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LABS ID: 4247 Brooks, Anthony "SOUNDSCAPES: THE EVOLUTION OF A CONCEPT, APPARATUS AND METHOD WHERE LUDIC ENGAGEMENT IN VIRTUAL INTERACTIVE SPACE IS A SUPPLEMENTAL TOOL FOR THERAPEUTIC MOTIVATION." PhD , Sunderland, UK, 2011

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Keywords: Empowered Creative Expression; Personalised Interactive Installations; Supplementing Traditional (Re)habilitation Intervention; Sensors; Societal Impact of Art + Science + Technology; Human WellBeing and Life Quality

[Link to Full Thesis](#), 47 + front/rear matter + published papers + appendixes pages, written in English , copyright Anthony Brooks

Abstract: This research explores sensor-based interactive systems to determine requirements for an untraditional tool to support therapeutic intervention and learning. Rather than concentrating on a specific physical disability, focus is on a means to stimulate a participant's existing ability to articulate creatively and playfully. Through motivating interactions via empowering unfettered gesture control of responsive digital multimedia in recreational activities, e.g. video gaming, music making, painting, and robotics; a 'whole-person benefit' - including impairment - is targeted.

A bespoke infrared sensor-based system was the vehicle for the investigations. Examined variables include (a) participants across wide age ranges and spectrum of ability including profound multiple disabilities (PMD), cerebral palsy (CP), acquired brain injury (ABI), and typically developing (TD); (b) different test locations; and (c) contrasting sensor-based apparatus.

End-user access, inclusion, and participation in the 'recreation-as- training/learning' activities were augmented through using divergent mediums adapted to the participant's profile. Gain in concentration, eye-to-hand contact and other self/social skills were amongst the reported PMD and CP benefits. Potentials within ABI were also positively evaluated, especially balance, body dynamics, and independence training. Despite the brevity of the study, the use of video games in various hospital contexts was also positive.

Results, and the research overall, signify the promise from using unencumbered gesture control of multimedia in this context. Benefits from regular use are hypothesized ranging from specific healthcare intervention, across various training/learning situations, to generic life quality. External expert evaluations substantiate these claims.

Despite the positive evaluations, limitations were identified in all the tested apparatus. This supported the determining of the requirements towards an optimal system solution. Thus, irrespective of the resultant patented product, it is concluded that a need still exists for an improved turnkey solution.

SoundScapes thus evolved from being product-centred into an open research platform upon which further ongoing multi/inter-disciplinary explorations are conducted.

Department: Faculty of Arts, Design and Media , Sunderland, UK

Advisor(s): Phil Ellis (now deceased)

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