Journal of Mobile Media
http://wi.mobilities.ca

Cosmogram

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Wi: Journal of Mobile Media 2016 10: 01

The online version of this article can be found at:

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Editorial: Mobile Trash

Josh Lepawsky

Abstract:

Trash indexes cosmologies. Since the launch of Sputnik, the discards and remainders of human technological capacities have been accumulating extraterrestrially. Thus to investigate mobile trash, one must move offworld. Offworld rubbish offers a useful concept for investigations looking for alternatives to the terrancentrism of mobilities. Representations of offworld rubbish might be usefully approached as cosmograms.

> *What kinds of representations would be adequate to the weird and complex world we're facing now? (Tresch 2005, 74).*

> *Who is the we? We humans never experience ourselves as a species. We can only intellectually comprehend or infer the existence of the human species but never experience it as such. (Chakrabarty 2009, 15).*

Not long ago, John Urry (2007) posited the notion of a 'mobilities paradigm' as a response to two connected realizations. First, a recognition across the social sciences that movement is a fundamental quality of human social life and of the social lives of things; and, second, that the quality of movement of people and things appears to have shifted in novel ways and forms in the twenty-first century. But, there is a striking feature of Urry's mobility paradigm given its explicit desire to account for the centrality of mobility to contemporary social life: the mobilities considered are, almost without exception, Earth bound. Urry does make a fleeting reference to satellites but only as an instance of one quintessential form of contemporary movement he calls 'military

mobility' and satellites receive no detailed treatment in his text. Yet, as of 1 July 2015, the National Aeronautics and Space Administration (NASA Orbital Debris Program Office 2015) catalogued 3,917 payloads delivered to orbit. Those payloads also resulted in 13,008 rocket bodies and debris joining that catalogue. In other words, over 76 percent of the objects in orbit are discards and remainders—trash—in motion above the Earth. In its admission of things to questions of movement, Urry's mobility paradigm has successfully overcome anthropocentrism, but orbital debris suggests that paradigm must also reach escape velocity from the gravitational pull of terran-centrism.

The total number of derelict objects in orbit is significant: over 21,000 objects greater than 10cm, 500,000 objects between 1 and 10 cm, and over 100 million objects smaller than 1 cm (NASA Orbital Debris Program Office 2012). The human technological capacity for extraterrestrial activity has left behind over 215,000kg of objects on moons, asteroids, planets, and comets throughout the Solar System. More than 180,000kgs of this mass is on the Moon. Astronomers and engineers are currently debating the merits and demerits of sterilization protocols for interplanetary missions that have been part of NASA's standard operating procedures since the Moon missions. They frame the issue in terms of the ethics of "contamination" (Conley and Rummel 2013; Fairén and Schulze-Makuch 2013). The debate pivots on the not improbable chance that nonhuman Earth life has already reached other planets in the Solar System as unintentional passengers aboard space vehicles and can persist in conditions like those on Mars. We can say without fanciful speculation, then, that discards and remainders arising from human and nonhuman action have moved off of Earth. We can also say that the

quantities of the trash hinted at above mean that its mobilization off the Earth is a normal occurrence rather than a special case. Indeed, space engineers were already concerned about the risks to space operations from debris resulting from launches and accumulating in orbit by the late 1970s (Kessler 1977; Kessler et al. 2010). By the late 1990s archaeologists and media scholars began to recognize extraterrestrial space as a relevant site for investigations into the formation of human cultural landscapes because of the trash accumulating there (e.g., Rathje 1999; Gorman 2005; Parks 2009). A growing mass of discards and remainders of human technological capacities has moved off the planet that species inhabits. If we are to investigate mobile trash, then, that investigation must be open to following what I will call 'offworld rubbish'.

I use the term offworld rubbish for its capacity to bend and meld different genres of work. It gestures to Thompson's (1979) notion of rubbish as non-synonymous with trash, waste, or garbage. For Thompson,'rubbish' is a material-semiotic placeholder between waste and value into and out of which objects, places, and people may be moved. Offworld rubbish also usefully signals the play between genres of science, technology, and fiction that are increasingly built into everyday contemporary life in highly unequal and uneven ways (Haraway 1991). The term blurs the distinction between terrestrial and extraterrestrial locales: vast terrestrially based infrastructures with their own discards and remainders must exist so that human beings and their technologies may operate extraterrestrially. Any Earth bound user of contemporary communication technologies or GPS-enabled devices is participating (again, unequally) in the generation of offworld rubbish (Rand 2014).

It has become a truism since the publication of Douglas' *Purity and Danger* (1966) that dirtiness and cleanliness index cosmologies. "Where there is dirt, there is system", is Douglas' (1966, 44) famous axiom. The cognitive categories and rituals that manage matter into and out of these symbolic domains are crucial stories for ordering the experiential life of different human groups in a variety of ways. While it is true that dirtiness and cleanliness index symbolic order, contemporary waste materials possess qualities—a combination of toxicity, heterogeneity, and persistence—that make them impossible to clean up symbolically, ritualistically, or indeed at all. What MacBride (2012) calls 'modern waste' is qualitatively different than the 'dirt' central to Douglas' foundational analysis. Modern wastes are synthetic and heterogenous; their generation, dispositions, and effects are indeterminate. Sweeping dust past the threshold of a home and managing spent nuclear fuel are radically different clean up projects. In Douglas' formulation of purity and danger, dirtiness and cleanliness are largely symbolic categories arbitrarily attached to things. Modern wastes certainly have their symbolic aspects, but they also entrain toxicological effects and abilities to persist as threats no matter how much symbolic or ritual cleansing work is done. The existence of offworld rubbish means a cosmology of modern waste must include the implications of the movement (as well as its generation, meaning, and management) of modern wastes not just on Earth, but off it as well.

Cosmologies are more than mere myths. They are fundamental blueprints for ordering and acting in an experiential world (Ferguson 1999). To persist and circulate such

blueprints require an infrastructure. The more durable that infrastructure, the further the blueprints can circulate, the longer and stronger are the bonds that group the collectives of humans and nonhumans that share their cosmology (Latour 2005). The challenge I am trying to take up in the short video accompanying this essay is to offer a public and revisable sketch of an answer to the twinned questions posed by John Tresch and Dipesh Chakrabarty in the epigrams above. The title of the video, *Cosmogram*, derives from Tresch's work on the historical interrelations between science, technology, and religion (Tresch 2005; Tresch 2007; Tresch 2014). Tresch has developed the term 'cosmogram' to describe the actual instruments for grasping, reproducing, and circulating the myriad stories a collective tells itself about its relation to fundamental categories of experience, that is, to "the overall arrangement of the entities they recognize" (Tresch 2014, 163). Tresch has in mind actual instances of devices such as maps, diagrams, buildings, calendars, poems, and encyclopedias. *Cosmogram* is a provisional attempt to represent a 'we' without offering a totality; to represent a cosmos of a patchy, distributed, and not necessarily coherent collective whose membership is not yet fully known (Latour 2005; Latour 2013).

A cosmogram suggests how a cosmos "can be treated as just another thing" (Tresch 2007, 84). By describing *Cosmogram* as just another thing I am playing with the multiple meanings of 'just': As an adjective, 'just' denotes action that is moral and fair. As an adverb it communicates notions of 'very recently', 'barely', 'simply', 'only', and 'no more than'. *Cosmogram* is meant to offer a place to gather and offer responses to the question: what is it to be a member of a species for whom the discards and remainders

of their technological capacities are populating a territory beyond the planet that species inhabits? *Cosmogram* is only—that is, just—an initial, provisional, and revisable sketch of an invitation to explore that question. It is an attempt to offer a partial and shorthand response to Chakarabarty's question about who constitutes the 'we' who are responsible for the generation of offworld rubbish as a form of modern waste. It is a visualization of a cosmology as 'just another thing', or, to write somewhat awkwardly, but more accurately, just another *things*. This grammatical error is deliberate. As a composition (Latour 2010; Latour 2011) about offworld rubbish, *Cosmogram* is meant to get around the collapse of the Earth into Wholeness or Oneness or into a singular 'Us'. The visualization does not offer a picture of 'everything', an 'overview', a 'whole'. It barely—sketchily, diagrammatically—illustrates traces of human and nonhuman technological action at the edges of a patchy, distributed, non-coherent collective-in-the-making. *Cosmogram* is meant to offer an efficient visual index of these groupings, their extent and their limits. It is also meant to raise questions—not answer them--about modern wastes as matters of care (de la Bellacasa 2011) in an emerging here and now that is characterized by, among other things, permanent pollution, waste, trash, and discards the mobilities and dispositions of which include not just Earth, but extraterrestrial space and other worlds, not metaphorically, but actually.

Rather than a fanciful thought experiment, offworld rubbish is an empirical situation that has been emerging since the launch of Sputnik. Ethical concerns about contamination from offworld rubbish became philosophical, but also practical problems for space engineers with the Moon missions. As such it is both recent, being barely 60

years 'old', and a situation that is already so mundane that the amount of material accumulating in near Earth orbit is routinely practiced by engineers as a calculable and genuine risk. Offworld rubbish can be long lived. As the orbital height of defunct and damaged satellites and debris increases, so do their residence times. At 1000km above Earth offworld rubbish will remain there for at least a century. After that, orbital decay will bring them back to Earth, leading to potential releases of radiological and toxicological materials into Earth's environment (Parks 2009). When trash moves offworld it challenges conventional notions of environmental justice as a question of the fair distribution of protection from environmental and health hazards. Offworld rubbish moves these kinds of concerns to other worlds, not just their distribution on Earth. The existence of offworld rubbish means that the mobilities paradigm must escape its terrancentrism and extend analysis to human extraterrestrial activity. That activity moves with it not just humans, but materials and nonhuman life as well, all of which generates discards and remainders.

If readers keep in mind the actual ways and means by which *Cosmogram* is assembled into a viewable moving image, then it offers a visualization but not an overview or all encompassing picture. A very partial inventory of required materials helps make the point: electricity, wires, software, computer modeling, rocket fuel, Cold War rivalry, Sputnik, NASA, highly trained human pilots, a tiny space capsule, cameras, broadcast networks, mathematical formulas, telescopes, circuitry. This list could of course be made much, much longer but it would not be infinite. Neither this list nor the resulting visualization I have called *Cosmogram* would (or could) include *everything*. To get a

picture of a whole Earth orbited by debris of human technological capacities it must be *manufactured*, literally built from many disparate bits and pieces. Once assembled it offers no all encompassing view. The pixels on the screen representing debris in motion must massively exaggerate their scale to make themselves visible. The globe surrounded in a wash of debris takes up nothing more than a few centimeters on your screen and a few minutes of your day. Thus this 'whole' view of mobile trash is tiny in comparison to all the disparate things that must be brought together so as to make that trash visible (Latour et al. 2012; Law 2004). It is even tinier still relative to all the people, places, and things it leaves out. So *Cosmogram* is no 'god trick' (Haraway 1991). It is no trick at all. It is a composition and as such has a territory of humans and nonhumans necessary for it to be brought together and persist. That territory is not general and universal, it is specific and particular. *Just like any other thing*.

Offworld rubbish points to a host of ethical questions to be explored: Whose trash is this? How can it be managed, if at all? What responsibilities do those who generate it have for the other times and places that might be impacted by it? *Cosmogram* does not answer these questions. It merely provides a site for those who might care about such matters to gather and collectively compose some relevant responses to them.

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