From Space to Stage: the Exomoon Project's Interplay of Art and Science

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Abstract

This presentation introduces the Exomoon immersive theatre project to dissect and understand its intricacies as an interdisciplinary collaboration; assessing its impact in both arts and sciences, particularly in terms of the vision it presents of humanity's future in the cosmos. Within and through the project, Exomoon's setting is used to reflect on Earth from an imagined (speculative) outside perspective. The presentation focuses on the process of creating the project, and provides an overview of its results.

Keywords

Immersive Theatre, ArtScience, Interdisciplinary collaboration, Space exploration, Public Outreach, Co-creation, Astrophysics, Storytelling

Introduction

Exomoon is an avant-garde immersive theatre experience conceptualised to explore the prospects of a human future in space. This initiative, a synergistic effort of Theater Neumarkt[1], the transdisciplinary collective SEADS[2], and the CHAMELEON[3] exoplanet and protoplanetary disk Innovative Training Network, was a paid-for theatre experience showcased over three weeks in early September, 2023 in Zurich. The production challenged audiences to reflect on possible future extraterrestrial settlements and the myriad possible versions of cultural, ethical, and intellectual heritages which could extend beyond Earth. This dynamic amalgamation was realised by designing a collaboration where astrophysicists, artists, and theatre technicians coalesced, not merely to adapt scientific research for artistic expression but to prompt scientists to reconceptualize their work within a speculative, yet palpably realistic framework.

Exomoon emerged as more than a mere artistic exploration of human existence in space; it actively engaged with contemporary human endeavours and cultural manifestations. This resulted in a theatrical experience for audiences to walk through and explore and which offered a multi-sensory encounter. Audience members were actively engaged in transforming themselves into characters as they contributed to the speculative world of the play through direct interactions with the actors and artefacts present.

Process and Methods

Mimikry

Theatre Neumarkt has run a series of three "Mimikries" so far. These are immersive, interactive and experimental theatre productions that blend artistic and thematic elements. Earlier installations of this series included themes like wellness (2020) and motherhood (2021). Pivotal for the series is that the entire theatre venue is reimagined and redesigned. The Exomoon project constitutes the latest instalment of the series, unique for welcoming audiences into a speculative and transdisciplinary arena, blending artistic expression with scientific inquiry in space research.

Exomoon

The Exomoon project is an immersive theater experience blending art and science to explore human futures in space through collaborative storytelling and interactive environments.

Location: Theater Neumarkt in Zurich, Swiss
Dates: 06/09/2023 - 19/09/2023
Run: 25 performance cycles
Team: Over 100 people contributed to the play including actors, lecture-performers, exoplanet scientists, dramaturgists and artists

Co-creation practices

The transdisciplinary collective SEADS was invited to create their first theatre piece within the experimental setting of the Mimikry series. A small group of SEADS members and theatre personnel led the collaboration and production of the piece.

In line with the methods that SEADS employ for their installation work, a co-creative and non-hierarchical philosophy was central to the process. For example, technical personnel from the theatre were offered creative agency and exoplanet researchers were confronted with ethics considerations, and challenged to think about the impact of the aesthetics from their research. These aesthetic interpretations were implemented at various stages in the play, for example to mimic star- and planet-rises on the speculative moon habitat. The technical staff of the theatre were also on stage and in character during the performances, augmenting their purely technical roles with artistic and science communicator ones. [4, 5, 6, 7, 8]

Overview of process

The project's development spanned over a year and half. The SEADS collective served as the artistic directors and organised regular meetings to foster the artistic process. Within this framework, various subteams formed, each dedicated to conceptualising specific components, such as a speculative observatory. To enrich the collaborative efforts and guarantee a diverse spectrum of ideas, the collective integrated one-on-one

interviews with its members, focusing specifically on their contributions and perspectives towards the project. This impacted the development of the stage design and resulted in a storyline book, which was expanded through role playing exercises with the dramaturgists, choreographers and performers.

The production of the project was undertaken in-house by Theater Neumarkt, in collaboration with the project's artistic leads. This collaboration was facilitated through regular brainstorming and implementation sessions, through mood boards, text generation, prototyping and pre-rehearsal sessions, all of which conducted either online, on-site or in hybrid format. Given the project's ambitious scope, which entailed transforming the entire theatre hall into multiple rooms and interactive experiences, a detailed maquette was constructed. This model was instrumental in ensuring efficient coordination and execution across the different departments.

The integration of scientific content into the project was executed in three phases. The participating astrophysicists provided their research in various formats, such as publications, academic and personal journals, and screen recordings. These materials were incorporated at different stages of the experiential journey. Subsequently, the scientists played a pivotal role in shaping the narratives. They ensured the scientific accuracy of the content by aligning it with current scientific understanding and participated in question-and-answer sessions with the performers and artistic teams. In the final phase, through collaborative role-playing and imaginative exercises, the astrophysicists were encouraged to confront new challenges and devise innovative solutions. This process prompted them to re-examine their research from a fresh perspective, thereby enriching the project's scientific depth.

Outcome

Experience

913 light years from Earth on a moon is a colony. The moon is called Moon. Moon orbits a planet. The planet is called Planet. Planet orbits a star. The star is called Star.
There is a settlement on the moon called Habitat in which 130 people live. The year is 20,531 and the people who live and research on the moon are twelfth generation descendants of those on Earth. It is unclear whether planet Earth is still inhabited by humans. Sometimes Habitat receives messages from Earth – but these have also been travelling for centuries.
Due to the extreme situation, people on the moon have to constantly adapt and overcome new challenges. They are fascinated by the cultural wealth and diversity of what was once the Earth. They want to recultivate a similar diversity of cultural practices within Habitat.
In 2023, certain people decided to take part in a lottery that promised a new life on Moon. The people who were selected in the lottery (the audience) have been cryogenically frozen for twenty thousand years. Some residents believe that now is the time to thaw these people, to diversify life in the habitat. Once set in motion, the change that some colonists long for and others fear can no longer be prevented, only shaped.
The audience’s experience of the Exomoon journey began just after thawing. Both in reality and in the story of the performance, they were tasked with finding their place in a new and strange community. How it went was determined anew every evening.

Result

The result was a rich and thought-provoking world, for the audience members who joined it for an evening, and even more for the actors, technicians, concept-creators and everyone else who was immersed in this world for months.
Throughout the course of the performance, viewers experienced moments of data overload, stories told in busy fragments, allowing viewers to piece together their own narratives. Audiences completed the story for themselves by filtering through the mass of data to focus on a certain storyline. The set became a space of uncertainty and questioning, broken up by clues or moments of insight.
Audience members encountered scientific visualisations on screens, alongside sleeping bunks and used coffee mugs. They could engage in the narrative through lenses of cultural anthropology, astrophysics, architecture, movement and more. Interspersed were moments away from the masses of information, cleansing, quiet times for reflection and return to the body.
In one area, visitors experienced a visualisation and sonification of the red and blue electromagnetic spectrum. Carrying on, viewers participated in an Exomoon ritual, and made choices with implications for their futures in the colony. Finally, they were able to enjoy a moment of “soft engagement” through communal processing, including socialising and creating (they were encouraged to draw on specific elements of the set).
Each evening featured a different guest lecturer, who ended each cycle with a brief performance lecture on a subject around which they were most knowledgeable. Thus, every journey through the experience was unique. The core experiences were wonder, uncertainty and surprise. Each new scene was unexpected, and the theatre became a space of possibility.

Future research

This presentation offers a preliminary examination of the Exomoon project and its developmental journey. We are in the process of analysing and evaluating the data accumulated both during the project's creation phase and from participant feedback. This data analysis will be used for investigating the interplay between art and science (ArtScience interactions) in the context of public outreach. Furthermore, we aim to delve into how artistic methodologies can contribute to advancing scientific inquiry, particularly within the realm of astrophysics. For example, we are looking at opportunities to improve in-silico modelling design through storytelling practices.

Presentation

The presentation will begin and end in the world of Exomoon. We will set the scene by familiarising the audience with the world we have created, inviting them in and offering a quick taste to situate themselves around the coming discussion. We will situate Exomoon in the context of other works of speculative fiction, such as the mythmaking and world-generating performances of Zadie Xa and Tai Shani, and the immersive worlds of TeamLabs.

As the project is still being analysed, this presentation would be our first opportunity to showcase our process, present our findings, and engage with a wider community of makers and thinkers to explore further directions.

The tone will be rigorous and informative, but also playful, allowing hints of performance to interrupt and enhance a more traditional presentation style. While we strive to have at least one physically present speaker, another may join virtually, allowing us to play with space and virtuality within the presentation itself.

We will return to the world of Exomoon again at the end of the talk, sharing more media (images, audio and video) from the production. Having offered the audience some tools and context to explore the creation, we will set them loose, to see what they make of it.

Figure 1. Impressions from Exomoon © Theater Neumarkt and SEADS

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SEADS (Space Ecologies Art and Design) is a transdisciplinary and cross-cultural collective of artists, scientists, engineers and activists. Its members come from all corners of the world. SEADS is actively engaged in deconstructing dominant paradigms about the future and develops alternative models through a combination of critical inquiry and hands-on experimentation.

Theater Neumarkt in Zurich is a pivotal institution in contemporary European theatre, known for its avant-garde and experimental productions. It plays a crucial role in shaping modern theatre, fostering innovative narratives and unconventional techniques. The theatre's diverse and interdisciplinary programming extends beyond traditional boundaries, engaging with current artistic and social discourses.

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Pieter Steyaert, a co-founder of SEADS and an innovative artist-researcher, is currently advancing his PhD studies at the University of Antwerp and Copenhagen. He is a member of CHAMELEON, an exoplanet Innovative Training Network (ITN) where he integrates artistic approaches with the scientific research of the network.

Mary Pedicini, an American artist and sculptor based in London, creates immersive stories through writing, sculpture, sound, and video. Influenced by mythology and science fiction, her work, exhibited in the US, UK, and China, delves into non-human perspectives. She holds a BA from Dartmouth College and an MA in Sculpture from the Royal College of Art.

Ulrike Kuchner, an astrophysicist and artist, works as a postdoctoral researcher at the University of Nottingham, UK. Blending her backgrounds in Astrophysics and Fine Arts, her work focuses on galaxy formation and explores themes like humanity and data imperfections. She is actively involved in the ArtScience community as an artist, mentor, and curator.

The three authors were part of the artistic directors of the Exomoon theater project and are members of SEADS.