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Imagining Lunar Denizens: Collaborative Creation of a Space Future

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Abstract

50 years after the first moon landings, mid-20th century narratives of frontierism and progress, amongst others, continue shaping popular conceptions of outer space. With the return of humans to the moon through NASA's Artemis mission, the joint Chinese-Russian International Lunar Research Station, and ideas of a Moon Village spawned by the ESA as backdrop, it is necessary to examine what a human presence on the moon actually means beyond a spaceflight's engineering paradigm and a monocultural depiction of space futures. Humanity's expansion to other celestial bodies prompts us to explore what Earthers' rules, habits, and practices we will carry with us. It is also an opportunity to reevaluate the relations we entertain with exploration, colonisation, the cosmos, and ultimately each other. How do we preserve or manufacture a sense of community? An ethic of mutualism? A sense of belonging? Will we inform a multicultural enclave? Or will we participate in the co-production of a new culture? This paper describes *Lunar Denizens* — a three-part series of collective world-building exercises and design sprints focussed on imagining Mare Nectaris, a permanent moon dwelling, organised by the New School Policy and Design for Outer Space (NSPDOS), the Santa Fe Institute's InterPlanetary Project, and Very Very Far Away (VVFA) for the 17th Venice Architecture Biennale — and explores the ambitions, potentials, and importance of such events to provide insights and help us shape the culture informing our space futures. Interplanetary success will require the mutual and dynamic interrelation of scientific and engineering expertise with human cultural and sociological factors. Using speculative thinking and fiction to help shape new understandings of the "real world", *Lunar Denizens* invited small and eclectic groups of scientists, artists, architects, and designers (and the enthusiastic audience) to imagine the arrival, the day to day, and departure from Mare Nectaris: What rituals? What routines and objects? What built environments? What paraphernalia? What social organisations do we imagine shaping the character of this fictional settlement? The speculative nature of *Lunar Denizens* also generated opportunities to examine contemporary Earth-related issues at a different scale and with a different perspective, and shape new conversations with potential to create new insights on our contemporary condition; addressing our current attitudes and prejudices to propose alternatives anchored in a diverse reality.

Keywords: Speculative Design, Lunar Habitation

1. Introduction

In light of the International Aeronautical Congress's consideration of "Space for All," we three propose that social engineering and policy design depend upon two modes of human thought: a reflection on our historical past and speculation about our future. The *Lunar Denizens* series virtually convened a diverse group of perspectives to attempt to address large challenges we face now that we are at the precipice of becoming an Interplanetary species, by first considering a thriving society on the Moon.

The *Lunar Denizens* series was composed of three distinct conversations, each conceived as design sprints,

and each were held virtually over Zoom, now archived on YouTube. The series was organised for the Italian Pavilion of the 17th Annual Venice Architecture Biennale, specifically in the Biennale's first-ever virtual space: CityX Venice. The sprints were conceived of and facilitated by Sitraka Rakotoniaina of Very Very Far Away (VVFA), and intended to continue speculative design work that began in a prior event, *Human Considerations: Speculations on Lunar Habitation*, also for CityX Venice, which he facilitated. The Santa Fe Institute's Interplanetary Project was approached during the design of the *Lunar Denizens* series and began contributing shortly after its inception. Their vision of combining the rigours of the best scientific methods with the playful and open exploration of experimental artistic practices was a natural fit for the

necessarily-speculative approach that the series required.

These events were meant to engage with the Biennale's central theme: the question "How will we live together?". This question invited contributors to let go of the present and grant themselves some temporal distance from its seemingly intractable constraints, in order to consider future modes of communal life. And since humanity has not yet established a long-term dwelling on the moon, we thought it would be insightful to focus our attention on that proximal locale. This would also allow us to engage with a variety of thinkers who are already hard at work making that future happen. The success of interplanetary citizenship rests largely on the shoulders of those few brave souls who are willing to venture out into the austere, and homestead other planetary bodies, but the impact is widespread, including future generations in time, and those remaining back at "home base" (Earth). Obviously, meticulous engineering reigns supreme in our thoughts for that future, but life on the moon is about so much more than simply getting there. How do we ensure that those who are willing to travel to a new settlement are also willing to stay? What forms of governance can extend between planetary bodies? What built affordances can contribute to a positive lived experience there?

It is in no way novel to explore team dynamics or working routines for long-term space missions; programs like NASA's Hi-SEAS have been testing the mettle of proxy Martians for years now, with a primary focus on quality of work and quality of life. However, data derived in those sorts of analog settings come only from the interactions between rarified proto-astronauts who dream of squishing themselves into small spaces to study the effects of low gravity on varying botanical species, for instance. What about the architects behind their modest dwelling? What about the tax-payers who collectively fund their experiment? What about those who don't and won't have access to such an experience? And what about the whole of humanity? When we step back, and put our long-termism lenses on, what should we be doing now in order to accommodate highly functional groups and families on and off planet?

We have a rich history to reflect upon and draw from as we enter into this potent future phase, and given the patterns we've observed across these growing social systems of our past, we here attempt to predict needs as of yet unaccounted for. As people continue to flock to cities, new developments in urban design, architecture, and technology are transforming how we live, work, commute, eat, and learn in urban settings. The rapid rise of the Digital Age has all but reinvented our day-to-day

urban lives, forging new pathways for remote communication (as was observed during the COVID-19 pandemic, and exploited for this very event series). There's no doubt the New York, London, and Buenos Aires of today would shock city-dwellers from a century ago. What innovations and advancements can we expect a century from now, as we begin to engineer new settlements off-planet?

Cities face new obstacles every day, which require bold solutions, and as people begin to move beyond earth, challenges like population increases, housing crunches, food and water shortages, the spread of disease, and the onset of war are all problems we must prepare to face. At present, in anticipation of this future, we have a unique opportunity to redesign our practices and start with a clean slate for ethical, resource-efficient, socially equitable, and eco-conscious urban environments. The work of speculating on the human experience in other, off-planet spaces is an exercise that will allow us to also reimagine the frightening frameworks we currently occupy on Earth. The benefits are bi-directional, impacting those who remain on Earth and those venture into new, unfamiliar worlds.

Planning for such a future requires rigorous rumination from all players, including the oft sidelined artist. With the hope that a lunar settlement would remain a part of, and not a satellite to, humanity's distributed society, we invited designers, authors, architects, researchers and artists to imagine temporarily living and working on the moon. We especially hoped to deeply examine the potential emergent human cultural and political arrangements. To do this and to inspire our participants, Peter Heft of New School Policy Design for Outer Space (NSPDOS) wrote a fictional 'history of the future'. This document laid out a coarse-grained but plausible scenario for the 21st century, in which global energy and resource crises as well as technological developments collided and brought an end to the Westphalian nation-state system, which birthed a worldwide governance system called the Global Union. That Union, to address the ongoing energy needs of 22nd century Earth, decided to establish a lunar base, Mare Nectaris, for harvesting solar energy. And it was the design of that base which the participants were invited to imagine.

How does the comfortable existence on Earth inform the shape of society on Mare Nectaris, and how can life on the moon impact global culture back on Earth, once our Denizens have returned? The feedback between these two very different types of lives *should be* mutually beneficial. And so, in keeping with the transdisciplinary tendencies of our organisations and the inherently social aspects of the guiding theme, we

decided that the “Mare Nectaris Cycle” should not privilege quantitative proclivities. Instead, we would make sure to develop a framework which blended the results of science’s empirical investigations and engineering’s pragmatics with the squishy, nondenumerable aspects of life like aesthetic affection. Thus, we took advantage of architecture’s liminal status and used that affordance as an excuse to invite a panoply of thoughtful extant humans to participate.

2. Methods

2.1 Design Sprints

In effect, a design sprint, in this context, was an attempt at reifying aspects of some of the ideas explored previously. Whilst a conscious effort was made to construct local, small, and perhaps peculiar narratives, the complexity of communal living on another celestial body meant that some ideas were potentially too difficult to articulate in a simpler concrete proposal within our limited time. These design sprints were an opportunity to readdress some of these ideas, potentially breaking them into smaller components easier to manifest through more tangible implementations. However, we also kept the conversation open so as to foster opportunities for utilising our new panellists expertise to potentially inform new conversations.

2.2 Situational Mini Briefs

Lunar Denizens consisted of 3 separate events lasting from approximately an hour and half to 2 hours, each event bringing together a different set of experts, with varied backgrounds, and interests. Each conversation would then naturally build upon each of the segments explored during *Human Considerations*. As the series progressed, the conversations also benefited from the insights gleaned during the previous events.

3. Lunar Denizens

3.1 The Welcoming Party

The first event of the series, *Lunar Denizens: The Welcoming Party* invited three thinkers: Stephanie Sherman, a design director, strategist, writer, and producer working across urbanism, technology, and culture; Simone Rebaudengo, a designer and futurism; and Dr. Haym Benaroya, a mechanical and aerospace engineer. They came together to explore and imagine what happens when newcomers arrive at *Mare Nectaris*. To guide them through the task, the session was also

subdivided into 3 new segments or mini briefs, each of which were introduced by a short text describing the situation.

When The Airlock Opens introductory text read as such:

“You’ve been waiting for this moment for months, and are excited to take your first step on Mare Nectaris, after what probably was the longest journey you’ve ever experienced. Your lander has docked, you’re patiently waiting as the crew outside seems to go through safety measures. You’re looking through the window to catch a glimpse of the settlement, suddenly you hear the sound of air rushing into your cabin, the airlock opens ...”

This first segment was interested in implementing “welcoming” structures and giving some visual representation of the ambiance and atmosphere using more familiar tropes — as we come out of the airlock, do we step in a large public space resembling an airport terminal? Or are we stepping into a decontamination zone consisting of small corridors? Are the settlers welcoming you? — These were used as clues to imagine the protocols that may have had an impact on the journey itself, and even inform the type of procedures newcomers may have needed to go through before boarding the spacecraft. But they also enabled us to explore new safety protocols consisting of physical and social periods of acclimatisation.

Moving on to *A Guided Tour*; our panellists were tasked with scouting some of the facilities on *Mare Nectaris*, and exploring how these may exist in relation to the lunar landscape and environment:

“After the excitement of landing and meeting your fellow lunar denizens you are shown around the base. There is an air of familiarity, after all you still need to perform many of the same functions as on earth, and you have been thoroughly briefed on life on Mare Nectaris along with various simulated events and safety drills prior to leaving earth however there is something uncanny about experiencing the actual base, not to mention the lunar gravity having a strange effect that no terrestrial simulation can quite replicate. You are shown

the common spaces, the canteen, and shared kitchens, along with food preparation areas. The exercise and social areas, then into your accommodation, the world of work can wait for tomorrow. ”

The aim was to discuss in more detail the community’s social organisation through the type of activities and the subsequent objects that may have been specifically designed for this environment.

Finally the *First Assignments* proposed to explore key aspects of the community such as the division of labour, and the power relations between individuals. This raised questions of governance across the discussion. For instance, do we envision chores and rotas distributed amongst the settlers? Who are the essential workers? Does *Mare Nectaris* have a Mayor?

“Thankfully being on the moon has not affected your morning routine, still starting the day with a strong black coffee and light breakfast, then after what was a somewhat unusual but comfortable night’s sleep it is time to report for work, it’s important to remember that this is the purpose of you being here, it’s not not only to experience life on an extraterrestrial body and the joy of a lunar cocktail (or two) in the shade of the base’s structure. Along with your work there are additional duties that each resident on the base must perform to ensure the safe and successful day to day operation of the facility, you are given a choice of options based on your profile and the vacancies created by the last departing group. These tasks must be performed above all other duties (professional or personal) as they are key to sustaining life in the base, then it’s time to start your shift.”

3.2 Moonlife

The second event of the series, *Lunar Denizens: Moonlife*, focussed on daily rituals and cycles, but also potentials for more Moon specific activities. For this session, our panellists were: Nicholas de Monchaux, an architect and author; Alice Bucknell, a worldbuilding artist and writer; Dr. Nina Lanza, a planetary scientist, principle investigator of the ChemCam on both Curiosity and Perseverance rovers, team member of for

the Antarctic Search for Meteorites; and Ibiye Camp, an artist exploring post-colonial subjects and the built environment.

Conversely to *The Welcoming Party*, the prompts used during this event were not as much written “in character” and trying to focus on the lived experience, but consisted rather of more general descriptions and a set of open questions.

As such, *A New Dawn*’s introduction read:

“Routine and repetition form the backbone for life in Mare Nectaris. Daily rituals provide structure and reference within the facility. From personal hygiene, employment and caregiving to station maintenance, the daily cycles and processes are not only necessary for individual wellbeing, but also the collective health and safety of all settlers. In such an environment, how does one release the tensions associated with extraterrestrial life? How does the built environment take care of their human software? What other roles are required beyond the ones solving our practical needs for productivity and survival?”

Beyond the more practical and physical needs, the panellists also explored what other activities were necessary to foster human flourishing; the opportunities for recreation and hobbies, within the constraints of a lunar habitat. How can the built environment we design allow for sonic experiences like privately practising versus publicly performing musical instruments? Given the mission-driven nature of such a settlement, an interesting collective desire emerged between our panellists, which, counterintuitively, was the desire for boredom, a scheduled time for boredom.

Whilst perhaps, living on another celestial body may be akin to living in a permanent state of danger, how could safety protocols be used as tools to help shape a new kind of culture and social organisation?

“As Haym Benaroya pointed out, we are on the moon, but our bodies are always enclosed. Whether it is in the habitat, or in a space suit we’re wearing outside. Our experience of the “world” is continuously mediated through this

wearable, individual or collective habitat. How do these devices and structures designed to provide health and safety, impact and influence our relation to the landscape? Do we constantly fear the outside?"

3.3 Down to Earth

Down To Earth was the series finale, and as before, this event was interested in readdressing some of the topics explored during previous conversations, so as to build upon them. For this closing session our panellists were: Julijonas Urbonas, an artist, researcher, and founder of the Lithuania Space Agency; Charmian Griffin, a web artist, producer and art critic; Joseph Popper, a space artist and theorist; and Caitlin McShea, Interplanetary Project Director and speculator.

This was also the opportunity to explore how the existence of a lunar community affects and changes the dominant space narratives? Is it the first step for human expansion through the solar system and beyond? What Denizens' rules and practices do we take back to Earth? And do we use this opportunity to reframe our position in relation to other species and environments on Earth and beyond?

This event first explored ways and methods for shaping the built environment to provide *A Manufactured Sense Of Belonging*, then addressed the possibility of *Mare Nectaris* to be a *Gateway To A New Frontier*, and finally closed with a conversation on *Births, Deaths And The Things in Between*. As opposed to both previous events, each segment was introduced by a general set of open questions:

"The shift in scale, routine and level of freedom could be overwhelming for those used to the rhythm and ritual of the base, or it could be a welcome change, yearning for return to a familiar life once lived. Adopt the position of a resident of Mare Nectaris either before or after departure from the base. Explore the desires, wants, worries and concerns of this group. Are there systems or protocols in place from previous departees? What are the artefacts, objects or tools that help with this transition? What are the mementos or souvenirs from this one off experience?"

A Manufactured Sense Of Belonging proposed to explore the human perspective at different scales: First from the Denizen escaping Earth's atmosphere and questioning the possibility for the built environment to reflect a certain sense of nostalgia; settlers' point of view as they return to Earth, regarding their status and potential attractors that could make the return something to look forward to; then the Earth's view of the settlers and the settlements; and finally considering a planetary perspective — would spacefaring help to promote some level of planetary consciousness? And furthermore, how might such a planetary consciousness shape our approach to engineering these social systems effectively?

Gateway To a New Frontier proposed to examine *Mare Nectaris* as a political entity, a kingdom, a corporate state, or a staging ground. Or on the other hand as a transitory space, or "space Antarctica", with no ownership.

And finally *Births, Deaths And The Things in Between* proposed that perhaps the expectations of life on the Moon and our conception of the norm, should not mimic the ones we may have on Earth, but rather build new Moon life cycles and rituals, which only make sense within a lunar context — do we recycle dead bodies as a new ritual? What does a space pregnancy require? How do you introduce Earth to an Extraterrestrial being, such as a Moon-born child?

One thing that became apparent in these conversations about having lived and now left a lunar settlement was the need for adequate communication of the lived experience to those back on Earth, whether in an effort to prepare a future Denizen, or simply to communicate the seemingly incommunicable to someone who would never step foot in Mare Nectaris. So archiving the experience in a journal or in film became a primary activity in the preparation for departure, and this translation problem arose. Therefore, one unexpected possibility that came about was the Denizens' experiences translated into Moon myth by the Earthers, and the most valuable souvenir brought back was not some tangible item, as one might expect, but rather a psychological experience.

3.4 Worldbuilding Through Design

Throughout the series, our approach to *Lunar Denizens'* methods of inquiry oscillated between 2 modes of design: *design as process* and *design as medium*. As mentioned earlier, focussing on the interrelations between smaller narratives and situations has led us to imagine and use objects and artefacts, arranged into environments as the vehicles for meaning. Thus, the values of the world we are attempting to build are intrinsically embodied by their practical and physical manifestations. As such, imagining communal systems with the human experience at its centre leads to considering the built environment beyond their primary functions — from their multisensory aesthetics to their socio-cultural associations.

In this series, we attempted to explore alternatives to current space narratives, by starting with proposing a series of situations as prompts. This in turn, using the collective experience, led to discovering other potentials and positions, resulting from the associations of our panellists' eclectic perspectives. In these instances, the formulation of positive and/or negative protentions were also manifested through “designed interventions”. The attempt of imagining *things* becomes then a playful activity of juggling back and forth between extrapolating from pre-existing conditions, historical precedents, and stakeholders current motivations and attitudes, and speculating on potential preferability, either conceived in opposition to existing conditions, or as an improvement upon pre-existing *things*.

Design as process is then a mode of imagination that enables the conceptualisation of *things* in the continuation of what already exists, allowing for enhancement and anticipation, but also re-enforcing the current status quo. Whilst *Design as medium*, is a mode of imagination that allows us to probe and critique current ways of thinking to foster new possibilities, regardless of the pre-existing conditions. The combination of these modes of imagination then allowed for the framing of future aspirations and the elaboration of systems of anticipation, all at once. The worlds emerging from these interrelations did so through general characterisation rather than through the creation and enforcement of general precepts and principles.

4. Results

Speculative Design and Observations

Whilst different in content and participation, certain overlaps in themes and topics started to emerge as we progressed through the events. The following points attempts to organise, comments and observations into 3 categories: first *a grand vision*, which focuses on the overall organisational and cultural feel; then, *the parameters of togetherness*, which looked at the communal structural needs from a more practical perspective, and finally *lunar poetics* which compiles ideas about reframing our relationship to nature, in a Moon dwelling context.

The conversations were vast and complex, especially when mixed with audiences' participation and responses. As such, the following is not attempting to present an exhaustive list of items and proposals, but rather compile some excerpts of ideas and observations often made cross-events, and upon which we could potentially build and plan future events.

5. Discussion

5.1 *Things to manufacture culture and a sense of community.*

5.1.1 *Co-producing Culture*

As expected and throughout our conversations, a lot of observations addressed the ways in which Lunar specificities would affect and shape the settlement's identity and culture. It is agreed and understood that such endeavour would emerge from international collaborations, and further cultural exchanges. A key aspect was the importance for settlers to actively participate in the co-production of lunar culture; the settlement's cultural identity not only consisting of juxtaposed communities, but also defined through spatially informed exchanges.

Another key factor likely to play a critical role is the nature of the settlement's sensitivity to its initial conditions. Lunar cultures and communal organisations would differ greatly if the first capsules were established as science research facilities, military outposts, or commercial stations for resources extraction or space tourism, each adapting towards local optimality — the necessity of purposefully designing and manufacturing everything, from general habitat to air molecules, would greatly influence the foundational

communal structures; from a commune with a strong sense of hierarchy to a more egalitarian base model.

This also highlighted the importance of the built environment fostering a certain image of the community, where spaces may be thought as communal landmarks. Thus the arrival gate, for instance, potentially shaped like a dome, a big shared space to reflect a certain idea of togetherness, or organised as a series of separated capsules favouring perhaps a more utilitarian mindset — the spatial experience becomes a cultural experience.

As a modular system of capsules may be more sensible for safety and expansion, at least in a settlement's first instance, the use and creation of social media and local networks could facilitate social exchange and cohesion; which in turn may require the need for storytellers, documenting and disseminating information for cultural engagement, within and beyond the settlement.

These also led us to discuss some measures for managing human flourishing; the psychological factors that would be influenced by interpersonal tensions, the sentiment of isolation combined with cabin fever, and levels of stresses related to life and work in general, and would need addressing through moments and times, when settlers can let their head down. These measures may take advantage of lunar specificities, such as lunar nocturnality (the lunar day equates to 14 earth days as each side of the moon is exposed to the sun for 2 weeks straight at a time) which may offer week-long clubbing nights, and in general more opportunity for developing peculiar nightlife cycles, as well as variations on ball sports, making the most of a weaker gravity, which may lead to a different kind and perception of athleticism, eventually reframing human abilities and disabilities. In this way, as with all evolved forms of living, the physical constraints of the lunar environment (bi-weekly darkness and lightness, gravitational disparity, etc.) drive selection towards unexpected favourable development.

5.1.2 Family Cell, Working Groups and Extended Family

By joining the settlement, each settler becomes a member of a tight knit community whose responsibilities are intimately tied to others in order to ensure survival. This shared responsibility led to

discussions concerned with the general model of social organisation this could potentially lead to. Although the original premise of the fictional settlement, *Mare Nectaris*, intended for the workers to bring their direct family, and perhaps envisioned a series of juxtaposed family cells, the need for cooperation to survive within a harsh and hostile environment may implicitly require a level of trust and bonding beyond traditional work relationships.

One proposed idea was to imagine the whole settlement's social organisation to be based on an apprenticeship model. Where traditional family structure would change to working groups lineage, passing on skills and information, and also tools and other specialised artefacts from generation to generation. This also led to imagining the newcomers' starter kit, consisting of the basic things needed to survive on the Moon, with also the instruments needed to achieve their work. Thus leading to the creation of rituals of induction, as individuals within the group gain more seniority, more responsibilities and access to more instruments and tools. As such, these working groups may operate as extended families, nurturing all their members to be proficient within their specific line of work, until they, themselves, master the Lunar ways of living and become a role model for younger lunar generations.

5.1.3 Work, Life, Recreation

As briefly mentioned earlier the lunar day-night cycle would lead to peculiar relationships to time. This provided an opportunity to reimagine and/or completely jettison our Earth based hourly distribution, moving from traditional 8 hours "slices", to a more adequate division in this lunar setting. One active audience participant, Fred Scharmen (art and design consultant, professor, architect and author of *Space Forces: A Critical History of Life in Outer Space*) proposed in the event's chat to reschedule, rest, recreation and work into 6 hours shifts. In practice, this would lead to 6 hours of work and dedicated to community well being, 6 hours of rest, and then a 6 hours bracket, on each side of these 2 periods which would be flexible and self-prioritised. As such, one may choose extra hours of sleep, or focus on self-determined priorities. This time distribution effectively divides a 24 hours period in 4, instead of the traditional 3, and would exist within the 28 days superstructure of the lunar day-night cycle. This also

raised a few questions regarding our relationship to nocturnality, and the type of leisure and recreation that this could potentially entice, from sky and Earth gazing to gambling and clubbing.

Through discussing the foundational structure of the organisation of time on the Moon, we also discussed the management of resources, their availability and regulations. Whilst it would be preferable for these to be free and available to all, this cannot happen without a shift from a paradigm of scarcity, where all activities may be metered and centrally registered, to a paradigm of abundance; the argument being that it is already “extra” to go to the Moon in first instance, so it would only make sense to also imagine a lunar settlement in a paradigm of overproduction, so as to alleviate the need for metering individual consumption, and the potential subsequent power struggle and tensions that may arise.

5.2 *The Parameters of Togetherness*

5.2.1 *Social Dynamics and the Built Environment*

One key aspect of community building, recurrently discussed, is the role played by the built environment as an aspiration to togetherness. As such design and architecture standardisation may embody and lead to internationalism, and the elaboration of systems in the continuation of Soyuz’s APAS-75 (Adrogynous Peripheral Attach System). Whilst we may think of human proofing the habitats, as injury prevention and in general a practical need for sustaining human life, the built environment enshrined with legal obligations of health and safety, is also a vector infusing certain principles and behaviours into the community’s core culture. As such, health and safety legal requirements may also be a kind of socio-political imagination designed for settlers to follow some principles of reciprocity.

It has also been argued that the harsh and extreme Lunar environment itself may force some levels of mutuality, however the guidance provided by a code of conduct devised for health and safety reasons, may lead to a certain ethic of mutualism. This in turn, may constrain the design of standards, to systems that comply with the creation of mutualistic solutions.

On another hand, we also discussed the extreme environment as potentially a factor that may lead to

ruthless competition — especially in situations favouring the continuation of extractive practices — emphasising the narrativising role that safety measures and protocols have as artificial constructs shaping, both, the character of the group and the space within which it exists.

As a result, and conversely to sci-fi corridor tropes, the habitat might feel more like a bouncy castle, with its members gauging their radiation levels using Lunar “fitbits” which may rule/determine their access and interactions with the station’s services, activities, and other members of the community.

5.2.2 *Cultural Politics*

As spaceflight imaginaries are built upon certain technologies and resources, very much following a centralised model of governance, we can assume that this particular frame of view would also favour certain types of ideologies. Thus, spaceflight narratives fueled by scarce, centralised and unsustainable sources of energy, and envisioned in the continuation of extractive practices, may ultimately lead to competitive values and approaches to community. Whilst, perhaps, more homogeneous systems and distributed approaches to the governance of space resources would intrinsically encourage mutualism. An example of this can be observed in the heterogeneity of legal frameworks dealing with space resources, whilst spaceflight is often presented as an international collaborative effort — the diversity of positions and agreements encourages competition rather than mutualism.

Under these circumstances, then, the guaranteed potential for business for private companies, along with the need for data protection would ultimately lead to a Lunar settlement whose safety zones and protocols for businesses would effectively be the steps towards land grabbing and the establishment of corporate territories, where secrecy would be encouraged over transparency.

5.3 *Lunar Poetics*

5.3.1 *Reframing Nature*

The Lunar landscape’s otherworldliness raises interesting questions regarding our relationship to nature on Earth and beyond. As such, a popular envisioning of nature, maybe closer to curated ideas of parks and greenery than any actual definition of a

“natural” environment. Settlers may grow accustomed to what Buzz Aldrin calls a magnificent desolation, and this newly found sensibility may shape the Denizens identity in unexpected ways — similarly to how rolling hills of agricultural fields may form an understanding of nature, although curated and artificial, for someone living in the United Kingdom.

The same feeling may also lead to the design of the settlement with a certain sense of nostalgia for Earth built-in. Hence influencing and informing, the way settlers may perceive their relationship to Earth.

The differences in gravity and spatial experiences may also lead to reframing our societal construct of norms. For instance, if hopping and skipping becomes our main way of navigating the settlement’s corridors, perhaps the design and implementation of Lunar infrastructures may change what is perceived as physical abilities, and differences on Earth.

Whilst discussing human reproduction and even the possibility of pregnancy and whether or not this was physiologically possible or even desirable, we realised that potentially a shortened life expectancy could be a defining trait of the Lunarian community. Which in turn, led us to discuss the potential for new mortuary sciences and rituals, exposing bodies to the vacuum of space for speedy mummification or the recycling of human remains, which could potentially reframe the position of

the human in relation to their human community, to other species and their environment; this brings the nature of the individual into question in a profound and exciting way. And, by extension, although small, the Lunar community may have a developed planetary consciousness which encompasses a cultural understanding of the planet processes, ultimately leading to the Moon as a celestial body becoming its own political entity, similarly to the ways certain rivers and ecosystems may gain legal representations and rights.

6. Conclusion

In conclusion, the *Lunar Denizen* series was an extension of humanity’s contemplation of its place in the cosmos. This variable repetition brought together numerous perspectives in a productive multiplicity to consider the question of how we might live together on the Moon. This locale, however, should not be taken as an end but as a single step towards a greater interplanetary continuation of life ad infinitum. This “life” would retain the human, as we know it, but would also reconceive of the species in a less anthropocentric and more ecosystemically, cooperative way.

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