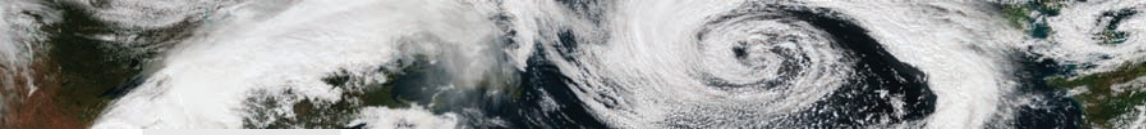


## *Openings and Retrospectives*



### RELATIONAL SPACE: An Earthly Installation

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When we were approached to curate an anthropological opening about life above Earth, we asked ourselves: What if we think about this piece as a mock-up installation, made to scale, pointing to particular and also to general values (Strathern 2004), exposing anthropological questions, concepts, and debates to the environments of outer space and space-on-Earth, a piece not anchored or stratified, but zooming in and out, coming and going from Earth, multisited from the start? Continuing along these lines: What if we think about Earth as itself an exhibit to the cosmic, a performative complex, exceptional (as far as we know) in the universe? Of course, the conventional anthropological response to exceptionalism is to historicize and contextualize the object. But thinking with whole Earth, in particular, presents us with a problem—and a provocation—in regard to context since, until recently, human attachments to the planet's surface have been the ultimate grounds of their actions, ideas, and relations, as well as of anthropologists' analyses of these.

This is not to say that humans were grounded before Sputnik: since Émile Durkheim, we have understood that humans incorporate entire universes in their worlds. The totem is a cosmic figure; shamans travel in ways that defy gravity, atmosphere, and physics. But as some humans have increasingly used robotic and remote explorations of the solar system and universe, from Earth's present and its surface domains and from craft more aligned to the ordinary world's order, openings are emerging to imaginative engagements with radical new ways of world-making and a reimagination of the planet as embedded in a wider space ecology. And as some people begin to leave Earth on spacecraft built to withstand and even embrace what they have learned of space, they are also faced with new sets of relations, new kinds of becoming, new natures. About 540 humans from thirty-five nations have left Earth in this manner (we'll get back to this), but these mostly-low-Earth-orbit forays have also activated enormous cultural and engineering productivity toward far more expansive visions of large-scale human settlements on the moon, Mars, or in rotating free-space colonies. These journeys—real and imaginary—compel critical revisits to familiar frontier narratives and new ethical guidelines for peaceful and environmentally accountable approaches to extraterrestrial collaboration by spacefaring entities (private and state-based). In short, outer space is being tentatively engaged by (and engaging) cultural values and varieties of sociality, in ways that *require* new anthropological questions.

This very human openness to new horizons of inquiry may not seem immediately apparent. Space's preponderance of lifelessness appears from an Earth-bound perspective not to be ecology without nature (Morton 2007) so much as environment without ecology. But we would argue that emphasizing the overwhelming absence of life in "space itself" (Battaglia 2012a) only naturalizes claims about the political and ecological irrelevance to Earth of outer space, despite its material, ecological, and technological connections to and relations with Earth. To highlight this point, we can take a detour out to where Earth's last wisp of life-impacted spherical atmospheric layer ends and infinite, polymorpous space—and its multiple natures—begins. This point seems to present a hard material and theoretical boundary between the Earth-space environment. Terrestrial life forms that travel into space via Earth-made spacecraft live as ecological outliers. Humans and select species in built vehicle environments in low-Earth orbit are tethered to earthly life-support supplies; terrestrial microbes that ride off with robotic spacecraft die or survive under siege from the force fields of other cosmic natures. The search for extraterrestrial life becomes also a search to see whether biology can ever be theorized as non-terrestrial and fundamentally relative (Helmreich

2009, 2012; Messeri 2011). As a proposition, life beyond Earth sits at the intersection of the technologically extreme, the impossible, the imaginable, the unencountered, and the terrestrially irrelevant. In space, life and death lose an equivalent presence with the non-living (Clark 2011; Farman 2013).

Yet some people and other living subjectivities have gone to space—are on orbit right now—and they, and the visions of space settlement that their activities activate in others, ask us to start raising new questions, ahead of time (just google SpaceX, Mars One, the 100 Year Starship program). These questions are prompted in part by new considerations of scale—spatial, temporal, and quantitative—that mark a shift in register of anthropological concerns with particulars and universals (Choy 2011), expanding our discipline’s ongoing epistemic experiment. Our qualification above—“some humans”—is a case in point, as those who have traveled to space so far have clustered (racially, geographically, culturally) with those elites formed in the violent crucibles of colonialism and capitalist globalization. One consequence of this phenomenon for anthropologists is a suspicion that the move to space, now and in the future, constitutes a movement of terrestrial stratified and spatialized socioeconomic and political relations into the cosmos. And of course, the desire for a “settlement” of the solar system cannot escape those histories. But this is not a simple translation (Battaglia 2012b); these formations and relations are thrown open in imaginations of space habitation by the radically different and multiple natures of space and by massive distances where Earth becomes a blue dot in other skies—or in imaginaries of travel to far-distant planets like Mars, not directly visible at all.

Whatever sociopolitical arrangements may take shape in putative future occupations, outer space makes a difference. For example, the upper limits of the physical universe prohibit the collapsing of time into space, so fundamental to the development of globalized capitalism. On the other hand, critical considerations of planetarity (Spivak 2003) in relation to globality invite us into a scalar temporal frame in which, by engaging Earth’s 4.5-billion years, all human histories—evolution, the Internet, colonialism, tea time—can easily be collapsed into a metaphorical blink, threatening their wholesale erasure as discrete and ordered events. The urgency of thinking through whole Earth (this time from both the real and the discursively produced perspective of anthropocenic concern) also inevitably provokes idioms of quantity: billions and trillions of tons, dollars, liters, organisms, locations—and people. This means that at the planetary scale, species (human and non-human) become relevant again, reformatting human his-

tories—individual biographies, the troubled histories of communities, racial classification—into actuarial facts (Malm and Hornberg 2013).

Thus a space-inclusive anthropology, and the scales and relations it reveals, requires questioning how the anthropological, social, biological, environmental, and ecological relate conceptually, but also how they scale with *and* against one another. Instead of assuming that the relationship of the anthropological and the ecological ends at Earth's high atmosphere because it is a natural boundary for earthly life forms, our data open to the ways in which Earth and space are connected through non-living spatial, environmental, and ecological connections, and provoke new ways of seeing terrestrial arrangements and imagining how they may work out in space—without presuming their outcomes. From this point of departure, seeing Earth through human eyes or other human-designed apparatuses of perception from outside its atmosphere should indeed put us on alert for any trace of the renaturalization of humanness (and human difference) through the frame of species, potentially eviscerating the hard-won recognition of the sorting work done by *species* as a concept in the long history of terrestrial migrations and colonialisms.

Further, it can open up possibilities for different forms of difference, a reconfiguration of what may seem alike, of what we might understand as particular, and what could emerge as universal. The challenge we see is both to hold onto what our analyses of racialization and colonialism, for example, have shown us, while allowing ourselves, simultaneously, to imagine, critique, and engage those new forms—liberatory or exploitative—that could emerge in the encounter of humans and the ecologies on which they depend in the multiple natures of outer space (Anker 2005).

All this is ethnographic through and through—not simply a new context to be accounted for, but one starting point among many in estrangement from home—and even the creation of new kinds of homes where Earth becomes only one of multiple places from which to look to other subjectivized places, no longer privileged by its status as an origin site. Again, these stances enable us to think anthropologically through and beyond the limits of our planet's cultured-natural atmosphere and what it has produced. In effect, people's investments of intellectual, affective, and material resources for moving off Earth—embodied, via remote-sensing, or in dreams—provoke, in no uncertain terms, a recasting of central (and deeply connected) arguments concerning discourses of inter-being relations of nature (where space natures bring cultures up against limits of sovereignty, colonization, resource management, even human material attachments

to the sun and its environments) or of the human (as post-earthling kinship across species figures alternatives to the “human-machine partnership” [Vakoch 2011] of orbital space stations’ life-support systems).



Figure 1. Working on the International Space Station. Photo by Terry W. Virts, posted on his Twitter account (<https://twitter.com/AstroTerry>), February 21, 2015.

Further, as the anthropological environment opens out to high atmospheric ecologies where humans, animals, plants, technologies, chemistries, and generativity in its broadest senses travel, interact, and loop (e.g., Choy 2011; Raffles 2011; Lahsen 2004), we are moved to query the limits of our disciplinary methods and models, indeed, to ask how *method* or *model* come to make sense in space environments in which varied natures open up the terrestrial presumptions of theory itself.

The phenomena of inhabited-space-station interiorities make the point. There, the posited ontological turn in anthropology is productively challenged by crew members’ descriptions of the work of living onboard an “artificial planet” (Lebedev 1988) where technoscientific curiosity and “sci-aesthetic” tinkering (Petit 2012) reveal the limits in situ of prototypes, analog environments, and engineering ontologies. It follows that philosophical speculations presenting orbital space stations as archetypally mediatic life-support systems for a speculative future (Sloterdijk 2009a, 2009b) are historicized and personalized by evidence of the

value added by local extraterrestrial knowledge. That system's artificially produced microgravity interior activates a de-exoticized perspectivism (Viveiros de Castro 2012)—complexifying human wayfinding. Further, international scientific programs that skyhook the work of the United Nations and other international bodies charged to craft legal guidelines for peaceful uses of outer space, explicate anthropology's argument for hospitality's place at the core of ethnographic theory (Candea and da Col 2012), properly in tune with "hostipitality" (Derrida 2000) for recognizing space-normal conditions of nature-culture exchange. Politicized and gendered cosmologies move into range of one another from as far away as the moon and an island in the southwest Pacific, provoking negotiations of irreconcilable understandings of "geontologies" (Povinelli 2014) and positioning the "cosmos as commons" (Battaglia 2014a), though without the easy presumptions of planar coordinates.

In addition, some of anthropology's hardest-working conceptual tools—context, identity, kinship—are submitted to the irritations of fluidist terms of reference (Connolly 2011; Helmreich 2009), as humans who recognize themselves as "no longer an earthling" (Linenger 2003) form affective attachments (Hustak and Myers 2012) to things like space-based plant biology experiments and other living species, making an argument in favor of "analogic affect" (Battaglia 2014c) by exposing the mutual vulnerability of both parties to the conditions of experimentation. A *cosmopolitical* concern (cf. Latour 2004) with purity and pollution activates differently when what, on Earth, may be predictable pollutants become different kinds of unpredictable agents that act in unexpected ways—as, for example, in the parasitic relations of human moon walkers and moon dust and the technology-imbricated stories they perform of forward-and-back contamination.

That said, terrestrially life-threatening outer space is physically and socially connected with terrestrial spaces and extends anthropological research environments. Anthropologists have examined how socially remote space-based technologies shape earthly spatial and environmental politics (Redfield 2000; Lahsen 2004); how cosmos, universe, and exoplanets become experienced as places in astronomical and geological sciences (Messeri 2011; Hoeppe 2012; Valentine 2012); how asteroids, comets, and space weather become targets for environmental regulation and global political-ecological action (Olson 2012); and how multinational plans for cleaning up and establishing accountability for orbital debris in an increasingly polluted low-Earth orbit produce new innovations around notions of property, pollution, and agency (Battaglia 2014b; Rand 2014). Taken together, these examples point to the bonding agents that intertwine and

strengthen between the environmental and ecological problems of Earth and space infrastructure building. Engineers and scientists in both domains must contend with managing invisible but powerful fundamental features of cosmos-as-environment that impact living–non-living dynamics as infra-ecological conditions: gravity, pressure, non-anthropogenic radiation. Moreover, in considering these linkages, anthropology is drawn into new relations with the biomedical and political dimensions of human spaceflight engineering and design (Olson 2010; de Monchaux 2011) and the politics of controlling pressure and gravity in water engineering (de Laet and Mol 2000; Anand 2011; Ballesterio 2012).

Moving back in toward Earth, closer to the ways in which the everyday terrestrial world is drawn into relation with space, anthropology is also uniquely poised to address how increasing numbers of telecommunication satellites—capable of slipping from their assigned orbits and colliding, or of becoming objects of a new space arms race—position us in new ways. We are drawn to consider the world from a perspective that does not presume ground to attend to (state and local) space-based satellite apparatuses of in/security, and to Cold War holdovers for managing extreme weather (Masco 2010) or theaters of war (Berland 2009). Anthropology is poised to consider how the operation of commercial and state programs of technoscientific exploration, resource extraction, and surveillance seek to find both permission and accountability for their activities. Funding institutions, the fine print of insurance and space-law documents, heritage-site claims to the moon and other extraterrestrial treasures, are enmeshed by pressures to ensure both the peaceful uses of outer space and—from the perspective of space entrepreneurs—the useful pieces of outer space. As the possibilities of space exploration intensify along these lines, we are moved to reevaluate *Homo faber*'s capacities for making worlds differently (Latour 2002), focusing anthropology on questions of which values are being translated into space and back again.

The gaps in knowledge that emerge from such realms of inquiry—and in the theories and questions we employ to produce knowledge—point to a space that resists a simple reduction to terrestrial analogs even as we must recognize their analogic power. They move us beyond exceptionalist Cold War narratives of (white) settlers on the frontier, or beyond U.S. American fears of Soviets (or nowadays, China or India) out to conquer the solar system. They ask for more than critiques of “the right stuff” posturing of American cowboy astronaut individualism, of the “New Soviet Man” (Gerovich 2007) embodied by cosmonaut hero archetypes or, in more recent times, of corporatism (Launius 2008) and “capitalism in space” (Valentine 2012). In doing so, an encounter with the different



natures of space reveals how people might model human-machine relations in ways demanded by space, and thus foreground the creative excess of curiosity and innovation. Both conceptually and materially attending to space-in-itself—and not presuming that terrestrial models and theories can do so without undergoing their own translation—launches an epistemological challenge to anthropology (Corsin-Jimenez 2013). But it also offers fresh possibilities of a new multisited anthropology by way of conceiving and taking seriously the “as if” futures of human and non-human entities and relations, on and off Earth.

We finished our first draft of this essay only days after the deadly crash of Virgin Galactic’s *SpaceShipTwo*, a vehicle designed to take well-heeled tourists to the Kármán line, the edge of space one hundred kilometers above Earth’s surface. Part of a much broader commercial space flight industry (that includes asteroid mining and Mars settlement alongside tourism), both Virgin Galactic’s plans and this accident, not surprisingly, activate many of our traditional anxieties—about colonialism, exploitation, stratification, overreaching techno-optimism—and calls on our theoretical models to account for them.

Such concerns simultaneously spiral out from and link to debates circulating among the Earth’s many publics, from concerns about social networking’s demands on people’s everyday lives to how to scale environments and shape policies in the age of what is being called the Anthropocene to the contexts and consequences of space-enabled state surveillance. These tensions drive imaginations of escape from Earth as much as they call for staying put and living within our ecological means, figured both by speculative fiction and by actual NASA film footage and scientific data (Battaglia 2012c).

All these responses call for an anthropology that remains mindful of its earthly origins while opening itself up to thinking about life and non-life above Earth as differences that make difference—figuratively and actually.

## ABSTRACT

*Anthropology off the Earth opens to new questions and futures for our disciplinary project and reach, while at the same time compelling revisits to classic sites of anthropological inquiry and critique. Taking as a given that human labor and imagination are neither limitable to, nor severable from, terrestrial-scapes of knowledge and practice, we argue that conceptually and materially working with outer space offers a unique opportunity to engage inter /disciplinary questions across many scales: with technologies of inter-being connections and disconnections, with approaches to what counts as nature and culture, and with questions concerning the often-invisible force fields of agency and structures of power.*



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