

**Drones:  
Visual Anthropology from the Air**

*Handbook of Ethnographic Film and Video*

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**Abstract**

This book chapter investigates the ethnographies, epistemologies, and ontologies of atmospheres and how atmospheric technologies are deployed in visual anthropology. Unmanned aerial vehicles or drones are epistemological tools for the production of videographical and other sensorial knowledge by anthropologists, archaeologists, and allied fields of natural science, social science, and social justice. Drones--and other atmospheric platforms such as satellites--are anthropologically relevant because of how cultures of visual and technological production evolve around their invention, deployment, and discourses of economic and political power. Lastly, this class of airborne technology is comprised of ontological objects which elevate and extend the human senses into the air, to the edge of the internet, and into entanglements with human and non-human and technological others. Thus, as epistemological, ethnographic, and ontological things drones generate compelling visual and multisensual data, offer opportunities to witness socio-technical cultures, and exist and come into being within a matrix of atmospheres, humans, and non-human agencies.

**Ethnographies of, Epistemologies from, and Ontologies with the Atmosphere**

“There is a fable told by a mountain people living in the ancient highlands of New Guinea about a race between a snake and a bird. It tells of a contest which decided if men would be like birds, and die, or be like snakes and shed their skin and have eternal life. The bird won and from that time all men, like birds, must die.” Robert Gardner (1963)

So begins the classic *Dead Birds* (1963), a semi-fictional story of the endless cycles of life, death, revenge, self-defense, and self-destruction in the highlands of Papua New Guinea. These words are spoken over a long and smooth tracking shot of a white-headed hawk gliding above the jungle. Next, the opening credits appear and we are definitely on the all-too-human earth, amongst moaning, grieving Papuan people, witnesses to the beginning of a death ceremony--a death that must be responded to with retributive killing of the Dani's enemy tribe--and the renewing of the cycle of vengeance. But before the revenge seeking bird-people we are with the living, soaring bird. From our perspective, somehow, somewhere the cameraperson is above the bird, above the forest canopy, and for a moment above the fray of the human drama unfolding below. Birds, like other subjects at home in the atmosphere, hail us to audiences to feel vertiginous height and gaseous mobility. This atmospheric camera perspective is both literally ungrounded--an image of a floating bird as seen from an elevated netherworld--and sets the stage for the film, providing a geographical overview and situatedness to the scenes that follow. The hawk and the camera person, both elevated and above the fray, are fused. Like

the pigeons used for surveillance photography in World Wars I and II (Figure), this hybrid of bird and camera insinuates the insights of this chapter: cultures of human, technological, non-human, and atmospheric collaborating on a specific kind of knowledge creation from the air.

There exists useful epistemological information in this evocative clip--the vertical view shows us where the Dani are in space. There is ethnographic information in visual form throughout the film that works synergistically with the voice-over. The opening clip is a literal overview providing a look at a dominant leitmotif in the film and in Dani society--the continuity of killing and revenge. Finally, there is an ontological statement made about three things: the nature of birds, the existence of cinematography, and the beingness of the Dani. Birds soar, glide, and, like men, die; cinematography takes a bird's-eye-perspective on cultural activity, attempting synthesis and simplification of the complex world below; and the Dani, in this interpretation, are driven by ontological concerns, e.g. the defending of existential boundaries, and other core qualities of their beingness. In this opening shot of *Dead Birds*, we find a parallel for the epistemologies, ethnographies, and ontologies surrounding drones equipped with high-definition still and moving picture cameras and other remote sensing payloads<sup>1</sup>. This elevated optical platform provides a unique perspective on visual anthropology, the anthropology of cultures of media production, and the existential status of technologies and how they mediate non-human others.

This is a visual anthropology **of**, **from**, and **with** the atmosphere.

A visual anthropology **of** the atmosphere looks up into the air and down at maps about that which exists above our heads and planet. A visual anthropology **of** the atmosphere is seen in the anthropology of birds (Jerolmack 2007, van Dooren 2014) and drone ethnography in North Dakota (LaFlamme 2017). These are grounded and materialistic accounts of the space above us, how it is imaged, and used as a platform for the imagination, economics, and politics.

A visual anthropology **from** the atmosphere is focuses on visual production that occurs from the atmospheric or vertical vantage point. If a visual anthropology of the atmosphere is looking up a visual anthropology **from** the atmosphere is looking down. Archaeologists use drones to make maps and so too do indigenous and activist done communities in Peru, Guyana, Panama, and Indonesia who use drones to peer on the forest and mining developments in their districts (Paneque-Gálvez et al. 2017). As a project participant writes, the drones is an “anti-land-grabbing device” (Radjawali et al. 2017). This section investigates how drone activists monitor human ecologies: village gardens, expanding bauxite and illegal gold mining, palm oil plantations, and other abused concessions to corporations. In the process, a culture of media production and digital activism forms around monitoring, mapping, and building legal arguments from the atmosphere.

Finally, this is a visual anthropology **with** the air. The atmosphere is a mix of gases that provides the weight against which to lift, glide, drift, and thrust. The drone becomes with the atmosphere, its winds, funnels, uplifts, and downdrafts. With other objects in the air, the drone is intertwined; it is tethered to electronic power and an electromagnetic link. It is connected to the Earth, pilot, and subjects below. This being-with is techno-ontological (Kittler 2009), the simultaneity of materiality, elementality, and subjectivity. To illustrate this point, I will conduct with a reflective visual analysis of our drone documentary, *Points of Presence* (Fish et al. 2017), which counter-maps the three undersea fibre-

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<sup>1</sup> I am not discussing military Predator or Reaper drones that cost millions of dollars, can hover for days, and are used for targeted assassination. I focus on smaller, relatively affordable civic drones connected to mobile phones, and usually carrying video capacities.

optical cables between Iceland and London. It is a visual anthropology looking down from the drone as much as locking into the drone technology, the elements, and non-human others.

I situate this investigation into drones within this atmospheric anthropology that includes the atmosphere as a medium for epistemological projects and methodological experimentation, the ethnography of the use of new technologies of the air by cultures of media production, and the ontological conception of these airborne technologies--elementally suspended extensions of bodies at the edge of the internet.

## **Ethnographies of the Air**

It might be a Scottish name, taken from a story about two men on a train. One man says, 'What's that package up there in the baggage rack?' And the other answers, 'Oh, that's a MacGuffin'. The first one asks, 'What's a MacGuffin?' 'Well,' the other man says, 'it's an apparatus for trapping lions in the Scottish Highlands.' The first man says, 'But there are no lions in the Scottish Highlands,' and the other one answers, 'Well then, that's no MacGuffin!' So you see that a MacGuffin is actually nothing at all. Alfred Hitchcock: nd

The Maltese falcon in John Huston's 1941 *The Maltese Falcon*, "Rosebud" in Orson Well's 1941 *Citizen Kane*, the Holy Grail in the 1975 *Monty Python's The Holy Grail*--these are examples of MacGuffins--objects of material culture which do not matter to the audience but around which the drama unfolds. MacGuffins in an anthropology of the atmosphere include the the Palapa satellite of Barker (2005) and the nationalistic discourses in Indonesia it inspired and the planet Mars (Valentine 2017) and the construction of humanness it creates. The satellite and other planets influence certain types of epistemological production. The drone is a MacGuffin and it is less important than the practices and discourses that circulate around it.

Consider birds as MacGuffins. They are a resource and symbol within indigenous cultures, have long been a minor topic in ethnography, appearing in the litanies of historical particularism and symbolic anthropology. Consider Clifford Geertz (1973) and his reading of the symbolism of the rooster as a stand-in for men and social force in Bali. Seen cross-culturally, birds are specimens; protected and sacred; with rights, behaviors, songs, and with agency. They are entangled with other species, techno-assemblages, and fates (Bowman nd). In a compelling ethnography of endangered birds, van Dooren (2014) examines the entanglements of birds, technologies, people, and human's ever-expanding web of influence. Anthropologist Colin Jerolmack (2007) studies the pigeon as a hybrid entity, neither natural nor entirely cultural. Through its history, the pigeon has been designed for food and fertilizer, to be a messenger and racer, and framed as a symbol and source of leisure and pleasure. These selected traits, result in the pigeon's wide domestication and distribution—as well as its adaptability. In the colonial period, the pigeon travelled globally—and then returned to a feral state—with all of the negative associations. This status, as a mix of natural traits and artificial selection, with a history of adaptation and manipulation, of being wild, then domesticated, and re-wilded in a compromised vertical urbanism--where former adaptation for cliff-dwelling maximises the high-rise canyons of the city street—these qualities make the pigeon a hybrid. This anthropology of the bird sets the stage for a discussion of an anthropology of another airborne hybrid which is half-human, half more-than-human, and always subjected to the whims of the elements, the winds of culture, regulation, and trends in

practice. Like birds, drones are not entirely of the earth or the atmosphere. They are both embedded within naturecultures.

More specifically, an example of an anthropology of drones is the work of anthropologist Marcel LaFlamme (2017) who investigates “aviation media”--the necessary and contested media practices of pilots in North Dakota. The reticence of some pilots to use safety-enhancing transmission media challenges the plans of the state to court drone industries--an industry that requires every flying object to be identifiable. This oppositional position is best summarized in the euphemism, ‘Airplanes fly by the laws of Bernoulli, not Marconi’, meaning the laws of physics not of the electromagnetic spectrum rule the air, not the airwaves (LaFlamme 2017: 690). Here, for LaFlamme, the fuselage is a MacGuffin around which epistemologies--what constitutes atmospheric knowledge and proper practice--circulate within the atmospheric element.

These anthropological studies into how birds and drones provide epistemologies, or ways of knowing, the atmosphere. Here, birds and drones are MacGuffins objects around which knowledge is produced through collective technological efforts and creative ideals. A closer look at a specific kind of culture that epistemology allows is necessary. In the next section, I advance not how drones are cultural objects but tools for anthropologists, scientists, and activists.

### ***Epistemologies of the Atmosphere***

The section is about the cultures that form through shared practice from the elevated perspective provided by atmospheric platforms. My key example include the production of cultures of media activism surrounding the building of maps and monitoring projects in Southeast Asia, Central America, and South America. First, however, because this section is about how cultures and cultural theories form in the air, we briefly look at how one disciplinary culture, archaeology, uses atmospheric platforms.

#### ***Drone Archaeology***

The anthropological utility of the aerial viewpoint has been prized in archaeology. Frost marks accumulate on various subterranean features, buried ditches hold differences in water retention, shadowmarks index elevation changes, soil colors modulate. Each can best be recorded from the air providing to archaeologists insights into manipulations of landscapes unseen by the terrestrial eye. The Nazca lines in southern Peru are a vivid example of the benefits of the vertical vision. Virtually indecipherable from the ground, the immensity of these geoglyphs become suddenly evident from an airplane. Historian Paul Kosok was the first to fly over the Nazca lines, recognizing in the 1940s that these strange indentations were not trails but the shapes of birds and other icons (University of Texas Archival Resource: nd). Called “space archaeology” by Egyptologist Sarah Parcak (2009), the method of using satellites in archaeology has identified urban and large ceremonial complexes in Peru, Iran, Egypt, and in Italy. NASA archaeologist Tom Sever (1999) uses satellites to identify settlements, population densities, canals, and transportation infrastructures in the Petén region of northern Guatemala. Using pulses of light that penetrates jungles and accurately measure distances, it is possible to build high-resolution topographical maps and identify monumental complex such as those at Caracol, Belize (Chase et al. 2010).

Like airplane, satellite, and other types of space archaeology, drones offer specific type of remote sensing from the air. Drones flown from lower elevation with high-definition cameras and other remote sensing payloads, offer high-resolution images. Easier to deploy and less expensive than either satellites or airplanes, drones offer a democratization of atmospheric remote sensing. Archaeologists use drones to measure differences in topography (Gutiérrez et al. 2016), photograph rock art (Mark and Billo 2016), map settlements (Parcero-Oubiña et al. 2016, Meyer et al. 2016), build terrain models (Baliño 2016), and rapidly collect data on threatened sites (Harrison-Buck et al. 2016). The application of drones goes beyond anthropology and the social sciences to include other sciences as well as humanitarian delivery of emergency medicine as well as politically-motivated forms of mapping and counter-mapping.

### *Drone Activism in the Global South*

The praxis of counter-mapping--or the production of alternative cultural boundaries--was invented in the forest of West Kalamantan, Indonesia in the 1990s (Poluso 1995). More recent drone-aided counter-mapping projects between 2011 and 2015 in the Kapuas River region of Kalamantan documented land concessions to a bauxite mine. The indigenous Tayan community also claimed the land. The indigenous-piloted drones documented how the mine expanded to absorb the traditional land outside its borders, despoiling the forests with tailings ponds. In a first for Indonesia if not the world, the georeferenced maps were accepted as evidence by the Constitutional Court in Indonesia. From this success a movement formed to challenge land concessions to mining and palm oil corporations. In this manner, a drone is an “anti-land-grabbing device” (Radjawali et al. 2017: 818).

The first experiments in drone activism were workshop facilitated in Southeast Asia and South America. These activism-academic projects were conducted in Indonesia by Radjawali et al. (2017) with indigenous Dayaks and in Peru, Panama, and Guyana by Panaque-Galvez et al. (2017). This is action research, or scholarly activism which includes the practices of community drone building, theorizing, flying, reflection, data collection, and data application in project of indigenous sovereignty. The workshops are designed to ascertain to what extent indigenous people can operate drone technologies and are also locations for ethnographic observations and conversations about technology and its relationship to environmental justice and land rights.

Drones in indigenous hands are primarily used to monitor and map terrain from the air. In the process, alternative maps are created designating new boundaries of traditional lands and document environmental damage. Counter-mapping takes the map as a text, open to interpretation, susceptible to revision. A map is a tool for both power and anti-power, it is hegemony spatialized. Counter-map projects are practices and discourses from the counter-hegemony. These grassroots political projects in geography, challenge spaces of inequality. Counter map projects are civic, participatory, and citizen-driven.

Maps are marks, evidence of human disputes. They are culturally-specific. Land-relations are concretized and formalized in maps. Colonialism and nationalism demarcate title through surveys and maps. While global examples exist (Wilson and Stewart 2008), indigenous media movement are by definition local: historically, culturally, and linguistically rooted in places. In this manner, the map may be a Western concept, imposing its authority through form. Or the map may be amenable to remix and the hybridization of Western precision and indigenous connection. The map is a representation of a

surround, an icon, an ideo-infrastructure, a portal, a translation. For the duration of its preservation and physical endurance, a map freezes space, exposing itself to management by the state. It is a *draft*, in the sense of writing, inscription, and legibility. In this manner, a drone is a stylo from the sky.

Indigenous communities in southern Peru have adopted drones in their activist countermapping exercises. In the Sierra Del Divisor of Peru, drones identify coca growers deforesting and encroaching on indigenous Shipibo Conibo territory (Reynold 2017). In the northern Peruvian Amazon, Department of Loreto, lies the Kukama Kukairia indigenous Territory. Here, in August of 2014, drones documented oil extraction infrastructure, oil spills, and other ecological destruction. In the Harakmbut indigenous region of the Peruvian Amazon, drones collected image data of illegal gold mining. Illegal logging and deforestation were recorded from the air within the indigenous Embera-Wounaan territory of southern Panama. In neighboring Guyana, in the Wapichana and Mukushi indigenous territory of the southern section of the state drones documented illegal logging, mining, and deforestation (Panaque-Galvez et al. 2017: 5). This is a manifestation of indigenous visual anthropology usually with still cameras that build massive orthomosaic maps of regions for use in projects of survivance.

For example, the drone workshop with 12 people from the Kukama Kukairia indigenous territory focused attention on mapping the forest along the pipeline as well as to investigate rumors of a sizeable oil spill caused by a ruptured pipeline. From a height of 450m, with a drone equipped with a GoPro Hero3 and Mobius ActionCam RGB camera, the Skywalker fixed-wing plane scanned the earth below. The pilot, equipped with a first-person point of view system, was linked to a durable laptop, and the radiowave frequency of the electromagnetic spectrum, could see in the jungle below themselves slash and burn agriculture, gardens, farms, clear-cuts, sold square lots, and everything in-between. Eleven km away they found a barren area radiating from the pipeline. They peered down on the tarry field, collecting numerous images and precise GIS data about this oil spill (Figure) (Panaque-Galvez et al. 2017: 10).

In the Embara-Wounaan region of Panama, participants came from the Puerto Indio, Bayamon, and Daipuru tribes. Their goals were to make detailed countermaps of illegal deforestation resulting from cattle ranchers, illegal foresters, and settlers cutting and planting crops. These activities are easily recognizable if only seen from above. Increasing their evidentiary worth, the coordinates for this maps were reinforced through ground-truthing. While both a fixed-wing and a quadcopter conducted atmospheric surveys, two teams marched through the jungle and foggy openings in the canopy following coordinates given by the drone and its operator. In one instance they found a ranch four times larger than it should legally be. The map they produced would be used in a court case to demand for greater protection of their hereditary rights to land(Panaque-Galvez et al. 2017).

## **Atmospheric Ontologies**

“Where atmospheres and climate, birds and other airborne things, wind, weather, and off-planet potential come together, we see this as a test launch for meta-atmospheric perspectives.... These theoretical cartographies of space, sky, atmosphere, and air are moved by anthropology’s ongoing turn toward posthumanisms, ontologies, things, mattering, and new materialisms” Cymene Howe (2015: np)

Anthropologists such as Howe, have investigated not only the natureculture non-human others that fly and drift in the air but also the atmosphere itself as an ontology, a material that becomes. Atmospheres, and the culture of the air, are recent interests within anthropology, connected both with atmospheric climate change and new technology for accessing the air such as drones. Following Howe's suggestion, I focus on the ontological in the anthropology of the atmosphere. The drone is a tool with which to experiment within the atmospheric laboratory. It can be used to gather affects of the forces within which we are suspended and give objects their material force. To illustrate this point, I will briefly reflect on our video, *Points of Presence* (Fish et al. 2017) (PoP), about countermapping the undersea fibre-optical system connecting Iceland to Europe through the United Kingdom and Denmark. This case study about the visual culture of information infrastructure in the North Atlantic region is distant from earlier cases on the construction of aviation media in North Dakota and the visual media activism in Indonesia and Central America. But in each case, the drone allows researchers to witness how the atmosphere is a platform for visual cultural construction and its contestation.

Underwater almost entirely and coming ashore buried by sand and concrete, the undersea fibre-optical system is hidden. The highly securitized and little staffed outposts for the internet are called points of presence, where multiterrabyte connectivity flows capable of millions of simultaneous different packet requests. Our counter-mapping methodology included locating these digital frontier spots and tracing the compass orientation with a drone. We fly over the ocean, following the cable to another information trading fort, this one not below the black sands and haybales as in Iceland, or the pilot whale waters surrounding the Faroe islands, or the Nazi bunkers in Denmark, but to a central node for internet co-presence, the Telehouse, in the City of London (Figures). The brief introduction to five drone ontologies--extension, elementality, elevation, edge, and entanglement draw from the hundreds of hours of experience flying drones for the purposes of making this documentary.

### *Extension*

The drone, is an ideal type of sensorial extension by lengthening sight, touch, and electronic internetworking. The drone outspreads into the elements, lengthens human senses in an elevated sense, spreads the edge of the internet, and through these extensions becomes entangled in multispecies, multi-ecologies, and multi-technological forces. The following four ontologies are extensions of this core extension. Perhaps the most important aspect of the drone is its capacity to mediate real time sense-data back to the body and any networked computer. Using a WiFi connection, the camera works in parallel to the evolving subsurface megastructure that is the internet. It is tethered to the earth, not only as an extension of body but also a node within a sensorial feedback system at an extremity of a planetary computer network. In navigating these elemental boundaries, the drone is positioned to mediate a looming hybridity of digital and organic information.

### *Elementality*

A drone's ontology is conditioned in flight by elementality, a term that describes how the medieval elements—earth, air, water, fire, for example, condition being (Clark 2017). Drones most clearly inhabit a mix of atmospheric gases. Drone users extend their sense of sight through this air and use the atmosphere as a convenient element to move through between destinations and projects. The wireless connections utilize the electromagnetic spectrum which is itself a force in the atmosphere. In this

manner, the atmosphere is an infrastructure for the transmission and reception of information. Adding drones to this matrix increases atmospheric spaces of possibility.

### *Elevation*

This air elementality allows for an ontology of *elevation*. A result of its atmospheric mobility, the drone comes into being through its ability to fly above the earth in myriad directions but always up. This elevated floating vantage point allows for the optical analysis of spaces, landscapes, infrastructures, and other vast hyperobjects—entities such as internet that are beyond our conceptualization and control (Morton 2013). Scholars of infrastructure claim that efforts to visualize information infrastructure—to deny the deniability of the immateriality of the cloud, for instance—would necessarily politicize these objects, making us more responsible for them and the impact they have on conditioning sociality and impacting sustainability (Parks 2013, Mattern 2013).

### *Edge*

Often the far distances we attempt to fly the drones results in a loss of connection between the controller and the drone. Quite regularly, the video feed from the drone to the mobile device connected to the remote controller will be lost. The image will freeze and turn black and white and a notification will inform the pilot that “connection has been lost.” Drones have an edge ontology; they become with the limits and the liminality of the network. Drones, as elevated and elemental objects, are at the geographical edges of the internet of things. In this way, drones are at the brink of the digitally known. The North Atlantic region which we experimentally mapped in PoP is very remote, underpopulated, and under-networked. The undersea cable may carry robust broadband capacity through these sparse islands but not for the communities living on the island. The drone, on the other hand, carries with it its own atmospheric connection. Thus, PoP illustrates how new technologies engage with areas at the fringe of information globalization.

### *Entanglement*

The drone has a co-determining relationship with the objects—elements, other non-humans, and edges—it comes into being alongside. Likewise, the mattering, programmatic, and ethical dimensions of the drone are interwoven by the messy practices of flying in elemental and social space. Drones become entangled with technologies, pilots, landscapes, and research subjects. Like pigeons and other beings transformed by contact with humans and ever-changing ecologies, drones are hybrids. A drone exposes collective action, either social scientific or activist. It helps in the building of knowledge about how the atmosphere is discursively produced. A drone is an atmospheric platform for the investigation of the concrescence of technologies, ontologies, and other species. This provides to anthropologists of the atmosphere an experiential sensation of the atmosphere, its forces, and what is possible within it.

### **Conclusion**

It is important to synthesize the ethnographic, epistemological, and ontological to come to a more realistic notion of what the drone is, does, and why it matters. As a contribution to a handbook on ethnographic video it is productive to consider the drone not only as something with which to make visual depictions of cultural activity but also as an object around which cultural activity occurs. Also, we



need to take seriously physics and how it impacts studied objects. Drones, either tethered to the hands of archaeologists or activists being studied by anthropologists, are uniquely transformative technologies capable of extending and elevating human and more than human senses to the edge of the internet and into entanglements with other forces and species. A visual anthropology that takes as a goal this synergy of epistemologies, ethnographies, and ontologies will generate holistic theory from a wide-range of methodological encounters.

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