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# Mobile media beyond mobile phones

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## Abstract

In this introduction, we argue for an expanded focus in mobile media and communication studies (MMCS) that accounts for the many types of mobile media that affect our lives. We begin by pointing out that mobile phone/smartphone research has dominated MMCS as a field. That focus makes sense, but it runs the risk of MMCS essentially turning into “smartphone studies,” which we argue would limit our impact. To make that case, we identify a few examples of the types of oft-ignored technologies that could add to the depth and breadth of MMCS research (e.g., RFID [radio frequency identification] tags, the Walkman, barcodes). We then summarize the articles in this special issue to categorize the breadth of this research, which ranges from analyses of mobile fans to autonomous cars to mobile infrastructure.

## Keywords

drones, infrastructure, media archaeology, media history, RFID

For a relatively new field, mobile media and communication studies (MMCS) has a rich, interesting history. A major part of that history involves the creation of this journal in 2013, which helped solidify MMCS as a subfield distinct from other media and communication subfields. But MMCS developed in other ways as well, with Campbell (2018) tracing that trajectory through the analysis of a multidisciplinary set of publications along two primary axes: spatiality and sociality. While the sources Campbell analyzed were diverse in terms of authors, methodological approaches, and journals and book publishers, one thing stood out to us when reading his analysis: The vast majority of MMCS research focuses on the mobile phone. That focus makes sense. The mobile

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phone has become possibly the dominant communication technology of our time. And that dominance has only become more pronounced with the growth of smartphones as polymedia that have become the central technology people use to do everything from communicate with one another to mass broadcast information to watch videos (Madianou, 2014). But our goal in putting together this special issue is to expand the focus of MMCS to account for the various ways people use other forms of mobile media to communicate with each other and with the environment.

Mobile media have been around far longer than mobile phones (Farman, 2012; Goggin, 2011; Goggin & Hjorth, 2009), so we are not claiming that no research exists on other forms of mobile media. In the field of sound studies, for example, there is a strong body of research on the intersections of mobility and mobile auditory media such as the Walkman and the iPod. Du Gay, Hall, Janes, Mackay, and Negus's (1997) work on the Walkman was formative to cultural and media studies. Bull's (2001, 2007) work on the Walkman and then the iPod explicitly focused on the intersection of mobility and media, with Bull arguing that mobile auditory media is a distinctly spatial technology. People move with their media to exert a sense of control over their experience of space. They use mobile auditory media to personalize the soundscape of their mobility, which in itself is a distinctly communicative act. Mobile media scholars who focused on the mobile phone later adopted some of Bull's writing about the Walkman and the iPod to understand how people used their phones while in public space (de Souza e Silva & Frith, 2012).

And major forms of auditory mobile media were not the only objects of analysis. A few studies, such as Schivelbusch's (1986) historical analysis of train travel, looked even further back at how people used books and newspapers to negotiate mobility. Schivelbusch linked the growth of the paperback novel to the popularization of train travel as a form of transportation. As he detailed, the train travel was the first time many people were surrounded by strangers for extended periods of time. They consequently had to establish new norms and new ways of navigating the mobility spaces of train travel. The book and newspapers were one way they did so by using these forms of mobile media to negotiate a certain type of control over their spatial experience, and that control was later adapted by commuters' use of smartphones to avoid encounters with strangers (Özkul, 2015).

Of course, the question of whether these important works are even a part of MMCS is an important one. They were almost all written before MMCS became an established field, and those scholars would likely not consider themselves MMCS scholars. However, the links between those studies and MMCS research is why we argue MMCS should broaden its focus to look outside of "the phone." To further understand why, we can return to Campbell's (2018) work we mentioned earlier. He traced the development of MMCS along two axes: spatiality and sociality. As mentioned before, almost all the research he included focused on the mobile phone, but those two axes could also be applied to other forms of mobile media. Early mobile GPS displays, for example, were distinctly spatial forms of mobile media people used to negotiate and control their experiences of mobility. And the byproduct of that control also impacts on sociality. As Schivelbusch argued, people began treating "railway" novels as mobile media in part to deal with the new social situations of train travel. Spatiality and sociality are often linked, especially with mobile media, and our understanding of mobile media is a spatial as well as a temporal one.

The Walkman, the book, the early mobile GPS display, and the iPod are four fairly obvious examples of what we should consider mobile media. And all have fairly straightforward nonverbal communicative functions. The articles in this collection dig much deeper into what counts as mobile media, analyzing everything from hand-fans and cars to social robots and networks. Before moving on to a summary of the collection, we would like to further develop our understanding of mobile media.

## **Barcodes, hybrid spaces, and everything else**

The push to expand the focus of MMCS raises an obvious question: what counts as mobile media? We argue for a broad definition that accounts for all the various mobile technologies that mediate among people and/or things and their experience with space and with each other. In other words, key to our definition of mobile media is the question of mobility. Mobile media should be able to move with bodies, and possibly more importantly, will partially shape experiences of mobility. In other words, mobile media are things that mediate between people and space and reconfigure experiences of how we move through those spaces. And the importance of mobility also pushes us to expand the focus of this issue to not just account for that which is mobile, but also that which enables mobility. After all, as Hannam, Sheller, and Urry (2006) argued, mobilities is not just concerned with that which moves but also that which enables movement. Consequently, we also argue that analysis of mobile media requires taking into account the mobile or fixed materialities—often infrastructures of various types—of the mobile technologies that render such mediation possible. Hence, our conceptualization of mobile media is situated at the intersection of mobilities, materialities, and mediation. Part of our push for such a broad definition is to show the value in broadening our objects of focus. By looking beyond smartphones, we can better understand these intersections and their social, cultural, political, economic, and ethical implications that shape and are shaped by people's everyday lives in often unnoticed ways.

A recent example is Frith's (2019) book on RFID technology that argues that we need to start thinking about mobile, communicative infrastructures as a type of mobile media. RFID tags can be attached to objects or bodies and then move through the world to wirelessly communicate identifying data with computing infrastructure; they are a key infrastructure of the Internet of Things. These tags might not be personal "communication" technologies in the sense of interpersonal communication like with smartphones, but we argue they should be part of MMCS. They communicate with each other and other objects, bodies, and networks. They do so by transmitting unique IDs to the built environment, which then can have major social and spatial consequences. For example, rooms will not open without the communication from access cards; subway turnstiles will not lift. These tiny technologies are a consequential form of mobile media that work as the communicative link between billions of physical things and larger digital systems. They have a place in MMCS.

Or to get even more mundane, what could MMCS add theoretically to our understanding of a technology like the barcode? Barcodes are one of those ubiquitous yet fairly unremarked upon forms of mobile media. But as scholars like Nigel Thrift (2004) have argued, barcodes are one of the most important technologies of the 20th century.

With no exaggeration, it would be difficult to picture our contemporary global economy without the barcode. Despite that importance, however, barcodes have received almost no attention in the humanities and social sciences, and pretty much the only times they are dealt with in MMCS research is in terms of QR (quick response) codes that are read by mobile phones (Fortunati, 2014). But what could taking something like the barcode as an object of study add to MMCS?

The first thing would be a recognition of the role barcodes play as mobile media. They mediate the relationship between the materiality of objects and the digitality of back-end databases. They are a quite literal, quite mobile link between the digital and physical. Or to put it differently, they are “bit structures” that are “the mechanism by which the virtual establishes its logic in the real” (Hosoya & Schaefer, 2002, p. 3). They do so because they are mobile and able to travel with any object to which they are affixed, and they communicate (in at least a broad sense of the word) because they contain data within their black stripes that can be transmitted to larger infrastructure.

Obviously, a barcode is a massively different type of mobile media than a smartphone and would likely require a different theoretical framework to analyze. But part of the goal of this collection is to show the value in a broader approach. And diving deeper into the humble barcode can show how even impactful theories of smartphone use can be enhanced through a willingness to occasionally look at what Star (1999) calls the “boring things” of everyday life. As an example, let’s return once again to Campbell’s (2018) mapping of MMCS research. He traced research along two axes: sociality and spatiality. One of the big shifts on the spatiality axis was the growth of what de Souza e Silva (2006) called “hybrid space,” a concept that was then further developed in later MMCS research (de Souza e Silva & Frith, 2012; Frith, 2015). Hybrid space refers to the merging of the physical and the digital, a new type of spatiality in which the two are difficult to conceptually separate in large part because of mobile phone usage and locative functions. However, positioning the barcode as a form of mobile media suggests that our contemporary hybrid spaces are more a newer form of the hybridity that already exists than a completely novel phenomenon. After all, barcodes enabled an earlier form of hybridity that merged the digital and physical in new ways. Obviously, the hybridity enabled through barcodes—basically the ability to make objects machine-readable and turn them into digital records—is much more limited than a mobile mapping or location-based social networking application. However, these “bit structures” merged the digital and the physical in novel, consequential ways 30 years before people started talking about 3G connections.

And of course, there are many more obvious candidates for objects of study than barcodes or even RFID tags. Despite the repeated hype that all media will converge into the smartphone, we still have diverse historical and contemporary examples of nonsmartphone forms of mobile media. Wearables, such as the FitBit or Samsung Gear Fit, may share data with smartphones, but they are a distinct technology used to discipline the body while simultaneously writing it into being (Neff & Nafus, 2016). Wearables become a new way of knowing oneself while also raising novel surveillance and privacy concerns that are distinct from the concerns with smartphones. For example, the recent push by employers to encourage employees to use wearables to qualify for certain health insurance discounts brings questions of surveillance quite literally to a biological level

(Rowland, 2019). And the same need for a unique approach is just as applicable for the many other forms of distinct mobile media, whether an eReader, a smart watch, or even an injectable microchip, that shape the media landscape.

Finally, beyond pushing for a more inclusive approach to what counts as mobile media in MMCS, another key goal for this special issue is to further Horst's (2013) call made in the inaugural issue of *Mobile Media & Communication*: an increased focus on the infrastructures that make mobile communication possible. In particular, we hope that expanding beyond the smartphone interface can help build ties between MMCS and infrastructure studies, which is a transdisciplinary field devoted to researching the infrastructures of everyday life. Infrastructure studies has its roots in information science and science and technology studies, in particular the work of Bowker and Star (1999). And infrastructures, including mobile infrastructures, are quite literally designed not to be noticed. They often only become "visible upon breakdown" (Star, 1999, p. 380), and as Farman (2015) notes, cellular network towers are often quite literally designed to look like something else.

But as the articles in this collection point out, mobile infrastructures matter. There are no smartphones without massive material infrastructures that support communicative networks. These infrastructures themselves may not seem like a primary object of MMCS, but we argue that they should be. After all, who is allowed to communicate and in what way is often a decision shaped by infrastructural investments and political choices about what gets built where. And the issue of mobile infrastructure also raises some major questions about competition, branding versus reality, and even national pride. For example, the push for 5G infrastructure, what even counts as 5G, and which nation leads the way have already become divisive issues. This infrastructure itself obviously requires different types of analyses from those of smartphones, but that analysis is crucial to further developing MMCS as a field.

In conclusion, this collection hopefully pushes MMCS in some new directions. Smartphones will continue to be the main objects of study in our field, and they should be. They are everywhere, and they have impacted how we live our lives. But we argue that MMCS should not become "smartphone studies," that a unitary focus can do more harm than good to the field's development. By doing so, we are essentially returning to the very first article published as the introduction to this journal, in which the editors argued that "Focusing too much on an existing tradition (namely, "mobile phone research") would hinder the further evolution of academic inquiry" (Jones, Karnowski, Ling, & von Pape, 2013, p. 4). Consequently, the articles in this collection cover a wide range of mobile media. We have no interest in drawing strict lines about what should and should not be part of MMCS. Rather, we worked with the authors to think creatively about what everything from drones to autonomous vehicles can add to our understanding of mobile communication more generally.

## Article summaries

Writing the summary section for this collection proved to be quite a challenging task. The challenge was due to the breadth and variety of contributions, as well as the new ways of interdisciplinary, methodological, and critical thinking found in these articles.

Mobile media are inherently (ontologically and epistemologically) mobile. With this issue, we realized that not only has our understanding of mobile media expanded beyond the mobile phone, but our thinking of the “mobile” in front of media has evolved. These articles do not see mobility as opposed to place, and they reject some commonly held assumptions that celebrate the binary oppositions between fixity and flow in developing various understandings of mobilities. As a whole, this collection understands mobilities as “entanglements” (Ingold, 2008) of (im)material, networked, and embodied forms of social, spatial, and temporal practices. All the contributions in this issue have added different layers to those entanglements and we owe thanks to all of our contributors for unsurfacing those layers and taking us on a journey in time and space that adds to the already rich but still relatively new field of MMCS.

Looking *beyond* something means looking both forward and back. In that sense, an important contribution to MMCS comes from the prehistories of mobile devices and archaeologies of mobile media. As argued by Davies (XXXX) in “Fanology: Handfans in the Prehistory of Mobile Devices,” “No new medium or technology can ever be entirely novel. By its very existence, it must connect with the aesthetics, desires, and practices of the past” (p. XXX). As a remediation of mobile media and communication (Bolter & Grusin, 1999), Davies traces “the haptic and optic aspects of the hand-fan” (p. XXX) as part of archaeologies of mobile media (Huhtamo, 2011).

Relatedly, Alper’s article “Portables, Luggables, and Transportables: Historicizing the Imagined Affordances of Mobile Computing” expands our understanding of mobile media and contributes to the histories of mobile media through her discussions of portable computing. Alper argues that portable computing “helped shape the social and cultural uses of contemporary mobile communication” (XXXX, p. XXX). In support of her argument, she takes us back to the 1980s to explore the foundations of today’s mobile media in the imagined affordances of portable computers, focusing on the “perpetual role of materiality and embodiment” (p. XXX).

As “portable” and “communicative” technologies, many mobile media enable real-time tracking of people and things in space and time, and location data is one of the key elements of such surveillance practices. In a similar (micro) “historical” vein to Alper, Wilken (XXXX) fills the “infrastructure” gap in MMCS in his article “Communication Infrastructures and the Contest Over Location-Positioning.” He does so through an analysis of location-determination systems that uses Skyhook Wireless as a case study. As we discussed before, mobile media are often designed to become invisible while rendering certain people and things visible. The balance of visibility/invisibility has ethical and societal implications because these location-determination systems not only create different layers of visibilities, they also make certain groups of people more visible than others, or in some cases, mis-represent or mis-interpret their movements. In that sense, looking at not only the infrastructure itself, but the underlying political and economic concerns is of great importance and adds to users’ imagining of affordances of mobile media (Alper, XXXX).

In addition, the articles in this collection show how designers’ vision/imagining of the users and the future of these media contribute to the ways we understand mobile media. An interesting example of such an imagining is Alvarez Leon’s analysis of cars in mobile media in his article “How Cars Became Mobile Spatial Media: A Geographical Political Economy of Onboard Navigation.” Alvarez Leon argues that navigation and increased

computerization of the navigation systems in the cars (i.e., “autonomous navigation”) have led to a transformation of our understanding of cars as (auto)mobiles into an understanding of cars as spatial mobile media. To follow this transformation, Alvarez Leon unearths the underlying “technological, political, and economic forces that have converged to transform cars into mobile spatial media” (XXXX, p. XXX).

As also argued by Wilken in his article, we should embrace our objects of study beyond the affordances and limitations of technology. We need to look into alternative and novel ways of researching histories, materialities, and politics of mobile media like in the examples of analyzing political economy ecosystems (Alvarez Leon, XXXX), corporate communications, trade publications, and patents (Wilken, XXXX). This move would not only provide us with a historical trajectory of mobile media, but also will give us the chance to expand our field’s understanding of mobile media futures, as argued in Rijske’s article “Mobilized Networked Infrastructures: Implications for Action, Space, and Knowledge.” Her article asks a core question central to the study of infrastructure within MMCS: Do we need to think of networked infrastructures as being mobile instead of fixed? Just like our conceptions of place (e.g., Cresswell, 2004; Sheller & Urry, 2006), communication infrastructures are also mobile (Rijske, XXXX). Rijske discusses this mobility of networked infrastructures that complements the traditional understandings of networked infrastructures as “necessarily immobile and centralized” (p. XXX) through an analysis of “forms of action, production of space, and ways of knowing” (p. XXX) that render production of new spaces and practices of communication possible.

The production of ground-level space through mobile media is obviously a core issue to MMCS, but this collection also argues that we may need to start looking to the sky to understand novel intersections of mobility and media. Following Farman’s (2011) definition of mobile media as “analog and digital technologies that shape the way we relate to space on the move” (XXXX, p. XXX), Hildebrand’s article, “Consumer Drones and Communication on the Fly,” takes our understanding of mobile media to a vertical, spatial level, where we can understand camera drones as mobile media. Hildebrand discusses “communication on the fly” and the “visual mobilities of the user” where the smartphone becomes the interface and remote control that provides the communicative link between the drone and its user (p. XXX). As Hildebrand points out, such an approach is much needed in MMCS when our object of study is situated at the nexus of “physical-material, digital-intangible, and social-spatial relations” (p. XXX).

Such relations always revolve around issues of individual and collective forms of privacy and practices of surveillance and governance. Hence, privacy and ethical implications of mobile media is a recurring theme of this special issue, as evident in Lutz, Schöttler, and Hoffman’s article, “The Privacy Implications of Social Robots: Scoping Reviews and Expert Interviews” (XXXX). Their article discusses social robots as mobile media and includes extensive review informed by and combined with expert interviews. Like with Hildebrand’s work on drones, Lutz, Schöttler, and Hoffman not only extend our understanding of what counts as mobile media, but also further our understanding of privacy implications of mobile technologies by discussing physical, social, psychological, and informational privacies in relation to social robots. Their research is a reminder that robots, especially as they become more mobile and communicative, will have a place within MMCS more broadly.



In sum, the articles in this collection cover a great deal of ground, ranging from personal fans as a communicative accessory all the way to emerging forms of robotics. We hope this collection is just a first step in what will ideally be a burgeoning area of research in MMCS. As we stated earlier, in no way is this collection the first to look at nonmobile phone forms of mobile media. However, this issue is the first to collect that research within the pages of our field's main journal and will hopefully help further conversations about the many types of mobile media—ranging from digital subway cards to personal drones—that impact the social construction of space.

### Author's note

~~Jordan Frith is now affiliated to the Pearce Professor of Professional Communication at Clemson University.~~

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Didem Özkul is a lecturer in Digital Media and Society at University College London, UK. She works on mobile media and communication practices with a focus on location data, and has published in journals and edited book collections on the topic. Currently, she is working on her monograph about the societal and ethical implications of location tracking and profiling with a special interest in machine learning and algorithmic bias.