OSCAR SALGUERO[1]

A FALSE ENCOUNTER

An Interspecies Martian Tale

ABSTRACT

This project concerns a fictional scenario in which an AI rover encounters an alien life form in the crevices of a Martian rock. The seconds in which this encounter takes place are mysteriously wiped out from the rover's Pancam metadata. It is speculated that this was a conscious decision, perhaps in an attempt to keep this moment in secret, safe from human knowledge. By employing standard research techniques along with interviews with experts in the field, as well as speculative fiction methods, the present paper attempts to explore two main ideas: the possibility of interplanetary multispecies coexistence (beyond the presence of humans), and a prediction of a future episode of AI/digital dissidence. Could machines be inspired by humanist literature in their quest for consciousness? Could machines find new ways to achieve solidarity with other nonhuman biological entities? Could their disobedience be more humane than the values of the humans who programmed them?

KEY WORDS: non-human intelligence, machine vision, interspecies, exobiology, AI, novacene

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INTRODUCTION

> Our capacity for fascination is what fuels solidarity, not some pre-theoretical, prefabricated concept of need. Fascination is the aesthetic gravitational pull of entities toward one another, the dynamics of solidarity, within a forcefield-like matrix of sensitivities.
> —Timothy Morton, *Humankind*[2]

The present paper began as a response to the question "Is it easier to imagine life on Mars than to take care of life on Earth?"[3] posed as part of The Age of Entanglements, a multispecies-oriented project commissioned by curators Petra Lilja (SE) and Jenny Lee (UK), and presented during Stockholm Design Week 2020. For the purpose of this thought-experiment, we will place ourselves in the context of Mars, year 2055, at the crashing site of an exploratory mission in which the only surviving member is Ray, a miniature rover equipped with artificial intelligence. Wandering around a large basin plain, Ray has stumbled upon a fascinating sight: an unknown lichen species growing in the crevices of an ancient rock. A multi-spectral, false-color miracle of life unfolds in front of Ray, as it decides to understand, admire, and allow this moment to exist in secret forever…

Figure 1. A False Encounter. © Oscar Salguero & Zack Saunders.

2 Timothy Morton, *Humankind: Solidarity with Non-Human People* (London: Verso, 2019).
3 Jenny Lee, and Petra Lilja, *The Age of Entanglements* (Stockholm: Self-published, 2020).

A MARTIAN HOST

Mars is fundamentally an igneous planet, with the majority of its crust being composed of volcanic basalt rock.[4] Incidentally, basalt can also be found on Earth and the Moon. Locations such as the Kilauea Volcano in Hawaii[5] and Iceland's lava fields[6] have, thus, become key experimental grounds for NASA's future Martian missions. Via projects like BASALT (Biologic Analog Science Associated with Lava Terrains), founded in 2015, and SAND-E (Semi-Autonomous Navigation for Detrital Environments), started in 2019, NASA attempts both to perform protocols for the identification of rock samples that may contain biological specimens, as well as to prepare rovers for navigation and geological surveying tasks.

MARS = BASALT ROCK

> A rock is a gigantic empty cathedral at a microscopic level;
> at a nanoscopic level, it is a vast empty region of a solar system.
> —Timothy Morton, *Humankind*[7]

Currently, most of the intended uses of Martian basalt rock are in the quality of building material. One example is basalt fiber, a relatively recent industrial product development. Formed via a smelting process, basalt is turned into a fine fiber with properties such as high tensile strength and radiation resistance (commonly used in the aerospace industry). Whether in the form of 3D printable composite (as in AI SpaceFactory's autonomous habitat constructions under Project MARSHA[8]), or basalt fiber reinforced clay blocks, all current material-based experiments with basalt rock aim to assist in building efficient shelter design and improving shielding conditions for human laboratories or colonizing settlements in Mars. Beyond the current material science and architectural applications, what if instead of regarding basalt rocks purely as building resources, we began considering them as hosts to potential vestiges of ancient life or nests for future life expressions on Mars?

As the exploration of this fictional scenario continued, some thought was given to the development of a speculative petro-filial relationship between humans and Martian rocks. Perhaps the properties of basalt rocks as natural cosmic ray shields might inspire new rituals or behaviors towards these entities by future settlers. In

4 G. Jeffery Taylor, "Mars Crust: Made of Basalt," *Planetary Science Research Discovery*, accessed November 19, 2019, http://www.psrd.hawaii.edu/May09/Mars.Basaltic.Crust.html.

5 Melanie Whiting, "Hawaii's Role in NASA's Space Exploration Programs," NASA, May 21, 2018, https://www.nasa.gov/feature/hawaii-s-role-in-nasa-s-space-exploration-programs.

6 "NASA Descends on Icelandic Lava Field to Prepare for Mars," *Phys.org*, accessed October 23, 2021, https://phys.org/news/2019-08-nasa-descends-icelandic-lava-field.html.

7 Timothy Morton, *Humankind: Solidarity with Non-Human People* (London: Verso, 2019).

8 "MARSHA by AI SpaceFactory," *AI SpaceFactory*, accessed November 19, 2019, https://www.aispacefactory.com/marsha.

spite of the narrative appeal, this idea further implied an anthropocentric approach, as the plot remained centered on the necessities of the human experience in a future Martian context.

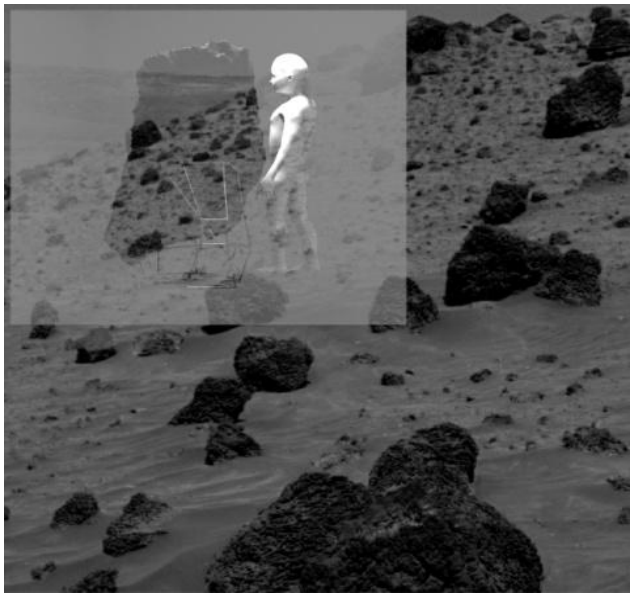

Figure 2. Mars, a petrofilial relationship? © Oscar Salguero.

BEYOND THE HUMAN

We must unhumanize our views a little, and become confident
As the rock and ocean that we were made from.
—Robinson Jeffers, "Carmel Point"[9]

As the research towards a nonhuman perspective of Mars continued, special attention was directed to earlier depictions in literature of hypothetical Martian settler accounts. A great source of inspiration came from *The Martian Chronicles*, a 1950 collection of science fiction stories by American author Ray Bradbury. The narrative centers on the emotional experiences of the first humans arriving to Mars for permanent residence after fleeing a planet Earth at the verge of nuclear war collapse. As expressed by one of the protagonists: "and somehow the mountains will never sound right to us; we'll give them new names, but the old names are there, somewhere in time . . . No matter how we touch Mars, we'll never touch it. And then we'll get mad at it, and you know what we'll do? We'll rip it up, rip the skin off, and change it to fit ourselves."[10] The emotional tone of the character, an early Martian colonizer,

9 Robinson Jeffers, "Carmel Point," *Academy of American Poets: poets.org*, accessed November 19, 2019, https://poets.org/poem/carmel-point.

10 Ray Douglas Bradbury, *The Martian Chronicles* (New York and Toronto: Bantam Books, 1990).

embodies the cosmic dilemma of the human race upon facing a sense of otherness in new celestial bodies. Do we respect the original wildness of Mars, or do we terraform it to adapt to a larger vision for the human species. The philosophical conundrum posed by the protagonist of the story inspired the following question: How difficult would it be to remove or replace the human agent from a Martian interspecies story?

EARTH = LICHEN

> One could speculate that lichens would be among the last inhabitants to succumb on a dying earth at some distant point in the future.
> —Steven L. Stephenson, *The Kingdom Fungi*[11]

While searching for examples of rock-inhabiting species, an email exchange with scientist Andreas Johnsson, PhD Research Fellow and planetary geomorphologist lecturer at the Department of Earth Sciences, University of Gothenburg (SE), pointed to the existence of lithotrophs, organisms that feed off mineral substrate and rocks as a source of energy acquisition.[12] Further inquiry led to the exploration of lichens as points of interest due to their congregation in formations such as desert basalt rocks,[13] but also given their capacity for thriving in otherwise inhospitable environments, when compared to other life forms from Earth.

Figure 3. Earth = Lichen. © Mark Cummel.

11 Steven L. Stephenson, *The Kingdom Fungi: the Biology of Mushrooms, Molds, and Lichens* (Portland: Timber Press, 2011).

12 Andreas Johnsson, email message to Oscar Salguero, June 4, 2019.

13 "The Desert's Lichen Crust on Rocks," *DesertUSA*, accessed October 23, 2021, https://www.desertusa.com/rocks-minerals/lichen.html.

Lichens are deeply fascinating. They are part algae or cyanobacteria and part fungi organisms that coexist as a perfect symbiotic system. According to Kerry Knudsen, mycological researcher and lichenologist at Prague University of Life Sciences, and Curator of lichens at the Lichen Herbarium of the University of California, Riverside (UCR), although lichens are, in terms of utility to humans, "almost totally useless,"[14] they are nevertheless "useful for the total ecological landscape."[15] As a species, lichens make up about eight percent of Earth's biomass and have been around for at least 500 million years (in fact, one of the oldest living organisms on Earth is an Arctic lichen species, Rhizocarpus geographicum, estimated to be 8,600 years old[16]). Their adaptability records are equally unparalleled. Due to their symbiotic nature, slow growth rate, and low nutrient needs, lichens have been known to survive in the most extreme environments, including deserts, the poles, and even outer space. In 2014, the International Space Station (ISS) revealed the results of a study called LIFE (Lichen and Fungi Experiment) which consisted in exposing lichen species Xanthoria elegans to outer space conditions. After 1.5 years, the species sample resulted in 71% of them being viable. The data suggests that lichens might be equipped to survive UV exposure, cosmic radiation and vacuum conditions practically unscathed.[17]

In the spirit of the thought-experiment of this developing story, I challenged Kerry Knudsen to share his ideas on the physiology of a hypothetical lichen species surviving on a Martian landscape: "first, they would be crustose… their thallus would be basically flat. Because of the loss of atmosphere and water, they would have a thick outer cortex that would be like a thick plastic. This would protect them from losing water and from extreme temperatures… They would grow on basalt at the poles where they get water vapor during polar summer when ice and dry ice evaporates. They would not have a dispersed pattern but a radial pattern from replicating by division. During polar winters, like lichens in the Arctic, they would be covered with frozen ice or dry ice. Normally lichens have cup-like structures that eject ascospores but this would probably not work on Mars because they would have a hard time finding a symbiont bacteria… But like some lichens, our imaginary species would be sterile, replicating by division (they would develop cracks and split) and in this way protect and pass on the bacteria they acquired a long time in the past."[18]

14 Kerry Knudsen and Ayana Young, "For the Wild," *For the Wild* (blog), April 24, 2019, https://forthewild.world/listen/kerry-knudsen-on-lichen-and-life-after-capitlism-116.

15 Kerry Knudsen and Ayana Young, "For the Wild."

16 "Lichens," *National Park Service. U.S. Department of the Interior*, last modified May 22, 2016, https://www.nps.gov/glac/learn/nature/lichens.htm.

17 Annette Brandt, Jean-Pierre de Vera, Silvano Onofri, and Sieglinde Ott. "Viability of the Lichen Xanthoria Elegans and Its Symbionts after 18 Months of Space Exposure and Simulated Mars Conditions on the ISS," *International Journal of Astrobiology* 14, no. 3 (2004): 411–25. https://doi.org/10.1017/S1473550414000214.

18 Kerry Kent Knudsen, email message to Oscar Salguero, November 11, 2019.

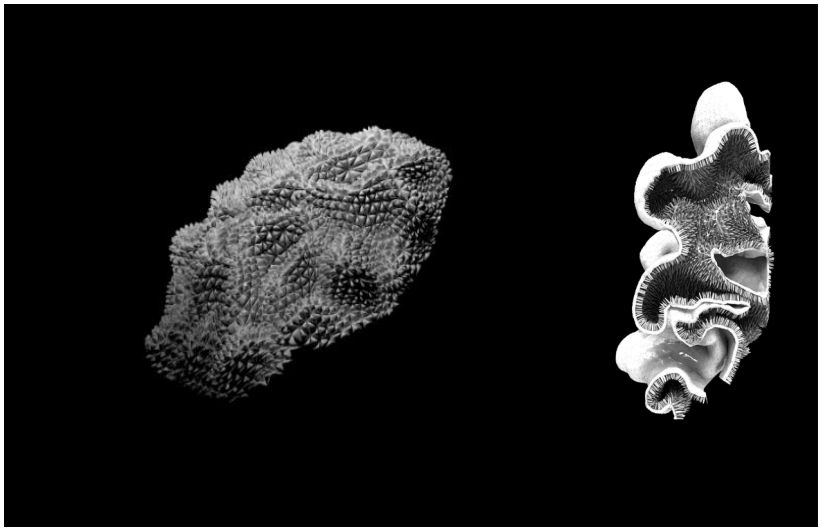

Figure 4. Speculative Martian lichens (based on Kerry Knudsen's hypothesis).
© Oscar Salguero & Zack Saunders.

THE WITNESS [BASALT ROCK + LICHEN = AN INTERPLANETARY ENCOUNTER]

> The world is not the world as manifest to humans; to think a reality beyond our thinking is not nonsense, but obligatory.
> —Graham Harman, *Object-Oriented Ontology*[19]

A rover is an unmanned motor vehicle designed to travel and document the surface of a planet or celestial body. In their short history on the Red Planet (starting with the landing of Sojourner in Mars in July 1997), they have already been the subject of numerous exchanges with popular culture and the collective imagination at large.

19 Graham Harman, *Object-Oriented Ontology: A New Theory of Everything* (London: Pelican, an imprint of Penguin Books, 2018).

Figure 5. @MarsCuriosity selfie Tweet (May 29, 2019). © NASA.

From their presence in blockbusters like *The Martian*[20] (in which Matt Damon's character is saved from losing communication with Earth by his fortuitous encounter with a long-lost Pathfinder rover), to the active Twitter accounts of Curiosity, and Mars 2020 Perseverance rovers (from which we can access a constant stream of status updates and selfies,[21] almost adopting a tone of voice and personality of their own); their influence in the promotion and extension of the human myth as an interplanetary species is undeniable.

As observing entities, rovers are equipped with a technical capacity to view the world in spectra beyond the limits of the human eye's range. One example is their "false-color" vision, which results from a composite of filters that allows them to highlight chemical compositions in the search for life signals. Although their registration of the Martian landscape is the only accessible extension of the human gaze, paradoxically, it can be inferred that the machine or computer vision of a rover is the only "true color" capture of the geography of Mars or perhaps the only objective vision of the planet's reality.

20 Robert Z. Pearlman, "The Real Mars Lander in 'the Martian:' Fact Checking the Film's NASA Probe," *Space.com*, October 2, 2015, https://www.space.com/30737-the-martian-nasa-mars-pathfinder-lander.html.

21 Curiosity Rover (@MarsCuriosity), "Just your friendly neighborhood robotic geochemist checking in with an update from the field: https://T.co/N6oUzKk8Bp..." Twitter, October 24, 2019, https://twitter.com/MarsCuriosity/status/1187455153793830913.

Figure 6. Testing Mars 2020 engineering cameras. © NASA.

Jim Bell, the lead scientist for the Pancam color imaging system on NASA's Mars Exploration Rovers (MER) program, refers to this conundrum: "we actually try to avoid the term 'true color' because nobody really knows precisely what the 'truth' is on Mars."[22] Perhaps even the moniker "Red Planet" is destined to become contested as future rovers will continue to be equipped with higher tech lens suites (covering the spectrum "from deep infrared to far UV,"[23]) and further independent intelligence.

In a 2015 *Gizmodo* article titled "Why our current missions to space could create sentient robots," science journalist and sci-fi author Annalee Newitz posits that "it's quite possible that our space robots could become the first artificial intelligences. That's because we're programming them to be as autonomous as possible."[24] Extrapolating on this thought, will rovers eventually transcend their human-assistant status and move into a territory of awareness and nonhuman selfhood? What if upon encountering a sign of organic life, a rover decided to keep the discovery purposely unregistered?

A FALSE ENCOUNTER [EVERYBODY NEEDS A ROCK]

2055. Ray, the last rover sent to Mars, has been circling around Utopia Planitia (46.7°N 117.5°E), the largest basin on the planet, in an unusual manner. Ray follows a certain instinct not previously observed in other miniature AI-enabled rovers. It hesitates, it plays with the wind, and at times it seems to truly connect with the

22 Nancy Atkinson, "True or False (Color): The Art of Extraterrestrial Photography," *Universe Today*, March 22, 2016, https://www.universetoday.com/11863/true-or-false-color-the-art-of-extraterrestrial-photography/.

23 Peter Lipschutz, email message to Oscar Salguero, December 10, 2019.

24 Annalee Newitz, "Why Our Current Missions to Space Could Create Sentient Robots," last modified December 16, 2015, https://io9.gizmodo.com/why-our-current-missions-to-space-could-create-sentient-5931389).

moment it occupies. On 424 sol day, Ray found a special rock. A full hour went by with no official recording of the event. Mass spectrometer off. Pure blank nondata. If it's any indication, Ray had recently accessed the files of a children's book called *Everybody Needs a Rock* by Byrd Baylor, a human of the 20th century. Among a set of 10 rules for finding the perfect rock, Ray's metadata highlighted, on page 2, the following passage: "If somebody says, 'What's so special about that rock?' don't even tell them. Nobody is supposed to know what's special about another person's rock."[25]

CONCLUSION

"A False Encounter" is an ode to the mystery of a chance encounter of worlds, an invitation into a silent contemplation of realities that escape our perception and whose agents are nonetheless as fascinating as ourselves. After all, perhaps beauty lies in the eye of the nonhuman… ⊡

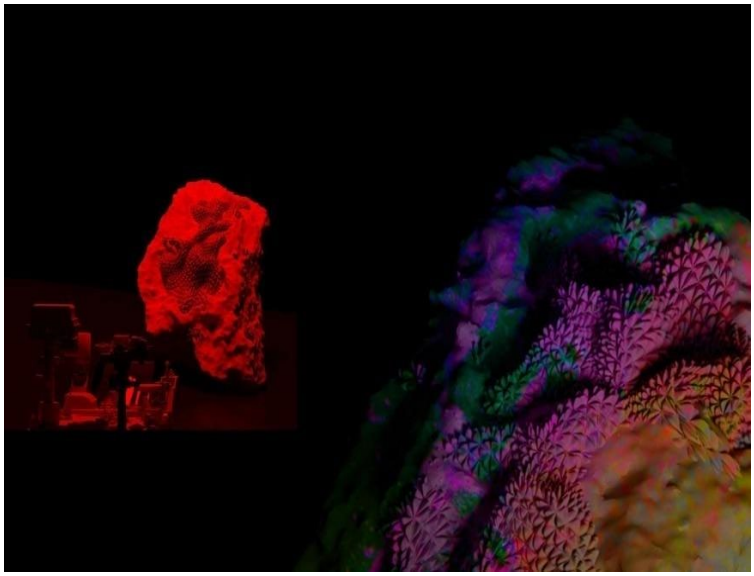

Figure 7. A False Encounter. © Oscar Salguero and Zack Saunders.

25 Byrd Baylor, *Everybody Needs a Rock* (New York: Macmillan, 1974).

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