"On Rocks and Revolutions: Some challenges to thinking straight about space resources and the future"

A Brief and Drafty Outline, from Kathryn Denning, Associate Professor, Dept of Anthropology, York University, Toronto, Canada, kdenning@yorku.ca

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Short talk for session: "How would it affect us as a species?", chaired by Franz van der Donk, presenters Kathryn Denning, Lucas Mix, Catherine Newell, and panelists Martin Elvis, Robin Wordsworth, Alanna Krolikowski, Matthew Hersch

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My short talk on Oct 16 will come at the problem of space resources from the perspective of an anthropologist/archaeologist who has been working around and with a variety of space communities (SETI, astrob iology, interstellar, Mars) for 15 years, and examining popular narratives of long-term human history for twice as long. I'm opting for a text summary because I think it's easier to see the argument this way rather than in Powerpoint.

From an anthropological perspective, I can't tell you how the use of space resources would affect us as a species, because the question has to be completely dismantled, particularly on the point of who "us" is and to what extent humans are all really in this together. And, as they say, prediction is hard, particularly about the future. I could try, but that would seem to be a futile endeavor for a 12 minute talk. So what I will do, instead, is make some observations about anthropologically-informed ways to think about space resources.

Our job here is to think about the potential role of myriad rocks in space in the historical continuum of a particular form of life residing on one particular biggish rock (with a bunch of other life forms).

Humans have a long relationship with rocks, obviously. Along our evolutionary/historical journey, we figured out how to make them into tools, build stuff with them, and extract substances from them which in turn allow us to do a variety of useful and useless things. In popular renderings of human evolution and history, these developments are frequently characterized as the technological revolutions that literally made humans what we are today. (Stone tools! Pyramids! Metallurgy! Industry! Onward and Upward!) Similarly, some thinkers portray space mining as another revolutionary event/invention along a cumulative human trajectory of increasing awesomeness, leading inevitably into the great beyond / final frontier, with either God or AI or maybe both animating the proceedings. [1]

[1] In particular, there is much to say about the Diamandis school of techno-optimism, both as a set of ideas and as a cultural phenomenon. Too much for a short talk, but we should discuss it, as it's deeply woven into the space resources conversation.

These renderings contain big, persistent, and interesting problems, which I will briefly address when we talk. [They include: a unilineal evolutionary approach which elides just about everything important or interesting about humans, a systematic disregard for the negative sides of technologies, and a distinct tendency to valorize power and inequity.] But what I want to suggest here is that there are other ways we might frame human relationships with rocks. *What if we see the rocks as having agency?* By this I don't mean consciousness or will. Rather, I mean: what if rocks are not just simply completely subjected to our all-powerful will? What if they are historical actors? How might this change our thinking?

For example:

- Rocks have driven trade networks (at every stage of human history), labour specialization, various kinds of machinery and infrastructure, social structures, cultural fads, economic trends, and politics. If we assume that rocks in space are no different in character, then we have to conclude that using them would lead us not to some sort of revolution in humanity's path, but just more of the same. Obviously, their location off Earth matters and has to be factored into any analysis, but what if it's actually not their "spaceyness" but their "rockiness" that matters the most? Then it's much easier to put the mythic/heroic "space is our destiny" stuff aside and just use our usual Earthly analytical frameworks to study the situation. [n.b. I'm not saying that historical analogies will be sufficiently illuminating. I think they won't.]

- Rocks, because of their tendency to be attached to or embedded within the Earth until forced to be otherwise, have caused or influenced a great deal of human territoriality. Rocks have inflexibly bossed us around: they've told us how to organize our societies, where to live, how to damage our bodies in pursuit of them, where to put up walls and draw borders, and how many people should die trying to take or keep them. Accordingly, we might regard them with grave suspicion. [Yes, I know the idea is that space rocks will be different because finally, we can fully control them, and this new order of business will supplant previous ways of doing things. Does anyone else buy that?]

- Rocks could be seen as distractions which now relentlessly divert our attention from the living to the nonliving, from the biotic to the abiotic. Contrasts: Humans literally can't live without other life. We certainly *can* live without gold watches and plenty of objects derived from rock. If you want more life, there are often ways to make more. If you want more rock, you have to go find (or take) more. Life flows, it moves, it can be relocated, reproduced, regenerated. (Within limits, of course, and we know it must be protected, treated carefully, etc., though we choose which forms of life to dis/regard.) But the inorganic is in some ways more easily manipulated, contained, controlled, stored, mathematically modelled, commodified, traded, and it is less contested and morally fraught... and it commands more of our attention. It is so often privileged over that which lives, and increasingly so in 21st century technological society. At a time when, logically, all of our attention should be focused on our biosphere as a matter of survival for ourselves and so many other life forms, how can we still see rocks as a way forward? Is this a 'progress trap'? (Something that was once adaptive but then abruptly becomes highly nonadaptive… a concept from Ronald Wright's *A Short History of Progress, 2004*).

- We could see humans' relationship with rocks as one long and ghastly arms race: i.e., who can use the raw materials to best get the upper hand over their neighbours. That may, alas, be the best framework within which to see space resources. We should take that seriously.

What's my point? Well, I see the exploration of metanarratives not as a fascinating end in itself, but as a way to glimpse the complex and difficult truths underneath our cultural stories of space, i.e. as an analytical tool which may help in seeing the problems of space resources more clearly. It's worth throwing every tool we have at the challenge.

Above all, we need a realistic assessment of what is actually happening and is likely to happen in the short term with space resources, and given that this picture is likely to be heavily dominated by American governmental, corporate, and cultural imperatives rather than by the Hague Space Resources Group (or other valiant attempts at multilateralism and science-policy-based thinking) … well, we particularly have to see various American stories of space for what they are. They have, as you know, a complicated relationship to the truth.

p.s. One more observation about how space resources will affect us as a species: do we have the verb tense right in the question? There are space resources [the physical realities] and then there are "space resources" [the cultural constructs and representations of those resources, whether in political ideologies, laws, conferences, books, movies, MMPORPGs, or stock markets]. The cultural constructs are *already* influencing our world and will continue to do so. They may even be more important than the actual physical space resources. I append an abstract below from another talk I've given, that tries to give some shape to this.

Metaplanetary Moments: It was 1969 when a human being first left a footprint on another world, but we have never lived solely on Earth: we have long been celestial travellers in our minds, stories, and cultures. Our imaginations are unconstrained by time and distance, and unaffected by airlessness, and so our hopes, fears, and stories of space evolve in response to human preoccupations. But there is something new: in the last 100 years, our material culture, physical bodies, and technology have begun to occupy the spaces beyond Earth, and their presence is increasing in density and expanding in range. **Crucially, these physical realities and evolving cultural imaginaries are not merely bypassing each other: they are hybridizing, exploding, entwining, fusing, and competing**. This introduces multiplicities, timeknots, planetary landscapes which are both here *and* there… *metaplanetary moments*. For example, as new extrasolar planets are continually announced by teams of astronomers, we are meeting these real places while hopelessly entangled by artists' visualizations and our long-held narratives of faraway worlds – pictures and stories which are profoundly fictional and, at times, very troubling in their implications. The complexity is deepening as VR and simulations, and all their avenues of replication and dissemination (from MMO games to films to NASA press conferences to citizen science databases), become ever more elaborate, widespread, impactful, and … "real". Having just entered the Anthropocene era, perhaps we are already at the brink of the Astrocene: the era in which humanity's sense of home and territory, and the realm of anthropogenic impact, both expand far beyond Earth.