From Hybrid Space to Dislocated Space: Mobile Virtual Reality (MVR) and a third stage of mobile media theory

Abstract

Research in the field of mobile communication studies (MCS) has generally moved away from focusing on how mobile phones distract users from their physical environment to considering how the experience of space and place can be enhanced by locative smartphone applications. This article argues that trajectory may be complicated by the emergence of a new type of mobile technology: mobile virtual reality (MVR). While an increasing number of handsets are specifically developed with MVR in mind, there is little to no research that situates this phenomenon within the continuum of MCS. The intention of this paper is accordingly two-fold. First, the article conceptualises MVR as a connective tissue between the two sequential tropes of MCS: physical distraction and spatial enhancement. Second, the paper introduces the concept of 'dislocated space' as a way of understanding the embodied space MVR might configure.

Keywords

Introduction:

Over the last decade or more, mobile communication studies (MCS) has become a thriving subfield within the larger field of new media studies. While the theoretical scope of MCS has broadened over the years, it still primarily focuses on how people interact with various forms of mobile media, ranging from mobile phones to auditory devices to wearable technologies. MCS, however, is about more than just the media form as an object of study. For all the different perspectives under the larger umbrella of the field, MCS is united just as much by the 'mobile' as the 'media.' Accordingly,

this field has strived to capture how mobility impacts media usage, and consequently, how various forms of mobile media affect how people experience physical space.

The field of MCS is relatively new. Nonetheless, it is possible to track a theoretical trajectory from writings about earlier forms of mobile media—such as the Walkman and pre-iPhone mobile phones—to newer developments in mobile locative media—such as smartphones and wearable technologies. To this end, Scott Campbell (in press)[1] has traced the 'propositions and assumptions that give shape to two of the field's primary branches: implications of mobile technology for connecting with (1) other people and (2) public settings (p. 1). His work separates the development of MCS into scholarship 'delineated by two axes'. One axis divides two major *areas* of scholarship, the other two major *eras* of it' (Ibid). The two areas are basically sociability and spatiality. The two eras are essentially pre-smartphone and post-smartphone. Campbell does not claim that these axes represent a clean break. However, Campbell's essential argument and evidence are clear: the field of MCS in general has seen a shift in how scholars understand the social and spatial impacts of mobile media.

Campbell's first axis focuses on sociability and showed that much MCS research has shifted from seeing the mobile phone as a tool that encourages social insularity (see Gergen, 2008) to recognising how people use mobile phones to broaden social networks (see Campbell and Kwak, 2011). The spatiality axis, which is more pertinent to this article, traces a lineage from pre-smartphone research that positioned mobile media as distracting from and privatizing one's surroundings (see Ling, 2004) to post-smartphone research that argued mobile media was often used to enhance one's experience of physical surroundings (see Frith, 2015). The division between sociability and spatiality, of course, is never completely clear. After all, using mobile phones as a tool for spatial distraction also often involves using mobile media to avoid socializing with others.

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[1] The page numbers we cite for Campbell's article refer to a post-print of the article because the published version is not out yet.

Campbell's (in press) work recognizes this overlap but breaks the research down by its focus, separating out studies that are *primarily* concerned with spatial issues and mobile media. As he and others have argued (see de Souza e Silva, 2013), mobile media have increasingly moved from being tools of distraction to becoming tools for spatial enhancement. Until now that is.

Building on Campbell's argument, this article explores an emerging form of mobile media that may complicate the trajectory mapped out in his work: the recent incorporation of virtual reality (VR) in smartphones, or mobile virtual reality (MVR) as we refer to it. MVR involves VR platforms powered through smartphones. In contrast to modern VR systems like Oculus Rift and HTC Vive that are large, expensive and immobile, MVR technologies, such as Google Daydream, are smaller, more portable, and can be used in transit. While MVR is still very much an emerging technology, the suitability of modern smartphones to incorporate VR cannot be argued. As Pierce (2015) points out, '[the] emphasis on smartphone VR is not altogether surprising, given that most of the ingredients to turn your phone into a virtual reality wonderland are already there'. And this suitability can readily be seen in the growing number of MVR phones, applications, and games that are now available. Further, with the recent release of Oculus Go, Facebook's stand-alone VR headset that does not require a smartphone, but is eminently mobile, it is important to begin theorizing how MVR works as a form of mobile media, especially given the dearth of research that currently exists on MVR as an emerging media form.

In the context of MCS, our interest here focuses on both the 'mobile' aspect of MVR as well as the 'media'. MVR represents a partial type of mobility, one that allows for corporeal movement but only in a fixed state. In other words, someone can ride public transportation and use MVR, but their primary senses—the ocular and the auditory—are too cut off from their physical setting for the user to be ambulatory. Consequently, we spend part of this article theorizing in what sense MVR might be considered mobile. Related to the question of mobility is the question of the relationship

between MVR users and their physical space. Unlike smartphones as locative media that provide information about one's surroundings and enable various forms of augmented reality (AR), MVR does not overlay a physical space with digital information; rather, through the MVR headset, the experience of the physical becomes partial because a digital space dominates the ocular and auditory senses. Consequently, later in the article we argue that MVR may represent a return of sorts to earlier understandings of mobile media as 'privatizing' public space and enabling people to disengage from their physical surroundings in a fractured and partial way.

To make our argument that MVR may necessitate a theoretical departure from the increasing focus on smartphones as locative media, we first discuss theories of mobile media and place, beginning with the idea of mobile media as a 'filter' used to 'control' and 'privatise' one's interactions with space. We then transition to the role smartphones play as locative media to show how research has increasingly focused on how mobile media have become tools for spatial engagement and enhancement rather than distraction. These first two sections therefore draw on Campbell's (in press) mapping of the trajectory of spatial approaches in MCS. We then complicate that trajectory through our analysis of MVR. We first describe MVR as an emerging media form and focus on how the technology could represent a return to the themes of distraction present in earlier analyses of mobile media. Then, using various theoretical foundations, as well as conceptualisations of the 'virtual', we build on existing understandings of 'hybrid space' to introduce the term 'dislocated space' as a useful theoretical approach for understanding the embodied space MVR configures. Following this, we explore how core issues of mobility differentiate the phenomenological experience of MVR from more traditional forms of VR. In sum, this paper will not only be one of the first to theorize the impacts of MVR on place, space and mobility, but it will also use MVR to make an original contribution to the development of mobile media theory.

Physical distraction

Mobile media have often been used as a way for people to engage differently with and filter information present in their physical space (de Souza e Silva and Frith, 2012). To see why, we can go at least as far back as the paperback novel. The history of mobile media, of course, goes back much further. As Farman (2013) notes, the invention of papyrus was an early type of mobile media that made knowledge moveable. His new work goes back even further to the Aboriginal walking stick as possibly the first form of communicative mobile media (Farman, 2018). However, our brief history starts at the book not just because of its role as mobile media, but also because of the shifting social situations of the 19th century. To be clear, we are not focusing on all types of mobile media—a broad term that could incorporate everything from a sheet of paper to a subway pass—but rather a few specific examples of mobile media people used to filter out experiences of public spaces. Or, in Campbell's (in press) terms, in this section we are focusing on how mobile media 'undermines, augments, or otherwise alters places of social activity' (p. 14).

For much of the codex book's history, the technology was fairly stationary (Manguel, 1997). Books were heavy and not designed to be read while mobile. This situation began to change with the advent of the paperback novel in the early nineteenth century, which enabled people to essentially engage with a separate, parallel space while mobile and thus 'escape' into literary worlds of their choosing (de Souza e Silva and Frith, 2012). However, the paperback novel did not cause the behaviours of separation, or at least not in any deterministic sense. Instead, the novel as mobile media form arose in part because of a new type of corporeal travel: the birth of the railway. As Schilvelbusch (1986) argued in his history of rail travel, before the railway, people journeyed long distances in private coaches. They rarely, if ever, were forced to spend prolonged periods of mobility in the company of strangers.

The social situation changed with rail travel. Unlike with private coaches, people were forced to share a space—the rail car—with strangers for considerable periods of time. Quite literally, few social norms existed to govern the situation, and people had to learn how to deal with the social expectations of strangers. One of the ways people engaged with the shared public space of the rail car was to turn to books as a way of ocularly disengaging from their physical surrounding. Consequently, many of the early popular paperback novels were referred to as 'rail novels' and sold in train stations because they were meant to be taken on trains as a way of dealing with and 'filtering' the physical environment (for an extended version of this argument, see de Souza e Silva and Frith, 2012). For all the talk of mobile phones and distraction, the history of the paperback novel's synergistic relationship to rail travel shows people have been using mobile media to carve a private experience out of a shared, public setting for well over a century.

A later mobile technology—the Sony Walkman—enabled people to exert control over a different sense: sound. They could essentially use headphones and auditory mobile media to privatize public space by choosing to engage with a soundscape not shared with others (Hosokawa, 1984), just as they did with the ocular sense, and the paperback novel. As Bull (2000) argued with the Walkman (and later the iPod), '[public] space in this instance is not merely transformed into a private sphere but rather negated so as to prioritize the private' (p. 79).

The mobile phone subsequently faced similar suggestions of physical distraction and separation (see De Gournay, 2002; Gergen, 2002; Katz and Aahus, 2002; Ling, 2004). Related criticisms focused on the remote sociability enabled by voice calls and text messages. Individuals remain in 'connected presence' (Licoppe, 2004) with others many miles away rather than communicate with those in their surrounding space. The study of how mobile phone users engaged physical space subsequently led to a number of formative theories in earlier mobile media research, including the observation that mobile phone users build 'telecocoons' (Habuchi, 2005), and that

mobile phone users enact a form of 'absent presence' in which they are physically present but cognitively absent (Gergen, 2002). As Barry Wellman (2002) put it, with landline phones, people called places; with mobiles, people call people. Symptomatic of this development, early mobile phone research is filled with arguments about how mobile phones were changing the fabric of shared spaces.

This research trajectory broadly comprised the first part of what Campbell (in press) mapped out in his examination of spatial theory in mobile communication studies. His work particularly looked at mobile phone research and analysed voice and texting 'to explain the problem of mobile phone use in public' (p. 16). In this section, however, we have shown that his arguments can be applied more broadly to the history of mobile media usage in public, in which often 'the underlying assumption is that mobile communication opens up a new social space that is separate and competing from the physical space of the user' (Ibid).

In sum, for much of the history of personal mobile media, mobile devices have been used to at least partially disengage from one's physical surroundings. Some contemporary research has continued this line of study, with multiple analyses of how mobile phone usage can be tied to all manner of accidents in public spaces (Lamberg and Muratori, 2012; Stavrinos, et al. 2011). By no means are we making value judgments on any of these forms of privatization. Many of the criticisms of mobile media distraction imagine an idealized public space in which buses are filled with enlightened discourse and people who readily enjoy conversing with strangers. In many instances, people turn to mobile media because those situations are not available or maybe not even desired. Nonetheless, beyond value judgments, issues of disengagement and distraction have heavily shaped how people initially understood mobile media, particularly mobile phones. As Campbell (in press) argues, however, that specific understanding began to shift in the post-smartphone era.

Locative media

The advent of the smartphone brought together several functions and technologies that were previously distinct. Consequently, the mobile phone has been transformed into a multimedia tool that can be used as a browser, a camera, a calendar, and so forth (Hjorth, 2011). Many smartphone capabilities are newer forms of older media. However, smartphones have also enabled new types of media based upon locative media.

Locative media is an eclectic term that can be attributed multiple meanings. For the purposes of this article, however, we will use the following definition.

> Locative media, in basic terms, are media that know your location and make such information meaningful to the user experience and interaction. Within this correspondence between a location and a person's interaction with media, site specificity is often a core component. (Farman and Frith, 2016, p. 140)

In short, locative media refers to any media form able to locate itself in physical space and provide information based on that location.

Most smartphones have locative functionalities that include global positioning systems (GPS), Wifi triangulation, and cellular triangulation (also all three at once in Assisted-GPS). Through these locative capabilities, smartphones can determine a device's position in physical space and provide contextual digital information. In the early 2010s, it was possible to come up with an at least somewhat comprehensive list of mobile applications that relied on location information. Such a list would include mobile mapping applications, location-based social networking applications (LBSN) that enabled people to 'check-in' to share location with friends (Saker and Evans, 2016), and mobile games that used location information for gameplay (Frith, 2013; Licoppe and Inada, 2006). By 2018,

it has become nearly impossible to even begin listing applications—or even types of applications—that use location to tailor information (Wilken and Goggin, 2015). Rather, by this point, it has become easier to list applications that *do not* rely on some kind of locative function than those that do.

The locative functions of mobile phones have significantly shaped how digital information is organized, and as a growing body of mobile media research has argued, how people experience and engage with their surrounding space (Frith and Saker, 2017). To this end, Campbell (in press) argues that smartphones as locative media shifted how mobile media researchers understand the relationship between mobile media and place. The 'first stage' arguments presented in the previous section viewed mobile media as tools people use to privatize public space and withdraw from their surroundings. With the growth of locative media, Campbell suggests mobile media research has moved into a 'second stage' of research in which usage no longer necessarily involves people withdrawing from their surroundings. And to this end, a body of work now exists that attests to such a position (de Souza e Silva, 2016a; Evans and Saker, 2017; Frith, 2015)

A possible beginning of the shift in how MCS researchers viewed the interrelationship between mobile media and place occurred before the popularization of the smartphone. A year prior to the release of the first iPhone, de Souza e Silva (2006) developed the theory of 'hybrid space'. This referred to a new form of socially constructed space in which physical information and digital information merged through locative media. At the time, she used rather niche mobile gaming applications to develop this concept. Over a decade later, and at least in the industrialized world, hybrid spaces have become the norm rather than the exception. Key to hybrid spaces are a combination of factors, including the social practices of mobile phone users, mobile data connections, and locative capabilities (Evans, 2015). In these spaces, the digital and the physical

become intertwined in new ways and cannot be conceptually separated. The digital accordingly becomes a kind of place marker, much like signs or store fronts in physical places.

The use of digital information to shape experiences of space contributed to a major departure from both earlier theories of the Internet, and much of the theorization of mobile media in general. Whereas people used books to read a narrative that was not place-specific, the Walkman to listen to a song that had nothing to do with one's surroundings, and the mobile phone to connect with absent others, the digital in hybrid spaces focused on the physically proximate. As Campbell (in press) puts it, 'smartphones can help enrich how people experience public places when used to digitally layer meaning onto them' (p. 18). The information once received, whether alerts about friends' check-ins, mapping directions to a bar, or nearby historical sites on a tourist app, was about one's physical surroundings. Equally important, that information then influenced mobility patterns, a point repeated in mobile media research on a variety of topics, including mapping applications (Ozkul, 2015), mobile gaming (Frith, 2013), and location-based social networking (Saker and Evans, 2016). Rather than a tool of physical disengagement, the smartphone as locative media instead became an interface through which to engage in an augmented way with nearby physical space.

Closely related to hybrid spaces, locative media also contributed to the growth of augmented reality (AR). AR, however, is notably different from the MVR we analyse in the next section. AR involves the overlay of digital information on physical space (Manovich, 2006). The most famous example is the hybrid reality game (HRG) Pokémon Go, which uses the phone's location and the camera to 'place' digital objects on the view of the physical space. As Farman (2013) puts it, AR 'in essence, superimposes data onto an object (or person) through a mobile device' (p. 139), augmenting the physical space through the addition of digital information. Just as with our broader discussion of hybrid space, AR involves an enhanced connection between mobile media and the physical world rather than the separation and distraction covered in the previous section. And as we explain later in

this article, AR is quite different from MVR because it enhances the physical by overlaying the digital rather than the digital incorporating the physical.

In effect, then, hybrid spaces and related theories pushed back against the idea that mobile media were automatically tools for distraction and separation. Much of this current stage of MCS research 'reflect(s) a concerted effort within the field to move away from theoretical assumptions about separate and competing realms of social interaction' (Campbell, in press, p. 13). Exceptions obviously exist, and people still use text and voice as ways to filter and disengage from nearby space. Nonetheless, as a general trajectory MCS has moved away from the ideas of distraction and disengagement. However, as the rest of this article examines, the advent of MVR possibly complicates that shift by enacting a new type of divide between the digital and physical in shared public spaces, a divide more porous than ideas of full absence or separation, but far less intertwined than notions of hybridity and augmentation. To make out case the rest of this article examines MVR as an emerging media form, and draws from various theoretical foundations, as well as conceptualisations of the 'virtual' to show how the technology may complicate the relationship between the digital and physical through mobile interfaces.

Mobile Virtual Reality (MVR)

Google released its first mobile virtual reality (MVR) headset in June 2014: the aptly named and low-cost Google Cardboard. Google Cardboard involved users constructing their own headset by unfolding and piecing together a rather flimsy looking cardboard viewer. Once assembled, users could download a variety of MVR applications and games on to their smartphone that they could access by slotting their mobile device into the cardboard viewer, and then wearing the headset like a rather cumbersome pair of glasses. While Google Cardboard may sound unimpressive, the results were surprisingly good. Upon wearing the headset, users effectively inhabited a three-dimensional

digital space that felt—for all intents and purposes—real. The cardboard viewer provided users with an affordable taste of the immersive capabilities of VR, only in this instance it worked through the convenience of their own mobile phones. Following the success of Cardboard, Google then focused on its more professional and refined MVR platform: Daydream.

Unlike Cardboard, Daydream requires the intermingling of three components: Daydream-ready smartphones, Google's accompanying Daydream View headset, and a wireless controller that digitally interprets physical movements and gestures through its smart sensors. Daydream is publicised as enabling users to 'get into the game', 'explore new worlds', and have access to their own 'personal cinema' (*Daydream*, 2018). Building on this potential, the last two years has seen a growth in concrete examples of people using MVR technology. For example, MVR has provided terminally ill patients with the experience of being outside (Murphy, 2017), distracted people from the sensation of painful treatments (Al-Heeti, 2018), extended the atmosphere of music festivals like Coachella beyond their spatial confines (Locke, 2017), and enabled home buyers to take virtual tours of real properties. Likewise, *The Guardian*'s (a UK-based broadsheet) MVR application demonstrates the journalistic potential of VR to provide new ways for audiences to 'step inside the story', with available experiences examining topics such as autism, asylum, and solitary confinement.

More recently, stories have also started to emerge that demonstrate the potential for MVR to be used in public settings, such as on trains (Degun, 2018), subways (Walker, 2015), and airplanes (Kushera, 2015). While these instances predominantly involve early adopters, the potential application of MVR in these spaces has not gone unnoticed by relevant authorities, with the Massachusetts Bay Transportation Authority (MBTA) notably advising passengers against this type of activity because customers should be 'aware of their surrounding at all time' (cited in Murphy, 2016). Issues pertaining to early adoption and transport safety aside, Darrel Greenhill (2018)

suggests, 'it will [not] be long before commuters using VR becomes a commonplace reality' (cited in Keown, 2018).

For the purposes of this article, a pertinent case in point involves a well-publicised instance of a man using MVR while commuting to work on a subway (see Patel, 2017). As subsequently shared footage on various social media sites revealed, the man's physical involvement in the digital world displayed in his headset became increasingly animated as the journey progressed. This development did not go undetected by other passengers. As one of the surrounding commuters who videoed the scene explained, 'the person we were gawking at couldn't even see or hear us. So we all had complete license to stare' (quoted in Walker, 2015). Not only was this case widely recounted across various news outlets and online platforms, but it was done so in the context of embodied space, with reporting often focusing on the extent to which the man in question was both physically and cognitively cut-off from his surroundings.

In contrast to smartphones as locative media, then, which have been theorised as enhancing what is physically nearby through site-specific 'revealings' of place, MVR outwardly provides new ways of leaving behind one's environment and being virtually transported to somewhere more exotic. In the example used above, MVR congruently enabled the commuter to momentarily occupy a digital world beyond his physical location, within a public space where standalone VR system usage would not be possible. Importantly, however, and as equally demonstrated by this example, while MVR might allow users to interact with a space that supposedly transcends physical reality, the virtual space of MVR is very much embedded in physical space. Corporeality is not circumvented but rather incorporated into the digital space contained within the headset. To be clear, this does not mean that the experience of MVR does not *feel* 'real'. Rather, what it means is the need for a more sophisticated understanding of the relationship between the 'real' and the 'virtual'.

Today the word 'virtual' is frequently employed in conjunction with digital technologies and the renaissance of VR as a realisable, immersive, and—now—mobile option. At the same time, the virtual is more than just a synonym for the digital (Shields, 2003). Chiefly building on the philosophy of Gilles Deleuze (Mackenzie, 2006), Shields (2003) differentiates between 'the real', 'the actual' (or 'concrete'), and 'the virtual', insisting that regardless of the 'virtual' not being the 'actual', it is nonetheless quite 'real'. Elaborating on this point, Miller (2011) suggests that play is a useful example of this relationship. While the world of play might not correlate with 'concrete' reality, it would be incorrect to suggest the reality of this world is not experienced as being 'real' by the child playing. The 'virtual' therefore problematizes the commonly held belief that the 'real' is a fixed and impervious category. In the context of MVR, this underlines that the virtual spaces currently being created in emerging applications and games are not simply an addition to the 'real', but also, and importantly here, 'real' in and of themselves.

The intermingling of the virtual and actual while bodies are in shared public spaces of transportation raises questions about how the hybridity of space and place may alter through MVR usage, which is, of course, the focus of this article. As discussed earlier, the locative functions of smartphones blended digital information with physical location to help enable hybrid space. In those instances, however, the relationship between the digital and physical was one of augmentation. With MVR, digital space displaces the physical on a phenomenological level. Concrete space is not augmented *per se*, but rather its concomitant sights and sounds are momentarily replaced with something different and oftentimes otherworldly. For the commuter engaged in MVR, the primary source of attention shifts from the 'actual' space of transportation to the virtual space of their headset. The physical setting synchronously changes from one of enhanced hybridity to what we refer to as 'dislocated space'. Here, we define this 'dislocated space' as *an inversion of hybrid spaces that involves concrete space being temporarily superseded by the digital space of MVR.*

Importantly, our conceptualization of MVR as dislocated space is not a straightforward

return to earlier conceptualizations of mobile media use as 'separate' or 'absent' from the physical.

Rather, *the shared norms of actual space dislocate the user, but remain a constraint upon actions in the virtual space.*

In a dislocated space where the digital incorporates the physical, the physical does not disappear, nor

is the person rendered wholly absent. The same was true of earlier mobile phone calls. Despite some

theorizations of separation, research by scholars like Lee Humphreys (2005) readily demonstrated

how even the most 'disengaged' user still showed some recognition of their surroundings. That said,

the ability to exist in a shared space is further complicated by MVR because of its sensory

displacement. With MVR, both sight and sound become sensually folded into the same mediated

experience. As a corollary to this, the phenomenological experience of MVR has the potential to

fully consume the primary information senses—the ocular and auditory—ostensibly (and

problematically) furthering (or perhaps lessening) the 'control' people exert through mobile media.

In the interest of clarity, our argument can by further explicated on a spectrum that starts

with traditional VR. For the most part, traditional VR is necessarily bounded and physically

demarcated. In the main, this is a by-product of the cumbersome, and weighty nature of standalone

VR, as well as the computation power needed to power modern systems. The physical space of VR

is almost entirely (though never completely) superseded by the virtual world displayed through the

headset. This process can occur precisely because the user has more power over their private

physical space, than a public shared space, which according to some theorizations (see Weintraub,

1997), is one of the defining factors of what make spaces private. Symptomatic of this physical and

digital rapport, and the ensuing regulation of space, the user is potentially more able to become

myopically immersed in the digital space of VR.

With MVR, however, cognitive sensitivity to the dynamic relationship between the digital

and the physical is understandably different. This variance is not because of the nature of the virtual

per se, but rather the nature of actual space. While MVR may configure digital space in a mode comparable to traditional VR, in a phenomenological sense the physical retains more of a central status with the former, because the physicality of the concrete world potentially carries consequences that outweigh the uncertainty of the latter. Indeed, the sense of immersion felt while using MVR in a public setting is justifiably mitigated by the limited control the user has over their actual setting once the headset is on. And because of this vulnerability, the practice of MVR carries a higher risk of physical injury or the threat of being ostracized by fellow passengers.

The dislocation enabled by MVR also raises an obvious question relative to our general argument: just how mobile is it? On the one hand, it could be argued that MVR is barely a form of mobile media. People are not able to walk through physical space wearing a headset. If they did, they would almost certainly hurt themselves because their vision would be completely occupied by digital imagery. However, in much the same way that the paperback novel is an example of mobile media even if it is engaged while physically stationary, the fact that MVR usage if often immobile does not mean that the technology itself does not remain a form of mobile media. The 'mobile' in mobile media is a spectrum that represents a wide range of mobilities that are important to consider. On that spectrum of mobility, and in the physical sense at least, MVR falls on the far end of 'less mobile' mobile media. MVR can be used while mobile, but this physical mobility comes in a rather limited form and likely no one with an MVR headset on would be able to physically walk from one place to another.

Walking, however, is only one form of mobility. As Lyon and Urry (2005) point out, mobile media are often used to negotiate 'in-between' time spent while mobile on public transportation, and that point is why MVR retains a place as mobile media. The person using MVR must rely on some kind of transportation infrastructure for their mobility, but because of the relatively small size of the headsets and the link to smartphones, they can engage in a mediated form of mobility during the

supposed 'dead time' of travel. Here, MVR reduces mobility, but it remains mobile nonetheless. And that mobility is key to the forms of dislocation examined earlier.

At the same time, and importantly for the purposes of this article, we also suggest that MVR simulates a form of mobility that goes beyond physical space and explicit displays of mobility. One of the immediate pleasures of VR is its ability to simulate the *feeling* of moving—oftentimes at incredible speeds. As touched on earlier, MVR can do this because of the sensory immersion MVR enables. The sensation of movement within MVR therefore does not involve the suspension of disbelief. Users are not required 'to adopt an 'as-if' structure of experience (Hjorth and Richardson, 2017, p. 5). Instead the perception of ambulation is congruent with the ocular and auditory experience of the MVR headset. Digital motion is physically felt. The fact that MVR usage might appear to be on the 'less mobile' end of mobile media is symptomatic of the 'dislocated' space we have suggested MVR is predicated on. In other words, the apparent immobility of users in relation to their immediate surroundings is not necessarily an indication of absent mobility, but rather one of perspective. It is our suggestion that from the vantage-point of the headset lies a confluence of mobilities that extend beyond concrete reality, as well as older forms of mobile media.

The push against tendencies to separate the digital and the physical was one of the animating arguments Campbell (in press) identified in his second trajectory of MCS research. In MVR, however, it could be possible to return to that separation to an even more extreme degree. After all, MVR could be conceptualized as a form of separation that *really* does separate the user from his or her physical space. However, this article introduced the idea of dislocation to capture the altered hybridity of space for MVR users. With MVR used in public spaces, the digital no longer augments the physical as in hybrid spaces; rather the digital of the virtual world supersedes the physical, but a full separation can never happen because the MVR user still must remain aware of the physical surroundings to function. Consequently, the physical space does not augment the digital as it would

in a full inversion of hybrid spaces, but it does constrain the experience of the virtual accessed through the headset.

While we avoid language of separation, our focus on MVR clearly situates this article within the older research on spatiality in Campbell's MCS trajectory. Campbell's work showed how MCS has moved—in general terms—from viewing mobile media usage as distraction to viewing them as augmentation. MVR is an example of mobile media that moves far away from augmentation and swings back towards distraction, possibly to a more extreme degree than any form of earlier mobile media. But as we argued earlier, even if MVR does become widely adopted and further shift the trajectory of some strands of MCS research, the shift will be more towards dislocation than separation. After all, to exist in a shared, physical space and function in society, people must remain at least somewhat aware of how to negotiate the norms and constraints of that place. That fundamental point does not shift just because someone uses MVR to engage with an immersive digital world. At some point the headset must come off.

Conclusion

The relationship between mobile media and place traces back much further than the mobile phone. As discussed, people used many earlier forms of mobile media, such as books and the Walkman, to exert control over their experience of place. People did the same with voice calls and text messaging, enacting 'telecocoons' (Habuchi, 2005) that enabled them to form a sort of private space mediated through their mobile device. However, as Scott Campbell (in press) argues, the concept of disengagement from one's surroundings began to shift in Mobile Communication Studies (MCS) with the rise of smartphones as locative media. People increasingly used mobile devices to engage with hybrid spaces shaped by site-specific digital information that enhanced their experience of physical space.

The move from physical distraction and supposed separation to augmented experiences of place, however, may be complicated by the emergence of Mobile Virtual Reality (MVR). MVR is a new form of mobile media that effectively turns smartphones into VR headsets. As we have argued, MVR potentially moves us away from hybrid spaces to a possible 'third stage' of mobile media research: dislocated space. In dislocated space, the digital no longer augments the physical, but rather the digital supersedes the physical while simultaneously being constrained by the norms and constraints of the surrounding shared space. The growth of MVR may reanimate discussions of detachment present in analyses of the spatial impacts of earlier mobile media. The phenomenological experience of MVR, however, provides a more sensorily immersive experience than earlier mobile media that enacts a more nuanced form of dislocation that more effectively—though never completely effectively—folds the physical into the digital. We therefore contend that MVR implicates a different kind of virtuality, and with it, a different kind of interstitial space, which might momentarily, but meaningfully, transform how 'the real' is experienced.

While the exigency of this article has chiefly revolved around the ability of MVR to effectively remove the user from their actual setting, there is also the opportunity for MVR to be employed in a manner than compliments both the physical and the social. Regarding the former, we now readily see the application of VR in hospitals, where surgeons effectively use this technology to visualise anatomical structures, practice operations and train medical students (Seymour, et al. 2002). VR is therefore used in these examples to present new revealing of—and indeed relationships with—physical space. Accordingly, our discussion of dislocated space does not preclude the potential of MVR to more readily extend and incorporate the actual world in interesting and nuanced ways as related technologies improve and develop in the future. Likewise, and regarding the latter, Oculus Go's social applications, such as Venues, which enables users to virtually partake in live events and socialise within virtual spaces (Rubin, 2018), also demonstrates the potential for

MVR to configure modes of spatiality that might forge new understandings of co-presence. While these trajectories are beyond the scope of this article, they nonetheless present interesting avenues of scholarly circumspection that should be explored, and could add much needed contours to our understanding of this technology.

The future of MVR is, of course, uncertain. However, the growing number of MVR platforms alongside its notable commercial support suggests the need to begin theorising the various implications of this nascent media form. MVR has the potential to reshape and complicate the relationship between mobile media and place and represents a potentially vibrant research area for new media scholars. Significantly, our study is one of the first to theorize the impacts of MVR and situate the technology within the lineage of MCS research, and we hope this article shows the potential pathways new media scholars can follow in future studies of the spatial, physical and social impacts of MVR.

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