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Abstract

When museums design exhibitions, they create room for experiences that allow the public to engage with knowledge about themselves and the world they live in. However, which publics do they serve? Embedded within the design of exhibitions are values and practices, which may hinder the inclusion of some of the users they are set to serve. This thesis sets out to understand and address this challenge within a specific frame: planetaria and the topics of astrophysics, space technology and planetary science. Astrophysics is viewed as a gateway to science, due to its ability to create awe. However, in the culture of astrophysics there is a persistent degree of gender imbalance. Thus, this thesis asks if this gender bias becomes unintentionally reproduced in the exhibitions on astrophysics, space technology and planetary science? If so, how can we design exhibitions and present astrophysics in a way that are more inclusive to a greater diversity of users? The retrospective part of this thesis focuses in on planetaria and planetaria exhibitions. Paper 1, 'Planetariums between experience and enlightenment,' finds that Scandinavian planetarium professionals sees enlightenment and experience as being complementary in the planetaria's dome programs. This finding show the potentials planetaria hold to fully embrace the experiential, aesthetic and affective aspects of astrophysics. Paper 2, 'The implied visitor in a planetarium exhibition' focuses on the Planetarium in Copenhagen, DK, and dominant discourse within their exhibition Space Mission. It finds astrophysics presented as technical, fact based, focussed on individual performances, and that the content is organised through game-like and competitive tasks. We argue that this focus and organisation are characteristics associated with masculinity, and therefore prompt a gendered implied visitor. Consequently, the gendered science of astrophysics gave rise to a gendered exhibition. The objective of prospective part of the thesis is to address this issue. Through my research, I have explored the potentials in operationalising postmodern feminism in exhibition design by linking theory with practice. In collaboration with the Planetarium in Copenhagen, I took an active part in co-creating the exhibition Made in Space. Through the iterative process of a design-based research method, I have collaborated with planetarium professionals, designers and users to experiment with how to design more inclusive experiences. Through this process I formulated design conjectures, or design assumptions, of how to best approach the topic of astrophysics, so that it becomes more inclusive for those who prior to this, have not felt capable of or interested in engaging with the abstract knowledge of astrophysics. These design conjectures are based in theory, qualified and reformulated through users collaboration, and embodied in the final design of the exhibition. The development and implications of the design conjectures and focus on operationalising postmodern feminism are discussed in paper 3, 'We are part of the universe, the universe is part of us': Transforming the astrophysics in the Planetarium' and paper 4, 'Made in space: Operationalising postmodern feminism in exhibition design.' In chapter 5, the interactions with and dialogues between the actual users of the new exhibitions were analysed, in order to establish whether the embodied design conjectures lead to the intended meaning-making and outcomes. This final analysis also acts as the backdrop for the final theory development and formulations of design framework. This framework includes the three general design guidelines for designing more inclusive exhibitions. These are: linking or connecting the concrete (e.g. the users body) and the abstract (e.g. the universe) enables the users to, and makes them want to, engage with abstract knowledge; creating shared experiences prompts debate and discussion on complex subjects, which enables joint meaning making; and providing room for open-ended questions in an immersive experience allows visitors to approach abstract knowledge in

imaginative and emotional ways. Finally, this thesis presents in paper 6, ‘Museums beyond neutrality’ an outlook both for practice and future research, in how museums and out-of-school science institutions can address the challenges facing the museum world and our society at large, by increasing their relevance and inclusiveness to the public.