

Neurodiversity in the Sensorial City

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Autistic people are often hypersensitive to sensory constructions of space. When confronted with unexpected, new or multisensory information this hypersensitivity often causes extreme distress.

Autistic people face exclusion from public life due to the design of the urban realm and public space of which the sensory and auditory qualities are not considered. Can cities be sensorially and acoustically accessible to autistic or otherwise neurodivergent people?

A research methodology is presented which provides a critical opportunity for landscape architects and urban designers to work with, learn from and design for autistic people by removing acoustic and sensorial barriers to the urban environment. The proposed methodology is comprised of ethnographic field recordings and embodied kinesthetic evaluations of urban space, collected through sensory walks and interviews, as well as sound mapping studies and field recordings. This process is informed by Lawrence and Anna Halprin's work in the RSVP Cycles and Taking Part collaborative workshops which stressed citizen participation, and which serve as a model for an exploratory, sensorial analysis of the urban environment. The resultant ethnographic materials constitute a new inventory of the city by representing autistic and neurodivergent ways of sensing, hearing and knowing the urban environment.

Introduction

Landscape architects and urban designers are tasked with the critical responsibility to design inclusive and accessible environments for all users, including those with physical, sensory, developmental or cognitive disabilities. Since 1990, in the United States, the *Americans with Disabilities Act* standards for accessible design has required that the built environment meet the

needs of the majority of those with physical disabilities and/or people who use mobility devices.

More recently, Universal Design has expanded the understanding of accessibility and inclusivity. The autistic and neurodivergent community is one of many underserved disabled communities whose needs are not addressed in ADA standards or in Universal Design.

Autism and Neurodivergence

The term neurodivergent describes someone whose neurocognitive functioning does not align with existing social norms. Autism Spectrum Disorder (ASD) is a developmental disorder and, within the neurodivergent and “Actually Autistic” communities, is considered one of many neurological variations. Occurring in both children and adults throughout the world, it may be more common than originally thought. While the medical community does not know why the occurrence rates of autism in both children and adults are increasing, many researchers confirm that greater awareness, improved case identification and changes in the age of diagnosis, as well as changing diagnostic factors have a significant impact on the occurrence rate.¹

Hypersensitivity to sound is one of the most common sensory processing dysfunctions experienced by autistic people.² In addition to difficulties with social interaction, communication challenges, and engaging in repetitive behaviours, sensory processing disorder is a common symptom of ASD. Recent studies have revealed that autistic people, both adults and children, may share a similar dysfunction in the part of the brain that regulates perception and the integration of complex sounds.³ Within the sensory world of cities, sound may be the most pervasive and impactful sensation for autistic people.

Currently, there is no standard set of design guidelines that addresses the design of the public commons or urban space to accommodate the needs of autistic people. In 2015, Magda Mostafa created the Autism ASPECTSS™ Design Index⁴ which establishes a design framework for architects

that seeks to create a standardised treatment of interior space. While the Autism ASPECTSS™ Design Index organises an evidence-based framework for interior spaces, these practices have not been applied in the landscape. The current state of neurodivergent landscape architecture research is focused on private outdoor places for children, such as small-scale horticulture therapy gardens in private healthcare settings, niche residential design and private educational play spaces. While architects and landscape architects have started to understand how autistic children experience and respond to the constructed environment, urban design has not been analysed in order to design places that are sensorially and acoustically accessible to autistic or otherwise neurodivergent people.

Research Proposal – Hidden Geographies

Hidden Geographies is a research project proposal that invites autistic or otherwise neurodivergent people to explore the visual, spatial and acoustic qualities of public space via a community-based participatory research process. Autistic people are particularly well-suited to participate in such a research project, and evidence suggests that their inclusion is required for more accurate representation.

In *Hidden Geographies*, autistic people will explore, via an embodied and sensorial ethnography, the visual, spatial and sonic qualities of public space. *Hidden Geographies* invites neurotypical designers to enter into the autistic way of knowing, perceiving and embodying place – entering into the hidden geographies of sensation. Designing this ethnographic study to include the body of the researcher and researched as part of the process of inquiry and data collection affords a ‘greater phenomenological sensibility to ethnography’.⁵ These hidden geographies provide critical information for developing new ways to envision urban design. The resultant ethnographic materials constitute a new inventory of the city – representing autistic and neurodivergent ways of knowing and being in the urban environment.

The methods of this proposed community-based ethnographic study are rooted in interviews, field recordings, and sensory and sound mapping. Field recording allows the participants to directly capture acoustic phenomena; sounds that are pleasant or compelling, intriguing and melodic, or frightening and overwhelming. Individual field recordings provide a direct representation of moving through linear time within a site. Visual analysis of sound files offers a new way of conceptualising the landscape and experience of site (Fig.1). Spatialising the field recordings and particular points of sensation (into a series of sound maps), combined with interviews, will lend designers insight as to where we can more closely explore the composition of urban design elements that have caused a sensory reaction.

Fig.1. Visual assessment of field recording with Sonic Visualiser software conducted in May 2019 in Center City Philadelphia. Images include a wav file with spectrum visualisation (showing frequencies along the x axis), spectrogram (visualising the amplitude across a range of frequencies including both background noise and equalisation), a melodic range spectrogram (illustrating meaningful acoustic events), and a peak frequency spectrogram (showing the material's frequency content).

This process is inspired by the geographic research field that uses the body as a research tool, in order to more deeply know and engage with place.⁶ Human geography teaches us how a walk translates into an embodied engagement: '[t]o walk through a place is to become involved in that place with sight, hearing, touch, smell ... proprioception, and even taste'.⁷ This process is additionally informed by Lawrence and Anna Halprin's work. Their RSVP Cycles and Taking Part collaborative workshops *Experiments in Environment* stressed citizen participation and provide a useful model for an exploratory, sensorial analysis of the urban environment.⁸

Image: Author conducting a field recording in Center City, Philadelphia, in May 2019.

Conclusion

The primary goal of this research project is to recognise and improve the lived experience and clinical outcomes of autistic people; however, as an ethnographic study of autistic people's experience in the city this project provides a significant opportunity to share autistic stories and experiences across a broad field of scholarship. Not only will we serve the physical, sensory and cognitive needs of autistic people, but we will also garner acceptance, accommodation and advocacy for autistic people in the built environment. Additionally, this project has the potential to shift disability discourse within the design professions from the medical model to social model, and work to build a world that is accommodating to all abilities.

By explicitly designing for autism in public space, we invite autistic people to engage more fully in our community and lessen the social oppression facing autistic people, based in stigma and fear. Landscape architects can challenge the prevailing social norms surrounding disability by removing social and physical barriers to full social inclusion. Working to remove barriers to public space, and designing for all experiences, landscape architects advocate for the recognition of humanity and equality in all of our community members.

¹ E.T. Parner, D.E. Schendel, and P. Thorsen, 'Autism Prevalence Trends Over Time in Denmark: Changes in Prevalence and Age at Diagnosis', *Archives of Pediatrics and Adolescent Medicine*, vol. 162, no. 12, 2008, pp. 1150-1156.

² E. Gomes, et al., 'Auditory Hypersensitivity in Children and Teenagers with Autistic Spectrum Disorder', *Arquivos de Neuro-psiquiatria*, vol. 62, no. 3b, 2004, pp. 797-801.

³ N. Boddaert, 'Perception of Complex Sounds in Autism: Abnormal Auditory Cortical Processing in Children', *American Journal of Psychiatry*, vol. 161, no. 11, 2004, pp. 2117-2120.

⁴ M. Mostafa, 'Architecture for Autism: Built Environment Performance in Accordance to the Autism ASPECTSS™ Design Index', *Design Principles and Practices*, vol. 8 no. 1, 2015, pp. 55-71.

⁵ M. Kusenbach, 'Street Phenomenology: The Go-Along as Ethnographic Research Tool', *Ethnography* vol. 4, no. 3, 2003, pp. 455-485.

⁶ R. Longhurst, E. Ho and L. Johnston, L 'Using the Body as an Instrument of Research: Kimchi and Pavlova', *Area*, vol. 40, no. 2, 2008, pp. 208–217.

⁷ P.C. Adams, 'Peripatetic imagery and peripatetic sense of place', in P.C. Adams, S. Hoelscher and K.E. Till (eds.), *Textures of Place: Exploring Humanist Geographies*, Minneapolis, University of Minneapolis Press, 2001, pp. 186-206.

⁸ L. Halprin, *The RSVP Cycles: Creative Processes in the Human Environment*, n.p. George Braziller, 1970.