

Opinion

Environmental Drone Methodologies



'Professional drone flying in the sunset' by concept w. Sourced via Shutterstock. Stock photo ID: 271586207.

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Recent estimates suggest that the global drone market will reach over \$48 billion by 2023 (<https://www.geospatialworld.net/news/global-drone-market-reach-48-8-billion-2023-report/>). The technology is already an excellent tool for videography, survey and aerial research, but also holds potential as a delivery device for everything from packages to urgent medical supplies. Like most technologies, drones can be mobilised to more malicious ends, as seen in the recent attack on Venezuelan president Nicolás Maduro (<https://www.theguardian.com/world/2018/aug/05/crackdown-feared-after-venezuelan-president-survives-alleged-attack>) allegedly orchestrated using consumer drone technology. Though recent industry growth is being fuelled by consumer appetite and corporate desires for automation, drones have long been used – and built – by environmental scholars who are uniquely placed to comment on the promises and pitfalls of the technology.

In a new open-access article entitled Drone methodologies: Taking flight in human and physical geography (<https://rgs-ibg.onlinelibrary.wiley.com/doi/abs/10.1111/tran.12232>) published in *Transactions of the Institute of British Geographers* Dr Karen Anderson and I argue that researchers should be making efforts to play a more significant role in the development and regulation of drones, and that research itself, particularly environmental research, will be drastically transformed by the advancement of drone tech.

We can see this currently playing out in the UK, which is experiencing its driest summer in fifty-seven years due to climate change. The arid conditions are causing parch marks – ghostly outlines of subsurface archaeological remains – to pop out of the landscape. These variations may not be clearly distinguishable on foot, but streamed from a drone’s camera they suddenly shimmer into view, as if a curtain to a parallel world has been pulled aside. This summer, Roman roads, burial mounds and bomb shelters have all been revealed through aerial sensing the parched countryside.

In the article, we suggest what drones offer is an extension of our sensory perceptions. The melding of human and machine, we write, allows for not just new ways of sensing but new ways of imagining what can be sensed. I often run drone method workshops, and one of the comments I often receive from participants is that flying the drone in areas we usually look *at* but rarely *from* impacts the way they imagine the environment long after landing. Even the university buildings we inhabit every day take on an alluring quality that invites exploration and contemplation. Dr Anderson and I call this atmosphere the *Nephosphere*, a volumetric perspective that is, generally, above rooftops and below piloted aircraft – the domain of the drone.

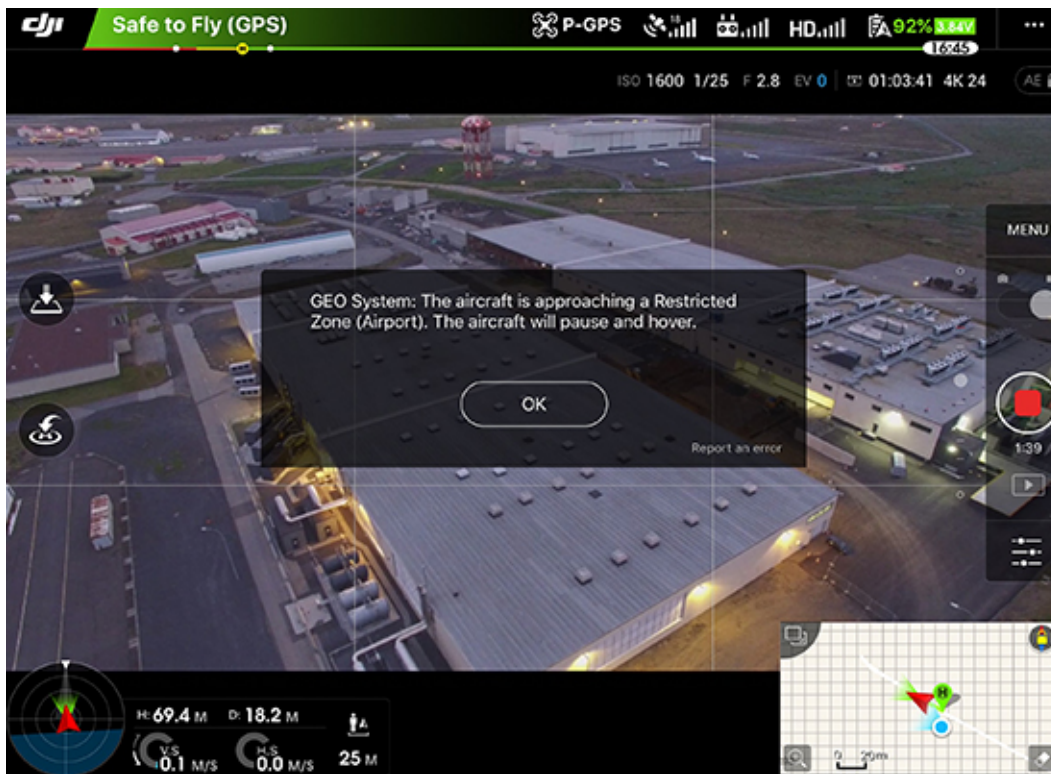


(<http://sydney.edu.au/environment-institute/wp-content/uploads/2018/08/University-of-Sydney-Drone-image.jpg>).

Drone image of the University of Sydney.

The summer before last, I worked with Lancaster University media sociologist Dr Adam Fish to produce an experimental documentary called *Points of Presence* (<https://youtu.be/BTg0KNAHdRM?t=6m16s>). The film traces the path of communication corridors – telegraph, telephone and now internet cables – that connect Europe to North America. The film exposes the internet as a material and political object far from ‘the cloud’. Seen from our drones, which trace cable paths, the infrastructure of the internet appears completely intertwined with the natural environment. As we flew over a vast black sand beach in Iceland, for instance, it became clear that inexplicable hay bales we had encountered earlier in the day were protecting a shallow fibre optic cable leading from the sea to a cable station, forming infrastructural land art in the process.

Drones, of course, enable more than just new ways of sensing; in each of my workshops environmental and urban activists suggest ways they might be used as a counter-surveillance tool, and we often assist in those efforts. As Adam Fish and I wrote in the *Guardian* (<https://www.theguardian.com/cities/2016/dec/12/attack-drones-privatisation-urban-airspace>), drones were used by indigenous activists to monitor police abuses during the protests at the Dakota Access pipeline on the Standing Rock Sioux reservation. Frustrated authorities ordered the Federal Aviation Administration (FAA) to place a Temporary Flight Restriction (TFR) over the area, emphasising the power drones harbour for political activism. Though drones have been used by researchers to survey forest canopy, to fly into craters to sample gases, and to quantifying grain-size distributions on hard-to-reach glacial moraines, the technology has untapped potential for more culturally-inclined fieldwork.



(<http://sydney.edu.au/environment-institute/wp-content/uploads/2018/08/Still-from-Points-of-Presence.jpg>)

Still from Points of Presence.

As Dr Anderson and I suggest, we are currently at a critical crossroad. The advancement of drone technology (keeping in mind the future growth projected above) is rapidly outpacing legislation, creating a chaotic – and relatively democratic – aerial commons. But software restrictions like geofences that block drones from flying in certain areas are expanding exponentially, and companies like Amazon are pressuring governments around the world to give them exclusive access to the *Nephosphere*. If we want to have a stake as activists and scholars in how future legalisation will shape our ability to do research, documentary work, and even assist in environmental activism, we are going to need to cooperate across disciplines to critically discuss the future of 'drone methodologies'. Failing to do so may see our contested aerial commons become increasingly controlled, regulated, privatised, and ultimately out of reach.

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