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DIVERSITY OF RESPONSES AND POTENTIAL CONFLICTS IN INCLUSIVE URBAN SOUND DESIGN - PRELIMINARY RESULTS FROM INTERVIEWS IN BRIGHTON (UK)

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ABSTRACT

To encourage the inclusion of more diverse experiences and perspectives in urban sound design, the Liveable Listenable Cities Collaborative Doctoral Award attempts to use a participatory art-based approach to co-design an urban sound art installation including neurodivergent and auraldivergent collaborators.

The first stage of this project involved interviewing citizens from Brighton and nearby areas to understand their experiences of outdoor acoustic environments and the language used in describing its attributes and their own feelings. This will constitute the basis for a forthcoming participatory workshop that will use sound art and community music principles for a playful approach to conflict resolution.

Here we report the preliminary results of the analysis of 13 collaborators' interviews. These show the diversity of experiences across different collaborators as well as across different times for the same collaborator, and the potential conflicts that can thus arise. Our findings emphasize the need to respect different experiences and embrace possible conflicts in policy making. We believe participatory co-design is an important tool to increase the inclusivity in the approach of local authorities and professionals with the aim of granting a greater decisional power to citizens over design choices.

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1. INTRODUCTION

"We live in cities where things happen without warning and without our participation. It is an alien world for most people. It is little surprise that most withdraw from community involvement to enjoy their own private and limited worlds." [1]

The urban built environment has not changed much since Jane Jacobs' manifesto, and is neither inclusive nor hospitable, from a sensorial perspective, for many city dwellers [2]. Air and noise pollution are the two worst offenders to our senses of smell and hearing, as well as being the most dangerous for our health [3]. A recent article of the EEA indeed reports that "Many people don't realise noise pollution is an important problem, impacting human health, including theirs." and that it "seems to have a larger impact on indicators related to quality of life and mental health" [4]. Negative effects range from cardiovascular diseases to diabetes, sleep disturbances, hearing loss, cognitive impairments, mental health and others health outcomes [3], [5], [6], [7].

Vulnerable groups could be even more affected by noise effects and are often under-represented or completely missing in research [8],[9]. The WHO itself acknowledges that "protective standards are essentially derived from observations on the health effects of noise on 'normal' or 'average' populations. […] usually adults […] selected because of their easy availability. However, vulnerable groups of people are typically underrepresented." [10]. This point is reinforced in the WHO's Environmental Noise

Guidelines for the European Region that state "the recommended guideline values might not lead to full protection of the population, including all vulnerable groups." [3].

Two under-represented groups in acoustics and soundscape studies that were involved in this study are the aural and the neurodiverse populations (and they may overlap in some cases) [11]. Auraldiversity is a term that was introduced in 2017 [12] and that questions the "singular model of hearing at the core of the preponderance of acoustic standards and guidance" [8] and has recently gained traction in both the academic [13], [14], [15], [16], professional community [17], [18], and regulations, since Wales has included auraldiversity in its 2023-2028 soundscape plan [19].

By recruiting participants with "normal hearing", most of the research practice and policy making is ignoring the potential differences in perception deriving from sensorineural, conductive, auditory and other causes [20].

Neurodivergent people are a group for which the acoustic environment can be particularly challenging, but often they're not included in research. Some scholars have investigated or are in the process of investigating this impact [9], [21], [22], [23] as well as standardization bodies have recently published recommendations for the built environment [24].

Two examples of soundscape studies which recruited a specific auraldivergent group, that with visual impairments, were carried on in [25] with a mixed-method approach to investigate the auditory capabilities of blind people and gain insight into their experiences through interviews and in [26] where soundwalks in the city of Granada were carried out and documented the challenges of applying standardized soundscape assessment protocols and the differences in the assessment between the blind group and a non-blind group.

2. OBJECTIVES

A previous description of the Liveable Listenable Cities project can be found in [27]. Since then, we felt a need to re-dimension the role of interactive and adaptive urban sound composition strategies and emphasize instead the decision making process applied throughout the urban sound design process to maximize its inclusivity and move away from the "tyranny of the majority" (Shapiro in [28, p. 346]). As such, a three-step process consisting of interviews, focus groups and co-design of an urban sound art installation was devised.

The semi-structured interview stage serves the purpose of gathering details of the lived experiences about outdoor acoustic environments with the goal of identifying evident conflicts in needs and preferences on which to base the initial discussions in the focus groups and co-design activity, the sounds and noises that were more commonly enjoyed or disliked, and the language used to describe feelings and acoustic environments attributes. Kim Foale for example arguments extensively the reasons to frame their research on soundscape within natural language to "allow people to report areas that are important to them, rather than presuming which areas people care about" [29]. A similar point is raised in [30] for qualitative research in general, that should prioritize giving participants the freedom to express their experiences using their own language with the aim of recognizing and embracing diversity stemming from various factors, such as gender and other status characteristics.

3. METHODOLOGY

3.1 Theoretical framework

For the interview questions design and analysis, a critical realist framework was applied [31], thus recognizing the existence of an acoustic environment independent of human perception, but that is experienced differently by everyone due to socio-cultural, physiological, personal differences and context and as such also a potential source of conflicts.

To stress the aim of empowering the citizens recruited as participants as much as feasible within a PhD project, especially in the forthcoming co-design workshop, we address them as "collaborators" [30, p. ix].

3.2 Methods

Thirteen collaborators were recruited among the citizens of Brighton & Hove city council. Among them all, there are people who self-identify as both neurodivergent and auraldivergent, only auraldivergent, or both neurotypical and auraltypical. Age brackets covered the ranges from 26 to 74 years old. In terms of gender, there were seven females, five males and one demigirl.

The recruiting purposefully targeted auraldivergent and neurodivergent collaborators whose input is essential to understand their requirements to create more inclusive acoustic environments that will also be more liveable for aural and/or neuro typical users. All of them received before the interview an information sheet with the details and purposes of the project, a consent form to sign, a copy of the interview questions, and given the option to be interviewed in person or remotely. Six collaborators chose to be interviewed in person and seven remotely. The interviews lasted on average one hour.

The questions aimed to explore some specific aspects of the experience of acoustic environments focusing on one that the collaborator visits on purpose and one that is avoided.

Reflexive Thematic Analysis was used to analyse the interview transcripts [31]. The transcripts were initially hand coded on a hard copy, and then both transcripts and codes were imported in Lumivero NVivo Version 12 [32] for codes refinement and themes building. Here a small subset of excerpts and their analysis, are reported. These are taken from the themes related to conflicts in needs and preferences, the intensity of the experiences and the impact of hearing loss on the perception of acoustic environments.

Ethical approval for this project was granted by the Music Department ethical committee of Goldsmiths University of London.

4. RESULTS

4.1 Conflicts in needs and preferences

Five were the types of sounds on which collaborators disagreed or expressed a strong contextual influence. People, children, music, birds (seagulls in particular), and wind.

4.1.1 The sound of people

People are almost always associated with "noise", and often it's a noise to avoid. It may be for the loudness of the noise itself, or for the feeling of "violation" of a personal space, or the perception of an intent and willingness to be loud, rather than a collateral effect of an activity.

"That whole space that is quite open becomes less open, but because it's so crowded and so everything is next to …, there is a lot of businesses that try to use that space. It's not very pleasant to be there because you feel like everyone is on your back." P1

"In the summer, everyone's very invasive with others' people space. They will come with speakers and then it's more than one speaker. It's a different group with playing different music and they play loud because they are displaying loudness". P7

"You know what young teenagers are like in the crowd. They're even louder and showing off." P13

The intensity of the experience is often overwhelming.

"On a whole I avoid it because it's like buses, taxis, there's usually someone off their face on drinks and drugs shouting about something or other. It's loud, it's busy. Yeah. It's just like I mean I don't like crowds so anything that's too busy you know I kind of get overwhelmed." P9

Sometimes it's a welcome noise, that grants attention and entertains.

A characteristic outdoor market can provide a fascinating experience, especially for those who are going to this market on purpose.

"It's like, wow, it's so crowded. So many people. So many for... That's like, that's something to see. It's like chaos can be like attractive, like, if you're not living in it. But if you just go to see it, it can be something nice to see or attractive. Not nice, but yeah, fascinating." P4

And the chit-chat noise in dining places can provide both the chance to witness – or engage personally in - social interactions.

"If I really want the social interaction but haven't got anyone to socialise with, then I love going out and just sitting down and watch, having a coffee and, you know, just picking up the vibes, if you like, from all the chit chat that's going on and everything like that. And that's quite fun in an outside cafe." P13

4.1.2 The laughter and the screeching of children

A similar contrasting experience happens with the sounds of children, which can be penetrating and annoying.

"On a nice day, if the children are playing outside, they're just so noisy and excited, they just be screaming and screeching and just really like top volume. Uh, so that I just found sort of really penetrating." P3

"I know people that probably don't go to the beach in the summer because they think there's too many sort of noisy children and people on the beach." P10

But also a welcome backdrop.

"...hearing, you know, kids playing in the distance, that's nice…" P12

"But at times, I mean, I love the sound of the schools, the children. I think that's a lovely... you know, just at play time when they're all (mimic excited chattering). And I used to be a teacher." P13

4.1.3 Music in public places

Music played in public places is widespread as background music in dining spaces, loud music in shops to attract a specific customer demographic, portable speakers used by people at the beach or in a park, or buskers on the street. Here the context is very important, because the same "music", as content, may elicit a very different response.

Music played through speakers in shops and dining places is always perceived as bad and imposed, and prevents people from using spaces or entering in shops.

"I don't like music playing in public places at all, really. I find it annoying because it's not my own choice of

music if it's playing in a public place, and it's usually very often too loud and it's like just not appropriate." P10

"I don't like shopping malls at all. I hate them with a vengeance. Mmhmm. Completely hate them because of the music they pump out and stuff like that, so I can't stand that, so I don't mind if it's more natural noise, but I don't like it where it's they're pumping music." P13

Buskers, are perceived as nice and pleasant, or at least "fine", if they are not amplified.

"I think that music is amplified when it doesn't need to be. So, if someone's busking in the street, that's fine. But not with amplifiers." P10

For some collaborators, sometimes even buskers can be challenging in terms of loudness and affect their use of the street and route planning.

"You know you can get some really loud buskers down there sometimes. I mean, you have to try and get past them and ooohh. So it's this kind of things like having to try and navigate all these difficult things, unpleasant things that are down there." P2

4.1.4 There's bird and bird…

Natural sounds overall are liked by all collaborators, from wind, rain and running water to insects and cicadas, while some birds may be more controversial.

This is the case for one of Brighton's most characteristic and feared bird, the seagull. It can be a source of distress with its loud screeching calls

"You might hear the seagulls, 'cause the seagulls are loud. So it's hard not to, they are everywhere and they drive me mad. They don't have a nice sound that yeah, that sounds great for me as well." P9

But as a background sound within a seafront environment, it can be well integrated and expected.

"There's just kind of other incidental things that they're, you know, like the birds, a lot of seagulls, but they're in the background and they complement it, they don't clash with it or conflict with it." P12

And in some cases, by association, seagulls' calls may become one of those meaningful sounds that identify a place or an experience and bear with it emotional connotations and attachment.

"I loved, you know, being on holiday and wake up to seagulls. And it's not, you know, it's an interesting sound that they make, but there was, I knew I was on holiday, you know, it was like that hearing the seagulls in the morning was like, oh, yeah, I'm on a holiday at my grandparent's house. Really special, and it wouldn't have been the same without the sound of them." P12

Artificial birdsong played through speakers was very disliked by one collaborator, which means that natural sounds are not automatically a welcome addition to a space.

"The only time that I can think of when the Council actually consciously used sound was that there was a small covered underpass […] they piped birdsong into it, really loud birdsong into it the whole time. Well, it's horrible birdsong to start. It's… it doesn't sound like birdsong. It sounds like one of those men who sell bird whistles that go along the street, that noise, is that kind of noise. It's not birdsong, if you know what birdsong sounds like, it isn't that." P2

4.1.5 The beauty and the beast - Wind

Wind is one of the recurrent natural sounds liked by many collaborators, but for some it has scary effects because their sensitivity or the use of hearing aids which can produce distressing artefacts when wind enters their microphones.

Wind is praised for its ability to "play" the trees and generate almost musical sounds.

"And if you really tune into it, you can hear it's almost like all the trees are playing different sort of notes because of the like the, you know, obviously the… all the trees and leaves and branches and everything… If it's just a little bit breezy, you can hear sort of it like… almost like a wind chime of the leaves, you just hear them making that sound and then another tree making another sound." P9

"It is really lovely having a space where you can then hear the birdsong, the wind. The wind rustling through the leaves, you know, through the grass or the buzzing of insects, you know, that tapestry of gentle sounds that kind of weave together." P12

At the same time, some collaborators using hearing aids or with misophonia mentioned how disturbing wind can be for them.

"Wind is probably my least favourite weather and that's to do with noise as well, that's to do with my hearing. So if it's particularly windy, I'll probably wouldn't go up there, you know that's one thing that would stop me from going up there." P5

"I don't feel comfortable with the wind, I'm terrified of having the wind in my ears, it feels painful." P7

4.1.6 Different people, different needs

Most of the interviewed collaborators acknowledged that other people may have different preferences regarding the acoustic environment. This may be a difference in age, the context, like the motivation for being in a specific public place, or personal inclinations.

One example is the recognition that there are categories of people who may enjoy noisy environments

"People that like shopping, I guess and like noise and that… that buzz, the buzz of the busyness which I definitely would have got when I was younger". P9

"Lots of people don't seem to mind. Uhm… people who are the noisiest ones, they seem to be enjoying themselves and it doesn't bother them". P6

"I do know some persons who really like to have a lot of crowds in the area and having that constant social noise and hubbub." P11

"Some people love noise all the time." P13

There is also a recognition that noise may be a sensory necessity for some, who could even be uncomfortable in a quiet environment.

"Some people don't seem to like silence and quiet very much, because you do see a lot of people walking through it with headphones on. Or talking to somebody on the phone. Ohh, I think its silence does make some people uncomfortable, or the lack of urban sounds anyway." P2

"There are lots of people that go down to the beach and walk with headphones on. So they clearly don't like the acoustic environment because they bring their own." P10

"Some people get anxious by spaces quietness you know, they want, they want the noise all the time, they need that security." P13

And also the same person could have different preferences at different times of the day.

"And it's always interesting how people vary in what they like and don't like or and vary in time as well. So it might be the same person but with different needs."

"I can't decide. It varies. It's like that, isn't it? I wouldn't like it always to be a park or forest. I'd hate that. I need the noise, human noise."

"It depends on my mood. If I'm there to… if I've got a lot of energy to expend, I might put on some fast music, if, like, if I've got a lot of energy that needs to come out… If I have an ill, it might be quiet music that I'm listening to, or it might be that I don't want any music on. I just want to walk and listen to nature and that's quite important too. And I never know what I'll want at the time." P13

4.2 Intensity of the experiences

The personal experience of acoustic environments may be really disabling and the intensity of the experience becomes evident trough the abundance of "battle language" that is used or references to "aggression", "assault" and "mission".

"Yeah, I don't feel safe. And then the safeness is of my well being because first make me jump, safeness of other people that might be distracted and get run over, a child who might just fall asleep and they'll get waked you know, scared, my dog who jumps and starts barking… is disturbing. So the safeness is more down to the well being, sensorial, you get assaulted by the noise." P7

"I grew up in the centre of England in a rural place. So to get parachuted into there was really…like a bit of a full on… full on aggression." P8

Interviewer: "How safe do you feel?" *"No, no, under attack. Maybe that's why I need to leave them quickly." P8*

"For the dog owners, the dogs were entirely friendly loving beings which I'm sure the dogs are, but to me, they're like acoustically assaulting my sense." P11

"When I'm hearing sounds that I don't want to hear, it's distressing, it's not just an inconvenience… […] But like, you know, I've described, I feel like a bear, I feel like a bear in a cage where I feel like I would chew my own arm off to get away from, you know, the sounds I don't want to…" P12

And also the time planning or route planning to avoid distress makes going out in the city feeling like going "on a mission".

"Let's go as fast as possible and then get out. Goal driven, like I'm like all I'm thinking about is what I need to buy and for who and like the most efficient route possible. Like it's all that's on my mind. Like I hyperfocus on my mission." P4

"It does also affect me on the social side things, like it makes it harder to socially engage because I'm… To get through the road, I have to focus on "this is why I want to get to" and then if I'm going back up the road "This is why I want to get to my flat." So I have to focus on the mission which does mean if people suddenly stop me on the road and the mission hasn't yet been completed, then I sort of just go "hi" and then move on." P11

4.3 The impact of hearing loss

Hearing loss has many important social and personal consequences on our lives. Every single person will have a different experience of it, and although it has culturally and socially born a mainly negative connotation, it's also recognized by some collaborators for some advantages.

It can cause physical distress like headaches and feeling overwhelmed.

"I know in the past I've had headaches and just feel really quite stressed because I know it's my brain is just trying to deal with all the level of noise and the processing.

And so if I'm using the word overwhelming, I think that's what I'm trying to explain." P3

"Some of the sounds I absolutely can't bear are... screeching, screeching noises. It absolutely worsens getting my hearing aids 'cause I think it amplifies that. So there's that really high you know those kind of high pitched mechanical sounds are awful. And then again, you know the thunderous whooshing sounds that come with traffic." P12

Spatial perception and orientation can be severely affected when hearing loss is asymmetrical.

"And as a result of losing my hearing, I really struggle with the directionality of sound now. But yeah, so we walk through it and I really wanted to know the source of the sound but I couldn't find it because it was, there was too many of them and I would have struggled, you know, maybe to identify where the sound was coming from. I really wanted to know what was making that sound." P12

At the same time some collaborators expressed welcome consequences of not having a "normal hearing".

"My husband, he will be disturbed by say students having music on at night having parties. But interestingly, I don't hear any of that at all. That doesn't disturb me at all"

"He just found them really annoying and again, you see, I didn't know. I didn't hear that at all. There are advantages sometimes to being a bit deaf." P3

A collaborator with a *"very good hearing"* expressed instead a desire to lose some high frequency hearing to avoid bothering high frequency noises around her, like that produced by pet deterrents put in private gardens or public places.

"I'm just hoping hearing would fade at the higher registers to the point where it's no longer a problem for me. I'm... I'm nearly 40. It should have gone by now." P6

5. DISCUSSION

5.1 Implications for urban planners and designers

Artificial birdsong played through speakers was very disliked by one collaborator, and this raises the issue of considering attentively the addition of sounds. This aligns with the recent findings in [21]: "Natural sounds in real contexts were preferred to artificial ones in a built environment, which for many participants could be "distracting" and "annoying", especially if they were perceived as imposed."

Many users switch often to a form of focused listening, seeking the source of interesting or unexpected sounds (also reported in [21]). From a design perspective this calls for making evident the presence of speakers or other artificial sources of sound to avoid the uncanny valley effect or frustration in these users. Also, the availability of signage with sound maps that show where sounds have been added could be useful.

Wind can be an impactful weather element that can easily disrupt the enjoyment of a place for users with hearing aids or misophonia. Urban planners are thus called to evaluate the possibility of providing in both parks and squares some seating places that are protected by wind through the use of built semi-open barriers or the use of dense vegetation nearby.

Micro-zoning in such places is also a good approach to urban sound design to allow people to choose what to hear depending on their personal preferences whenever possible.

Last but not least, although not fully included in this paper's results section because of lack of space, it's very important to note that no one of the collaborators interviewed mentioned that their favourite place is completely quiet and silent, while most of them mentioned natural sounds (as widely reported in the literature), especially water sounds as desirable, and sometimes also people/children sounds as a pleasant background.

5.2 Limitations

The collaborators were recruited through online advertisement and printed flyers in community centres and shops across Brighton & Hove. This may have reduced the visibility of this project to potential people with limited mobility and/or not registered or exposed to the online newsletters and organizations that circulated the recruiting ad. The experiences and problems raised by the collaborators may be not representative of other public places in other cities or countries, or of the experiences of other aural and/or neurodivergent citizens.

6. CONCLUSIONS

These findings demonstrate the heterogeneity of experiences among various collaborators and within individual collaborators across different times, potentially generating conflicts in design targets. Our research underscores the necessity of acknowledging diverse experiences and accepting potential conflicts during policy development, ideally resolved through the measures mentioned in the discussion section to accommodate all the needs emerged, and using participatory co-design with a cohort as diverse as possible to produce places that instead of being hos-tile are hos-pitable [33] for the largest possible portion of the population, not just the average.

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