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Space Architecture: technical aspects, design, engineering, concepts and mission planning (1)

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SOCIAL-SPACE ANALOGS: EXPLORING THE EMERGING ISSUES OF INTERPLANETARY
SETTLEMENT**Abstract**

Emerging efforts toward permanent human settlements in space introduce a wide range of issues that are beginning to strain our current capacity to govern the course of off-world development. Concurrent with the technical problems typically associated with long range human spaceflight, settlement efforts are also giving rise to legal, political, cultural, economic and social challenges that are beginning to make space issues relevant to a wider range of stakeholders. In the past, technical and social issues associated with space activity were relegated to separate domains, but as settlement efforts progress, these issues are proving to be closely interrelated. They should be treated holistically as not only a monumental technical design challenge, but also a social project of an unprecedented scale. While many methods exist to help actors assess technical design architectures, the international community lacks a meaningful context within which to explore the emerging soft, “social-space” issues that settlement raises such as the potential consequences of altering legal frameworks, the effect of governance design on human behavior, and many broader economic, social and cultural issues. The international community would benefit from a high-profile, participatory forum to bring together and actively engage key groups that are becoming increasingly important to the process of settlement, but are presently under-represented within the space sector. Some of these actors include small but emerging space nations, the citizen-science community, the social sciences, humanities and arts disciplines, the venture capital and entrepreneur communities, interest groups and, most importantly, the public at large. Space analogs provide a potentially useful environment for exploring these emerging issues. Current analogs are, however, designed to mimic space agency exploration architectures and culture, but could be easily adapted to simulate the more open selection criteria, non-scientific focus and population growth of a settlement mission. Adapting current analog designs to better evaluate social issues could generate valuable insights at the interface of theory and practice through collaboration and open access to research, allowing stakeholders across all sectors to better align incentives for the equitable development of outer space. This paper proposes a design template for a low cost international, interdisciplinary and intercultural space analog network that can enable a wider range of stakeholders to begin thinking about solutions to the complex problems posed by off-world human settlement.