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"If I was king of India I would get all the horns out of cars." A qualitative study of sound in Delhi

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"If I was king of India I would get all the horns out of cars." A qualitative study of sound in Delhi[1]

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Abstract. In this paper we present an experimental sonic space, the mobile noise abatement pod (mNAP), constructed and used over a two-week period in Delhi, India, in December 2014. The interdisciplinary project, involving a composer, designer,

carpenter, development scholar, filmmaker, graphic designer and sociologist, aimed to investigate how noise, including honking as one of the most prevalent sounds in Indian cities, is perceived. The fieldwork reveals noise as a complex contextual, spatial and personal experience that is as much about habit as it is about identity and class, intimately related to economic inequality and inherently connected to social justice. This text suggests that attempts to reduce levels of noise need to take into account its meaning and position – by whom and how narratives of noise reduction are constructed and reproduced.

Keywords. spatial experiment; noise pollution; honking; place identity; social class; inequality; Delhi; India.

Participant: Everyone is affected by honking and yet we all do honk.

Introduction. Cities, and in particular the seemingly imploding/exploding megacities of the Global South, have received widespread attention in recent years (e.g. Davis 2006; Neuwirth 2006; Rühle 2008; Koonings and Kruijt 2009). Delhi finds itself amongst those large continuous built-up areas and is most likely to see further growth in the next decades (Ahmad et al. 2013). It is – alongside its counterparts – discussed as a place of economic development and innovation (Eichengreen and Gupta 2011; Bhagwati and Panagrariya 2013) and, at the same time, fuels debates and research on widespread poverty, further marginalizing gentrification processes, housing shortage (Dupont 2011, 545; Ghertner 2011) and environmental pollution linked to progressively worsening air quality, the shortage of clean water as well as limited

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access to sanitation (Singh and Dhamijal 1990; Sequeira 2008; Chaplin 2011). Noise is a further recognized, yet highly contested, environmental pollutant. This contestation has a number of reasons. Industrialization, urbanization and the expansion of communication and transport systems are often stated as a cause for the 'disturbing level' of noise pollution (Hunashal and Patil 2012).

In India, as elsewhere, laws regulate permissible sound pressures in decibel measurements (dB) which express, on the one hand, the rights for citizens to have a pollution-free environment and, on the other hand, the citizens' duty to keep it pollution free (Miglani 2015). And yet, the permissible levels tend to be exceeded. Studies by the Delhi Pollution Control Committee (DPPC) have shown that norms are not being met and noise levels of main arteries often reach between 80 and 93 dB – which is dangerously close to and often above noise exposure levels that are known to damage hearing (Chandra 2013). At the same time, however, laws specify an explicit 'Right to Religion and Noise' – rendering noise as a multi-modal and multi-dimensional field. And though decibels might give us a precise reading of the loudness of a sound or combinations of sound, they are crucially missing those *contextual*, social, cultural, political, among others, factors when it comes to understanding debates around noise (Bijsterveld 2008). Noise – with noise here being perceived as any unwanted, loud and disturbing sound (see Schafer 1977) – is therefore better discussed as part of the broader urban soundscape, as scholars from different disciplinarian areas built the concept over time, from composer and author Schafer and his follower, aural historian, Emily Thomspon, to Michael Southworth (1969) in urban design and planning; in Thompson's (2002, 1) words, 'Like a landscape, a soundscape is simultaneously a physical environment and a way of

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perceiving that environment; it is both a world and a culture constructed to make sense of that world.'

Thomspon's definition draws on Corbin's seminal study (1998) of the auditory landscape in the context the 19th century French countryside, problematising social divisions, religious conflicts, class and communal identities in light of processes of modernisation. Following paragraphs show parallels between Corbin's analysis and the modern day 'bourgeoisification of Indian cities' (see Ghertner 2011 and Nijman 2006), thus foregrounding the role of noise as a marker of social and economic stratification. And yet, while designs of urban soundscapes – as a means to overcome the negative connotation of noise through a designed and therefore controlled approach to noise – have often come to stand for attempts to create better visiting experiences (Liu and Kang 2015, 102), the manifest and inescapable exposure to noise for large parts of the urban populations in India remains untouched by these predominantly experience-oriented considerations.

A careful reading of Gandy and Nilsen's (eds.) *The Acoustic City* (2014) brings forward the multiple manifestations – visible, tangible, undetectable, or, on a different level, social and political – of sound in the urban terrain. Whilst Schafer's coinage of the term 'soundscapes' helpfully interweaved the concepts of space and sound, a more complex conceptualization of the 'acoustic city' has since become necessary – one that points to the dynamic relationship between the acoustic experience of the city and its historical, political and social context (Gandy and Nilsen 2014, 9). Honking is a typical example of noise in the urban soundscape, for it simultaneously embodies and communicates diverse experiences and understandings of the city in terms of

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environmental and health issues, local politics and infrastructure, as well as individual and collective occupancy of public space (Chatterjee 2016, Singh 2015). And yet, honking is but one noise in an urban acoustic environment that consists of a myriad of other 'auditory landscapes' (Corbin 1998): from natural sounds and human voices to artificial background engine noise, acoustic gentrification or mall acoustics (mall music), for example. In considering these, this paper endorses Smith's (1994, 235) claim that sound is both symbolic and ideological. She thus argues that sound is inseparable from the social landscape and urges for a 'more explicit incorporation of sound […] into research in human geography, and especially into those aspects of the subject concerned with cultural politics' (Smith 1994, 238).

With the above as starting point, this qualitative study of sound in Delhi that took place in December 2014 offers an innovative, interdisciplinarian contribution to the comprehension of the social, spatial and political power implications of Delhi's 'auditory landscapes', providing an evidence base for a simultaneous exploration of noise as physically and spatially experienced and symbolically perceived. It discusses perceptions and active experiences of sounds in the city to then draw attention to some complex associations between noise, honking and broader social factors related to cultural and place identity – associations necessary to instigate further qualitative studies to inform policy making and urban planning.

Noise and honking in Delhi: from a 'new spatial order' to a 'socio-spatial disorder'[2]

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Though strongly regulated and fined when abused in many countries, in most Indian cities honking is incessant. The huge number and variety of vehicles on the road, combined with people and livestock create an environment that becomes difficult to navigate at best (Baber 2010; Harmstead 2011). In these often hazardous situations of congested roads, and despite its contested status, the horn is elevated to the status of a warning mechanism so as to mitigate the risk of a collision. A recent study conducted in Delhi by the Central Road Research Institute (CRRI) pointed out that 'honking contributes thrice what the normal traffic does at an intersection' (CRRI study quoted in Pandey 2013). This obviously has implications for disadvantaged populations, those living on or in the close vicinity of busy road networks and those whose working environments as street vendor, bicycle-rickshaw or auto-rickshaw driver allow them no obvious means of escaping the constant and dangerous noise levels. [Fig.1.]

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Fig. 1: Mathura Road, South Delhi, where housing is found right next to one of the main arteries leading out of the city.

Despite the acute severity of the problem – set to increase over the coming years in line with an anticipated rise of urban populations, car ownership, urban construction sites, and associated traffic through deliveries and heavy goods vehicles – attempts to reduce noise by getting people to use less noisy means of transport have been manifold, but also largely unsuccessful (Kumar, Kumar and Joshi 2015). As Ahmad et al. (2013, 647) dispute, '[…] both metro and BRT projects could not attract as much [sic] riders as planned and expected'. Equally, initiatives such as 'Do Not Honk' have not had significant success in Delhi. Whilst they have certainly produced publicity, messages including 'Do not honk if you love peace', 'For God's sake stop honking' or 'Dear Uncle! Can't you drive without honking' seem simplistic at best ('Do Not Honk | The Earth Saviours Foundation' 2014) especially when considering

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the evidence about the damaging effects of noise and vibration on health ranging from irreversible hearing loss and anxiety attacks to hypertension and heart disease (e.g. Majumder, Mehta, and Sen 2009; Chaturvedi et al. 2011). Undoubtedly with good intentions, these initiatives, driven by an active and sometimes activist elite, as well as more recent investigations into health implications around noise pollution (Chatterjee 2016) are further ignored by the actions of car manufacturers such as Volkswagen and Audi. These companies are outfitting their vehicles for the subcontinent's market with electromechanical rather than electronic horns which are not only louder than the horns fitted for models elsewhere, but their tooting sounds last longer (Stancati 2013).

A closer inspection of urban and suburban infrastructure developments in India – from the inauguration of the Delhi metro in 2002 to the 'anti-poor spatial restructuring' that took place in the build-up to the 2010 Commonwealth Games in Delhi which included, amongst other measures, forced eviction of over 200,000 people (Ramakrishnan 2013, 102) – begins to unveil the links between BRT and metro projects and a further exclusion of the disadvantaged from the urban space, what Fernandes (2004) refers to as a 'politics of forgetting'. This politics is concerned with the 'beautification' of both physical and social space and a concomitant process of 'polarization and underlying exclusion' of marginalized social groups (Dupont 2011, 550). Located in a broader context of global neoliberalisation that has strongly affected Indian cities, the new urban agendas and reforms since the 1990s have given rise to a 'new' consumption-driven and lifestyle-defined 'middle class', which represents modernity and the 'bourgeoisification of Indian cities' (Ghertner 2011, 513; Nijman 2006, 762). As Siemiatycki (2006, 287) astutely observes, however, on the occasion of the metro development:

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> In a city with such a disparity between rich and poor already, the development pattern consciously stimulated risks driving a further chasm between the classes. The educated, the wealthy and the powerful are being invited to turn their gaze to the world, to sit down for a Big Mac or a slice of pizza and take advantage of the new employment opportunities in the information technology parks that are being stimulated by the metro. The poor, on the other hand, are seeing their homes disappear for a development they do not have the skills or the income to benefit from; metro fares were raised making it harder for them to afford to ride, and their income earning prospects as hawkers were made illegal.

Seen in this light of socio-economic restructuring, Siemiatycki **(**2006, 288) goes on to argue, the Delhi metro sought to 'inculcate a pattern of public behaviour that accompanies a vision of modernity […] It reflects an attitude that prioritizes the pleasures of the affluent and the profitability of multinational corporations over the needs of the city's poor.'

The aforementioned anti-honking campaigns can be similarly seen in a neoliberal context of individuals' responsibilization and shift toward a civil society, whose workings and practices are familiar mainly to the 'culturally equipped middle classes' (Routray 2014, 2293-4; after Chatterjee 2004). In this context the poor are largely at a disadvantage 'when it comes to participating, negotiating and resisting modern governmental systems' (Routray 2014, 2293). Thus, while an anti-honking campaign may pertain to the cultural understandings and capacities of a socio-economic elite who can stick a 'Do Not Honk' sticker on their own car, or possess the resources and time to be informed about and participate in such 'common good' actions, the majority of the poor who suffer more from noise pollution levels, as previously

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discussed, remain marginalized. It is for such reasons that Nijman (2008, 75), among others, critiques NGOs for their 'inherently undemocratic nature and lack of accountability to the broader populace'.

The above commentaries call for a more interdisciplinary and experimental approach to investigating perceptions and experiences of noise, beyond often top-down initiatives that superficially address anti-honking, as if noise is a one-dimensional issue. Such an approach would take into account narratives and constructions of sound in the urban environment, thus enabling a deeper understanding of the factors that underlie people's responses and attitudes to noise pollution. This understanding informed the conceptualization of the mobile noise abatement pod (mNAP) as a tool to investigate the complex issues around noise and the development of the research process as described in the next section.

The experimental sound space and research set-up.

The study that informs this paper's discussion, the 'Boxing the mNAP' project, was a six-month (1 September 2014 – 1 February 2015) research project funded by the UK's Arts and Humanities Research Council (AHRC). Driven by the previously discussed ineffectiveness of various campaigns to generate action, beyond the level of raising awareness only on noise pollution, the aim of the mNAP project was to promote an active way of listening to participants, thus helping them to better perceive and problematise the experience of noise and honking, and make direct associations with their everyday exposure to noise pollution. In addition, our goal was to sensitise and energise relevant governmental and non-governmental organisations

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and groups to resume efforts for positive change on a policy and practice level toward a healthier urban environment in Dehli and India more broadly.

The mNAP was conceived as a follow-up to work undertaken by members of the research team at the UnBox Labs 'Future Cities' event at the National Institute of Design (NID) in Ahmedabad, India, in February / March 2014.[3] The UnBox Labs project aimed to bring together creative practitioners, artists and researchers from the UK and India for a ten-day experimental exploration of the theme of 'Future Cities' (Quicksand 2014) and was part of the larger framework of activities of the UnBox Festival 2014. It was in Ahmedabad, where an initial version of the mNAP was developed as a tool, or 'social condenser'[4], to engage with the omnipresent noises of the city and its consequences on its inhabitants. Working from within the somewhat sheltered campus of the NID, a group of creative practitioners and academics co-developed a mobile sound-shielded box (made from predominantly borrowed and found materials that provided a sheltered room to be used for the concentrated experience of the noises of the city.[5] The initial version, built on the back of a bicycle rickshaw frame was tested both within the environment of the NID and a nearby urban village. [Fig.2.] This was subsequently advanced by members of the initial team to provide less of a visual presence but a better acoustic separation from the external environment, which in turn resulted in a box that due to its weight was less mobile than the first experiment.[6]

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Fig. 2: The test-version of the mNAP in Ahmedabad. Here, a lightweight sound-insulated box was constructed on the back of a bicycle rickshaw, providing some sonic separation from the urban environment. This box was tested both within the National Institute of Design and the urban village of Kocharab.

The beta version of the mNAP, which is discussed in the context of this paper, was built for and tested in the context of the 2014 UnBox Festival which took place at the Indira Ghandi National Centre for the Arts, Delhi between 12th and 14th December 2014. To broaden the empirical set up of the fieldwork, we further installed the mNAP at the India Habitat Centre for two days prior to the Unbox Festival. Being located there allowed us to reach an audience beyond the ticketed festival of collaborative and interdisciplinary making to include built environment professionals, creative entrepreneurs, university students, researchers and artists who work from this centre for nationally and internationally active organisations as well as for many of Delhi's key development agencies.[7] It was in those two locations, the India Habitat Centre and the Indira Ghandi National Centre for the Arts where the interviews were conducted over five days.

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75 participants in total, 30 female and 45 male, mostly middle and upper class professionals, often with a degree from abroad, engaged with the research (sound experiment *and* follow-up interview), the youngest being 17 years old and the oldest 70 years old. As expected, the research project captured perceptions of noise from people who are less likely to be as aggressively exposed to noise given their relative economic power to purchase 'calm'. That most participants (43 out of 75) reported using their own car whilst travelling in Delhi, for example, points to such an understanding. In the context of this research project, however, as previously explained, the pool of participants was regarded as appropriate in light of actively informing policy making and initiating public actions that address noise pollution, in tandem with associated, social, development and poverty problems, by way of working for environmental governmental and non-governmental organizations, the press, the construction industry, education, and planning agencies. On another level, that the research setup was located at two relatively controlled and, in terms of noise levels, subdued sites, sheltered from major link roads through greenery and setbacks, we ensured that a focused engagement with the sound experiment was possible and that the follow-up interview was recorded with sufficient clarity. [Fig.3.]

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Fig. 3: The mNAP at the Indira Gandhi National Centre for the Arts.

Designed to cancel out exterior noises, the mobile noise abatement pod (mNAP) was intended to take people out of the noisy urban space and expose them, firstly, to an entirely silent environment before subjecting them via headphones to a 12-minute composed sound installation.It was thus conceptualized as a tool for not only making the all-pervasiveness of sound or noise pollution more 'hearable' to the research participants, but also provoking discussion that would afford a better understanding of the reasons for the seemingly inescapable intensity of noise produced by the constant presence of cars, horns and amplifiers in Indian cities.

Once inside the mNAP participants were exposed to a stereo piece based on recordings collected at various locations in and around Delhi which captured diverse, yet typical, sonic experiences of the city.[8] Only these recordings were used to make

the piece – no other sound files, synthesized or otherwise recorded were used. This recreated and allowed participants to immerse themselves into a condensed and composed, yet 'authentic' sonic experience of an everyday urban environment.[9] That this took place in an otherwise artificial space enhanced concentration and focus on the sound piece and helped to efficiently record people's reactions to what they were hearing by marking them via an iPad interface; and, finally, enabled recollection of and reflection on the sound recording in follow-up interviews.[10]

The spatially confined and controlled phase of listening inside the mNAP thus set off a broader debate on the experience of the urban soundscape, which unravelled during our interviews with participants. The piece was reminiscent of sounds that our participants are exposed to on a daily basis and thus prompted them to elaborate on their reactions to these sounds during the experiment and contextualize them in their everyday lives. The sound of birds chirping and singing, for example, was identified as one of the most pleasant sounds within the piece and thereby enabled participants to reflect on their own urban sonic environments and which sounds they find most enjoyable or most unbearable and disturbing. Participants talked about the effects of noise pollution on their behaviour, health, mood and feelings, and articulated diverse understandings of the prevalent honking practices.[11] Despite representing one facet only of noise pollution in Delhi, honking was particularly addressed as a readily identifiable noise by both locals and visitors, extensively discussed in research and by the media, and being the focus of several campaigns aimed to reduce noise pollution in urban India, as already discussed. The majority of the interviews were conducted in English. Interviews conducted in Hindi were facilitated by an Indian, Dehli-based

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member of the research team. All of them were then transcribed and analysed thematically with NVivo.

A mixed-methods approach to mapping responses to sound

While listening to the sound installation in the mNAP, participants used an iPad interface, which allowed them to press 'mood' buttons ('unexciting' / 'exciting', 'pleasant' / 'disturbing'). When the participant pressed a mood button, it was time-stamped in milliseconds relative to the start of the playback. Doing so allowed a quantitative understanding, to start with, of what the participants perceived as being a 'pleasant/unpleasant' and 'stimulating/unstimulating' sound.

With the analysis of the data plot in mind, care was taken to match the headphones' listening levels with the sound pressure levels present at the point of recording. The goal in doing this was to ensure that the participants' experience of loud honking was at least objectively similar to the sound pressure levels experienced on the street. Of course, the sonic context in which loud sounds are placed in the sound installation at times bears no resemblance to a real-world street ambience, so the subjective perception may be quite different in these two very different listening environments. In particular, quite sudden loud sounds in the installation may be significantly more negatively experienced, whereas in the context of an overall noisy ambience they could go almost unnoticed or ignored. This qualitative difference in the listening experience was confirmed by the research participants in the follow-up interviews.

What the plot of the 75 individual user responses shows us then is that there is in fact consensus at certain points of the piece, as represented by point clusters. [Fig. 4.] The

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most striking clusters appear around 600 seconds (= 10 minutes) into the piece. As expected, at this point clusters are found in both the 'stimulating/disturbing' and 'unstimulating/disturbing' categories. Interestingly, the cluster is denser first of all in the stimulating category and then quite clearly shifts to unstimulating. At this point in the mix we have a loud music recording, consisting of voice and percussion, and traffic noise, including beeping. The traffic noise continues as the music stops. This may well be responsible for the shift from stimulating (music) to unstimulating (traffic), but because both music and traffic are loud, each is in fact designated disturbing. At this point in the piece there is an almost complete absence of pleasant markers.

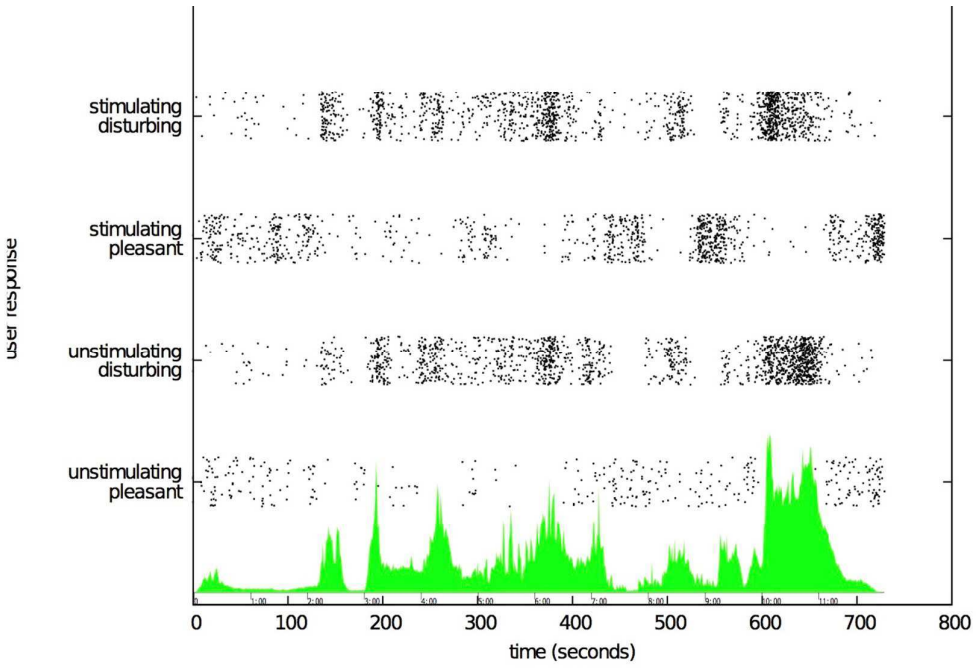

Fig. 4: Plot capturing the user response density per second of recording. The green area represents loudness levels (RMS) in the piece.

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Similar but not quite as striking clusters occur at other peak loudness parts of the piece, for instance just before 200 seconds, around 250 seconds, and at around 370 seconds. Again, this was anticipated as at each of these points there are traffic and other sound pollutants, such as jet engines. Clearly a majority of participants find these sounds disturbing, no matter what their view of the idea of the absence of such sounds in general daily life may be.

The follow-up interviews found the participants agreeing that traffic noise, predominantly honking, is perhaps the most disturbing sound in the city. This second layer of qualitative analysis, however, enabled an enrichment and substantiation of this understanding through the emergence of three broad umbrella themes. Firstly, the experimental study shows that certain sounds, despite their sometimes aggressive nature, are considered a necessary device to communicate people's actions and practices; secondly, exposure to aurally intense environments tends to be an accepted, sometimes even comforting, condition which is taken for granted and is deeply embedded in and accompanies people's everyday practices; and, thirdly, statistically and medically viewed exposure to involuntary harmful levels of noise do not simply translate into noise pollution in the ears of those who are affected by it.

By means of separating sound from its visual experience within urban space, the study highlights that decibel numbers on their own don't capture the different roles of sound, which is inextricably bound to and shaped by culture, social class, economic power and lack thereof, personal and place identities; and, thereby, noise pollution campaigns or research that highlight quantitative dimensions of the problem alone effectively reduce its complexity. This complexity is here captured in the participants'

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reactions to the sound installation, which display differentiated understandings, conceptualisations and often deliberately selective appropriations of their respective aural urban environments.

The voice of the city

Interviewer: You have just heard the audio file. How did it make you feel?

Participant: I heard the reactions of the city.

That sound – or, indeed noise – is not experienced as a single event, isolated from social context (Cain et al. 2013), is a key insight that the research participants shared out of the sound experiment. The participants' recollections of the sound composition were accompanied with narratives that contextualized and enlivened their listening experience. The stories that they constructed, in tandem with listening to sounds, thus made them feel '*disturbed'*, '*happy'*, '*annoyed'*, '*scared'*, even, '*shaking'*, and '*feel like turning around*' as if '*some of the things were happening right behind you*'. When asked to share his experience of the sound experiment, one participant depicts the physical settings where he located the sounds that he listened to. Rather than feeling enclosed and isolated inside the box, focusing on the sound allowed him to put together visual fragments of his everyday life in the city in what comes out as a detailed and fascinating narrative:

> *It sounded like the day was starting. I heard birds chirping. It felt like you were in your balcony, seeing the sunrise so it was quite pleasant. After that, screaming sounds (laughs). The buses, the honking, the crowd. Then it feels like we have gone shopping. A Sunday is even more hectic than a working day. You are running*

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around with your family. The hawkers are around, you know. The ladies are window shopping, their words are quite clear. Like my office is in X place, I have an institution there and lots of students come there, I can see their faces.

To a great extent, therefore, the communicative power of sounds appeared to lend itself to an almost tangible, physical quality that engendered emotional, visceral and bodily reactions to the participants. Parallels can be drawn with Rice's (2003; 2013) research of the impact of the acoustic dimension of hospitals on patients – an 'active soundscape' (Rice 2003, 4) which is shown to be experienced with particular immediacy, thus making more acute the experience of other senses. In the context of the mNAP experiment, sounds evoked images and enabled participants to observe and describe them with intense curiosity – scenes from urban life and natural scenery. To use their own words, people were '*airported'*, '*transported'*, '*re-imagined'* in and out of the box, '*visualised'* waterfalls and mountains, and, generally, felt '*interested'*.

The above reflections, while not directly relating to honking as urban noise, are interesting as they illustrate a qualitative appreciation of associative recollections that come with sound, and which enable communication with the city and its dwellers. In light of discussing sound as communication in this section, they describe a liveliness that imparts a sense that '*the city is not empty'*, as another participant argued; '*people talking around, life, people signing, random things happening […] a city without noises is not good'*, she went on to explain. This was a shared understanding by most participants, whose ideal city '*wouldn't be a noiseless*' city – '*it's quite a comforting sound, that there is people around you* [sic]', a woman said, thus experiencing a sense of connection with people via sound.

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The above remark exemplifies Cain et al's (2011, 232) holistic conceptualisation of sounds as 'meaningful events' that create a set of expectations and understandings to individuals and communities. In this light, they contend, 'simply removing negative sounds is not enough […] the simple elimination of 'noise' is not always appropriate and can create anxiety' (2013, 232). This is not to say that the participants are unaffected by the heavy traffic that they confront in the city of Delhi – on the contrary, honking was described as the most unbearable noise that afflicts Delhi residents on many levels, from the hearing problems that some of them admitted having, to the everyday vexation that obstructs their work, relationships, movement and peace of mind. And, yet, disturbing as it may be, honking was frequently seen as 'sociable', a messenger that made traffic personal but also conveys the frustration experienced with it, almost like a safety valve that enables people to release repressed stress and communicate this annoyance to one another.

Seeing honking as part of the broader urban soundscape therefore helps to frame it as a form of communication that people engage with in order to convey messages, rather than a mere nuisance – even if this understanding involves the 'necessary evil' aspect of it. Given the practical difficulty of engaging in dialogue with each another in order to get through traffic, communication is embodied in honking: *'[…] traffic is based on knowing what's happening and knowing what's happening is also telling what's happening'*, a participant explains, '*that's [people's] way of communicating on the road, when they can't, like, yell outside their car to someone else*'.

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Even more telling, however, is what the majority of the respondents articulated as a key expression of communication through honking, i.e. that it enables people to '*put into action some repressed feelings of daily lives*'. Interestingly, therefore, honking is here described as both the source of and outlet for frustration that links to an overall assessment of their everyday life. At the same time, honking is a manifestation of power: '*it's like a kind of announcement that we own a car, I have a big car and I have all the right to honk'*. It establishes power and status while further enforcing social stratification (it is only those who have a horn who can use it), which unfolds into a self-fulfilling process of dominance, as '*the more you honk the more powerful you are'*. In this light, it communicates a clash of wealth, classes and dynamics in Delhi, thus unveiling social identities and conflicts. As one participant described it, it is a '*form of violence, a form of abuse'*, thus pointing to more symbolic understandings of honking than the 'get out of my way' warning described above.

It is also beyond honking debates, however, that symbolisms and meanings were identified as being communicated by sounds – symbolisms that differed depending on a variety of factors. These mark some interesting insights into perceptions of religion and religious practices, triggered by the intensity, loudness or calmness, of related sounds that people were exposed to in the mNAP. Whilst several respondents, for example, reported using meditation as a means of relaxation and retreat from the city hullabaloo or withdrawing to a temple in order to find acoustic peace, for others sound became a marker to distinguish religions and their respective practices stating, for example, '*The Sikh temple believes it has the right to be loud, Hindus believe they have the right to be loud. This is wrong.'*

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What is notable in the above accounts is the symbolic messages that sounds appear to communicate and embody. This relates to De Witte's (2008) fascinating exploration of the power confrontations between Christian and Pentecostal-charismatic churches in Accra, Ghana, making claims to political and civic rights on the occasion of the 'noisemaking' religious practices of the latter – for example, through loudspeakers, traditional drumming, passionate preaching and frantic shouting, all fusing into what De Witte calls 'battlefield of religious sound' (2008, 695). Her work confirms that sound 'is never an objective or neutral phenomenon' (2008, 692); rather, it simultaneously reflects and embodies power, and represents broader, civic and political issues and agendas for the different social and religious groups. In the context of this study, the co-existence of different religious groups in Delhi, from Hindus, Muslims and Sikhs to Buddhists and Christians, among others, appears to create similar tensions, according to the aforementioned respondent.

In the same vein, while market sounds engendered to most research participants a sense of comfort and familiarity, a group of laughing and bantering boys was associated by some female participants as *'uncomfortable'* – pointing to sound as a measure of safety. Informal discussions with the Indian members of our research group and participants confirm, indeed, the pervasive and deep, yet little addressed, gender inequality problem in India, every so often raised by the media (e.g. Lal 2016).

In the above examples, sound was used by participants to create distinctions between social status and religion, and identify '*the noisy 'other'* [as a] consistent rhetoric' (Chandola 2012b, 402) which marginalises, politicises and moralises people's narratives and understandings of the self and other. This multi-layered acoustic

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experience of the city of Delhi becomes further enmeshed with notations of professional status and level of education, the following comments by research participants being a vivid reminder that class inequalities in India still prevail – 'Caste is not Past', a New York Times article alerts (Sankaran 2013). '*Unnecessary honking*' is associated with '*little educated people*', '*illiterate*', '*uncivilised*' members of the Delhi society and an alleged decrease of noise is linked to the sensitivity of 'creative' people towards these issues. On another level, the active and excessive production of sound through, for example, honking, is also identified as an indicator for an emerging society focused on 'achievement' – arguably pointing towards a potential increase of the problem rather than its reduction through the gradual but continual elimination of pedestrians and cyclists.

Whether physical or symbolic, the qualities of sound appear, therefore, to permeate the respondents' understandings of identity, their sense and experience of place. Rather than offering monolithic accounts of noise and sound as a negative *per se* or isolated phenomenon, participants pointed to much more complex understandings. People's culture, status, religious orientation, emotional or psychological state and well being, everyday experience of traffic, all permeate and are expressed by sound. This resonates with Chandola's (2014, 215) understanding that

> […] sound is not just a moment of insular and individuated instance of utterance, but derives its momentum from the collusions with the multiplicities that abound these matrices: spatial, temporal, sonic, social, cultural, and political. A listener, not unlike a cartographer, traverses through these matrices to 'make sense', to hear, to map not by accompanying each sound (or in the case of a cartographer, venturing into every crevice) but by deliberately, unintentionally, and inadvertently leaving most un-listened into.

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All-pervasive as it is, sound communicates city life, it expresses the '*reactions of the city'*. Or, as a participant contemplated, '*[sound] passes messages to us, almost subconsciously, without anyone's consent*'.

Normalised soundscapes

Interviewer: Why do you think people honk?

Participant: I think it's part of the habit.

Interviewer: Habit of what?

Participant: Habit of honking.

Though discussed as a context-specific and multi-layered experience that is strongly interwoven with their sense of place, most participants' first reaction when they stepped outside the mNAP was one of surprise and wonder; the experiment was seen as a revelation allowing them to appreciate sound in its own right. Their responses thus led to another key theme that emerged out of the research, that of sound as a habit, a taken for granted experience. Some people were taken aback by the immediacy of the impact that their exposure to the recorded piece engendered, sharpening their understandings of sound as a distinct and, often, overlooked sense where it became possible to '*segregate sound as an experience different from what I'm seeing, what I'm thinking, what I'm smelling'.* This participant's account evokes Chandola's (2012a, 56) understanding of 'soundscapes as cultural systems' encapsulating a variety of practices, beliefs, habits and social positionings, thus rendering the distinction between the auditory and the visual ineffective – a compelling case for a multi-sensorial appreciation of people's everyday experiences.

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The sound experiment was thus seen by many of the participants as an opportunity to disentangle sounds that surround them, becoming '*aware [of] how much noise is surrounding everything that I'm hearing',* which, though familiar, they usually work in the background without being picked up and actively listened to. Participants' concentration on the sound composition thus resulted in a surging awareness of the variety of acoustic stimuli that accompany their activities, which, mundane and repetitive as they are, largely go unnoticed. This confirms previous arguments that sound is so powerfully interwoven with space, cultural practices and personal experience that it becomes part of unquestioned, deeply-rooted habits. Some participants would even feel '*uncomfortable'*, that '*something is missing'* and in '*need to be in a noise-like situation*' if they found themselves in very quiet spaces, for example, in a village: honking has become normalized to the extent that people '*have become de-sensitised*'. This is a '*disturbing'* realisation to this woman, echoing Rice's (2003, 4) astute remark upon the sonically constituted and ordered sense of self; '*in real life situations'*, she pondered, '*we don't react, but since I was inside the box and there was no occupation I concentrated […]*'.

When it comes to honking, in particular, another participant acknowledged that '*it's become a norm, like it's kind of getting people aware of trying to push through the traffic and all that, but there's clearly no ethical idea behind it*'. The apathy to the harmful and disturbing effects of honking, which went down to a '*just for fun'* attitude of many drivers, who '*sometimes honk without any real reason, just to irritate others*' was identified as a learned practice on the streets, associated with a mentality developed from the early stages of someone's driving experience whereby the honk becomes a part of '*our system*'.

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Could it be, therefore, that honking, among other commonplace sounds, though disturbing and harmful as it may be exacerbating noise pollution, is not acted upon because it is habitual and taken for granted, revealing individuals 'passive soundselves' against the city's dominant soundscape (Rice 2003, p. 7)? The previous section showed that sounds communicate messages and are bearers of particular conditions, feelings, cultural practices and perceptions. Stripped of its associated sounds and routine noises, therefore, Delhi would be a strange place leaving people '*confused'*, '*displaced'* and '*curious'*.

Conclusions

When we are in the noise we are the noise, when we complain about the traffic, we are the traffic.

Participant

The above discussion comprises an analysis of sound as bearing multiple identities, with participants' narratives being constructed around contextual, place- and culture-specific issues that affect their everyday lives. This complements Chandola's (2012b, 392) powerful argument that structural inadequacies are important to understand, yet 'it is equally significant to engage with how the city is lived, produced, created and contested.'

The study's contribution to this field is thus three-fold. Firstly, following interviewees' responses, it evidences that noise is relational: it is linked to personal experiences, perceptions and identities. Decibels might be one measure to capture the

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level of noise, but noise cannot be separated from its socio-political meaning and economic context: what to some respondents is an acceptable level of noise or simply loud sounds, but at the same time comforting, becomes for others a matter of safety, a means to talk about class, measure of the level of education or, indeed, religious beliefs. Whilst the particular set of participants of our study were able to speak of measures to avoid or blank out unwanted noise, the choice to withdraw from noisy surroundings, however, does not present a possible option for the majority of the population and especially not those who work on or along the roads of Delhi.

Secondly, the research shows how deeply sound is connected to the construction and maintenance of identities. Discussions with people showed that they identify themselves and Delhi through sound, thus revealing some complex constructions of this issue – in relation to education and culture, economic and social status, or religion, for example. Thus, honking in Delhi emerges here as part of a greater nexus of social issues and, normalized and embedded in everyday experience as it is, it spills over into other areas of social life. It is also thus perceived as shaping both participants' relationships as well as cultural/place identity, with narratives unfolding into a deeper analysis of structural and societal problems within the Indian culture, beyond traffic problems and honking, and which are often reflected in the distinct soundscape of their respective locality. This reinforces Chandola's (2012b, 402) claim that 'noise is not always, and singularly, about loudness, nor is it always about sound', rather a 'matter of social and cultural specificity and subjectivity.'

Finally, and linked to the above, although the study did not directly aim to discuss the problem of noise pollution and honking as experienced from the perspective of

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disadvantaged populations, the identity- and culture-bound layers of analysis offered by our otherwise middle-class and educated participants are too telling to interpret only in these narrow class confines. Importantly, they call for further research into the implications of noise pollution for the urban poor, as well as other vulnerable social groups, such as children or people with disabilities. Follow-up research will help to enrich and advance aforementioned studies that helped to conceptually frame this piece of research (indicatively, Chaterjee 2014; Routray 2014).

We argue that these findings from an interdisciplinary conceptualised experimental space matter particularly to fields such as architecture, planning and urban design. Whilst these disciplines deal with noise produced by urbanisation through the creation of noise buffers for example or urban soundscapes, this form of making space often only *re*acts: it is not taking sound and other everyday experiences and patterns as a starting point around which encounters, events, or indeed infrastructures, are designed. Our experimental study points here to the importance of the storied element of sound and its capacity as a bearer of identity in the (social) production of space. Whilst it has been argued (Beatley 2013) that '[th]e subject of sound needs to be more squarely on the agenda of urbanists', our study argues that it is a deep engagement with the complex narratives of sound that is needed in order for sound to get onto these agendas.

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[2] Dupont 2011, 597, citing Marcuse and van Kempen, 2000 and Banerjee-Guha 2002 respectively.

[3] UnBox was initiated in 2011 by the interdisciplinary Bangalore and Delhi based practice Quicksand and explores how creative collaborations between researchers and practitioners can push boundaries by fostering new alliances. The UnBox Lab in 2014 was organized under the overarching topic of 'Future Cities'. A range of projects developed at the UnBox Lab where further developed for the UnBox Festival in Delhi in December 2014.

[4] Initially proposed by a group of Russian architects in the 1920s, where the term 'social condenser' was used to describe new social building typologies, it is here used to describe an object that is more then a mere box: it both attracts attention and provides a context for conversations around the topic of noise.

[5] The initial Ahmedabad team was comprised of Aditi Kulkarni (graphic designer), Ankit Daftery (electronic artist), Michael Edwards (composer), Persis Taraporevala (development scholar), Shradha Jain (film maker) and Tatjana Schneider (designer / educator) and was supported by Vivek Sheth (exhibition designer). We were further helped by the NID's timber workshop in the actual making of the box.

[6] The on-site Delhi team comprised of Michael Edwards, Persis Taraporevala, Shradha Jain and Tatjana Schneider. Maria Patsarika joined the team to work on the interviews and data analysis. In Delhi, the team was further supported by the graphic designer Vidit Narang, the carpenter Akhilesh and his team.

[7] Although the selection of these two sites was in line with our aim to engage predominantly with policy makers, activists and members of environmental organisations, the study cannot be considered representative of a broader demographic in Delhi, i.e. including the perspective of more disadvantaged populations, particularly those most affected by noise and honking. Due to time restrictions and the already set research project framework no further field research was possible. This was a given limitation of the present study, which, nonetheless, works as an incentive for follow-up research. That the present study, though drawing on the experiences and perceptions of socio-economically advanced poopulations in Delhi, bring forward issues of ecnonomic inequality and social (in)justice, we consider a critical outcome for further study into the field.

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[8] The recordings were made between 30 November and 4 December 2014 using binaural recordings of high- and low-frequency, close and remote, human and natural sounds, and collected at locations in and around Delhi over a 5-day period. Details on the creation of the piece can be found at https://sites.eca.ed.ac.uk/mnap/form-of-the-mnap-sound-installation/; the full piece can also be auditioned on that page.

[9] For a detailed description of the sound installation including the recording and mixing choices see: https://sites.eca.ed.ac.uk/mnap/form-of-the-mnap-sound-installation/

[10] The choice of the contrasting pairs 'pleasant/unpleasant' and 'stimulating/unstimulating' was informed by studies on individuals' emotional response to music and sound. See, for example, Madsen, 1997; Kuwano and Namba et al., 1991.

[11] Rather than delineating at the outset particular, and potentially restricting, definitions of sound and noise, which would be at odds with the exploratory nature of the research project, respondents were encouraged to provide their own understandings. This was driven by our desire to open up the noise pollution debate beyond decibel measurements and numeric scales, informed by Chandola's (2012b, 391) assertion that in their everyday environments people 'do not engage with sounds in their quantifiable manifestation of decibel notes; instead, we engage with a multitude of notes, variously organized as silence, music or noise.'

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"If I was king of India I would get all the horns out of cars." A qualitative study of sound in Delhi[1]

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Abstract. In this paper we present an experimental sonic space, the mobile noise abatement pod (mNAP), constructed and used over a two-week period in Delhi, India, in December 2014. The interdisciplinary project, involving a composer, designer,

carpenter, development scholar, filmmaker, graphic designer and sociologist, aimed to investigate how noise, including honking as one of the most prevalent sounds in Indian cities, is perceived. The fieldwork reveals noise as a complex contextual, spatial and personal experience that is as much about habit as it is about identity and class, intimately related to economic inequality and inherently connected to social justice. This text suggests that attempts to reduce levels of noise need to take into account its meaning and position – by whom and how narratives of noise reduction are constructed and reproduced.

Keywords. spatial experiment; noise pollution; honking; place identity; social class; inequality; Delhi; India.

~~*Male*~~ *Participant: ~~"~~Everyone is affected by honking and yet we all do honk~~"~~.*

Introduction. Cities, and in particular the seemingly imploding/exploding megacities of the Global South, have received widespread attention in recent years ~~(e.g. Davis 2006; Neuwirth 2006; Rühle 2008; Koonings and Kruijt 2009)~~(e.g. Davis 2006; Neuwirth 2006; Rühle 2008; Koonings and Kruijt 2009). Delhi finds itself amongst those large continuous built-up areas and is most likely to see further growth in the next decades (Ahmad et al. 2013). It is – alongside its counterparts – discussed as a place of economic development and innovation (Eichengreen and Gupta 2011; Bhagwati and Panagrariya 2013) and, at the same time, fuels debates and research on widespread poverty, further marginalizing gentrification processes, housing shortage (Dupont 2011, 545; Ghertner 2011) and environmental pollution linked to

progressively worsening air quality, the shortage of clean water as well as limited access to sanitation (Singh and Dhamijal 1990; Sequeira 2008; Chaplin 2011). Noise is a further recognized, yet highly contested, environmental pollutant. This contestation has a number of reasons. Industrialization, urbanization and the expansion of communication and transport systems are often stated as a cause for the "~~"~~'disturbing ~~level"~~level' of noise pollution (Hunashal and Patil 2012). ~~Yet, is the unequal exposure to noise which is one of the most striking aspects of this issue. While total escape from it is almost impossible, it is the most vulnerable populations – people who work on or along streets or those who literally live on or near roads – who suffer most. The exposure to noise for active and passive participants within the urban realm (pedestrians as much as drivers of bicycles, carts, cars, vans and lorries) is exacerbated through types of transport (open auto rickshaws) and driving behaviour (e.g. open invitations to 'sound horn'). Whilst an average city street measures around 70 dB(A) in Ahmedabad, readings of noise levels of main arteries in the city of Ahmedabad, for example, show numbers between 83.4 dB(A) and 85.8 dBA – which is dangerously close to and sometimes above noise exposure levels that are known to damage hearing (Ahmedabad Municipal Corporation, Ahmedabad Urban Development Authority, and CEPT University 2006). Yet, decibels might give us a precise reading of the loudness of a sound or combinations of sound, but it is the context of the noise, its source and producer that are as important~~

In India, as elsewhere, laws regulate permissible sound pressures in decibel measurements (dB)~~ when it comes to understanding debates around noise (Bijsterveld 2008). In India, as elsewhere, laws regulate permissible sound pressures in decibel measurements~~ which express, on the one hand, the rights for citizens to have a

pollution-free environment and, on the other hand, the citizens' duty to keep it pollution free (Miglani 2015). And yet, the permissible levels tend to be exceeded. Studies by the Delhi Pollution Control Committee (DPPC) have shown that norms are not being met and noise levels of main arteries often reach between 80 and 93 dB – which is dangerously close to and often above noise exposure levels that are known to damage hearing (Chandra 2013). At the same time, however, laws specify an explicit 'Right to Religion and Noise' – rendering noise as a multi-modal and multi-dimensional field. And though decibels might give us a precise reading of the loudness of a sound or combinations of sound, they are crucially missing those *contextual*, social, cultural, political, among others, factors when it comes to understanding debates around noise (Bijsterveld 2008). ~~At the same time, however, the law specifies an explicit "Right to Religion and Noise" – rendering noise as a multi-modal and morally disputed field. However, this role of noise as a marker of social and economic stratification is less identified in the literature. Whereas designs of urban soundscapes have~~Noise – with noise here being perceived as any unwanted, loud and disturbing sound (see Schafer 1977) – is therefore better discussed as part of the broader urban soundscape, as scholars from different disciplinarian areas built the concept over time, from composer and author Schafer and his follower, aural historian, Emily Thomspon, to Michael Southworth (1969) in urban design and planning; in Thompson's (2002, 1) words, 'Like a landscape, a soundscape is simultaneously a physical environment and a way of perceiving that environment; it is both a world and a culture constructed to make sense of that world.'

Thomspon's definition draws on Corbin's seminal study (1998) of the auditory landscape in the context the 19th century French countryside, problematising social

divisions, religious conflicts, class and communal identities in light of processes of modernisation. Following paragraphs show parallels between Corbin's analysis and the modern day 'bourgeoisification of Indian cities' (see Ghertner 2011 and Nijman 2006), thus foregrounding the role of noise as a marker of social and economic stratification. And yet, while designs of urban soundscapes – as a means to overcome the negative connotation of noise through a designed and therefore controlled approach to noise – have often come to stand for attempts to create better visiting experiences (Liu and Kang 2015, 102), the manifest and inescapable exposure to noise for large parts of the urban populations in India remains untouched by these predominantly ~~experientially~~ experience-oriented considerations.

~~Honking, in particular, which is strongly regulated and fined when abused in many countries, is incessant in most Indian cities and the huge number and variety of vehicles on the road, combined with people and livestock create an environment that becomes difficult to navigate at best (Baber 2010; Harmstead 2011). In these often hazardous situations of congested roads, and despite its contested status, the horn is considered a necessary evil and is elevated to the status of a warning mechanism so as to mitigate the risk of a collision. Initiatives and interventions – whether government or citizen-led – have largely been ineffective in addressing the above problems (e.g. Kumar, Kumar, and Joshi 2015; Singh 2015), which suggests that there might be other issues at stake when it comes to comprehending the relations between sounds and their use in everyday life.~~

A careful reading of Gandy and Nilsen's (eds.) *The Acoustic City* (2014~~), for example,~~) brings forward the multiple manifestations – visible, tangible, undetectable,

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or, on a different level, social and political – of sound in the urban terrain. Whilst Schafer's coinage of the term 'soundscapes' helpfully interweaved the concepts of space and sound, a more complex conceptualization of the 'acoustic city' has since become necessary – one that points to the dynamic relationship between the acoustic experience of the city and its historical, political and social context (Gandy and Nilsen 2014, 9). Honking is a typical example of noise in the urban ~~acoustics~~soundscape, for it simultaneously embodies and communicates diverse experiences and understandings of the city in terms of environmental and health issues, local politics and infrastructure, as well as individual and collective occupancy of public space~~.~~ (Chatterjee 2016, Singh 2015). And yet, honking is but one noise in an urban acoustic environment that consists of a myriad of other 'auditory landscapes' (Corbin 1998): from natural sounds and human voices to artificial background engine noise, acoustic gentrification or mall acoustics (mall music), for example. In considering these, this paper ~~effectively~~ endorses Smith's (1994, 235) claim that sound is both symbolic and ideological. She thus argues that sound is inseparable from the social landscape and urges for a 'more explicit incorporation of sound […] into research in human geography, and especially into those aspects of the subject concerned with cultural politics' (Smith 1994, 238).

With the above as starting point, this qualitative study of sound in Delhi that took place in December 2014 offers an innovative, interdisciplinarian contribution to the comprehension of the social, spatial and political power implications of Delhi's 'auditory landscapes', providing an evidence base for a simultaneous exploration of ~~sound~~noise as physically and spatially experienced and symbolically perceived. It discusses perceptions and active experiences of sounds in the city to then draw

attention to some complex associations between noise, honking and broader social factors related to cultural and place identity – associations necessary to instigate further qualitative studies to inform policy making and urban planning.

Noise and honking in Delhi: from a 'new spatial order' to a 'socio-spatial disorder'[2]

Though strongly regulated and fined when abused in many countries, in most Indian cities honking is incessant. The huge number and variety of vehicles on the road, combined with people and livestock create an environment that becomes difficult to navigate at best (Baber 2010; Harmstead 2011). In these often hazardous situations of congested roads, and despite its contested status, the horn is elevated to the status of a warning mechanism so as to mitigate the risk of a collision. A recent study conducted in Delhi by the Central Road Research Institute (CRRI) pointed out that 'honking contributes thrice what the normal traffic does at an intersection' (CRRI study quoted in Pandey 2013). This obviously has implications for disadvantaged populations, those living on or in the close vicinity of busy road networks and those whose working environments as street vendor, bicycle-rickshaw or auto-rickshaw driver allow them no obvious means of escaping the constant and dangerous noise levels. ~~As Lee (2015, 236) points out, 'different classes exhibit different modes of infrastructural aptitude and often quite unequal levels of physical discomfort and self-expression [...]' [Fig.~~[Fig. 1.]~~)~~

Fig. 1: Mathura Road, South Delhi, where housing ~~happens~~is found right next to one of the main arteries leading out of the city.

Despite the acute severity of the problem – set to increase over the coming years in line with an anticipated rise of urban populations, car ownership, urban construction sites, and associated traffic through deliveries and heavy goods vehicles – attempts to reduce noise ~~have been manifold, but also largely unsuccessful. Ahmad, Balaban, Doll & Dreyfus (2013), for example, state that in the case of Delhi '[d]espite the recent progress in improving the vehicle fleet and the public transport infrastructure […], most of the problems arising from urban transportation still prevail. Partly, this is because both metro and BRT projects could not attract as much [sic] riders as planned and expected' (Ahmad et al. 2013).~~

~~Equally, bottom up~~by getting people to use less noisy means of transport have been manifold, but also largely unsuccessful (Kumar, Kumar and Joshi 2015). As Ahmad et al. (2013, 647) dispute, '[…] both metro and BRT projects could not attract as much [sic] riders as planned and expected'. Equally, initiatives such as 'Do Not Honk' have not had significant success in Delhi. Whilst they have certainly produced publicity, messages ~~such as~~including 'Do not honk if you love peace', 'For God's sake stop honking' or 'Dear Uncle! Can't you drive without honking' seem simplistic at best ('Do Not Honk | The Earth Saviours Foundation' 2014) especially when considering the evidence about the damaging effects of noise and vibration on ~~both health and safety~~health ranging from irreversible hearing loss and anxiety attacks to hypertension and heart disease (e.g. Majumder, Mehta, and Sen 2009; Chaturvedi et al. 2011). ~~These~~Undoubtedly with good intentions, these initiatives, driven by an active and sometimes activist elite, as well as more recent investigations into health implications around noise pollution (Chatterjee 2016) are further ignored by the actions of car manufacturers such as Volkswagen and Audi. These companies are outfitting their vehicles for the subcontinent's market with electromechanical rather than electronic horns which are not only louder than the horns fitted for models elsewhere, but their tooting sounds last longer (Stancati 2013).

A closer inspection of urban and suburban infrastructure developments in India~~—~~ – from the inauguration of the Delhi metro in 2002 to the 'anti-poor spatial restructuring' that took place in the build-up to the 2010 Commonwealth Games in Delhi which included, amongst other measures, forced eviction of over 200,000 people (Ramakrishnan 2013, 102)~~— begins to highlight a politics concerned with the 'beautification' of both physical and social space and a concomitant process of~~

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~~'polarization and underlying exclusion' of marginalized social groups (Dupont 2011, 550) –~~ – begins to unveil the links between BRT and metro projects and a further exclusion of the disadvantaged from the urban space, what Fernandes (2004) refers to as a 'politics of forgetting'. ~~Located in a broader context of neoliberal globalization~~This politics is concerned with the 'beautification' of both physical and social space and a concomitant process of 'polarization and underlying exclusion' of marginalized social groups (Dupont 2011, 550). Located in a broader context of global neoliberalisation that has strongly affected Indian cities, the new urban agendas and reforms since the 1990s have given rise to a 'new' consumption-driven and lifestyle-defined 'middle class', which represents modernity and the 'bourgeoisification of Indian cities' (Ghertner 2011, 513; Nijman 2006, 762). As Siemiatycki (2006, 287) astutely observes, however, on the occasion of the metro development:

> In a city with such a disparity between rich and poor already, the development pattern consciously stimulated risks driving a further chasm between the classes. The educated, the wealthy and the powerful are being invited to turn their gaze to the world, to sit down for a Big Mac or a slice of pizza and take advantage of the new employment opportunities in the information technology parks that are being stimulated by the metro. The poor, on the other hand, are seeing their homes disappear for a development they do not have the skills or the income to benefit from; metro fares were raised making it harder for them to afford to ride, and their income earning prospects as hawkers were made illegal.

Seen in this light of socio-economic restructuring, Siemiatycki (2006, 288) goes on to argue, the Delhi metro sought to 'inculcate a pattern of public behaviour that accompanies a vision of modernity […] It reflects an attitude that prioritizes the

pleasures of the affluent and the profitability of multinational corporations over the needs of the city's poor.'

The aforementioned anti-honking campaigns can be similarly seen in a neoliberal context of individuals' responsibilization and shift toward a civil society, whose workings and practices are familiar mainly to the 'culturally equipped middle classes' (Routray 2014, 2293-4; after Chatterjee 2004). In this context the poor are largely at a disadvantage 'when it comes to participating, negotiating and resisting modern governmental systems' (Routray 2014, 2293). Thus, while an anti-honking campaign may pertain to the cultural understandings and capacities of a socio-economic elite who can stick a 'Do Not Honk' sticker on their own ~~a~~ car, or possess the resources and time to be informed about and participate in such 'common good' actions, the majority of the poor who suffer more from noise pollution levels, as previously discussed, remain marginalized. It is for such reasons that Nijman (2008, 75), among others, critiques NGOs for their 'inherently undemocratic nature and lack of accountability to the broader populace'.

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The above commentaries call for a more interdisciplinary and experimental approach to investigating perceptions and experiences of noise, beyond often ~~bottom~~top-down initiatives that superficially address anti-honking, as if noise is a one-dimensional issue. Such an approach would take into account narratives and constructions of sound in the urban environment, thus enabling a deeper understanding of the factors that underlie people's responses and attitudes to noise pollution. This understanding informed the conceptualization of the mobile noise abatement pod (mNAP) as a tool

to investigate the complex issues around noise and the development of the research process as described in the next section.

The experimental sound space and research set-up.

~~The research project that informs this paper's discussion was funded by the UK's Arts and Humanities Research Council (AHRC)~~The study that informs this paper's discussion, the 'Boxing the mNAP' project, was a six-month (1 September 2014 – 1 February 2015) research project funded by the UK's Arts and Humanities Research Council (AHRC). Driven by the previously discussed ineffectiveness of various campaigns to generate action, beyond the level of raising awareness only on noise pollution, the aim of the mNAP project was to promote an active way of listening to participants, thus helping them to better perceive and problematise the experience of noise and honking, and make direct associations with their everyday exposure to noise pollution. In addition, our goal was to sensitise and energise relevant governmental and non-governmental organisations and groups to resume efforts for positive change on a policy and practice level toward a healthier urban environment in Dehli and India more broadly.

The mNAP was conceived as a follow-up to work undertaken by members of the research team at the UnBox Labs 'Future Cities' event at the National Institute of Design (NID) in Ahmedabad, India, in February / March 2014.[3] The UnBox Labs project aimed to bring together creative practitioners, artists and researchers from the UK and India ~~together~~ for a ten-day experimental exploration of the theme of 'Future Cities' (Quicksand 2014) and was part of the larger framework of activities of the UnBox Festival 2014. It was in Ahmedabad, where an initial version of the ~~noise~~

~~abatement pod~~mNAP was developed as a tool, or 'social condenser'[4], to engage with the omnipresent noises of the city and its consequences on its inhabitants. Working from within the somewhat sheltered campus of the NID, a group of creative practitioners and academics co-developed a mobile sound-shielded box (made from predominantly borrowed and found materials that provided a sheltered room to be used for the concentrated experience of the noises of the city.[5] The initial version, built on the back of a bicycle rickshaw frame ~~and~~was tested both within the environment of the NID and a nearby urban village. [Fig.2.] This was subsequently advanced by ~~some~~ members of the initial team to provide less of a visual presence but a better acoustic separation from the external environment, which in turn resulted in a box that due to its weight was less mobile than the first experiment.[6]

Fig. 2: The test-version of the mNAP in Ahmedabad. Here, a lightweight sound-insulated box was constructed on the back of a bicycle rickshaw, providing some sonic separation from the urban environment. This box was tested both within the National Institute of Design and the urban village of Kocharab.

~~Based on our initial research both in the field and of the literature, which showed questionable effectiveness of many bottom-down initiatives, the Delhi experiment aimed to engage predominantly with policy-makers, NGOs and activists to understand their perception and experience of noise. To aid this aim, the design of the first box was altered to provide less of a visual presence but a better acoustic separation from the external environment. Hence, we implemented a number of structural and material changes in the construction of the mNAP – which in turn resulted in a box that due to its weight was less mobile than the first experiment. This beta version was subsequently~~The beta version of the mNAP, which is discussed in the context of this paper, was built for and tested in the context of the 2014 UnBox Festival which took place at the Indira Ghandi National Centre for the Arts, Delhi between 12th and 14th December 2014. To broaden the empirical set up of the fieldwork, we further installed the mNAP at the India Habitat Centre for ~~2~~two days prior to the Unbox Festival. Being located there allowed us to reach an audience beyond the ticketed festival of collaborative and interdisciplinary making to include built environment professionals, creative entrepreneurs, university students, researchers and artists who work from this centre for nationally and internationally active organisations as well as for many of Delhi's key development agencies.[7] It was in those two locations, the India Habitat Centre and the Indira Ghandi National Centre for the Arts where the interviews were conducted over ~~5~~five days.

75 participants in total, 30 female and 45 male, mostly middle and upper class professionals, often with a degree from abroad, engaged with the research (sound experiment *and* follow-up interview), the youngest being 17 years old and the oldest 70 years old. ~~Mostly middle and upper class professionals, often with a degree from~~

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abroadAs expected, the research project captured perceptions of noise from people who are less likely to be as aggressively exposed to noise, given their relative economic power to purchase 'calm'. That most participants (43 out of 75) reported using their own car whilst travelling in Delhi, for example, points to such an understanding. In the context of athis research project, however, whose intention, among others, was to leave a lasting impact on the debate surrounding noise pollution through the people it engagedas previously explained, the pool of participants was regarded as appropriate in light of actively informing policy making and initiating public actions that address noise pollution, in tandem with associated, contextual, social, development and poverty problems, by way of working for environmental governmental and non-governmental organizations, the press, the construction industry, education, and planning agencies. On another level, that the research setup was located at two relatively controlled and, in terms of noise levels, subdued sites, sheltered from major link roads through greenery and setbacks, we ensured that a focused engagement with the sound experiment was possible and that the follow-up interview was recorded with sufficient clarity. [Fig.3.].]

Fig. 3: The mNAP at the Indira Gandhi National Centre for the Arts.

Designed to cancel out exterior noises, the mobile noise abatement pod (mNAP) was intended to take people out of the noisy urban space and expose them, firstly, to an entirely silent environment before subjecting them via headphones to a 12-minute composed sound installation. ~~[Fig.4.]~~ It was thus conceptualized as a tool for not only making the all-pervasiveness of sound or noise pollution more ~~visible~~'hearable' to the research participants, but also provoking discussion that would afford a better understanding of the reasons for the seemingly inescapable intensity of noise produced by the constant presence of cars, horns and amplifiers in Indian cities.

~~[See attached sound file]~~

~~*Fig. 4: The mNAP sound recording*~~

Once inside the mNAP participants were exposed to a stereo piece based on recordings collected at various locations in and around Delhi which captured diverse, yet typical, sonic experiences of the city.[8] Only these recordings were used to make the piece – no other sound files, synthesized or otherwise recorded were used. This recreated and allowed participants to immerse themselves into a condensed and composed, yet 'authentic' sonic experience of ~~their~~an everyday urban environment.[9] That this took place in an otherwise artificial space enhanced concentration and focus on the sound piece and helped to efficiently record people's reactions to what they were hearing by marking them via an iPad interface; and, finally, enabled recollection of and reflection on the sound recording in follow-up interviews.[10]

The spatially confined and controlled phase of listening inside the mNAP thus set off a broader debate on the experience of the urban soundscape, which unravelled during our interviews with participants. The piece was reminiscent of sounds that our participants are exposed to on a daily basis and thus prompted them to elaborate on their reactions to these sounds during the experiment and contextualize them in their everyday lives. The sound of birds chirping and singing, for example, was identified as one of the most pleasant sounds within the piece and thereby enabled participants to reflect on their own urban sonic environments and which sounds they find most enjoyable or most unbearable and disturbing. Participants talked about the effects of noise pollution on their behaviour, health, mood and feelings, and articulated diverse understandings of the prevalent honking practices.[11] Despite representing one facet only of noise pollution in Delhi, honking was particularly addressed as a readily identifiable noise by both locals and visitors, extensively discussed in research and by the media, and being the focus of several campaigns aimed to reduce noise pollution

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in urban India, as already discussed. The majority of the interviews were conducted in English ~~to be~~. Interviews conducted in Hindi were facilitated by an Indian, Dehli-based member of the research team. All of them were then transcribed and analysed thematically with NVivo.

A mixed-methods approach to mapping responses to sound

While listening to the sound installation in the mNAP, participants used an iPad interface, which allowed them to press ~~"mood" buttons ("unexciting" / "exciting", "pleasant" / "disturbing").~~'mood' buttons ('unexciting' / 'exciting', 'pleasant' / 'disturbing'). When the participant pressed a mood button, it was time-stamped in milliseconds relative to the start of the playback. Doing so allowed a quantitative understanding, to start with, of what the participants perceived as being a ~~"~~'pleasant/~~unpleasant"~~unpleasant' and ~~"~~'stimulating/~~unstimulating"~~unstimulating' sound.

With the analysis of the data plot in mind, care was taken to match the ~~headphones~~headphones' listening levels with the sound pressure levels present at the point of recording. The goal in doing this was to ensure that the participants' experience of loud honking was at least objectively similar to the sound pressure levels experienced on the street. Of course, the sonic context in which loud sounds are placed in the sound installation at times bears no resemblance to a real-world street ambience, so the subjective perception may be quite different in these two very different listening environments. In particular, quite sudden loud sounds in the installation may be significantly more negatively experienced, whereas in the context of an overall noisy ambience they could go almost unnoticed or ignored. This

qualitative difference in the listening experience was confirmed by the research participants in the follow-up interviews.

What the plot of the 75 individual user responses shows us then is that there is in fact consensus at certain points of the piece ~~[Fig. 5.],~~ as represented by point clusters. [Fig. 5.] The most striking clusters appear around 600 seconds (= 10 minutes) into the piece. ~~At~~As expected, at this point clusters are found in both the "'stimulating/~~disturbing"~~disturbing' and "'unstimulating/~~disturbing"~~disturbing' categories. Interestingly, the cluster is denser first of all in the stimulating category and then quite clearly shifts to unstimulating. At this point in the mix we have a loud music recording, consisting of voice and percussion, and traffic noise, including beeping. The traffic noise continues as the music stops. This may well be responsible for the shift from stimulating (music) to unstimulating (traffic), but because both music and traffic are loud, each is in fact designated disturbing. At this point in the piece there is an almost complete absence of pleasant markers.

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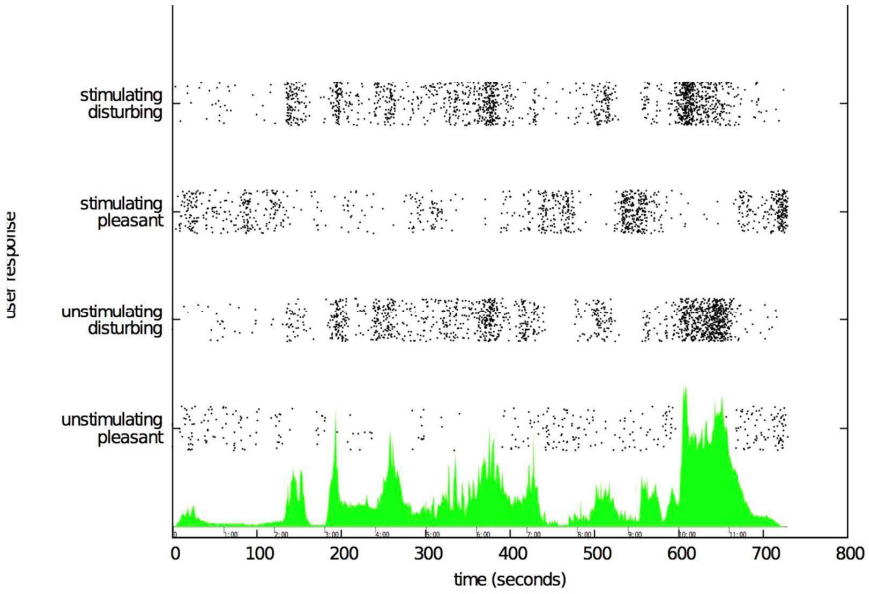

Fig. ~~5~~4: Plot capturing the user response density per second of recording. The green area represents loudness levels (RMS) in the piece.

Similar but not quite as striking clusters occur at other peak loudness parts of the piece, for instance just before 200 seconds, around 250 seconds, and at around 370 seconds. ~~At~~Again, this was anticipated as at each of these points there are traffic and other sound pollutants, such as jet engines. Clearly a majority of participants find these sounds disturbing, no matter what their view of the idea of the absence of such sounds in general daily life may be.

The follow-up interviews found the participants agreeing that traffic noise, predominantly honking, is perhaps the most disturbing sound in the city. This second layer of qualitative analysis, however, enabled an enrichment and substantiation of this understanding through the emergence of three broad umbrella themes. Firstly, the experimental study shows that certain sounds, despite their sometimes aggressive

nature, are considered a necessary device to communicate people's actions and practices; secondly, exposure to aurally intense environments tends to be an accepted, sometimes even comforting, condition which is taken for granted and is deeply embedded in and accompanies people's everyday practices; and, thirdly, statistically and medically viewed exposure to involuntary harmful levels of noise do not simply translate into noise pollution in the ears of those who are affected by it ~~(this is also borne out across the globe by people's willing attendance at concerts and club nights which produce dangerous sound pressure levels).~~ .

By means of separating sound from its visual experience within urban space, the study highlights that decibel numbers on their own don't capture the different roles of sound, which is inextricably bound to and shaped by culture, social class, economic power and lack thereof, personal and place identities; and, thereby, noise pollution campaigns or research that highlight quantitative dimensions of the problem alone effectively reduce its complexity. This complexity is here captured in the participants' reactions to the sound installation, which display differentiated understandings, conceptualisations and often deliberately selective appropriations of their respective aural urban environments.

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The voice of the city

Interviewer: You have just heard the audio file. How did it make you feel?

~~*Male participant*~~*Participant: I heard the reactions of the city.*

That sound – or, indeed noise – is not experienced as a single event, isolated from social context (Cain et al. 2013), is a key insight that the research participants shared

out of the sound experiment. The participants' recollections of the sound composition were accompanied with narratives that contextualized and enlivened their listening experience. The stories that they constructed, in tandem with listening to sounds, thus made them feel '*disturbed'*, '*happy'*, '*annoyed'*, '*scared'*, even, '*shaking'*, and '*feel like turning around*' as if '*some of the things were happening right behind you*'.

When asked to share his experience of the sound experiment, one participant depicts the physical settings where he located the sounds that he listened to. Rather than feeling enclosed and isolated inside the box, focusing on the sound allowed him to put together visual fragments of his everyday life in the city in what comes out as a detailed and fascinating narrative:

> *It sounded like the day was starting. I heard birds chirping. It felt like you were in your balcony, seeing the sunrise so it was quite pleasant. After that, screaming sounds (laughs). The buses, the honking, the crowd. Then it feels like we have gone shopping. A Sunday is even more hectic than a working day. You are running around with your family. The hawkers are around, you know. The ladies are window shopping, their words are quite clear. Like my office is in X place, I have an institution there and lots of students come there, I can see their faces.*

To a great extent, therefore, the communicative power of sounds appeared to lend itself to an almost tangible, physical quality that engendered emotional, visceral and bodily reactions to the participants. Parallels can be drawn with Rice's (2003; 2013) research of the impact of the acoustic dimension of hospitals on patients – an 'active soundscape' (Rice 2003, 4) which is shown to be experienced with particular immediacy, thus making more acute the experience of other senses. In the context of

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the mNAP experiment, sounds evoked images and enabled participants to observe and describe them with intense curiosity – scenes from urban life and natural scenery. To use their own words, people were '*airported'*, '*transported'*, '*re-imagined'* in and out of the box, '*visualised'* waterfalls and mountains, and, generally, felt '*interested'*.

The above reflections ~~came with an~~, while not directly relating to honking as urban noise, are interesting as they illustrate a qualitative appreciation of ~~such~~ associative recollections that come with sound, and which enable communication with the city and its dwellers ~~and~~. In light of discussing sound as communication in this section, they describe a liveliness that imparts a sense that '*the city is not empty'*, as another participant argued; '*people talking around, life, people signing, random things happening […] a city without noises is not good'*, she went on to explain. This was a shared understanding by most participants, whose ideal city '*wouldn't be a noiseless*' city – '*it's quite a comforting sound, that there is people around you* [sic]', a woman said, thus experiencing a sense of connection with people via sound.

The above remark exemplifies Cain et al's (2011, 232) holistic conceptualisation of sounds as 'meaningful events' that create a set of expectations and understandings to individuals and communities. In this light, they contend, 'simply removing negative sounds is not enough […] the simple elimination of ~~"noise"~~'noise' is not always appropriate and can create anxiety' (2013, 232). This is not to say that the participants are unaffected by the heavy traffic that they confront in the city of Delhi – on the contrary, honking was described as the most unbearable noise that afflicts Delhi residents on many levels, from the hearing problems that some of them admitted having, to the everyday vexation that obstructs their work, relationships, movement

and peace of mind. And, yet, disturbing as it may be, honking was frequently seen as 'sociable', a messenger that made traffic personal but also conveys the frustration experienced with it, almost like a safety valve that enables people to release repressed stress and communicate this annoyance to one another.

Seeing honking~~,~~ as part of the broader urban soundscape~~, in light of its symbolic, communicative quality,~~ therefore helps to frame it as a form of communication that people engage with in order to convey messages, rather than a mere nuisance – even if this understanding involves the 'necessary evil' aspect of it. Given the practical difficulty of engaging in dialogue with each another in order to get through traffic, communication is embodied in honking: *'[…] traffic is based on knowing what's happening and knowing what's happening is also telling what's happening'*, a participant explains, '*that's [people's] way of communicating on the road, when they can't, like, yell outside their car to someone else*'.

Even more telling, however, is what the majority of the respondents articulated as a key expression of communication through honking, i.e. that it enables people to '*put into action some repressed feelings of daily lives*'. Interestingly, therefore, honking is here described as both the source of and outlet for frustration that links to an overall assessment of their everyday life. At the same time, honking is a manifestation of power: '*it's like a kind of announcement that we own a car, I have a big car and I have all the right to honk'*. It establishes power and status while further enforcing social stratification (it is only those who have a horn who can use it), which unfolds into a self-fulfilling process of dominance, as '*the more you honk the more powerful you are'*. In this light, it communicates a clash of wealth, classes and dynamics in

Delhi, thus unveiling social identities and conflicts. As one participant described it, it is a '*form of violence, a form of abuse'*, thus pointing to more symbolic understandings of honking than the "'get out of my ~~way"~~way' warning described above.

It is also beyond honking debates, however, that symbolisms and meanings were identified as being communicated by sounds – symbolisms that differed depending on a variety of factors. These mark some interesting insights into perceptions of religion and religious practices, triggered by the intensity, loudness or calmness, of related sounds that people were exposed to in the mNAP. Whilst several respondents, for example, reported using meditation as a means of relaxation and retreat from the city hullabaloo or withdrawing to a temple in order to find acoustic peace, for others sound became a marker to distinguish religions and their respective practices stating, for example, '*The Sikh temple believes it has the right to be loud, Hindus believe they have the right to be loud. This is wrong.'*

What is notable in the above accounts is the symbolic messages that sounds appear to communicate and embody. This relates to De Witte's (2008) fascinating exploration of the power confrontations between Christian and Pentecostal-charismatic churches in Accra, Ghana, making claims to political and civic rights on the occasion of the 'noisemaking' religious practices of the latter – for example, through loudspeakers, traditional drumming, passionate preaching and frantic shouting, all fusing into what De Witte calls 'battlefield of religious sound' (2008, 695). Her work confirms that sound 'is never an objective or neutral phenomenon' (2008, 692); rather, it simultaneously reflects and embodies power, and represents broader, civic and

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political issues and agendas for the different social and religious groups. ~~In the same vein, market sounds generally engendered a sense of comfort and familiarity, whereas a group of laughing and bantering boys was associated by some female participants as 'uncomfortable' – pointing to sound as a measure of safety.~~In the context of this study, the co-existence of different religious groups in Delhi, from Hindus, Muslims and Sikhs to Buddhists and Christians, among others, appears to create similar tensions, according to the aforementioned respondent.

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In the same vein, while market sounds engendered to most research participants a sense of comfort and familiarity, a group of laughing and bantering boys was associated by some female participants as *'uncomfortable'* – pointing to sound as a measure of safety. Informal discussions with the Indian members of our research group and participants confirm, indeed, the pervasive and deep, yet little addressed, gender inequality problem in India, every so often raised by the media (e.g. Lal 2016).

In the above examples, sound was used by participants to create distinctions between social status and religion, and identify '*the noisy 'other'* [as a] consistent rhetoric' (Chandola 2012b, 402) which marginalises, politicises and moralises people's narratives and understandings of the self and other. This multi-layered acoustic experience of the city of Delhi becomes further enmeshed with notations of professional status and level of education~~.~~, the following comments by research participants being a vivid reminder that class inequalities in India still prevail – 'Caste is not Past', a New York Times article alerts (Sankaran 2013). '*Unnecessary honking*' is associated with '*little educated people*', '*illiterate*', '*uncivilised*' members of the Delhi society and an alleged decrease of noise is linked to the sensitivity of 'creative'

people towards these issues. On another level, the active and excessive production of sound through, for example, honking, is also identified as an indicator for an emerging society focused on 'achievement' – arguably pointing towards a potential increase of the problem rather than its reduction through the gradual but continual elimination of pedestrians and cyclists.

Whether physical or symbolic, the qualities of sound appear, therefore, to permeate ~~people's~~the respondents' understandings of identity, their sense and experience of place. Rather than offering monolithic accounts of noise and sound as a negative *per se* or isolated phenomenon, participants pointed to much more complex understandings. People's culture, status, religious orientation, emotional or psychological state and well being, everyday experience of traffic, all permeate and are expressed by sound. This resonates with Chandola's (2014, 215) understanding that

> […] sound is not just a moment of insular and individuated instance of utterance, but derives its momentum from the collusions with the multiplicities that abound these matrices: spatial, temporal, sonic, social, cultural, and political. A listener, not unlike a cartographer, traverses through these matrices to 'make sense', to hear, to map not by accompanying each sound (or in the case of a cartographer, venturing into every crevice) but by deliberately, unintentionally, and inadvertently leaving most un-listened into.

All-pervasive as it is, sound communicates city life, it expresses the '*reactions of the city'*. Or, as a participant contemplated, '*[sound] passes messages to us, almost subconsciously, without anyone's consent*'.

Normalised soundscapes

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~~INT~~Interviewer: Why do you think people honk?

~~M~~Participant: I think it's part of the habit.

~~INT~~Interviewer: Habit of what?

~~M~~Participant: Habit of honking.

Though discussed as a context-specific and multi-layered experience that is strongly interwoven with their sense of place, most participants' first reaction when they stepped outside the ~~pod~~mNAP was one of surprise and wonder; the experiment was seen as a revelation allowing them to appreciate sound in its own right. Their responses thus led to another key theme that emerged out of the research, that of sound as a habit, a taken for granted experience. Some people were taken aback by the immediacy of the impact that their exposure to the recorded piece engendered, sharpening their understandings of sound as a distinct and, often, overlooked sense where it became possible to '*segregate sound as an experience different from what I'm seeing, what I'm thinking, what I'm smelling'*. This participant's account evokes Chandola's (2012a, 56) understanding of 'soundscapes as cultural systems' encapsulating a variety of practices, beliefs, habits and social positionings, thus rendering the distinction between the auditory and the visual ineffective – a compelling case for a multi-sensorial appreciation of people's everyday experiences.

The sound experiment was thus seen by many of the participants as an opportunity to disentangle sounds that surround them, becoming '*aware [of] how much noise is surrounding everything that I'm hearing',* which, though familiar, they usually work in the background without being picked up and actively listened to. Participants' concentration on the sound composition thus resulted in a surging awareness of the

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variety of acoustic stimuli that accompany their activities, which, mundane and repetitive as they are, largely go unnoticed. This confirms previous arguments that sound is so powerfully interwoven with space, cultural practices and personal experience that it becomes part of unquestioned, deeply-rooted habits. Some participants would even feel '*uncomfortable'*, that '*something is missing'* and in '*need to be in a noise-like situation*' if they found themselves in very quiet spaces, for example, in a village: honking has become normalized to the extent that people '*have become de-sensitised*'. This is a '*disturbing'* realisation to this woman, echoing Rice's (2003, 4) astute remark upon the sonically constituted and ordered sense of self; '*in real life situations'*, she pondered, '*we don't react, but since I was inside the box and there was no occupation I concentrated […]*'.

When it comes to honking, in particular, another participant acknowledged that '*it's become a norm, like it's kind of getting people aware of trying to push through the traffic and all that, but there's clearly no ethical idea behind it*'. The apathy to the harmful and disturbing effects of honking, which went down to a '*just for fun'* attitude of many drivers, who '*sometimes honk without any real reason, just to irritate others*' was identified as a learned practice on the streets, associated with a mentality developed from the early stages of someone's driving experience whereby the honk becomes a part of '*our system*'.

Could it be, therefore, that honking, among other commonplace sounds, though disturbing and harmful as it may be exacerbating noise pollution, is not acted upon because it is habitual and taken for granted, revealing individuals 'passive soundselves' against the city's dominant soundscape (Rice 2003, p. 7)? The previous

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section showed that sounds communicate messages and are bearers of particular conditions, feelings, cultural practices and perceptions. Stripped of its associated sounds and routine noises, therefore, Delhi would be a strange place leaving people '*confused'*, '*displaced'* and '*curious'*.

Conclusions

> ~~'~~*When we are in the noise we are the noise, when we complain about the traffic, we are the traffic.*~~'~~
>
> ~~Female participant~~
>
> Participant

The above discussion comprises an analysis of sound as bearing multiple identities, with participants' narratives being constructed around contextual, place- and culture-specific issues that affect their everyday lives. This complements Chandola's (2012b, 392) powerful argument that structural inadequacies are important to understand, yet 'it is equally significant to engage with how the city is lived, produced, created and contested.'

The study's contribution to this field is thus ~~two~~three-fold. Firstly, following interviewees' responses, it evidences that noise is relational: it is linked to personal experiences, perceptions and identities. Decibels might be one measure to capture the level of noise, but noise cannot be separated from its socio-political meaning and economic context: what to some respondents is an acceptable level of noise or simply loud sounds, but at the same time comforting, becomes for others a matter of safety, a means to talk about class, measure of the level of education or, indeed, religious

beliefs. Whilst the particular set of participants of our study were able to speak of measures to avoid or blank out unwanted noise, the choice to withdraw from noisy surroundings, however, does not present a possible option for the majority of the population and especially not those who work on or along the roads of Delhi.

Secondly, the research shows how deeply sound is connected to the construction and maintenance of identities. Discussions with people showed that they identify themselves and Delhi through sound, thus revealing some complex constructions of this issue – in relation to education and culture, economic and social status, or religion, for example. Thus, honking in Delhi emerges here as part of a greater nexus of social issues and, normalized and embedded in everyday experience as it is, it spills over into other areas of social life. It is also thus perceived as shaping both ~~people's~~participants' relationships as well as cultural/place identity, with narratives unfolding into a deeper analysis of structural and societal problems within the Indian culture, beyond traffic problems and honking, and which are often reflected in the distinct soundscape of their respective locality. This reinforces Chandola's (2012b, 402) claim that 'noise is not always, and singularly, about loudness, nor is it always about sound', rather a 'matter of social and cultural specificity and subjectivity.'

Finally, and linked to the above, although the study did not directly aim to discuss the problem of noise pollution and honking as experienced from the perspective of disadvantaged populations, the identity- and culture-bound layers of analysis offered by our otherwise middle-class and educated participants are too telling to interpret only in these narrow class confines. Importantly, they call for further research into the implications of noise pollution for the urban poor, as well as other vulnerable social

groups, such as children or people with disabilities. Follow-up research will help to enrich and advance aforementioned studies that helped to conceptually frame this piece of research (indicatively, Chaterjee 2014; Routray 2014).

We argue that these findings from an interdisciplinary ~~conceptulised~~conceptualised experimental space matter particularly to fields such as architecture, planning and urban design. Whilst these disciplines deal with noise produced by urbanisation through the creation of noise buffers for example or urban soundscapes, this form of making space often only *re*acts: it is not taking sound and other everyday experiences and patterns as a starting point around which encounters, events, or indeed infrastructures, are designed. Our experimental study points here to the importance of the storied element of sound and its capacity as a bearer of identity in the (social) production of space. Whilst it has been argued (Beatley 2013) that '[th]e subject of sound needs to be more squarely on the agenda of urbanists', our study argues that it is a deep engagement with the complex narratives of sound that is needed in order for sound to get onto these agendas.

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[1] The research was funded by the Arts and Humanities Research Council and supported by the Unbox Festival, Delhi, 2014, the British Council, The University of Edinburgh and the University of Sheffield. The project received ethics approval from the University of Edinburgh. The authors would like to thank the India Habitat Centre and the Visual Arts Centre for hosting the project, as well as the Jain family for providing the space for constructing the box.

[2] Dupont 2011~~:~~, 597, citing Marcuse and van Kempen, 2000 and Banerjee-~~-~~Guha 2002 respectively.

[3] UnBox was initiated in 2011 by the interdisciplinary Bangalore and Delhi based practice Quicksand and explores how creative collaborations between researchers and practitioners can push boundaries by fostering new alliances. The UnBox Lab in 2014 was organized under the overarching topic of 'Future Cities'. A range of projects

developed at the UnBox Lab where further developed for the UnBox Festival in Delhi in December 2014.

[4] Initially proposed by a group of Russian architects in the 1920s, where the term 'social condenser' was used to describe new social building typologies, it is here used to describe an object that is more then a mere box: it both attracts attention and provides a context for conversations around the topic of noise.

[5] The initial Ahmedabad team was comprised of Aditi Kulkarni (graphic designer), Ankit Daftery (electronic artist), Michael Edwards (composer), Persis Taraporevala (development scholar), Shradha Jain (film maker) and Tatjana Schneider (designer / educator) and was supported by Vivek Sheth (exhibition designer). We were further helped by the NID's timber workshop in the actual making of the box.

[6] The on-site Delhi team comprised of Michael Edwards, Persis Taraporevala, Shradha Jain and Tatjana Schneider. Maria Patsarika joined the team to work on the interviews- and data analysis. In Delhi, the team was further supported by the graphic designer Vidit Narang, the carpenter Akhilesh and his team.

[7] ~~While informing about~~ Although the ~~'where' and 'when'~~selection of ~~the research experiment beyond these locations, in particular through direct engagement with people 'serving'~~ these two ~~locations – bicycle and rickshaw drivers, delivery personnel, cleaners and kitchen staff – and more likely to be directly exposed to noise, the study is predominantly based on participants who also wanted to participate in the interviews. With many partaking in the experiment, most were then not keen to answer questions about it. Although this~~sites was in line with our aim —to engage predominantly with policy makers, activists and members of environmental organisations—, the study cannot be considered representative of a broader

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demographic in Delhi~~.~~, i.e. including the perspective of more disadvantaged populations, particularly those most affected by noise and honking. Due to time restrictions and the already set research project framework no further field research was possible. This was a given limitation of the present study, which, nonetheless, works as an incentive for follow-up research. That the present study, though drawing on the experiences and perceptions of socio-economically advanced poopulations in Delhi, bring forward issues of ecnonomic inequality and social (in)justice, we consider a critical outcome for further study into the field.

[8] The recordings were made between 30 November and 4 December 2014 using binaural recordings of high- and low-frequency, close and remote, human and natural sounds, and collected at locations in and around Delhi over a 5-day period. Details on the creation of the piece can be found at https://sites.eca.ed.ac.uk/mnap/form-of-the-mnap-sound-installation/; the full piece can also be auditioned on that page.

[9] For a detailed description of the sound installation including the recording and mixing choices see: ~~https://sites.eca.ed.ac.uk/mnap/form-of-the-mnap-sound-installation/~~https://sites.eca.ed.ac.uk/mnap/form-of-the-mnap-sound-installation/

[10] The choice of the contrasting pairs ~~"~~'pleasant/~~unpleasant"~~unpleasant' and ~~"~~'stimulating/~~unstimulating"~~unstimulating' was informed by studies on individuals' emotional response to music and sound. See, for example, Madsen, 1997; Kuwano and Namba et al., 1991.

[11] Rather than delineating at the outset particular, and potentially restricting, definitions of sound and noise, which would be at odds with the exploratory nature of the research project, respondents were encouraged to provide their own understandings. This was driven by our desire to open up the noise pollution debate

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beyond decibel measurements and numeric scales, informed by Chandola's (2012b, 391) assertion that in their everyday environments people 'do not engage with sounds in their quantifiable manifestation of decibel notes; instead, we engage with a multitude of notes, variously organized as silence, music or noise.'

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Mathura Road, South Delhi, where housing is found right next to one of the main arteries leading out of the city.

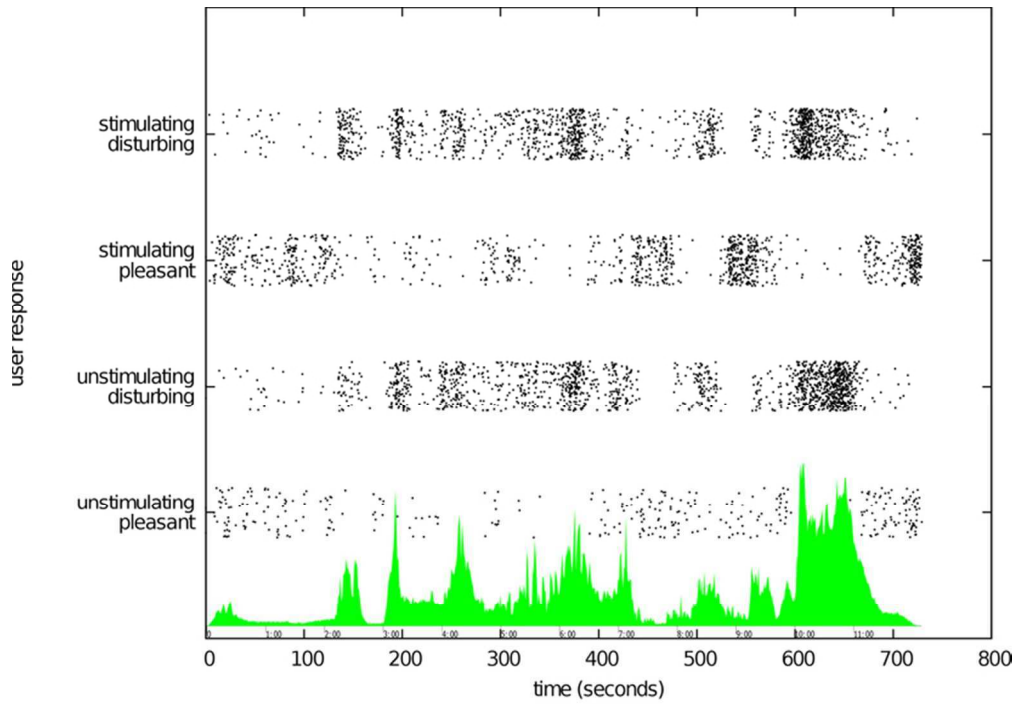
150x112mm (150 x 150 DPI)

The test-version of the mNAP in Ahmedabad. Here, a lightweight sound-insulated box was constructed on the back of a bicycle rickshaw, providing some sonic separation from the urban environment. This box was tested both within the National Institute of Design and the urban village of Kocharab.

112x63mm (150 x 150 DPI)

The mNAP at the Indira Gandhi National Centre for the Arts.

149x112mm (150 x 150 DPI)



Plot capturing the user response density per second of recording. The green area represents loudness levels (RMS) in the piece.

139x97mm (150 x 150 DPI)

Dear Matthew Gandy,

Please find attached our revised article following your suggestions and those of the peer reviewers.

We have gone over the 2nd statement (given that the 1st did not suggest further revisions) and have reworked the text again. Our detailed responses to these comments are highlighted in red.

Please do let us know if there are any further questions.
We do look forward to publication!

Thank you

Tatjana Schneider
On behalf of all authors

Referee 1: "If I was king of India I would get all the horns out of cars." A qualitative study of sound in Delhi

Some of my criticisms to do with inequality have been dealt with. The paper was already an accomplished piece of empirical work.

Referee 2: "If I was king of India I would get all the horns out of cars." A qualitative study of sound in Delhi

This paper explores an understudied field of urban research: sound/noise in Delhi. The paper is well written and organized, and very innovative in terms of topic and empirical approach. However, there are two main areas that need to be further revised:

1) The terminology needs to be further clarified:

a) While the authors make interesting links to key concepts and literatures on "urban sound" they need to clarify the terminology. What is the difference between the idea of a "soundscape", an "auditory landscape", an "urban acoustic environment", "acoustic gentrification", and "urban acoustics". Which terminology will be used in this paper and why? The authors need to define those concepts, which are relevant to this specific paper and elaborate on how their empirical research expands or questions them. For example, how does the idea of an "auditory landscape" as developed by Corbin in the context the 19th-Century French countryside, translate to an urban context? Why is the concept of the "auditory landscape" relevant for this paper?

The paper focuses on noise, which is the key concept problematised in the paper. In doing so we are also making associations with the concept of (urban) soundscape, in order to explore how narratives of noise reduction are constructed and produced in the socio-political context of Delhi.

More specifically, see the changes made in 'Introduction'.

b) Page 3 L 8-39: While the author/s have included key texts in this section, their way of referring to the literature differs from the style of citing in the rest of the paper. As the focus of this paper is on "noise" and "honking" in particular, the reference to Smith (ideological and symbolic aspects; cultural politics) needs to be balanced with key texts on the material and physiological aspects of honking/noise (e.g. in relation to public health).

There is already a reference just before Smith's note on the ideological / symbolic qualities of sound: 'Honking is a typical example noise in the urban soundscape, for it

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simultaneously embodies and communicates diverse experiences and understandings of the city in terms of environmental and health issues, local politics and infrastructure'.

In addition to this, the physiological aspects of honking and noise are addressed in the following section, 'Noise and honking in Delhi: from a 'new spatial order' to a 'socio-spatial disorder'' For example: '[…] the evidence about the damaging effects of noise and vibration on health ranging from irreversible hearing loss and anxiety attacks to hypertension and heart disease (e.g. Majumder, Mehta, and Sen 2009; Chaturvedi et al. 2011). These initiatives, driven by an active and sometimes activist elite, as well as more recent investigations into health implications around noise pollution (Chatterjee 2016) are further ignored […]'

2) There is a disjuncture in the paper, which needs to be addressed and linked, between a) the theme of "noise and the urban poor" and b) the empirical study, which involves only middle-class participants.

a) The authors need to state more clearly what the exact aims of the empirical study are. Was the aim to create awareness about noise pollution / honking in Delhi amongst policy makers and urban professionals by providing a concentrated space for engaging with sound? Was the intention of the empirical part of the project to encourage policy makers and professionals to engage with the topic on a policy level? If so, were there any results after this study?

See first paragraph of section 'The experimental sound space and research set-up.'
Re. the last question, it is too early to know whether there have been results out of this study.
See also in same section 'It was thus conceptualized as a tool for not only making the all-pervasiveness of sound or noise pollution more visible to the research participants, but also provoking discussion that would afford a better understanding of the reasons for the seemingly inescapable intensity of noise produced by the constant presence of cars, horns and amplifiers in Indian cities.'

b) On Page 6 L 3-13 the authors state that anti-honking campaigns involve a socio-economic elite who "possess the resources and time to be informed about and participate in such 'common good' actions" – how does the empirical research set-up and selection of participants in this paper differ or does it replicate the problem addressed by Nijman? How could poor people benefit from this study?

See footnote 7
The links between the choice of the empirical set up and the resulting selection of participants is acknowledged also in the body of the text – e.g. 'As expected, mostly middle and upper class professionals, often with a degree from abroad, the research project captured perceptions of noise from people who are less likely to be as aggressively exposed to noise, given their relative economic power to purchase 'calm'.'

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c) P 7 L 8ff- and footnote 5: could the authors include a reflection on whether the set-up of the experiment and the follow up interviews might have influenced peoples' decisions not to participate? Why were people not keen on answering questions? Why did the authors not include additional research methods, e.g. interviewing those people most affected by noise/honking?

See footnote 7

d) Page 14 L 45: the authors refer to the results of the empirical experiment stating that "participants pointed to much more complex understandings" of noise and sound. Yet, how do these complex understandings of sound as expressed by the middle class/ highly educated professionals, relate to the problem of honking and noise pollution in Delhi and how it affects the urban poor as outlined in the first sections of the paper, where these issues were outlined? These two strands of the paper need to be linked.

See in Conclusions: 'Finally, and linked to the above […]indicatively, Chaterjee 2014; Routray 2014).'

See also footnote 7

Further smaller remarks and comments for editing the text:

i) Consistency in style citing participants (Page 1 L 28 – removed 'male'; Page 11 L 15-16 – removed 'male'; Page 15 L 11-15 – changed 'int' to interviewer and 'm' to participant for consistency; Page 16 L 47 – removed 'female'); why are participants differentiated by gender?

ii) Page 1 L 56-57: "it" missing: "Yet, it is the unequal…

addressed

iii) Page 2 L 12-15: explain technical terminology "dB(A)" in footnote, or move paragraph explaining legal regulations based on decibel measurements in front of this section (Page 2 L 25-30 "In India, as elsewhere, laws regulate…").

Moved

iv) Page 2 L 12-15: example from Ahmedabad – could you replace this with data from Delhi for consistency?

Replaced with data from Delhi

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v) Page 2 L 33: what is meant by “morally”?

Taken out: and morally disputed – replaced with ‘and multi-dimensional’

vi) Page 2 L 55: “Initiatives and interventions”: could you give a few examples?

Section restructured, so that these initiatives are discussed directly upon mention.

vii) Page 4 L 20: the figure works better before the quote by Lee.

Done

viii) Page 4 18-20: how is the quote by Lee relevant here? Is it necessary?

Upon reflection taken out.

ix) Page 4 L 28-36: what are the reasons why BRT and metro projects could not attract enough riders? Is this a question of class? And, what is the link between efficient transport and noise reduction

The link here is not about efficient transport and noise reduction, rather about reducing the number of cars on the road and noise reduction. The addition ‘by getting people to use less noisy means of transport’ helps to clarify this. With this as starting point, the paragraphs that follow flesh out the links between infrastructure developments and class and inclusion – or, better, exclusion (see ‘A closer inspection of urban and suburban […] corporations over the needs of the city’s poor.’ ’)

x) Page 4 L 48: could you give some examples on the effects of noise and vibration on health and safety?

Added ‘health ranging from irreversible hearing loss and anxiety attacks to hypertension and heart disease’

xi) Page 4 L 40-50 and Page 5 L 49-50: could you elaborate on who exactly is driving the anti-honking campaigns? Who is involved? Is it only the middle- class? If so, what are their motivations?

We have added a small sub-sentence making clear that it is an ‘elite’ who is

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promoting this. The implications are made clearer in the following paragraph: 'A closer inspection of urban and suburban […] corporations over the needs of the city's poor.' See also sentence 'Undoubtedly with good intentions […] manufacturers such as Volkswagen and Audi'

xii) Page 6 L 41-42 take out the second "together"

done

xiii) Page 6 L 38 – what is the UnBox Festival, who organizes it and with what aims- include a footnote

Added:
UnBox was initiated in 2011 by the interdisciplinary Bangalore and Delhi based practice Quicksand and explores how creative collaborations between researchers and practitioners can push boundaries by fostering new alliances. The UnBox Lab in 2014 was organized under the overarching topic of 'Future Cities'. A range of projects developed at the UnBox Lab where further developed for the UnBox Festival in Delhi in December 2014.

xiv) Page 6 L 48: explain the use of the term 'social condenser'

Footnote added
Initially proposed by a group of Russian architects in the 1920s, where the term 'social condenser' was used to describe new social building typologies, it is here used to signify an object that both attracts attention and, at the same time, provides a context for conversations around a certain topic – here, noise. ,

xv) Page 7 L 8-38: description of the beta version could be included in a footnote

We believe that this is important as it provides context. We have not changed or moved it.

xvi) Page 9 L 18: was there a translator present, so that interviews could have been conducted with non-English speakers?

See last sentence of section 'The experimental sound space and research set-up.': 'The majority of the interviews were conducted in English. Interviews conducted in Hindi were facilitated by an Indian, Dehli-based member of the research team. All of them were then transcribed and analysed thematically with NVivo.'

xvii) Page 10 L 2-15, 20-27: how do he authors interpret the results, are they surprising or expected?

We have added ‘As expected, ‘ before “at this point clusters are found in both the “stimulating/disturbing” and”
For the second one, we have added ‘Again, this was anticipated as” before ‘at each of these points there are traffic”

xviii) Page 10 L 47-50: if the authors compare urban noise with concerts they also need to highlight the voluntary/involuntary aspects of exposure to high sound pressure levels.

There is no intention to compare these. To avoid misinterpretation we have removed the sentence.

xix) Page 11 L 15 – Page 12 L 23: this section, which elaborates on themes of “sound and memory”, “sound and imagination”, “sound and emotion”, needs to be linked back to “honking and urban noise” as the main topic of the paper. Why are these interview sections and results relevant for the paper?

See additions: ‘The above reflections, while not directly relating to honking as urban noise, are interesting as they illustrate a qualitative appreciation of associative recollections that come with sound which enable communication with the city and its dwellers. In light of discussing sound as communication in this section, they describe a liveliness […]’

xx) Page 13 L 15-16: this is an interesting point to discuss further: honking as both source and outlet of stress, and a necessary evil of everyday life.
?
This point is discussed prior to the sentence that has here been separated and is also followed up after. We believe that is sufficiently addressed.

xxi) Page 13 L 28: is “symbolic” the suitable term in relation to honking when referring to “a form of abuse”?

This is now removed.

xxii) Page 13 L 46-47: in relation to the comments on religion (“Hindus believe they have the right to be loud”), who made these remarks, do we know anything about the interviewees? Can you contextualize religious tensions in order to enable readers to interpret these remarks? Similarly, more contextualization is needed on Page 14 L 3-14 in relation to religion and gender, and on Page 14 L 25-30 in relation to class.

For respect of anonymity we cannot reveal the identities of the respondents and associate them with extracts included in the analysis.

However, discussion is thus contextualised: 'In the context of this study, the co-existence of different religious groups in Delhi, from Hindus, Muslims and Sikhs to Buddhists and Christians, among others, appears to create similar tensions, according to the aforementioned respondent.'

Also in relation to gender and class:

'Informal discussions with the Indian members of our research group and participants confirm, indeed, the pervasive and deep, yet little addressed, gender inequality problem in India, every so often raised by the media (e.g. Lal 2016). '

'[…] the following comments by research participants being a vivid reminder that class inequalities in India still prevail – 'Caste is not Past', a New York Times article alerts (Sankaran 2013).'

xxiii) Page 14 L 40-48: in this section the authors generalize (people's understandings of …), yet the interviewees only reflect a small fraction of society. Better to use "the interviewees/ the respondents."

This is changed to 'respondent'.

xxiv) Page 16 and Page 17: Conclusion: in the conclusion the findings of the empirical study are generalized without taking into account structural aspects when referring to the participants' responses.

See added characterizations – e.g. 'following interviewees' responses,' 'what to some respondents is…'

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