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Distorted constellations: interdisciplinary perspectives on understanding reality and the self

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Augmented reality as cognitive science experiment

Visual Snow is a neurological condition that is experienced as an 'augmented' reality of auras, glowing lines, depression, anxiety and depersonalisation (Solly et al. 2021). Whilst Visual Snow produces a collection of different symptoms, it is clinically recognised (Puledda et al. 2020). A commonly experienced visual symptom is described as the 'persistent effect of television "snow"', and was first described in the literature in 1995 (Liu et al. 1995).

Distorted Constellations is an immersive, sensory, labyrinthine environment and playful experience of an augmented reality interpretation of artist, Nwando Ebizie's unique perception of the world[1]. The exhibit draws on Visual Snow as experienced by the artist and informed by interdisciplinary research, including cognitive science. The exhibition, public events and recent inbuilt psychological study, embrace the subjective nature of perception and highlight a role for augmented reality art experiences as cognitive science experiments in public settings.

This contributed symposia will stimulate debate and questions arising across the intersections of art, neurology, cognitive neuroscience and public participation to leverage understanding of reality and the self through interdisciplinary considerations of cognitive difference. The role of reflexive collaborative inquiry and active public participation in emergent research is considered as a way to offer socially responsible scientific tools (Chilvers & Kearnes, 2020) to the cognitive science community and society.

[1] 'Distorted Constellations' at Liberty Festival: In Conversation (Extract): https://vimeo.com/389278534

Speaker Biographies

Dr Erinma Ochu: combines neuroscience, storytelling and participation to research how extended reality experiences might foster collective reimagining of life.

Nwando Ebizie: multidisciplinary artist converging around art personas, experimental theatre, neuroscience, music and African diasporic ritualistic dance. Her unique strand of afro-futurism and research into cognition is inspired by her neurodiversity and live art participatory practice.

Dr Simon Cropper: researches human sensation and individual differences in perception, including colour perception, the nature of hallucination and the role personality plays in what we see.

Dr Franscesca Puledda: headache specialist whose PhD focused on understanding the neurophysiology of Visual Snow. Core interests are the pathophysiology of migraine, comorbidities, neuroimaging, neuromodulation and the neurophysiology of primary headache disorders.

Professor Sophie Scott: cognitive neuroscientist whose research is focused on the neural basis of vocal communication - how our brains process the information in speech and voices, and how our brains control the production of our voice.

Talks
Opening talks: Contextualising artistic expression & lived experience within cognitive neuroscience

Nwando Ezibie[1], Sophie Scott[2]

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[2]Speech Communication Lab, Institute of Cognitive Neuroscience, UCL, UK

Constellations are a way for the artist to understand herself and how she connects to reality. These talks introduce the exhibit, Distorted Constellations, as an alternate reality and research playground where audiences enter a mythic interpretation of Visual Snow using immersive technologies, inspired by the neuroscience of perception and contextualised in artistic expression that draws on African rituals. By placing these art-science talks in constellation, speakers will tease out the questions the exhibit asks of society and cognitive neuroscience. This includes, but is not limited to, acceptance of human differences, neurodivergence and building empathetic relationships.

Title: Please do not adjust your sets

Simon Cropper
Complex Human Data Hub, Melbourne School of Psychological Sciences, Victoria, Australia

From the moment we are born, we search for meaning in the world. This process is unique, as is the version of reality we create. Distorted Constellations is an externalisation of the world of an artist living with Visual Snow. We wanted to know how much of this world connected to that of others and we devised a psychological study to ask audiences experiencing the exhibition at The Science Gallery, Melbourne, Australia[2]. We asked how Nwando's experience of the world compared to their own. Audiences are currently able to contribute to this growing body of research by participating in the survey (via QR code) where they were asked for their view of the world before and after experiencing the exhibit. Drawing on insights and reflections from designing and delivering the study, this talk will outline how lived experience of visual snow, artistic exhibition and psychological science can combine to inform study design. The design considerations, methodological challenges and innovations that arose in the development of this study will be shared, alongside early scientific insights.

Title: A Distorted Reality: neurological perspectives and current understandings of Visual Snow

Franscesca Puledda
Headache Group, Institute of Psychiatry, Kings College, UK

Visual Snow Syndrome is characterised by chronic and persistent visual disturbances that manifest across the visual field. A key breakthrough came in classifying the condition through patient descriptions of their symptoms.

This talk outlines how Visual Snow is distinguished from other disorders, the range of symptoms caused by the brain, e.g. photophobia which manifests as difficulty seeing at night. Knowledge about Visual Snow's neurology and how the brain's misinterpretation of signals from the eye manifest to patients. The talk will highlight key scientific tools, surveys, neuroimaging, lumbar puncture, genetic studies, brain perfusion and neuromodulation to gain insights into the biological mechanisms behind the condition.

[2] https://melbourne.sciencegallery.com/mental-exhibits/distorted-constellations

In tandem, the active nature of Visual Snow patients online, in groups, helps progress Visual Snow research perspectives further to build a common understanding and phenotype of Visual Snow.

Facilitation Discussion: The value of immersive experiences and exhibition as public laboratory

Erinma Ochu
iSchool, Manchester Metropolitan University, UK

This session will interconnect the talks to research into immersion spanning, theatre studies, art, cultural studies and extended reality experiences (Reason & Lindelof 2020; Dewey 1980; Mercer, 2015; Rose, 2018). Questions and prompts will invite interdisciplinary debate linking the understanding of reality and the self to the value of lived experience and public participation in shaping research, scientific tools and an inclusive society. The implications for socially responsible and inclusive cognitive science research, will be considered.

Acknowledgements

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