

# Evolving mobile media: Changing technology and transforming behavior

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[journals.sagepub.com/home/mmc](https://journals.sagepub.com/home/mmc)**Ran Wei** 

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Historians have long warned us that any prediction about the future, including the future of communication technology, is a risky business. However, adoption of mobile telephony seems to be an exception. The predictions were wrong, just in a different way—worldwide adoption of mobile phones went much faster than expected rather than more slowly. It is now proverbial to characterize mobile phones and devices as the fastest-diffused technology in human history.

In my essay for the inaugural issue of *Mobile Media & Communication* (Wei, 2013), I described mobile media spearheaded by the smartphone as coming of age with a big splash. By that I meant that widespread adoption and novel uses of mobile media were unlike any other media technology. Looking back, the splash became a tsunami. In 2021, mobile users worldwide topped seven billion, accounting for 91.54% of the world's population. In fact, Earth has more mobile phones and devices than people.

## Mobile as metamedia?

More importantly, major technological changes brought by broadened bandwidth on 4G networks have ushered in a greater volume of audio and visual in mobile communication, such as two-way live chatting. With an iPhone, a user can do a live show (e.g., streaming shows) or podcasting. TikTok, a globally popular video-sharing social network site, provides an example of videos-driven applications and services enabled by 4G networks.

It is worth noting that mobile users (in millions) are the driving force in shaping and reimagining what mobile media are and how they are used as resourceful tools for accomplishing mundane tasks, staying connected with loved ones, and being entertained anytime, anywhere. Mobile media represent multiple images—a mini telephone fits in the palm, the miniature computer in the pocket, social media platforms on the go, and the Internet without the wire. These images are seamlessly reconciled in a single sleek

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device thanks to its attributes such as multimodality, portability, and personalization (Schrock, 2015). Nowadays, explicating what is mobile or what “mobile” means is increasingly difficult, if possible at all.

Therefore, it has been a challenge to conceptually define mobile media because unlike any predecessor media technologies, mobile media are not a single technology, device, application, or process. Instead, by employing the most current and top-notch information technologies, mobile media represent a type of hybrid or convergent communication technology based on configurational possibilities of wireless networks, telephony, mass media, and the Internet. Sawhney (2009) characterized the growth of mobile networks that extended the reach of the Internet to mobile environments as “innovations at the edge.”

It is not surprising that academic research has benefited from the deployment and growth of 3G/4G networks in the past 10 years. 3G and smartphones gave rise to a new kind of communication experience through real-time connection that cuts across time and physical barriers in space. Voice calling, messaging, live chat, web surfing, and e-commerce—all made possible with a tap of the screen of a sleek smartphone. My students and I noted (Wei, Fan et al., in press) that the majority of studies on mobile communication published from 2006 to 2020 focused on smartphones (e.g., iPhone). It is no exaggeration that the smartphone has been a catalyst of the rapid growth of mobile communication research. In this sense, the 3G/4G era can be considered as the golden years in which mobile communication research has bloomed.

Nevertheless, current research lags in putting forward up-to-date and robust conceptual definitions of mobile media, especially the explication of mobility in mediated communication via personalized portable devices. When Levinson (2004) defined the mobile phone narrowly as “media in motion,” his definition was suited to describing earlier models of smartphones in the 3G era. Mobile technology, services, and applications have developed in leaps and bounds in the past 10 years, calling for more informed conceptual delineations.

Humphreys et al. (2018) proposed the definition of the smartphone as a “metamedium” that contains a multitude of “constituent media.” Because the Internet-enabled mobile phone bridges the divide among various forms of mass communication (e.g., print, radio, TV), it also represents a brand of convergent medium. Indeed, in analyzing the content of more than 500 articles devoted to mobile communication research from 2006 to 2020, my students and I (Wei, Fan et al., in press) found that mobile media were not studied as a stand-alone medium. Instead, mobile communication scholars studied them together with other digital media or Internet technologies. For instance, they investigated mobile media in connection with social media, information technology (IT) in general, the mobile Internet, the landline telephone, and various forms of mass media (e.g., TV, radio, newspaper or e-publishing).

The conception of smartphones as a “metamedium” is useful, but its analytical power needs to be established. Considering that new generations of Internet technologies progress toward mobile interface and applications, while mobile media are evolving toward a full-fledged computational technology, I expect the definition of mobile media will continue to evolve as well in the near future, marked by big data, cloud-based technologies, artificial intelligence (AI), and machine learning, among others.

At a time when cutting-edge technologies feature a mobile dimension that offers killer apps for portable devices, robust conceptual clarity of mobile media as a metamedium is an urgent scholarly undertaking. In meeting the challenge of theory-building specific to mobile communication to advance the field, establishing some fundamental yet uniquely mobile-focused foundational concepts is a priority. If we fail to establish the foundation of conceptual clarity about mobile media and communication, mobile media may face the peril of being treated as a background technology of leading technologies of the day, leaving mobile communication to mean everything and therefore nothing substantial or distinctive.

## **The mobile dependency**

Communication technology is a fascinating research field largely because few can know in advance what users will do with it to meet their needs and expectations. The ubiquitous 3G/4G mobile phones have given rise to a lifestyle that centers around the smartphone and device, or an approach to rely on mobiles as a means to resolve everyday life issues. Industry polling data (Gallup, 2015) have shown that American smartphone users check their phone anywhere from every few minutes to a couple of hours every day to text, swipe through apps, or scroll through social media pages. The tapping, swiping, and clicking amount to an average of 2,617 times each day (Winnick, 2016). Mobile “natives” essentially live on their smartphones (to them, mobile is anytime, all the time).

The strong bonding between users and their always-on mobiles leads to what Katz and Aakhus (2002) feared—over-reliance on such technologies. Separating the smartphone from its user is almost impossible. A user leaving home without the phone will feel vulnerable. Most notable is the thought of NOMOPHOBIA (that is, NO MOBILE PHone PhoBIA), a psychological condition when people fear losing control over their lives if detached from mobile phone connectivity. To some users, life without the phone comes to a halt. Others count it a blessing to turn off the phone.

Thus, scholarly attention has shifted from adoption and ownership of mobile media to the psychology of mobile communication, especially the psychological consequences of mobile dependency. In a way, it is ironic that mobile media as a technology of freedom from limitations of time and physical barriers have trapped their users. It seems to me that investigating the uses and implications of mobile media for one’s well-being due to dependency should be high on the agenda of mobile communication research.

## **Rising vulnerabilities of mobile communication**

No doubt, the evolving mobile technology will continue to shape the user’s psychology and behavior. During the on-going global pandemic, a QR code is the pass to venture out; a mobile site presents a lifeline for those quarantined in a confined space. Our dependency on smartphones has deepened. We tend to rationalize the dependency by associating mobile media with conveniences, functionality, utility, and comfort. However, with convenience comes the rising vulnerability of mobile communication. Here, I do not mean

just a threat to one's privacy, risk of being hacked, or falling victim to mobile scams. I mean the vulnerability associated with habits tied to mobile media use. Let me explain.

Though mobile media were not invented as a toy, play is a striking feature of mobile media usage—affording a user mindless, casual, and instantly gratifying opportunities for play while on the move. This sort of playful and mindless behavior tends to result in a new type of brain drain—the presence of one's own smartphone reduces available cognitive capacity (Ward et al., 2017).

My collaborative research (Wei, Guo et al., in press) on the diffusion and impacts of misinformation about COVID-19 on social and mobile media illustrates how widespread misinformation led to harmful consequences in four of Asia's leading cities (that is, Beijing, Hong Kong, Singapore, and Taipei). Respondents who shared misinformation with others after viewing those half-truth messages tended to fail at processing the information thoroughly. What's more, our research suggested that sharing the misinformation on mobile apps could increase the risk of mistreatment and false beliefs. Specifically, sharing COVID-19 misinformation was the strongest predictor of accepting misleading messages as true. When this happened, anti-vaccine attitudes followed.

## **Human aspects of technology in future research**

Now, at the dawn of 5G networks, 5G technology will provide much richer wireless communication and media experiences to users. Smartphones without algorithms are unthinkable; AI has found its way in mobile media or new applications developed specifically for mobile devices. As a miniaturized computer in one's pocket, the smartphone as a gateway to endless streams of digital information will accelerate. At the same time, apps and mobile devices for experiencing virtual content, and real-time collaborative viewing and working will gain a foothold. In all probability, mobile communication's frontier will expand to dazzling prospects of new multiplicities, configuration potentialities, and complexity. The game is afoot.

Although the building of theory regarding mobile media has lagged behind the fast-evolving technology, mobile communication research should not chase after hot technologies and killer apps, which are ever-changing. Such an approach would likely be futile. As Flanagan (2020) proposed, scholars should focus on studying the pursuit of goals, and enduring needs and wants of people, especially the role of communication technology in inspiring and fulfilling those needs and realizing the goals they pursue. For instance, building on user-focused approaches (e.g., the coping model by Beaudry and Pinsonneault, 2005), theories of mobile communication can be developed from imagining and articulating what inspires people to better their lives via the pervasive mobile media. This is how a newly established subfield of communication research contributes to the deepening of our understanding of the human aspects of technology.

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