On exo-economics

Planetary Resources

Por Pedro Victor Brandão[1] | english

In April 2012, a company held a press conference with a puzzling presentation that resembled a work of science fiction.

The large reception took place at the Museum of Flight in Seattle, and the company, called Planetary Resources, announced that beginning in 2014 it would be able to "gain access to natural resources of space by mining near-earth approaching asteroids[2]".

Giving a speech on the potential for redemptive abundance in the face of paralyzing scarcity, the company's co-founder, Peter Diamandis, promised to "ensure humanity's prosperity by accessing the vastre sources of space," renewing a push for extra-planetary colonization in front of a cadre of highly risk tolerant investors, among them Eric E. Schmidt and Larry Page (executive chairman of Alphabet Inc.(https://abc.xyz/) and co-founder of Google Inc.

(https://www.google.com/about/company/),respectivel y) .

On the company's website, one finds the assertion than an asteroid of 500 meters diameter contains around 174 times the global annual yield of platinum [3] . On Asterank (http://www.asterank.com/) , one discovers that 2011 UW158 has an estimated worth of 30 billion dollars, making it the sixth most cost-effective asteroid. Portraying the over 81 thousand asteroids in proximity to Earth's orbit as simultaneously a threatt olife and a

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[2] http://www.planetaryresources.com/2012/04/asteroid-mining-plans-revealed-by-planetary-resources-inc/

[3] https://www.planetaryresources.com/2012/07/asteroids-alien-planets-or-your-house/#mining-delivery

lucrative and untapped source of raw materials, the company purports to be directly aligned with NASA's mission.

Other such initiatives have cropped up since Moon Express (http://www.moonexpress.com/) and

Deep Space Industries (http://deepspaceindustries.com/) have carried out preliminary campaigns involving the launch of reconnaissance missions, the presentation of reports and eye-catching digital renderings,as well as research tied to programs in the United States and Luxembourg, the two countries which have led initiatives to revise the tenets of the 1967 Outer Space Treaty[4].

Luxembourg has since February 2016 been devising laws with these companies, while American

Congress passed, in December 2015, the United States Commercial Space Launch Competitiveness Act

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, which recognizes the right of U.S. citizens to assume property rights over appropriated asteroids. It also permits businesses to explore and extract resources in outer space.

In reading and discussing these developments with others, including scientists and artists, several questions surfaced. What constitutes the ownership of exo-economic natural resources? What are the risks of outer-space missions for water, platinum, palladium, and other rare metals? Will these undertakings further academic research in the fields of cosmochemistry and mineralogy? Will they provide the means for a universal basic income? Or will the result simply be an interplanetary bank for a handful of investors?

[4] In accordance with the Outer Space Treaty, "the exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind." (Part I, A, Article I), Furthermore, (Part I, E, Article XI). At https://www.state.gov/t/isn/5181.htm (https://www.state.gov/t/isn/5181.htm)

[5] https://www.congress.gov/bill/114th-congress/house-bill/2262/text (https://www.congress.gov/bill/114th- congress/house-bill/2262/text)

Although these developments have been unfolding over the last four years, the juridical institutions which govern this new realm of primitive accumulation are opaque. As AndreiȘapera points out, in one of the first articles to invoke the term "exo-economics[4]" outside of a pseudo-scientific context, "until now, this debate was somewhere in the realm of political philosophy, but it is to become a pressing issue that will need to be solved. This could represent one of the most intense legislative, political and intellectual challenges that we have faced so far. The outcome of this legislative debate could have an extremely important impact, being able to mark the dawn of a golden age of prosperity for all Humankind[5]."

Brief historiography

This isn't a new picture; it can be traced to 1950s American literature, in which science fiction served as an engine for Cold War imaginaries. Isaac Asimov, in one of the stories included in the collection *I, Robot* ,*touches* explicitly on the matter: " 'I'm only saying,' said Gregory Powell, patiently, as one explaining electronics to an idiot child,'that according to spec, those robots

[4] Until then, the term "exo-economics" had been used solely in an undercurrent of speculative theories about outer space in relation to the possibility of "Alien Venture Capitalism" and out-of-body experiences. At (http://exopolitics.blogs.com/exopolitics/2014/05/exoeconomics-how-inner-earth-can-mentor-us-to-achiev e-economic-freedom-and-money-less-abundance.html)

[5] Șapera, Andrei. "Towards Exo Economics – Developing an off-planet economy and its implications." Bucharest: SOREC. Revista Œconomica: , issue 2; 2014

are equipped for asteroid mining without supervision. We're not supposed to watch them.' 'All right. Look — logic!' He lifted his hairy fingers and pointed. 'One: That new robot passed every test in the home laboratories. Two:United States Robots guaranteed their passing the test of actual performance on an asteroid. Three: The robots are not passing said tests. Four: If they don't pass, United States Robots loses ten million credits in cash and about one hundred million in reputation. Five: If they don't pass and we can't explain why they don't pass, it is just possible two good jobs may have to be bidden a fond farewell[6]".

A few years later, Will Stewart (a penname used by Jack Williamson), published the short story collection *Settee,* in which a sort of antimatter becomes the impetus for a space race entangled with an energy crisis, a personal mission, and interplanetary diplomacy[7]. In 1952, Robert A. Heinlein, considered by many to be the standard - bearer of speculative fiction, published the novel *The Rolling Stones ,in* which a family of tourists arrives at the asteroid system and discovers an intensive operation for mining radioactive metals.The family sells the offspring of a Martian animal (the flat cat) to the miners, and then moves on to go visit the rings of Saturn[8].

Not coincidentally, the fictions that we see on the brink of actualization today can be traced much further back through archaeological anthropology on Amerindian economies. Mircea Eliade, who conducted an analysis of the elements involved in these economies, states that: "So-called 'primitive' peoples worked with meteoric iron long before learning how to use terrestrial ferrous minerals. Furthermore, it is known that before discovering how to alloy, prehistoric peoples treated certain minerals as if they were stones, or rather, considered them to be raw material for the fabrication of lithic objects. A similar technique came to be applied up until relatively recently by some peoples who ignored metallurgy: they worked meteoric iron with silica hammers, moulding objects whose form faithfully reproduced that of lithic objects... When Cortéz asked the Aztec chiefs where their knives came from, they pointed to the sky. Like both the Yucatan Mayans and the Peruvian Incas, the
Aztecs used exclusively meteoric iron, to which they attributed a value greater than gold[9]".

[6] Asimov, Isaac. "Catch that rabbit!" New York: Street & Smith, coll. Astounding Science Fiction; 1944.
[7] Stewart, Will. "Settee Shock" New York: Street & Smith, coll. Astounding Science Fiction; 1949.
[8] Heinlein, Robert A. "The Rolling Stones". Nova Iorque: Scribner; 1952.
[9] Eliade, Mircea. "Forgerons et alchimistes." Paris: Flammarion, coll. "Homo-Sapiens"; 1956. [12] http://gravidadespcs.tumblr.com/

A practical experiment in the Colônia Crater From this research I was invited to conduct a workshop for the students of the Vargem Grande Municipal School as part of a project bridging art and science. Conceived by artist Daniel de Paula and critic Leonardo Araujo, gravidade – [espécies de espaços]
(translated gravity – [species of spaces]) took the geological and patrimonial specificity of the Colônia Crater as a point of departure for research. De Paula and Araujo define the site as a locality "in the Parelheiros district in the Vargem Grande neighborhood of São Paulo, and a near-circular geographical formation of mountains that form a valley of nearly 3,6 kilometers diameter. The crater was formed by collision with a celestial body (an asteroid) nearly 35 million years ago, which due to the absence of scientific studies, remains of unknown origin and physical form; that is, it is not known whether the object was frozen, rocky, or ferrous. The crater was discovered by satellite studies in 1961, and a more extensive study was carried out beginning only in 1990. Its settlement began in 1988, with a total of around 45.000 people occupying about third of the crater's area today[12].

Through workshops, visits, activations of dormant spaces, and gatherings between artists, scientists, and citizens, the project has been developed over the course of 2016 as groundwork for more stable institutional involvement, reaching far beyond the results typically demanded in the context of an artistic project. Daniel and Leonardo extended an invitation to carry out a workshop with the youth of the Vargem Grande Municipal School, and I decided to broaden my research in the form of a class on exo-economics and the recording of a video. The objective was to activate speculative imagination through four meetings with a group of six youth between 11 and 13 years of age, where I presented the concepts of abundance and scarcity taking as reference the mining activities on asteroids and the current stage of natural resource depletion in the midst of global economic crises. On the last day of the workshop, we used an enlarged print of a fragment of the Toluca Meteor (located in Mexico, an IAB-type siderite, composed of 91% iron and 8,1% nickel) to walk the city streets and record footage which we all watched the next day. After showing the video we had a conversation about the future and the youth took the opportunity to speak not only about their impressions of the workshop, but also about their intuitions on the possibility of a world of generalized abundance, in which employment, income, salary, and even money are considered obsolete.

One statement, in particular, caught my attention. 12-year-old Bianca spoke first about the park she often goes to to play with friends, intuitively putting forward a critique of exponential growth: "You saw that at the park, there's just sand and a few toys. Our neighborhood doesn't have many of these things. Imagine the park they have in São Paulo, Ibirapuera... It drives me

crazy, because our neighborhood attracts a lot of people to research the crater, but it's missing so much... I imagine a future with more money, where people can improve their homes, they don't have to work so much to pay rent, the bills go down, and nothing's so expensive. I also hope that someday Vargem Grande gets better, because if it does, I'll keep on living here forever. There's people that think that life is money, but it isn't, because there are other ways of living. I saw a video about a man who was a doctor or a scientist, who lived really well, and was really rich. He gave everything up to live in the forest. Now he eats fruit, bathes under a waterfall, and is very healthy. He's doing great. Without money, we could bargain... If you have clothes that you don't want anymore, you go to the market to exchange the fabric for something else, and it becomes something new, something great. Money isn't everything."

In Bianca's imaginary future, it only makes sense to mine asteroids if she can play at the park at night, paint the houses on her street, and go to university. Although much of this seems far off, the contestation of narratives by a young person—living in one of the poorest areas of São Paulo, Brazil's largest city, in the midst of a juridical-parliamentary coup d'état and a push by transnational corporations to "break the frontier"—stuck with me. A new challenge to the commons lies before us and I imagine we'll need more than just luck to comprehend this.

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