DISSERTATION REVIEW

Hereby I submit my review of the doctoral thesis of the the doctoral candidate **Foteini Kolaiti** (***18.04.1990**) entitled *"3D Printed Sanitary Hardware for Speculative Needs: Functional Fictions of Minimized Water Waste in a Sustainable Martian Bathroom"* in the field of Fine Arts and Art Conservation, conducted at the Eugeniusz Geppert Academy of Art and Design in Wrocław and supervised by **Dr habil. Dominika Sobolewska**.

Foteini's chosen narrative accompanying her research thesis offers a smart and challenging reflection on what can be called post-futuristic visions of near-term space colonization, with a particular focus on the harsh natural conditions of Mars's dead ecosystem. By directly zooming in on one of the often overlooked and unglamorous aspects of life-support infrastructure—such as human toilet systems within a speculative Martian colonization scenario—Foteini constructs a compelling non-direct critical commentary on Earthly ecological challenges. These include waste management under conditions of increasingly severe scarcity of vital resources, particularly water and energy. In response to these identified problems, Foteini develops a constructive proposal in the technical realm, emerging from an intelligent design approach to robotic additive manufacturing.

Her project unfolds as a fascinating journey across multiple disciplines. The accompanying design and technological explorations demonstrate Foteini's outstanding ability in interdisciplinary state-of-the-art analysis, alongside a rigorous and inventive approach to research methodologies. Throughout the thesis, the development of both the theoretical and the technical parts can be clearly traced, culminating in functional prototypes of ceramic vessels designed for the efficient reception and incineration of biowaste.

Particularly noteworthy is Foteini's ambition to ground her argument in Martian geology. Through the analysis of space-science research on the Red Planet's natural resources, she proposes a speculative material system for 3D printing based on locally sourced regolith. While some aspects of the methodology and argumentation may lack full scientific resolution or realism, they function effectively as conceptual tools, demonstrating how design can be used as a method for addressing existential problems through speculative and critical practice.

Having carefully reviewed the dissertation, its conceptual framework and realization, together with the accompanying creative work, I conclude that the candidate fulfills the academic and artistic requirements. I therefore recommend that Foteini Kolaiti be awarded the academic Ph.D. degree in the field of art, within the discipline of fine arts and art conservation.

Moreover, given the outstanding quality and substantial scope of work Foteini Kolaiti produced during her doctoral studies, I recommend that she be nominated for an award of honorable distinction.

Sincerely,

Dr. Vasily Sitnikov
Stockholm, 2025-01-19