting experiential moments, as well as shifts in the overall touch or feel of each farm day. Such approaches may also open up opportunities to attend to more-than-human ethics of encounter, in this case perhaps using the video footage to observe the responses

of *non-human* animals at the care farm to these interactions. As noted by Gorman (2019, pp. 313), such encounters also 'interrupt and disrupt animals' own health capacities and assemblages'. Without a more-than-human ethic of care, there is a risk of 'elevating human experience, relegating non-humans to a state of utility' (2019, pp. 314).

3. ATTENDING TO MORE-THAN-HUMAN QUALITIES OF ENCOUNTER

Reflecting the broader relational turn occurring within and beyond human geography, there has been a shift within the geographies of health and wellbeing from conceptualising health and illness as properties or 'characteristics of specific human bodies or populations' (Andrews & Duff, 2019, pp. 125), instead recognising health, wellbeing, illness and disability as dynamic, emergent expressions of specific more-than-human relational configurations (Hall and Wilton, 2017; Bell et al., 2019). In seeking to place myriad non-human, non-organic entities alongside humans in the co-constitution of health and wellbeing, researchers are increasingly looking to methods that help to understand what is happening in-situ, what arrives or leaves to contribute to health and wellbeing and in what ways (Andrews & Duff, 2019). Mobile and in-situ methods offer one avenue for exploring these questions, encouraging a focus on 'how interactions between human and nonhuman actors matter in the moment they are produced rather than contending with their symbolic meaning per se' (Coen et al., 2018, pp. 558).

Attending to more-than-human relations in this way demands a broader approach to ethical accountability, an approach underpinned by a response-ability *with,* not *for,* others that 'accounts for the ways that different phenomena come to matter as matter' (Springgay & Truman, 2019, pp. 29). Negotiating and capturing such more-than-human mattering – events that often emerge as unanticipated distractions or punctuations in the research process – is therefore an important skillset to develop. Thompson and Reynolds (2018) suggest that the disruptive qualities of go-along interviews – be they physical or discursive – can enhance our understandings of the

complex contingent relations between place, practice and health, from encountering participant acquaintances en route, to altering routes/schedules in response to myriad weather changes or recognising narrative inconsistencies and contradictions. Recognising the role of more-than-human entities in co-constituting (rather than necessarily disrupting) the research encounter, in-situ and mobile methods have the potential to shift traditional ethical frameworks of health research beyond the human to the 'more-than-human', where research awareness extends to the health of the broader environment and the flora and fauna within it.

The value and challenges of attending to these more-than-human actors were discussed by one workshop participant in the context of research exploring the influence of woodland activity programmes on participant wellbeing. Combining a range of methods – including longitudinal quantitative surveys, in-situ participant focus groups ('panad rownd y tan', cuppas round the fire) and participant drawing exercises – the study examined influences supporting and/or compromising opportunities for local people to take part in such programmes. Both 'delights' and challenges were identified in collecting data within open/uncontrollable woodland environments. While adverse weather, chit-chat, late arrivals, dogs and passers-by often distracted focus group participants, many of these 'distractions' were also productive, acting as 'micro-events' that influenced both the course of discussion and participants' woodland experiences. Shared discussions were enriched by shifting woodland soundscapes, with participants observably more willing to open up in the presence of bird-song, highlighted as a beneficial co-sonic experience (Hall et al, 2008). These more-than-human contributions gave immediate and in-depth insight into how aspects of the programme had benefitted participants, by providing affective uplift and specific mental health gains, including positive distractions from negative thoughts. The use of drawing exercises during the research helped re-gather scattered attention (a key measure within environmental psychology) and bring participants' focus into a more reflective space, sharing individual and collective interpretations of their experiences on the programme and its broader

influence on their day-to-day lives. Notably, those with mental health conditions indicated that situating the focus groups in the woods put them at relative ease, with the trees providing a screen when seeking anonymity, allowing for thoughtful silences and removing pressures to converse (Hall et al., 2008), while also offering a sense of spaciousness to get up and walk around when feeling anxious.

Moving from woodlands to seascapes, two workshop participants introduced a multi-method qualitative project, exploring the 'intangible' personal and cultural values held about the coast, and its perceived contribution to human health and wellbeing. Go-along interviews were conducted and adapted to the preferences and capabilities of each participant (Parent, 2016), including walk, cycle, trike, boat and canoe-alongs; modes of mobility that participants felt best reflected their everyday encounters with the coast. This modal diversity necessitated close attention to the more-than-human qualities of each research encounter, paying heed to the route chosen, the mode and pace of movement, and the roles of specific non-human entities – the weather, tide, terrain, the 'feel' underfoot and so on – in co-producing and guiding the interview discussions. Participants often remarked upon features they encountered, such as birds and animals, boggy ground or dark clouds that temporarily blocked sunshine, prompting discussions of formative memories, or momentarily shifting their coastal experiences.

In attending to these more-than-human influences on the interview direction, the place of each interview was interpreted as a third interview participant, at times putting participants at ease through bringing place rather than participant into focus (Van Cauwenberg et al., 2012), while also enacting agency upon the research encounter in varied ways. 'Place triggers' were an essential relational component of these mobile and in-situ methodologies, allowing a fuller exploration of the intricate dynamics of people-place-wellbeing relationships across the study sites. In this way, in/out-situ methodologies can be seen as part of a wider 'material turn' in the geographies of health and wellbeing, raising important questions regarding the ways in which

more-than-human encounters both punctuate and co-constitute the research process (Dowling et al, 2017), and how to remain responsive and accountable to such encounters throughout.

4. INTEGRATING MATTER AND MEANING IN THE GEOGRAPHIES OF HEALTH AND WELLBEING

As noted by de Leeuw et al. (2018, pp. 289), traditional approaches for understanding and contextualising experiences of health and wellbeing in place 'are often limited and not suited to capture a fleeting emotional experience, the unknowable, or a biological event that happens in the blink of an eye'. Whilst people can talk about their health and wellbeing practices (Hitchings, 2010), certain experiences and fleeting sensations can be less 'tellable' than the more 'rehearsed' biographical stories commonly volunteered within traditional interview circumstances (Holton and Riley, 2014). The types of mobile and in-situ methods shared by participants during our workshop highlighted a range of opportunities for augmenting narrative and discursive accounts of health and wellbeing with methods that 'foreground encounters in the here and now' (de Leeuw et al., pp. 324). They opened up new possibilities for discerning, expressing and communicating diverse sensations, feelings and emotions and their implications for experiences of health and wellbeing.

An example shared during the workshop prompted an important discussion concerning the growing interest in the use of biosensing technology, in this case to measure somatic responses in relation to memory, emotion, and historic environments (Anonymous, 2017, 2019). Biosensing technologies record and measure the body's automatic reactions, such as galvanic skin responses and electrical activity of the brain. Research using biosensing technology is still in its infancy, but it is an opportune time to critically discuss what biosensing adds (Spinney, 2015) and how we can maximise its potential in health geographical research. Although traditionally used in disciplines such as psychology, neuroscience and medicine, such approaches are increasingly being deployed within the social sciences (Aspinall et al., 2013; Chrisinger & King, 2018). Geographers, in particular, have expressed interest in the potential of these technologies to provide a digital

representation of the *intensity* of affect at a pre-conscious level (Spinney, 2015) that can be used in concert with more traditional mobile methods that speak to the *quality* of affect (such as mobile video ethnography and video-elicitation interviews). Such traces could be used to explore how and why different emotions unfold and resonate as people move through the different contexts and relational configurations of everyday life, and what this means for experiences of health and wellbeing over time. However, while biosensing can provide insights into individual level psychophysiological responses, when used in isolation it can reduce the body to a series of numbers (Lupton, 2012), largely failing to recognise the body as complex, affective, and relational. This issue was tackled by our workshop participant through incorporating biosensing within a broader mixed methods approach (Anonymous, 2017, 2019), using the graphic outputs from the biosensor as an 'embodied memory trigger' (Spinney, 2015, pp. 240). The biosensing data (gathered using E4 Empatica Wristbands) was integrated with GoPro video footage, GIS mapping and narrative methods (interviews and participant diaries). Data tracks were co-ordinated through time stamps and linked with a final carto-elicitation interview phase. In essence, what was measured in the research was 'inferred emotion' from associated somatic (bodily) reactions that were contextualised and co-interpreted with each research participant through the carto-elicitation interviews. Reflecting on longstanding debates about the use of mixed methods more broadly (Moran et al., 2011), references have been made to mixed methods research as 'a Trojan horse for positivism' (Giddings & Grant, 2007), with the warning that 'messiness occurs when researchers do not acknowledge their paradigmatic positioning' (2007, pp. 58). Recognising this tension, any effort to use such mixed in-situ and mobile methods – and the inferences drawn about matter, meaning, health and wellbeing from the data generated – must be informed by clear and consistent researcher positionality statements.

5. MOVING FORWARD WITH MOBILE AND 'OUT SITU' METHODS: CRITICAL REFLECTIONS

With growing interest in health, place and wellbeing as situated, emergent and relational, research conducted in and beyond the geographies of health and wellbeing is increasingly looking to in-situ and mobile methods that offer complementary insights into the diverse temporalities and spatialities of health, wellbeing, illness and impairment (Hall & Wilton, 2017; Andrews and Duff, 2019; Bell et al., 2019; Gorman, 2019). As ever, 'so what' questions rebound on such methodologies; what do they add to established narrative descriptions of health and wellbeing? Why emphasise movement when equally interested in the health and wellbeing potential of stillness and quiescence, the moorings between mobilities? (Spinney, 2015) Are we compromising the reflective moments of fieldwork by privileging the fleeting/sensational/affective aspects? Are such approaches inclusive? This paper has sought to navigate some of these tensions, alongside the broader ethical challenges and opportunities raised by efforts to move beyond more traditional researcher-controlled environments and encounters.

In pursuing mobile and in-situ methods, we might consider place to be a given, but is there a 'why' of place? In-situ methods may be particularly well situated to provide complementary insights concerning the 'why of where'. As presented in this paper, the place of the incidental/contingent as 'event' is significant across these types of methods; generating interest in the 'interview as event', and opportunities for capturing and working with the liveliness of more-than-human research encounters within otherwise somewhat static written transcripts/representations. In seeking to get closer to the complexity of experience and its ability to shape health and wellbeing, in-situ research outdoors allows us to reflect more on both the obvious punctuations and the more subtle incidents that may unfold during the research, how the more-than-human co-constitutes the research process (Dowling et al., 2017) and how to engage with and attend to important non-verbal changes in embodied responses in/out situ and on the move (Brown & Durrheim, 2009). While never easy, research experiences recounted here suggest opportunities for embracing and working with such event-ualities, both for the benefit of the data

and for shared safety and risk management within outdoor environments. With the rapidly developing interest in health and wellbeing research that combines active experiencing/emoting bodies, the co-measureability of both physiological and psychological responses was also identified as valuable in future policy development (Spinney, 2015). Equally, one cannot ignore logistics, the weather or the costs of these types of approaches.

The act of talking while walking (or canoeing, jogging, swimming, wheeling etc.) brings with it additional response-abilities on the part of the researcher and underlines the importance of deeper accounts of ethics-in-practice (going beyond procedural ethics) to ensure the dignity and emotional wellbeing of both participant and researcher. It is also a relevant justification for the value of such methodologies that can be articulated in ethical reviews; equally something to consider when managing relationships with participants in the field. It is important to be realistic and honest about both the potentials and possible dangers of mobile methods; a critical awareness of issues emergent from ongoing research can only help new researchers moving into these methods. As noted by Warren (2017), the ethnic, gendered and moral dimensions of the walking interview (and mobile methods more broadly) remain under-explored, as well as the able-bodied assumptions/misperceptions that sometimes underpin their use (Castrodale, 2018; Macpherson, 2016). How to manage issues of visibility matter here, where being seen somewhere or with someone prompts social concern or judgement – or more positively, when this acts to counter identity-limiting normative stereotypes of where different bodies 'should' be and how they 'should' move (Parent, 2016) – or when moving and talking with a stranger lie outside of one's socio-spatial norms or comfort zones (Warren, 2017). In such cases, care-full and creative methods can be adopted to engage with the material, affective and sensorial qualities of participant experiences *without* the physical act of moving, finding alternative ways of registering and sharing sensescapes, for example through adapting softGIS approaches (Kyttä et al., 2013) or multisensory visualisation (May & Lewis, 2009).

Additional critical and honest reflections on the unreliability of technologies identified a clear need to test things out properly in the field (Zenk et al., 2018). For all that we now live in a multiply-sensed big data world, digital signals – especially in more remote areas – remain both blissfully and annoyingly unreliable. Equally, in simple material object terms, the fallibility of technology must be acknowledged; things (recorders, phones, cameras, sensing equipment) regularly break, especially if shared by multiple users. In terms of a specific technical outcome, a question for future research is, 'what might a fool-proof bespoke app for out-situ work look like'? Building on this, we should explore the level and duration of piloting needed to develop the necessary skills and confidence to conduct and refine such methods and to capture, interpret and communicate nuanced understandings of health and wellbeing in place using such mobile and in-situ data. How do we ensure our methods, equipment and study participants are ready, willing and able to encounter shifting more-than-human relations through the seasons and other fluxes of the year, and how do we support this through care-full research practices? Such questions are eminently answerable, constrained only by the funding timeframes of many contemporary research projects and, in terms of mobile application developments, by the willingness of researchers to work with app developers and technologists. In learning from the issues described in this paper, ensuring our academic system supports the development of flexible and reflexive researchers with a toolbox to draw upon in the event of unpredictable research encounters is important, even and especially when things do not turn out as expected.

The examples shared in this paper demonstrate the importance of researcher reflexivity to ensure we maximise opportunities to use these methods in inclusive, ethical ways and to produce better quality knowledge. The continued development of these technologies and methodologies might throw light, especially from a critical health geography perspective (Brown et al., 2017), as to what other key questions (for example, around housing, inequality, disability, ageing, deprivation) might be answered, re-framed or even uncovered by such approaches.

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