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The Art and 'Science' of Opera: Composing, Staging & Designing New Forms of Interactive Theatrical Performance

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***Abstract*— New technologies, such as Virtual Reality (VR), Robotics and Artificial Intelligence (AI) are steadily having an impact upon the world of opera. The evolving use of performance-based software such as Ableton Live and Max/MSP has created new and exciting compositional techniques that intertwine theatrical and musical performance. This poster presents some initial work on the development of an opera using such technologies that is being composed by Kallionpää and Chamberlain.**

I. BEGINNINGS

Opera as an art form is interesting because it is both musical and theatrical, and as such it is an ideal new-media research platform that can allow researchers to develop new technologies and interactional techniques that at a high-level explore the interplay between audience, performance, composition and staging. In many respects opera lends itself to being explored though methods developed in Participatory Design, Human-Computer Interaction and Computer-Supported Cooperative Work. We offer a brief insight into some of the initial work and discussions that have started to emerge in regard to the development of an opera called '*Spirits of the Land, Lake and Sea'*, which aims to explore the use of Virtual Reality/Mixed Reality, non-linear performance and narratives, autonomous compositional techniques and mulit-sited/distributed performance.

II. THE OPERA

In this section we quickly discuss our vision for the opera, which is currently in its early phases, we briefly discuss three constituent parts of the opera that will be of interest to the conference audience. '*Spirits of the Land, Lake and Sea'* is envisaged as being a participatory experience. Communities in rural Finland and the UK will form the core inspiration for the narrative of the performance, which will be based on their experiences of living with the land, lakes and sea. In past projects we have used participatory approaches to great effect, as they engender the involvement of the community, which lead to a sense of ownership and a greater commitment to, and involvement in the project [1].

Virtual and Mixed Reality – We intend use VR and Mixed Reality in order to share different environments that will consist of different audio environments and differing VR experiences relating to the different sites where the opera is performed. Mixed Reality techniques will bring the virtual and physical together by the blending of audio, location and performance into a narrative structure.

Non-Linear Narratives & Performance – Developing non-linear compositional and performance techniques is a key area exploration. Tools such as Ableton live mean that non-linear performance and 'triggering' is possible, however the integration of computational performance and acoustic instruments is more complex – relating this to the narrative of the opera will be challenging, using modular compositional approaches may offer a solution.

Autonomous Composition & Streamed Content – We aim to use compositional techniques that will offer us the opportunity to engage with, understand and develop a theoretical framework for composing and performing with autonomous music. As part of the opera we aim to build on our existing research in this area [2] and develop the integration of streamed and sonified content [3] relating to the sites explored.

III. CONCLUSION

Opera is an intriguing space to work when one wants to explore the design and development of new technologies that might impact up the composition, performance and staging of such work. Working in such spaces are complex, but there is value in understanding the way that this art form can offer exciting and new possibilities to further understand the way that new technologies relating to autonomous systems for compositional practice, Virtual Reality spaces for performing and non-linear narrative/performance structures can be developed and applied in the real world.

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