

Aerial Play: Drone Medium, Mobility, Communication, and Culture
Julia M. Hildebrand (Palgrave, 2021)

John Fraim

Ten years ago, on a warm evening, I was sitting with a group of neighbors in lawn chairs in a small community park, looking up into the Ohio sky. It was July 4th and we were all waiting for the annual American ritual of fireworks to begin. It was nine-thirty when it was dark enough for our town to begin its half hour spectacular. Conversations had toned down as everybody now turned their faces upward. The bursting galaxies of light would soon fill the sky.

This is when we all saw the flashing red and green lights in the sky, perhaps a few hundred feet above us. The lights hovered for a few seconds and then moved maybe 50 feet to one side and then went backwards. Then, the lights shot high into the sky until the red and green lights might have been the pinprick of another star. The light held this position for a few seconds and then started to get larger and larger as it lost altitude and came back to hover over us, this time no more than a hundred feet over us. Two red flashing lights on the front of the object and two green lights on the back were fully discernible.

All of us in the lawn chairs were looking up at the object, unsure on what we were seeing. Then, a man a few chairs away from me said, “Ok Bobby, let’s land it and watch the fireworks.” In the fading light I could see a young boy next to the man, holding a device with control sticks on it. I watched him work the sticks as the red and green lights slowly descended into the park away from our lawn-chair. The boy ran to fetch it and as he did there was the first exposing of fireworks overhead. It was spectacular but for me, at that moment, the most spectacular thing was the magic maneuverings of the red and green lights I had just seen. It was the first time I remember seeing a drone.

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At the time, ten years ago, drones were the new “toy” on the block, so to speak. They were usually only in the possession of a handful of teenagers who did annoying things with them like buzz people in parks or hover outside people’s windows. It was (almost exclusively) another tech device for boys, the type of boys who loved to pull pranks and be in places they were not supposed to be in.

Now, in 2021, even I own a drone (a DJI Mavic Air 2) and drones have escaped from the realm of devices owned mostly by teenage boys to become one of the world’s most popular, useful - as well as debated - technologies. For example, since 2020, drones are being used by many countries around the world to combat the Coronavirus. In China, DJI drones are used by the police force to remind people to wear masks. In other

countries, such as Morocco and Saudi Arabia, DJI drones are used to disinfect urban areas and monitor human temperatures to contain the spread of Coronavirus. And, at the Tokyo Olympics, the swarm of drones opening and closing the games was one of the true spectacles of an Olympics with many spectacles.

Today, drones are a multi-billion-dollar industry with tentacles in all sorts of industries such as the military, agriculture, real estate, filmmaking, commercials, and sports. The commercialization of drones has created a new cottage industry in writing about their commercial uses in scholarly, scientific, humanitarian, and military publications, some of these publications are classified as drones have become one of the most secretive technologies of various militaries around the world.

But while the industrial and commercial use of drones is huge, it is in the consumer and market for drones that the cultural and social effects of this new drone technology are experienced by drone users. These are the drones that bring us aerial still and moving images from around the world on social media platforms. For example, in the U.S. alone, an FAA forecast in June 2020 estimated there were 1.32 million consumer drones belonging to roughly 900,000 hobbyists, logging in 1.5 million hours of exclusive recreational flight every month.

The exploding consumer market for drones has made Frank Wang, founder of DJI, the largest consumer drone company, the first drone billionaire and one of the rising stars of the modern Chinese economy. Wang founded DJI in 2006 and ran it out of his dorm room at Hong Kong University of Science & Technology. By 2020, the company accounted for 70% of the world's consumer drones. The groundbreaking product of DJI was their Phantom drone released in 2013. It was an entry-level drone which was far more user-friendly than other drones on the market at the time.

In September of 2016, the second generation of DJI drones were introduced with the first of the new Mavic series, the Mavic Pro. The drone could capture stable, 4K video, had a flight range of 4.3 miles, a flight time of 27 minutes and a top speed of 40 mph. Importantly, it came with obstacle avoidance technology as well as a “return to home” button. It was The Mavic Pro folded small enough to fit into a small bag. At the 2017 IFA trade show, DJI announced the upgraded Mavic Pro with their Mavic Pro Platinum. The upgraded version included better battery life and improved noise reduction due to new propellers and electronic speed controllers.

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It was around 2017 that an award-winning professor of communication named Julia M. Hildebrand acquired her first drone. It was a DJI Mavic Pro Platinum drone she named Jay. Professor Hildebrand also acquired an interest in looking at drones from a new perspective. The perspective was of a media ecologist, the group of scholars who carry on the work of Marshall McLuhan. Hildebrand had won multiple awards in media ecology including the prestigious Harold A. Innis Award in the field of Media Ecology. Since 2019, she has been an Executive Board Member of the Media Ecology Association.

The theoretical concepts of media ecology were proposed by Marshall McLuhan in the 1964 book *Understanding Media* and the term media ecology was first formally introduced by Neil Postman in 1968. In this context, ecology refers to the environment in which the medium is used – what they are and how they affect society. As Neil Postman states, “if in biology a ‘medium’ is something in which a bacterial culture grows (as in a Petri dish), in media ecology, the medium is ‘a technology within which a (human) culture grows.’”

With *Aerial Play: Drone Medium, Mobility, Communication, and Culture* (Palgrave Macmillan, 2021) Hildebrand has written an interdisciplinary work built around media ecology and directed at the world of consumer and recreational drones. In so doing, she has focused attention on a long overdue perspective about the exciting new technology of consumer drones. This new technology is shaping modern perceptions in far more ways than one from just an above, aerial, perspective of the world. In many ways, it is a subject Marshall McLuhan would be “probing” if he was around today.

Professor Hildebrand begins her book with an observation about the relatively limited “sustained empirical research” on the range of applications for consumer drones. Some authors write about subjects such as the history of drones; others write about their humanitarian aspects; still others focus on their potential for deviant and dangerous use. Overall, though, Hildebrand notes that there is little social-scientific literature on drones. Citing the observations of academics Klauser and Pedrozo, that “existing academic work on (civil and commercial applications of) drones suffers from a dramatic lack of empirical research, which explains the generalist tone and research focus that characterizes most of the literature in the field.”

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Hildebrand aims to establish new pathways forward in drone studies with *Aerial Play*. Her approach is to view them as “mobile media, embedded in medium-specific ecologies that encompass technical objects, spatial formations, social and visual arrangement, and affective entanglements, beyond mere flying machines.” In effect, she views drone technology as a medium. She notes several frameworks inform this approach. There is the McLuhanesque observation of media as extensions and environments emphasized by media ecology. There is also the study of the physical and visual movements in fields such as critical mobilities studies, mobile communication research, and human geography. There is also research of the material and immaterial socio-spatial agencies in science and technology studies.

She argues that there are compelling intersections between the above conceptual lenses in personal drone ecologies, mobilities and agencies. In considering drones as media, she recalls the famous aphorism of Marshall McLuhan that “The medium is the message.” Hildebrand asks if this is so, what type of “medium” is the consumer drone and what “messages” does it offer? She notes that camera drones “reconfigure the basic premises of seeing and moving by extending the human eye and foot.”

The field of mobilities research substantiates this media ecology approach and Hildebrand frames camera drones as an “ambivalent mode of mobility and immobility” within the “new mobilities paradigm.” This new paradigm has been forming in the social sciences led by scholars Mimi Sheller and John Urry from Lancaster University. They note in the abstract of their 2005 paper “The New Mobilities Paradigm” that “Some recent contributions to forming and stabilizing this new paradigm include work from anthropology, cultural studies, geography, migration studies, science and technology studies, tourism and transport studies, and sociology.” As they note, “All the world seems to be on the move” but “Social science has largely ignored or trivialized the importance of the systematic movements of people for work and family life, for leisure and pleasure, and for politics and protest. The paradigm challenges the ways in which much social science research has been ‘a-mobile.’” As Hildebrand observes, the focus of this wide new field is not only on the physical and corporeal ways of moving someone or something, but also on “imaginative, virtual, and communicative forms of travel” that are “relevant in the context of ... consumer drones as mobile media.”

Mobility studies is part of the growing area called “Geographies of Media” and it is significant the *Aerial Play* is published under this new series from Palgrave Macmillan. Its focus is largely on human geography that focuses on different elements of human activity and organization and various areas of geography study. Hildebrand quotes human geographer Tim Cresswell that “Movement is rarely just movement” but “carries with it the burden of meaning.” Therefore, like media ecology, “mobilities research questions the neutrality of mobile forms” argues Hildebrand. In effect, “drones are not simply empty, neutral vessels enabling physical, virtual, and imaginative movements but implicitly and explicitly shape the relationships within and surrounding them.”

The approach of Hildebrand also draws on science and technology studies to explore camera drones as “situated socio-technical systems” that focus on specific aspects of media production, distribution, and consumption. This allows her to view consumer drones as dynamic socio-technical formations rather than as isolated and static machines. As she says, “Central is the understanding that people construct new ‘ways of relating’ in their use of different technologies.”

Hildebrand notes the combined perspectives above yield insights into the agencies of technology and the embodied and disembodied ways of relating they open. The chapters in her book expand on these approaches.

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One of the most interesting yet subliminal aspects of this book is that it brings two narrative voices to the table in discussing drones. In *Aerial Play*, a new piece of technology is viewed from the first-person narrative voice of a user of the technology and the third person perspective of an academic observer and writer about the technology. This calls forth an interesting situation in looking at a modern technology. Most academics in Hildebrand’s broad discipline of communication are both users and writers about the technology they write about. Yet few academics are users of drones so much of

their writing about drones (if any) is based largely on the here say of users rather than their own experiences.

In the beginning of the book, Chapter 2 “Understanding (with) the Drone,” the idea of the first-person narrative is established by the author. Ah, fiction says the reader. The book is more of a novel than an academic work. But it suggests that the true reality of a new tech sets up personal drone use contexts and provides an inventory of common spatial, temporal, mobile, social, and affective elements in aerial play. The author juxtaposes a combination of sky video and ground audio into what she terms “drone logs” and a method she calls auto-drone-technography. She argues for the value of a “larger ‘auto-drone’ view for researchers to consider their own ‘affective mobilities’ within research processes and acknowledge their respective relational emplacements from a distanced and detached top-down perspective.”

Chapter 3 or “Situating Hobby Drone Practices” begins shifting from one’s (Hildebrand’s) personal relationship with drones to looking how they are used in everyday, recreational spaces. She makes a case here for widening the definition of drones as “unmanned aircraft systems” and drone play beyond just aviation. Hildebrand discusses a holistic approach to drones via image sharing and community building. More than just an “unmanned aircraft” a drone represents a complex assemblage of people, things, spaces, communication, and movement beyond just the aerial mode. Much of this will become more relevant when the drone, smartphone, and socially networked communication merge further.

In Chapter Four, “Communicating on the Fly” Hildebrand argues for approaching camera drones as mobile media that help “access, collect, and shape physical, digital, and social spaces.” The medium affords what Hildebrand calls “communication on the fly” in the unique mixture of aerial navigation, visual production, and networked communication. The chapter discusses what physical-material conditions the drone makes visible and the kind of cartographic empowerment drone users attribute to their aerial play. As she notes, the conditions of communication on the fly shape user practices of place-sensing and place-making and help expand thinking of contemporary communication on the move.

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The next chapter, Chapter Five, “Moving and Not Moving Up in the Air,” relates to perhaps the most fascinating area of consumer drone use today in immersive flying with first person view (or FPV) where a drone pilot uses a virtual reality type of headset. This type of drone play collapses the distinction between pilot and drone. As Hildebrand notes, “Instead of finding themselves in their grounded bodies, users speak of being the drone up in the sky.” In effect, FPV drone flying represents the three-dimensional, drone version of video gamers’ virtual reality.

The FPV drones are the racing drones that speed around impossible courses, passing through small openings and making impossible turns. Television programs featuring

racing FPV drones are usually held in large dark hanger-type buildings where the audience rides inside the headset of one of the drone pilots.

Hildebrand doesn't mention this in her book and a few links to FPV videos might be appropriate in this chapter of the book. I present a few links below so readers can experience the user perspectives with FPV drones. First, the greatest of the FPV pilots, the legendary Paul Nurkkala (aka Nurk). Ever since Nurk received a toy drone from his family in 2014, the entire course of his life changed. Born and raised in Minnesota, he never imagined he'd travel the world, including to Saudi Arabia, Iceland, and Singapore, to race in and consistently win drone racing competitions.

One of Nurk's most amazing FPV flights is captured on YouTube and called "Flight of the Year." In it, Nurk's FPV drone plays with a speeding freight train even going under its wheels. The videos can be seen at ...

<https://www.youtube.com/watch?v=nQDcDZ6rmGE>.

Or the world's longest FPV drone shot developed to show the everyday life in a school for further education in St. Gallen, Switzerland at ...

<https://www.youtube.com/watch?v=yXEb0fWLJIY>

Another amazing FPV drone video is a drone through a Minnesota bowling alley at ...

<https://www.youtube.com/watch?v=Tvkot4jGLWU>

Another FPV drone shot in one take is a commercial for a vintage clothing company ...

<https://www.youtube.com/watch?v=sBAU5JmU3tE>

The continuous shot from FPV drones above offer a new way of storytelling. In the St Gallen school video, it is as if we are with a with a dis/embodied presence or spirit that quickly invades the school and moves through various conversations and actions in progress, invisible to students and faculty, searching for something perhaps. The continuous shot inside a bowling alley in Minnesota looks at various parts of the bowling alley (like the pin placing machinery) not available to bowling customers. Like the drone in the St. Gallen school, it also interrupts conversations of bowling customers. Finally, a continuous shot, FPV drone is used to create a commercial for a vintage clothing company allowing potential customers to see behind the scenes of the operation.

This new form of continuous shot offers a technological experience similar to the literary stream-of-consciousness technique first used by authors such as Virginia Woolf in *To the Lighthouse* and James Joyce in *Ulysses*. Or, for that matter, the 2020 war film *1917* in one continuous shot that follows a young soldier on his mission to warn a commander of an attack. Here, one wonders if these FPV views might evolve into a new type of narrative that mixes time periods. For example, in the St. Gallen school FPV video above, this might be done by showing the drone entering the school in the early morning and

leaving at night leaving the viewer of this film wondering how continuous time is mixed with linear time.

To media ecologists, Aerial Play is what Marshall McLuhan might point out as a modern version of what he called “cool” media as distinguished from “hot” media. Basically, cool media was participatory, two-way media while hot media was one-way, non-participatory broadcast media.

And within the cool media of consumer drone play, perhaps the greatest element of cool is with the FPV drones or the virtual reality (gaming) aspect of drones. In FPV flight, there is the blurring of pilot-drone boundaries and what Hildebrand calls “dis/embodied mobilities.”

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In Chapter 6, “Seeing Like A Consumer Drone,” Hildebrand addresses drone flying and image-making to “create new kinds of socio-cultural environments, similar to how the advent of the airplane changed air space.” She notes that drone enthusiasts like Eric Dupin (founder of the social networking site Dronestagram) point to the powerful visual and mobile affordances of camera drones. As Dupin observes:

Drones are revolutionizing photography. These small and lightweight quadcopters can take pictures in places where no other devices are able to fly: monolithic buildings; moving vehicles, sports arenas; inaccessible landscapes. They allow you to see the world from dizzying heights, providing the ultimate bird’s-eye view. They also signal a new ‘layer’ to traditional aerial photography, sitting somewhere between satellite, aircraft and street views.

Hildebrand notes that social scientist Saulo Cwerner and colleagues argue that these new spatial and visual practices “have changed the dynamics of contemporary war, mapping, surveillance, art, journalism, urban planning and government, to name a few.”

Hildebrand returns to a self-reflective, first-person engagement with drones in Chapter 7 - “Dancing With My Drone.” This offers that rare combination of scholar and tech user experience rare in most scholarship and especially rare in the new area of drone media scholarship. She offers several fascinating comments from consumer drone users about their relationships with their drones.

The chapter begins with a humorous parody of a fictional drone user in San Francisco named Kelly who names her DJI Phantom drone Clippy and considers it a pet she has rescued from the fictional San Francisco Drone Rescue Society. While the fictional Kelly’s relationship with her drone sounds weird, there are many drone users out there who view their drones as much more than just another piece of technology.

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In the final Chapter 8 of the book - “Conclusion: Open Skies” - Hildebrand notes “The goal of this book was to complicate, challenge, and complement discourses that approach consumer drones as unmanned aircraft systems, as technologies of surveillance and dangerous weapons, and as tools and devices for aerial navigation and data collection.” Really, as she notes later, the “book was driven by the goal to unveil the biases and effects of consumer drones as mobile media.”

As she observes, the drone “configures principles of communication and transportation across hybrid geographies” offering fertile ground for bridging media ecology, mobilities research, mobile communication research, human geography, and STS.

To accomplish this, Hildebrand’s book links several theoretical frameworks ultimately advancing an interdisciplinary perspective. This “boundary crossing” of disciplines becomes increasingly relevant in our world of emerging media like consumer drones, and other mobile, digital, robotic, intelligent, and autonomous platforms. She argues that they challenge the way we talk about communication, movement, environments, and relationships.

Hildebrand provides a quote from the famous media ecologist Neil Postman from his book *The End of Education* (1995) which notes that “powerful ideas” and “philosophy” are embedded in every technology. The quote is relevant in unveiling the biases and effects in drones:

Embedded in every technology there is a powerful idea, sometimes two or three powerful ideas. Like language itself, technology predisposes us to favor and value certain perspectives and accomplishments and subordinate others. Every technology has a philosophy which is given expression in how the technology makes people use their minds, in what makes us do with our bodies, in how it codifies the world, in which of our senses it amplifies, in which of our emotional and intellectual tendencies it disregards.

Each of the chapters in *Aerial Play*, notes Hildebrand, speaks to some of the “powerful ideas” and technological “philosophy” Postman observes. The result of her engagement with authoring the book encouraged Hildebrand to study not only her drone named Jay but also herself via the method she characterizes as “self-reflective and auto-technographic.”

Using a technique called the tetrad created by Marshall and Eric McLuhan in *New Laws of Media* (1988), Hildebrand formulates an exploratory tetrad of what the technology enhances, retrieves, and reverses into and obsolesces. In doing this, she points to avenues for future research into drone media, mobility, communication, and culture. She makes the case for a well-regulated “air commons.”

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Hildebrand is right in directing her book towards consumer and recreational drones used by millions. It is with these drones where the activity of “play” is still possible. It is no accident in this regard that Hildebrand titles her book *Aerial Play* rather than *Aerial Work*. In the latter designation, there is little room for probes and deeper dives into ideas like media ecology, mobility studies, and perspectives of situated social systems. The purpose of these commercial, industrial work drones has already been defined and these drones go off to work each day with tasks leaving little room for contemplation and discovery about what the nature of their technology.

Yet being one of the first scholarly books to explore the emerging phenomenon and technology of consumer drones, Hildebrand’s book provides more of an investigation method of what Marshall McLuhan called “probes” or questions rather than answers. In fact, the playful nature of the recreational drone might embody an appropriate metaphor for McLuhan’s idea of a probe. While most focus on Marshall McLuhan’s ideas about media, relatively few consider his method of investigations about media. McLuhan explained some of these methods using the term “probe” during his 1969 interview from *Playboy* magazine:

“The medium I employ is the probe, not the package ... that is, I tend to use phrases, I tend to use observations that tease people, that squeeze them, that push at them, that disturb them, because I’m really exploring situations, I’m not trying to deliver some complete set of observations about anything. I’m an investigator, instead of explaining I explore ... I’m making explorations. I don’t know where they’re going to take me ... I want to map new terrain rather than chart old landmarks ... I’ve never presented such explorations as revealed truth ... The better part of my work on media is actually somewhat like a safe-cracker. I don’t know what’s inside; maybe it’s nothing. I just sit down and start to work. I grope, I listen, I test, I accept and discard; I try out different sequences—until the tumblers fall and the doors spring open.”

In much the spirit of McLuhan’s method of probes, Hildebrand is an explorer and an investigator of new consumer drone technology. How do drones change our perspective on the world rather than what work do drones do? Drone work is being defined in greater detail every day, but drone play is something outside these definitions. Commercial drone work uses drones to accomplish tasks and provide “answers.”

Yet consumer drone play is not directed towards any task. In effect, consumer drones allow the user to be somewhat like that “safe-cracker” McLuhan talks about in the *Playboy* magazine interview. However, more than the old type of grounded “safe-cracker” but rather a new type of aerial safe-cracker. Hildebrand wants to begin probe-type questions into this new technology.

Hildebrand feels the consumer drone can help us think about how “semi-autonomous robotic systems may shift our social, cultural, and technological relations in everyday horizontal and vertical spaces.” She is setting a foundation for future discourse on the

emerging technology of drones. This discourse might be one between both academic and non-academic users of consumer drones.

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She seems to be working under this paradox that hovers, drone-like, above her, embodied in her Mavic Phantom drone Jay. There is little question that *Aerial Play* is written for academics. Yet it also discusses a technology used by millions around the world today. In fact, a technology used very little by academics. Will non-academic recreational users of drones offer an important part of the future discourse on drones? Will the academic perspective always remain outside that of users and simply comment on the use of drones by others? Perhaps the self-reflective, auto-technographic approach described by Hildebrand offers a way to offer their own comments to the discourse.

Julia M. Hildebrand is a media ecologist carrying forth much of the McLuhan insights into our modern world. One only wishes that McLuhan was still around and that he could be given a drone like Jay to play (probe) with.

In the end, like one of her intellectual predecessors McLuhan, Hildebrand is that rare scholar of our times, more interested in mapping new terrain than charting old landmarks.

John Frain

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Julia M. Hildebrand

Dr. Julia M. Hildebrand is Assistant Professor of Communication at Eckerd College, Florida. Originally from Germany, she earned her PhD in Communication, Culture, and Media at Drexel University. Her research lies at the intersections of critical media studies and mobilities research with a special interest in mobile technologies, visual communication, and human-machine interactions. Her work has been published in journals such as *Media, Culture, & Society*, *Digital Culture & Society*, *Mobile Media & Communication*, *Explorations in Media Ecology*, *Transfers*, and *Mobilities*. Her research on consumer drones has won several awards: The 2020 Harold A. Innis Award for Outstanding Dissertation in the Field of Media Ecology, the 2019 Outstanding Dissertation Award by Drexel University, and the 2018 Emerging Scholar Research Award by the Mobile Communication Interest Group of the International Communication Association. At Eckerd College, she teaches such courses as "Media and Society," "Media Ethics," and "Critical Studies in New Media."

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