AN ANTHROPOLOGY OF OUTER SPACE: PLANETARY IMAGINATION AND PLACEMAKING PRACTICES

Lisa Messeri. *Placing Outer Space: An Earthly Ethnography of Other Worlds*. Durham & London: Duke University Press, 2016. 248 pp.

> *There's been a lot of great work by NASA and other organizations in early exploration of Mars and understanding what Mars is like, where we can land, what's the composition of atmosphere, where is the water or ice... But we need to go from these early exploration missions to actually building a city.*
> (Elon Musk in September 2016)

The above excerpt from Elon Musk's lecture at the International Astronautical Congress in Guadalajara, Mexico, on September 26, 2016, reveals his intentions to move from the research of Mars to the colonizing of the planet, also demonstrating the engine, fuel tanks, and other elements of the interplanetary ship his company *SpaceX* is working on. The book by Lisa Messeri, *Placing Outer Space: An Earthly Ethnography of Other Worlds*, reveals the transformation in modern astronomy and planetary science which makes this shift possible – the distant planets in the solar system and around distant stars are not abstract space objects anymore, but rather concrete places that humans could inhabit one day.

The book represents an important step in anthropology, approaching a new field of modern society – space exploration. Messeri affiliates to "a small field that can be called the 'social studies of outer space'", seeking to understand what the cosmos can tell us about ourselves. She refers to the works of D. Valentine, V. Olson, and D. Battaglia as founders of this new field, who explicitly argue about the need for an anthropological approach to outer space as "a crucial site for examining practices of future imagining in social terms, and for anthropological engagement with these practices" (Valentine & Olson & Battaglia 2009: 11). The field could be considered as a branch of anthropology of science, which emerged more than forty years ago, becoming one of the engines of the profound transformation in social sciences today. However, the study of outer space touches the very roots of anthropology as a science – simply because in a strange way it resembles the foundational studies of 'primitive' and traditional cultures, and this also provides an alternative or 'outer' perspective to the modern (Western type of) societies. The book repeatedly hints at this, showing how the strange habitable places imaged by planetary scientists differ so radically from the way of life here on the Earth.

Messeri considers as her main contribution the deepening of our understanding of 'cultural connectivities between cosmic worlds', and where 'Earth becomes part of a vast interplanetary network'. Focusing on planetary scientists as the main target of her ethnographic study, she identifies and analyses the practices and techniques that allow them to transform planets from abstract objects in astronomical space into places full of meanings and considered from the point of view of (potential) human presence: "[P]lacemaking at a planetary scale resists homogeneity… [and] transforms the planetary from the perceived to the experienced. A place-based orientation, rather than passively gazing at the globe from the outside, allows for an imagination of being on/within/alongside,

of experiencing, the planet" (p. 12). Her notion of 'planetary imagination' catches the core of this process, because it captures the "holistic conceptions that scientists have of the planets they study. The planetary imagination includes scientific understandings of the planet and conceptions of planetary pasts and futures, as well as notions of what it would be like to be on and live on other planets" (ibid.).

Messeri's basic achievement consists in identification, description, and analysis of several different activities, or techniques, of placemaking: narrating, mapping, visualizing, and inhabiting, used by scientists "to imagine themselves on other worlds" (p. 19). In her own words, *narrating* builds a rich story that connects Earth with another world; *mapping* and *visualizing* other planets translates the strange and unknown into the sensorially relatable; while *inhabiting* and *forms of embodiment* are tools of placemaking, employed even when the place being made is physically inaccessible. Each technique is presented in a separate chapter, so the four chapters constitute the structure of the book.

Based on her fieldwork at the Mars Desert Research Station (MDRS) in Utah (chapter 1, "Narrating Mars in Utah's Desert"), she reveals three different placemaking practices: 1) building 'informal maps and marked GPS waypoints'; 2) (geological) visualizations necessary for figuring out where researchers stay in place and in time; and finally 3) the very inhabiting of the MDRS and coping with its infrastructural hardships. She summarizes the life of planetary scientists at the MDRS as 'double exposure', where Earth and Mars, present and future, acquired data, and bodily experience of living at the MDRS merge. Here "the entire planet finds its materiality through the landscape and ordering narratives woven by participants" (p. 33). Using Tom Moylan's interpretation of Mannheim's notion of utopia as well as the notion of heterotopia (M. Foucault), she describes the MDRS as a utopian narrative comprising "stories of geologic history, the ideal of fieldwork, the frontier and the American West, and scientific and speculative stories" (p. 68). This general utopian narrative embraces four specific landscapes and related *geological*, *astrogeological*, *areological*, and *science fiction narratives*.

We find especially revealing her science fiction narrative behind the idea, architectural design, and the way of life of the MDRS habitat:

> *Just as the Utah desert made the most sense to Mars scientists once elements of Martian geology were present in the landscape,* [the habitat] *cylindrical living space makes complete sense when viewed through the lens of science fiction. For those who have spent decades reading about future colonies on Mars, it is a joy to bring those elements into the present*. (p. 66)

Experienced anthropologists could find a strange parallel between a science fiction narrative describing Mars habitat, and classical anthropological texts, describing the worlds of the Bororo or Ewenki, where the mythological narrative exteriorizes in material culture and social life.

In chapter 2, "Mapping Mars in Silicon Valley", Lisa Messeri brings the reader to a small group of IT researchers called Mapmakers, who inhabit NASA Ames Research Centre in Silicon Valley. Established during one of the numerous restructurings of Ames and as a sign of its opening towards the public and business communities, the work of the group of Mapmakers indicates an important change in the exploration practices of planetary scientists. Using an open source code developed by NASA, they are aiming at the democratization of a huge amount of data accumulated from NASA's robotic missions on Mars. They produce interactive maps integrated in Microsoft and Google

software, which depart from abstract and purely objective visualizations of traditional scientific maps, bringing into them the perspective of a living human body with its curiosity and meanings, where the local perspective dominates. Messeri skilfully traces the challenges and contradictions in this work since 'democratization' is embedded in the 'imperial strategy' of NASA as a government agency and presupposes an educated and curious public with basic IT-skills.

In chapter 3, "Visualizing Alien Worlds", and chapter 4, "Inhabiting Other Earths", the author expands the techniques and patterns of activities of planetary imagination she identified at the MDRS and Ames in the new settings – at the Massachusetts Institute of Technology (MIT) (exoplanet scientist Sara Seager), and at Cerro Tololo Inter-American Observatory (CTIO) in Andes Mountains, Chile. However, unlike on Mars, in these new settings the scientific exploration based on new technology made a step that was almost unimaginable a few decades ago: now the planetary scientists were able to observe planets around distant stars many light years away from the Sun. They learned how to measure the orbit, size, mass, and chemical composition of the planets passing in front of these stars, thus causing miniscule changes in the spectrometric data.

This way an entirely new branch of planetary science – exoplanets, along with research groups studying them – emerged. Lisa Messeri is maybe the first anthropologist who carried out her fieldwork among these groups. Interestingly enough, she identifies the same basic pattern of placemaking, using different techniques and 'rhetoric':

> *For exoplanet astronomers, a planetary imagination helps make worlds as meaningful as an intimate, local place. This is a difficult task requiring a rich imaginary. Without high-resolution pictures of the planet, like those we have for Mars, exoplanet astronomers produce abstract representations…* […] *Yet these images do not obviously represent places but are made into places through the social and technical practices around which this new scientific community has coalesced. In constructing and discussing visualizations, astronomers engage simultaneously in practices of professionalization and of place-making*. (p. 118)

The group of MIT focuses on exoplanets whose characteristics sometimes substantially differ from the planets in the solar system. The author had a rare "privilege of observing the community at a time when the techniques of seeing were still being developed", discovering unique semiotic, rhetoric, and perceptional patterns summarized as three different "modes of seeing" – "seeing with the system", "seeing beyond the signal", and "seeing through language". In search of concepts to frame her findings she found useful resources in the works of anthropologist Ch. Goodwin, psychologists D. Gentner and M. Jeziorski, sociologists of science like M. Lynch, S. Woolgar, B. Latour, A. Cambrosio, M. Hesse, M. Kemp, and some others (pp. 119–123).

Lisa Messeri completes her anthropological study of placemaking practices in planetary science by returning to the notion of 'inhabiting'. The group of exoplanet astronomers at the CTIO is chasing a particular type of planets – those resembling the conditions on Earth and where humans could potentially live. Similar to the MDRS, this is another unique object of anthropological study, whose job is to identify the most distant places suitable for inhabiting, thus setting the directions in which our "grand-grand-grandchildren will direct their ships". Oscillating between Heidegger's notion of 'dwelling' and Doreen Massey's 'fluid' notion of home, relevant to the 21th-century waves of migration, the exoplanet astronomers search for a "perfect Earth-like planet" and at the

same time are "entrenched in ideas of unboundedness, multiplicity, flows, and networks… never about a single world but about the potential for all planets to be worlds" (p. 187).

We would like to end our review with a critical note. Lisa Messeri considers 'exploration' as a bound to classical modern type of colonization, i.e., as a preparatory step to industrial, political, or military expansion. This refers to anthropology itself, which also emerged as a tool of colonial powers to cope with the local population. Latour's anthropological notion of 'centres of calculation' also describes this type of modern science, in which with each circle of going to the 'field' and coming back to the centre with new data, the asymmetry between the metropole and periphery increases, and the centre becomes stronger than the locals. However, late modern, 21st-century relations between science and power substitutably change, as reflected in the notions of 'science in wild' and 'hybrid forum', describing situations when scientists are not superior to the public, but have to take it as an agent who has enough capacity to enter into dialogue and start collaboration with them (Callon & Lascoumes & Barthe 2009). This and other studies have questioned the distinction between laymen and experts, and pointed to the fact that in contemporary societies the share of population between 25–64 years of age with university education is well above 30%, and in some societies even 50% (https://en.wikipedia.org/wiki/List_of_countries_by_tertiary_education_attainment). This means that scientific knowledge and scientific instruments are not anymore the privilege of a handful of people in aristocratic courts and the Academy of Sciences, like it was in the 18th century. Hence it is possible that exploration may serve as a new, 'non-imperial' type of colonization carried out by communities and similar to the colonization of the Pacific by Polynesians, Ancient Greek colonies, and even the colonization of Quakers and Puritans in America. 'Mars Underground' and 'Mars Society' movements that Messeri mentions in her books, or David Valentine's ethnography of New Space entrepreneurs seeking colonization of space in a way 'orthogonal to profit' support such an option. Maybe this is one of the reasons why 'frontier' metaphor is so popular among space explorers.

Acknowledgements

Written within the framework of the project "Man in a Changing World: Problems of Identity and Social Adaptation in History and at Present" (the RF Government grant No. 14.B25.31.0009, PI D.A. Funk).

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