THE SOUND-CONSIDERED CITY
A GUIDE FOR DECISION MAKERS

The Sound-Considered City
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Recomposing the City
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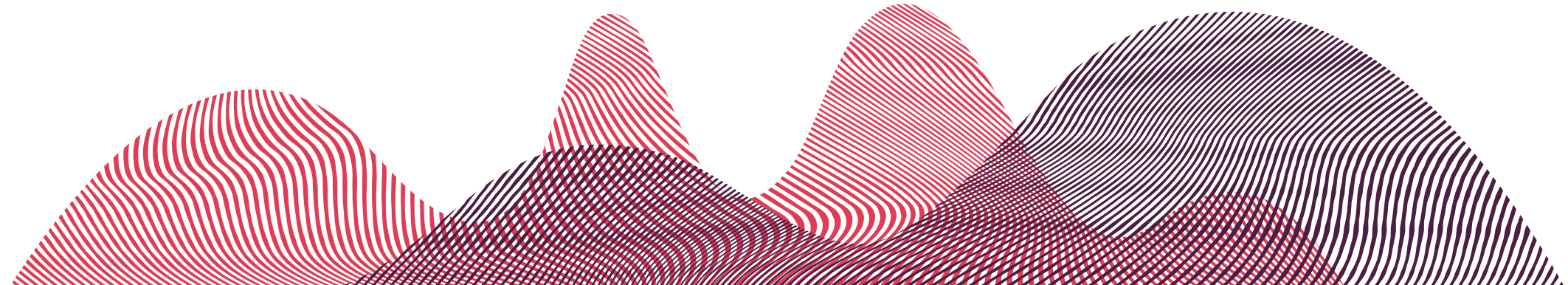
A GUIDE FOR DECISION MAKERS

The sound-considered city is a more memorable, more vibrant, more sustainable place. In embracing sound as a creative medium, city designers and decision makers can be empowered with a new tool to create the prosperous and healthy cities they aspire to build. Sound can be much more than noise that pollutes. It can positively impact the way spaces are lived in, worked in, and played in for generations to come.



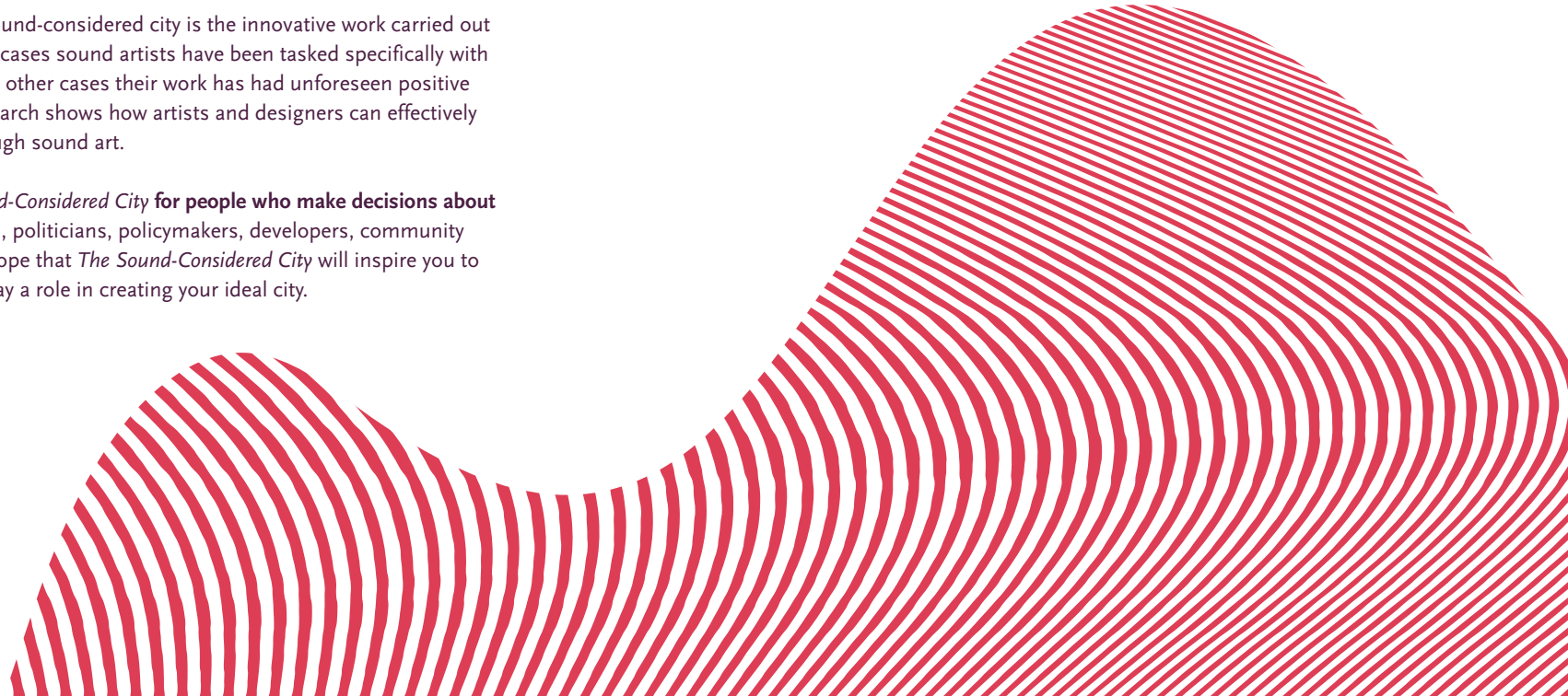
FOREWORD

This guide has been written by the **Recomposing the City** research group (www.recomposingthecity.org).

Based in Belfast and Oxford, our mission is to bring together artists, architects, planners and others in investigating the relationship of sound to urban environments. We support new design and research projects, and we seek to improve the understanding of sound by those who make decisions about cities. Our aim is not merely to reduce unwanted noise in urban areas. Rather, we support creating urban spaces in which sound is considered an essential part of placemaking.

Key to our vision of the sound-considered city is the innovative work carried out by **sound artists**. In some cases sound artists have been tasked specifically with improving urban areas. In other cases their work has had unforeseen positive impact on cities. Our research shows how artists and designers can effectively 'recompose' the city through sound art.

We have written *The Sound-Considered City* **for people who make decisions about cities**: planners, architects, politicians, policymakers, developers, community groups and beyond. We hope that *The Sound-Considered City* will inspire you to rethink how sound can play a role in creating your ideal city.



THE STRUCTURE OF THIS DOCUMENT

The Sound-Considered City begins with a discussion of current policy contexts. We then present straightforward methods that anyone can use in considering the role of sound in public spaces.

The main body of the document is structured around **nine main themes** which reflect **core planning principles**. These themes are explored through examples in Belfast and international case studies.

Foreword

I Introductory Issues
i. How Sound Improves Cities
ii. Sound Beyond Noise
iii. Policy Context

II Belfast Streets: Analysing Urban Sound

III Considering Sound in Nine Core Planning Principles
1. Health and Well-Being
2. Connectivity
3. Safety
4. Vibrancy
5. Tourism
6. Economic Growth
7. Shared Space
8. Biodiversity
9. Placemaking

IV Key Points

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Acknowledgments

I. INTRODUCTORY ISSUES
i. HOW SOUND IMPROVES CITIES

Economic vibrancy. Sustainability. Healthy environments. Inclusive, democratic societies. These are some of the common goals to which many of us aspire when we envision our ideal cities. For most policymakers and city designers these goals can be met in variety of ways, from better transport networks to sustainable methods of waste reduction, from provision of space for physical exercise to improved access to cultural activities.

What is missing in many planning documents -- what is too often ignored -- is **the way the city sounds**.

Through our research we have found that a **sound-considered city**:

- is a better place to live,
- promotes health and well-being,
- improves educational attainment,
- can generate economic growth,
- is a place where more people feel welcome and comfortable,
- is more inclusive, and
- is a place people remember and with which they can identify.

I. INTRODUCTORY ISSUES
ii. SOUND BEYOND NOISE

In urban environments sound has principally been considered in its unwanted form: **as noise**, something that pollutes the environment. There is no absolute definition of what constitutes noise. This differs from person to person. Although very loud sounds are likely to cause discomfort, some quiet sounds can be irritating, too. Therefore we cannot determine whether any part of the city sounds pleasant or unpleasant simply through measuring noise levels alone.

In noise policy documents, noise is often categorised as *environmental*, *neighbourhood* or *neighbour noise*. Environmental noise refers to noise generated by chronically loud, outdoor sources such as transport and industry. Neighbourhood noise is caused by human activities in the community, such as entertainment or construction. Neighbour noise is the sound created within a person's home or their neighbour's home.

By contrast, the term **soundscape** denotes a more complete impression of the acoustic environment. The soundscape is made up of everything that can be heard in a particular place at a specific moment in time. The term was popularised by Canadian composer R. Murray Schafer in his book *The Soundscape: Our Sonic Environment and The Tuning of the World* (1977). It is useful to think about an urban area's soundscape in conjunction with its noise levels in order to imagine the positive as well as the negative potentials of sound in the environment.

Recomposing the City has asked how a consideration of sound, rather than just noise, can help improve urban areas. Indeed, we understand sound as key to a city's vitality. As the soundscape artist and researcher Jacqueline Waldock (2015) has argued, hearing one's neighbor isn't necessarily unpleasant. Rather, being able to hear one's neighbor can make many people people safe and part of a community. We believe that proposals for urban development should account not only for eliminating or blocking out what is perceived as unwanted noise, but to **promote and enhance positive and distinctive aspects of the local soundscape**.

I. INTRODUCTORY ISSUES
iii. POLICY CONTEXT

In the first half of the 20th century it was demonstrated that unwanted noise impacts negatively on health, and policymakers in many countries created guidance to respond to the negative effects of noise. Unfortunately, guidance has been slow to support the creation or integration of pleasant sounds into urban environments, despite overwhelming evidence to show the positive effects such sounds can have (Davies et al., 2013).

The World Health Organisation's *Guidelines for Community Noise* (Berglund et al., 1999) was a key document that provided advice on mitigating the harmful effects of noise in non-industrial areas. The EU's 2002 *Environmental Noise Directive* (END) aimed to achieve the uniform assessment and management of unwanted sound across European cities. Unlike the WHO's *Guidelines for Community Noise*, the END Directive is only concerned with reducing levels of environmental noise (transport and industry sounds). Authorities in EU member states are required to publish **noise maps** and to enact **Noise Action Plans** every five years for towns or cities with more than 100,000 inhabitants, as well as for any major roads, railways and airports. There is also provision for the identification and protection of designated **Quiet Areas**.

Member states have incorporated END into their planning systems in different ways. In the UK, **Noise Policy Statements** provide the policy framework within the wider context of sustainable development. For example, the *Noise Policy Statement for Northern Ireland* (2014) sets out three objectives. These include mitigating the adverse impacts of noise on health and limiting the potential noise burden on local communities. UK local authorities that make planning decisions will take Noise Policy Statements and relevant Noise Action Plans into account.

Noise maps upon which Noise Action Plans are based use noise modelling: estimations that exclude common sources of annoyance such as loud music or alarms. Therefore noise maps can be limited in the impact they can have. If we wish to positively affect well-being through improving the acoustic environment, then we need to consider urban soundscapes in their entirety.

Although planning policy has historically concentrated on the management of noise, recent documents have acknowledged the variety of sounds that make urban spaces unique. *Sounder City: the Mayor's Ambient Noise Strategy* (Mayor of London, 2004) recommends that areas identified as having a valuable soundscape be treated individually so as to retain the variety of sounds in the city. Similarly, *Westminster Noise Strategy* (City of Westminster, 2009) stresses the importance of preserving sounds which may have positive associations in shaping the experience of the city.

Policy is thus beginning to evolve from **eliminating unwanted noise** towards **celebrating unique sounds** in our environments.

II. BELFAST STREETS
ANALYSING URBAN SOUND

Understanding soundscapes and making recommendations for improving the acoustic environments of cities can seem daunting and beyond many people's technical know-how. However, even the most simple **listening exercises** can tell us a great deal about shared spaces.

In preparing this document we carried out some basic analyses using an inexpensive decibel meter and an affordable audio recorder in a variety of locations in Belfast. While not exhaustive, these methods were enough to clarify aspects of the acoustic environment and highlight areas in need of intervention. **Anyone involved in urban design can use these techniques to inform his or her work**.

We examined the sounds of each location in three ways:

- Using the decibel meter, we took several readings to establish the minimum and maximum noise levels experienced in the location during the exercise.
- We took notes in each location indicating how pleasant it was to have a conversation there.
- We also paid close attention to the quality of sound in each location by making an audio recording for three minutes and taking notes. Listening back to the recording, it was easy to describe the variety of sounds that could be heard in that place and identify the dominant sounds.

When all of this information is put together, we can start to understand both the **unique acoustic character** and the **acoustic problems** of each place. We can pinpoint what sounds should be sustained or preserved and the challenges that need to be addressed through sound-considered design.

SOUND ANALYSIS EXAMPLE

Why is it important to consider sound? Several areas of the city are underused partly because of their poor acoustic quality. Here we show how a simple sound analysis can be carried out with the aim of better understanding an acoustic environment.

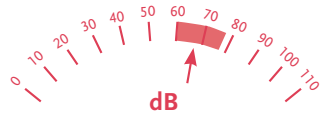
ALBERTBRIDGE ROAD

The level of background noise on Albertbridge Road in Belfast is extremely high. Traffic noise masks pleasant sounds such as people chatting or leaves rustling. However, there are not many pleasant sounds even beneath the rumble of vehicles – why stop and have a conversation when you can't be heard? The acoustic environment of the Albertbridge Road is caught in a vicious cycle: it will not be more pleasant unless people contribute more positive sounds, but as long as it is an unpleasant place in which to spend time, no new sounds will be created. Reducing traffic noise would quieten this space, but it would not necessarily make it more pleasant. What it really lacks is the **acoustic vibrancy of human activity**. Urban designers could catalyse this through creating **acoustically sheltered places** along the road in which people enjoy spending time.

Predominant Sounds:
Traffic rumble.

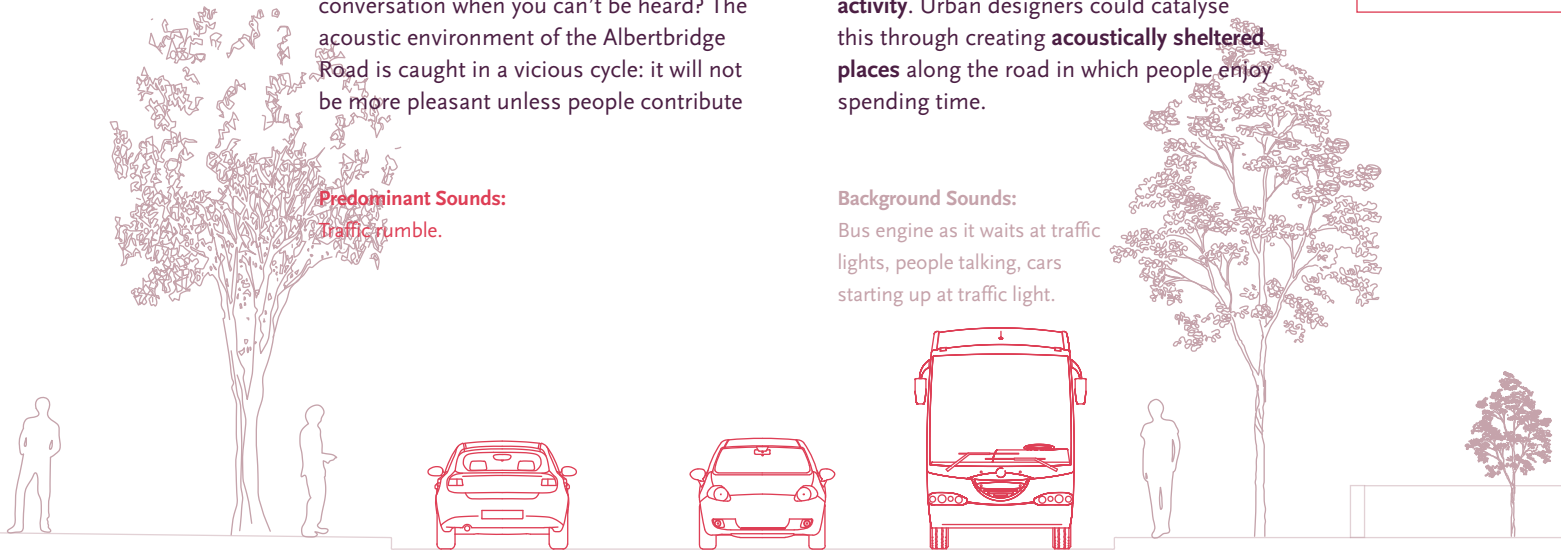
Background Sounds:
Bus engine as it waits at traffic lights, people talking, cars starting up at traffic light.

Albertbridge Road, 6PM, weekday
At the spot where the reading was taken, traffic noise overpowers any other potential sounds because the traffic is constantly speeding up or slowing down due to the traffic lights. It is therefore very difficult to have a conversation on the street.



dB reading
60-75 with peaks at 78 with buses passing

Conversations
Poor/reasonable



III. CONSIDERING SOUND IN NINE CORE PLANNING PRINCIPLES

Now that we have a better sense of these important introductory issues, we will address how sound can positively impact urban environments with regard to **nine core planning principles**:

1. Health and Well-Being
2. Connectivity
3. Safety
4. Vibrancy
5. Tourism
6. Economic Growth
7. Shared Space
8. Biodiversity
9. Placemaking.

We will first take you through the streets of Belfast to explore how sound impacts these key issues there. We will show examples of problematic areas as well as positive cases.

We will then guide you through a number of international examples that focus on projects by sound artists who collaborate with architects, planners, researchers and community groups. We chose these examples from a variety of social, political and economic contexts in order to show how widely applicable, and yet locally relevant, the consideration of sound can be.

1

HEALTH AND WELL-BEING

For many cities, improving the health and well-being of citizens is a key consideration in future plans. In particular, many city planners want to promote physical activity through the careful design of streets, parks, residential areas, and workspaces. Simply put, the more active people are, the better their physical and mental health.

Sound can have an enormous impact on whether or not people feel at ease being 'out and about' in their cities. Streets and spaces which sound pleasant can promote physical activity and interaction with neighbours -- both important measures for mental and physical health.

BELFAST EXAMPLE
NEWTOWNARDS ROAD

Belfast's Lower Newtownards Road is a well-used arterial route into the city. However, it struggles to maintain its role as a local high street due to a history of deprivation and political tensions. Belfast City Council has invested millions of pounds on environmental improvements under its *Renewing the Routes* scheme (2004-2016). Although this particular scheme was impactful and well received by local residents and businesses, pedestrian occupation of the street remains low.

While traffic noise masks existing pleasant sounds such as people chatting or birdsong, the variety of sounds beneath the din of traffic is also very limited. There are few places along the pavement where people can move away from the road edge because it is so narrow, making this a particularly unpleasant pedestrian route. With nowhere to sit at a reasonable distance from such high levels of noise, both elderly and very young people could be discouraged from walking along Newtownards Road and will drive into the city instead. The acoustic environment and the walkability of a city are tightly interwoven: points of acoustic respite or acoustic interest along the road could encourage people to walk into the town centre along the Newtownards Road.

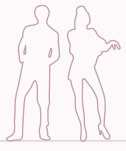
Newtownards Road, 6.15PM, weekday
The spot where this reading was taken is on a pavement next to traffic that was stopping and starting due to traffic lights. Therefore the peaks of traffic noise were very loud compared to the relatively calm background noise level of 55 dB. This, combined with the close proximity to the moving traffic made the bursts of traffic noise particularly unpleasant.

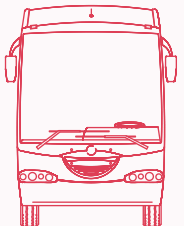
dB reading
55 - 65 with peaks at 80 when buses pass

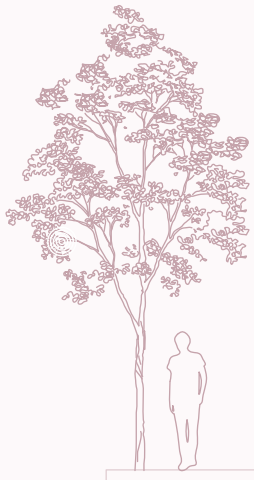
Conversations
Poor/reasonable

Predominant Sounds:
High speed traffic passing, chatter.

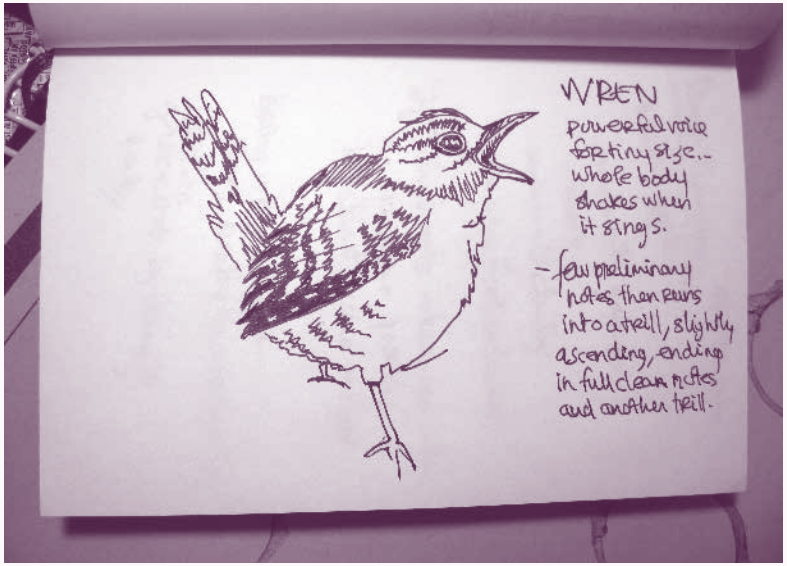
Background Sounds:
Rustling tree, footsteps.







INTERNATIONAL EXAMPLE
SING CITY (2010)



The example of the Newtownards Road in Belfast points to some of the difficulties the acoustic environment can pose in relation to health and well-being. Through the creative consideration of sound, cities might be able to circumvent some of these issues. **Sing City** (2010), a project by Annah M. Kassen in London, is an example of this type of inventiveness.

Kassen's mission in *Sing City* was to 'provide a quick, uplifting break for busy people by reacquainting them with birdsong in the streets of London' (Kassen 2010, p. 6). Kassen used widely-available technologies—a website and a mobile phone app—to engage the public in interacting with local birds and birdsong. The website included a **live map** which showed hot spots of activity: if an interesting birdsong was heard on a specific street corner, a user could share this information with others as it was happening.

Sing City aimed to promote physical activity to combat health issues including obesity, heart disease, diabetes, stroke, cancer, osteoporosis, depression and sleep problems. Birdsong was seen as attractive to users because the songs themselves were therapeutic in addition to encouraging physical activity.

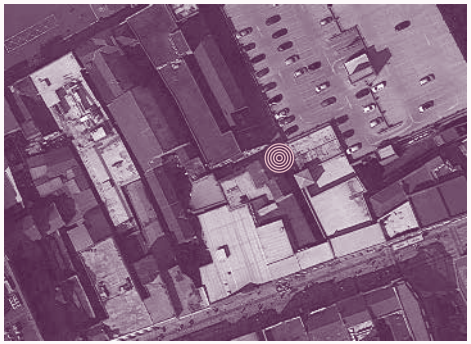
Sing City, developed in conjunction with Lewisham Council, aimed to target **health inequalities** within a context of **very limited budgets**. Key to Kassen's project was evidence that walking outdoors, an inexpensive form of exercise, improved social contact and had a lower dropout rate than the use of gyms.

Kassen's project exemplifies how a creative approach to sound in the city can help combat serious health challenges in an affordable way. As healthcare budgets continue to shrink, one can imagine how sound art projects could improve the well-being of large and varied populations.

2
CONNECTIVITY

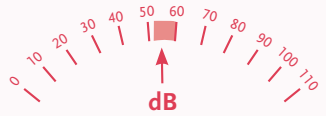
Connectivity is key to urban planning for multiple reasons, from ensuring that different publics can move safely through their cities to promoting sustainable means of transport. Sound can play a key part in considerations of connectivity.

BELFAST EXAMPLE
POTTINGER'S ENTRY



From above, the narrow alleyways in Belfast city centre look dark and dangerous, with poor visual connection between them and the large shopping streets on either side. However, shoppers are drawn into some of these entries by music and the sounds of human activity. Buskers often play at the alley's entrance, and behind the buskers people occupy the narrow street as though it were a beer garden. Music flows outside from the pub and the space is animated with the sound of clinking plates, bowls and glasses. This is made possible by the design features of the entry: its narrowness prevents car traffic, allowing the entire space to be filled with people; the tall buildings on either side of the alley mask traffic noise from further away, creating an acoustic oasis that can then be filled with other sounds. Provision of shelter and seating in the alleyway itself encourages people to occupy this 'external room,' and as they create cheerful sounds, even more people are drawn in. From this point many people carry on their journey through the alleys to discover the shops on the other side.

Pottinger's Entry, 4PM, weekday
This spot is significantly sheltered from traffic noise because it is pedestrianised and surrounded by 3-4 storey buildings. For this reason, other sounds come to the fore, such as pub music and the sound of catering. People sit outside to drink and chat.

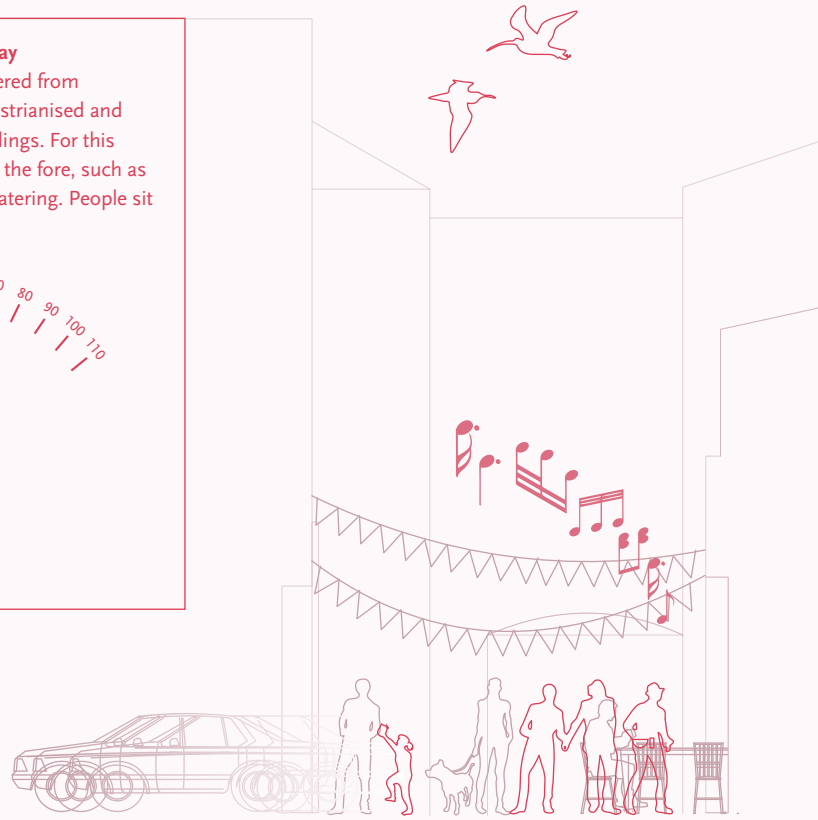


dB reading
52-57 peak at 60

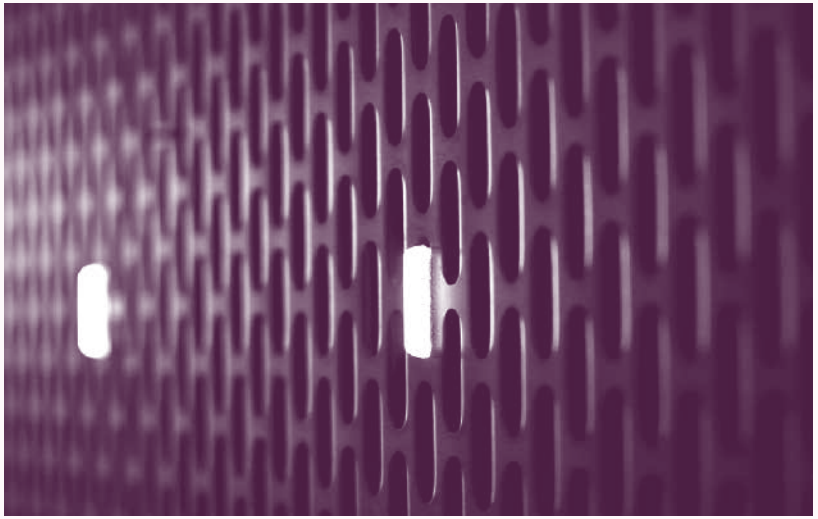
Conversations
Pleasant

Predominant Sounds:
Seagulls, chatter, children talking, music

Background Sounds:
Footsteps, distant traffic, cups/ saucers clattering, flags clinking, doors opening and closing, distant traffic hum, dog barking



INTERNATIONAL EXAMPLE
THE LIGHT NEVILLE STREET (2009)



Pottinger's Entry in Belfast shows how a pedestrianized area with an interesting sound environment can help link a city together. However, we also need to consider sound environments in which vehicles are present. Indeed, connectivity in cities has been dramatically changed by the inclusion of rail corridors or large motorways. Reserved for trains or cars, these avenues make difficult-to-cross barriers for pedestrians, cyclists, trams and buses. Where opportunities to cross these barriers are provided, they are often difficult to access, unpleasant or even unsafe.

What few people consider are the sonic issues presented by these barriers. For many people, crossing points can feel uncomfortable and even frightening because of extreme noise. Not only are these spaces physically difficult to cross, they are places to be avoided because they are **aurally intimidating**.

However, architectural solutions to these types of issues exist. **The Light Neville Street** (2009) in Leeds exemplifies how a consideration of sound can increase connectivity in such spaces. This project was a collaboration between Leeds City Council, the public arts consultancy firm Media and Arts Partnership (MAAP), the architects Bauman Lyons, and the Berlin based sound artist Hans Peter Kuhn. The loud railway underpass at Neville Street, used by over 20,000 pedestrians every day, had been extremely unpleasant and heavily polluted, both by car exhaust and intense noise. Nonetheless, it was a vital connection for those on foot or bicycle accessing the city.

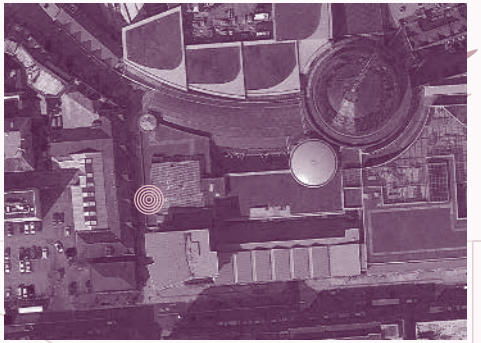
Hans Peter Kuhn's work on one wall of the tunnel included a **sound-and-light installation** that helped to cancel some of the traffic noise, particularly at peak periods. Bauman Lyons Architects helped to design the wall in which Kuhn's installation was inserted, including significant acoustic absorption panels. The architects also moved the bus stops out of the tunnel to further decrease the noise and pollution levels in the enclosed space.

This is an instance in which a forward-thinking public client, an inventive artist, and architects with a strong design sensibility came together in **considering sound from the inception of the project**. Together they have made an enormously positive impact on people who use an essential public space.

3
SAFETY

Increasing safety and security is another key issue for those who plan and manage cities. Many planners are keen to explore how design interventions can help improve safety rather than relying on policing and surveillance.

BELFAST EXAMPLE PART I
MONTGOMERY STREET



Even within the very centre of Belfast the atmosphere can change considerably from street to street. One minute the environment can feel friendly and safe. The next it's possible to feel isolated and perceive the actions of others in a different light. Montgomery Street and Arthur Street are adjacent, both within eyesight of the Victoria Place shopping centre. Yet our study shows that their sound environments contribute to a striking contrast in the way people interact in these streets.

When the shops are open, Montgomery Street is enlivened by a steady stream of pedestrians. However, because there are no entrances or windows along this route, people do not stop, slow down or converse: it is a street to pass through. For this reason, as the shops start to close, Montgomery Street very quickly becomes empty, silent and unwelcoming. We observed that this affects the way people react to each other: there is little smiling or interaction.

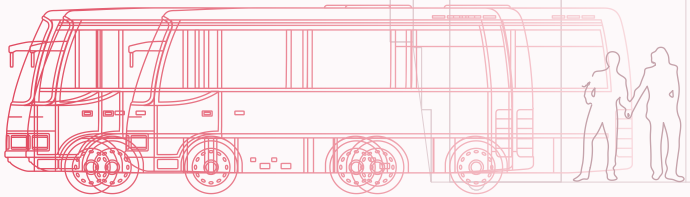
Montgomery Street, 3.15PM, weekday
Even though this street opens onto a busy vehicular road, the fact that it is pedestrianised, narrow, and sheltered to a certain extent by taller buildings makes the sonic environment relatively pleasant. However, it is suddenly very quiet when people are not passing through it, given the lack of active street frontage. It can feel like an isolated spot very quickly.

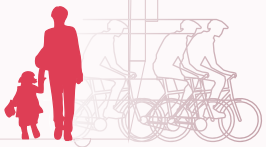
dB reading
55-60 with peaks at 63 when buses pass

Conversations
Pleasant

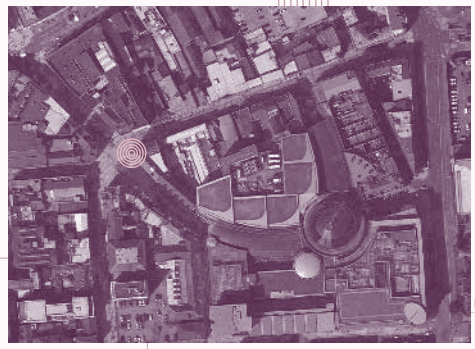
Predominant Sounds:
Traffic hum; footsteps; children talking, chatter

Background Sounds:
Squeaking trolley, bicycles, rustling shopping bags, passing bus, seagulls





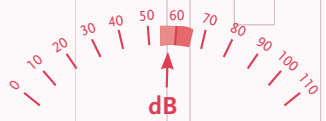
BELFAST EXAMPLE PART II
CORNER OF ARTHUR STREET



Just a few seconds' walk away, in Arthur Street, the atmosphere couldn't be more different. People are sitting around a sculpture and listening to a busker playing guitar. The music is briefly interrupted by a ringing bell and raucous laughter: a group of women pedalling a beer bike trundle past, enjoying their hen party. People turn to each other and laugh.

Although sound is not the only ingredient making this spot friendlier than the other, it plays a significant part. The background noise level is low (this is a pedestrianised area), allowing the busker to play. The busker and the crowd draw in other people who can hear the music from further away. The sonic environment is supported by the urban design: the sheltered square in front of the shopping centre and street furniture create the perfect conditions for performance and spectatorship.

Corner of Arthur Street, 3PM, weekday
The fact that this spot is pedestrianised, at a distance from main vehicular routes and sheltered by 4-6 storey buildings makes for a very pleasant acoustic environment in which to hold a conversation. The sounds that come to the fore - chatter, footsteps - give this spot a sense of vibrancy.



dB reading
54-60 with peaks at 65 with bursts of traffic nearby

Conversations
Reasonable/pleasant

Predominant Sounds:
Chatter, footsteps

Background Sounds:
Faint construction - drilling, bicycle, rustling bags, children talking

INTERNATIONAL EXAMPLE
SOUNDING BRIGHTON (2011)

With the previous example we can see that sound can substantially alter the comfort level of streets in Belfast and change social behaviours in those streets. Indeed, improving the acoustic environment of underused areas has been proven to have a positive effect on the **social sustainability** of urban places.

One striking example has been deployed in the heart of Brighton's clubbing district. The Brighton and Hove City Council and the UK Noise Abatement Society worked together with artists, environmental experts and local residents in the project '**Sounding Brighton 2011**'. This was a multi-part event that included musician Martyn Ware's *West Street Story*. This project focused on Brighton's West Street, which many local people consider to be unpleasant when clubs empty in the early hours of the morning. Based on multiple consultations with a variety of people in the community, Sounding Brighton 2011 aimed to act as an alternative to the 'Saturday night drinking culture by creating immersive sound "occupations" which would change... the noisy atmosphere of a raucous street on a Saturday night' (Lavia et al., 2012, p. 7).

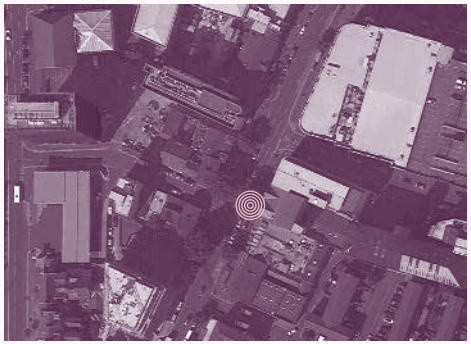
West Street Story used immersive soundscapes to investigate if sound could improve public safety. On Brighton's White Night, a busy evening of cultural activities, Ware played both recorded and live sounds via two rows of loudspeakers. Ware's 'occupations' helped to smooth the transition from a noisy, fun nightclub atmosphere to the city street by acting as a new **sound threshold**; the difference between the two world was eased, and visitors seemed to enjoy leaving the club in an alternative way. According to the researchers, 'police feedback from the event confirmed how much [safer] the area was than normal, to the extent that [the police] were confident enough to redeploy forces elsewhere in the city' (Lavia et al., 2012, p. 10).

What this project shows is that through minimal but creative use of sound and music in city spaces, social spaces can be improved. Key, however, is that these interventions do not deaden the vibrancy of these spaces, but rather that they encourage liveliness in more inclusive ways for both revellers and local residents.

4
VIBRANCY

The vibrancy of a city is often regarded as essential to liveability for residents and attractiveness for tourists and investors. The sounds of a city--whether or not it is 'buzzing'--can be a key aspect of perceiving the city as vibrant.

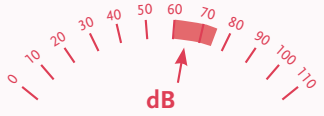
BELFAST EXAMPLE PART I
DUBLIN ROAD



Botanic Avenue and Dublin Road are both vibrant parts of Belfast, connecting the Queen's University Quarter with the city centre. Both streets are lined with bars and restaurants, yet they have different strengths and weaknesses in terms of their acoustic environments.

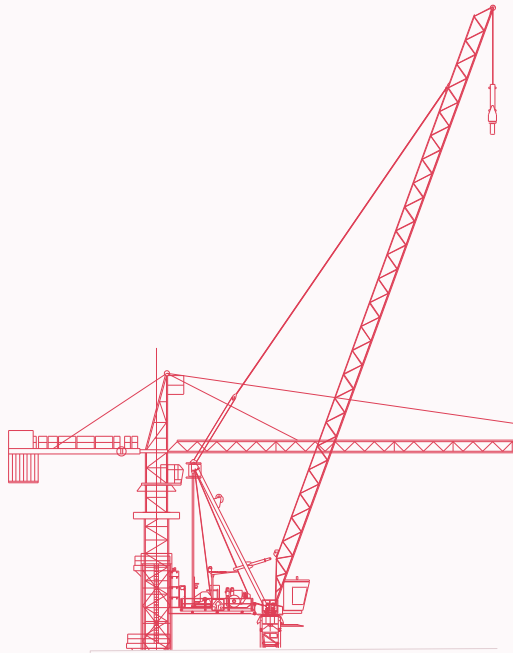
Bars and restaurants attract a stream of customers, and, as our analysis shows, there are a variety of positive sounds in both streets.

Dublin Road, 3.30PM, weekday
At the point where this reading was taken, a striking difference in sound level was noted between the roadside edge of the pavement and further back against the buildings. The 8m wide pavement therefore allows a degree of shelter from traffic noise, and this is apparent as people sit outside restaurants and pubs and can hold a conversation.



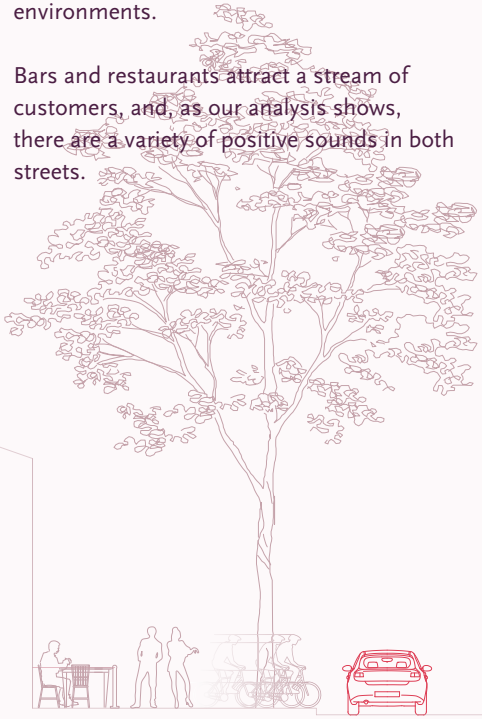
dB reading
60-70 with peaks at 75 when buses pass

Conversations
Reasonable



Predominant Sounds:
Traffic; van opening; construction - scraping and stapling

Background Sounds:
Bicycle; buggies, occasional laughter, shopping bags



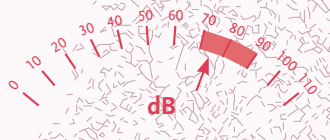
BELFAST EXAMPLE PART II
BOTANIC AVENUE

Botanic Avenue has the highest levels of traffic noise recorded in our exercise. However, it is extremely vibrant thanks to the high footfall of visitors.

By contrast, Dublin Road is quieter but less pleasant acoustically since people are, for the most part, simply passing through.

Both streets could be improved acoustically: diners could be sheltered from the buses on Botanic Avenue, and the density of stores and cafes could be increased on Dublin Road. This would improve the vibrancy of each street and encourage people to spend more time there.

Botanic Avenue, 3PM, weekday
The fact that this spot is pedestrianised, at a distance from main vehicular routes and sheltered by 4-6 storey buildings makes for a very pleasant acoustic environment in which to hold a conversation. The sounds that come to the fore - chatter, footsteps - give this spot a sense of vibrancy.

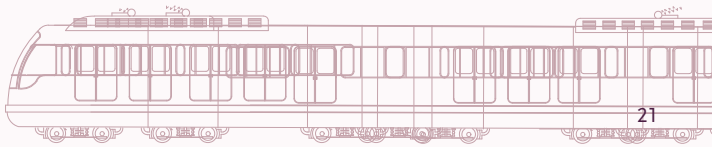


dB reading
70-75 with peaks at 90 with buses passing

Conversations
Reasonable

Predominant Sounds:
Loud traffic; bus brakes; people talking

Background Sounds:
Footsteps; bicycles; train horn; music; rustling shopping bags



UQÀM

INTERNATIONAL EXAMPLE
IMPULSE (2015–16)

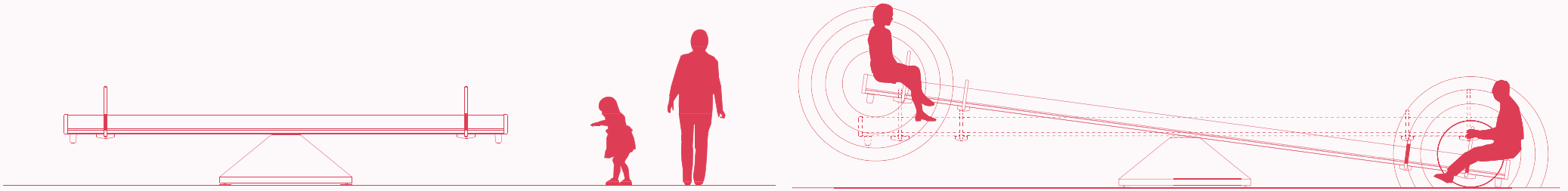
While Dublin Road and Botanic Avenue are examples of how streets can be vibrant in different ways, Belfast, like all cities, has areas which are less animated than others. These pockets exist for many reasons, from stunted economic development, to close proximity to industry, to poor connectivity.

In Montréal, the Quartier des Spectacles has many cultural venues and regularly curated events. However, there still exist small areas of the quarter that are underutilized, and these areas can seem vacant when plays and concerts are not taking place. The Quartier des Spectacles commissioned CS Design from Montréal and Lateral Office from Toronto to create a temporary installation which would attract activity throughout the day. With several collaborators including sound artist Mitchell Akiyama they installed **Impluse** (2015-16), a series of 30 adult-sized see-saws.

The Impulse see-saws were no ordinary pieces of playground equipment. Designed to cope with Canada's extreme temperatures, the see-saws were not only illuminated by bands of LED lights, but they played different notes when they were in use. The designers were inspired by 'repetition, rhythm and syncopation'. These are important issues in music that can also be translated into the design of vibrant urban spaces.

Key to the sonic experience were the number of people engaged with the installation: it was their movement that dictated which sounds were played when, creating a people-activated composition in the space. The designers saw *Impulse* as 'an ever-changing urban instrument'. Videos of the event show how it enlivened what can at times seem an empty part of the city.

The story of *Impulse* does not end in Montréal. Starting in 2016 the entire installation moved around the world and has been installed in cities including London, Brussels, Chicago, and Detroit. The vibrancy that this project brings to the places it visits is an example of how sound can invigorate cities in simple, beautiful and effective ways.



5
TOURISM

Today most city plans consider how to best accommodate tourists. While some cities are concerned that tourists are swamping local facilities, other cities see tourism as key to economic growth. Some of the most successful tourism projects involve both visitors and locals. A consideration of sound can be key to this type of approach.

BELFAST EXAMPLE
COMMERCIAL COURT

Commercial Court is one of Belfast's most visited Entries. It is perhaps an unlikely home to some of the city's most successful pubs, bars and businesses. However, inside the Entry the environment is very pleasant. Its acoustic quality plays a large role in this.

Part of the charm that draws tourists to Commercial Court is a sense of surprise and discovery. Sound is key to this kind of encounter: while the Entry might not look enticing at first, or even be noticed, the sound of revelry entices people to come in. A sequence of spaces leads into the Entry: a busy shopping street gives way to a narrow entranceway which reveals a pedestrianised alley within. This kind of spatial variety and sense of acoustic discovery are rare. It is the hidden spaces and unexpected sounds that draw in visitors, keen to discover the unique experiences a city can offer.

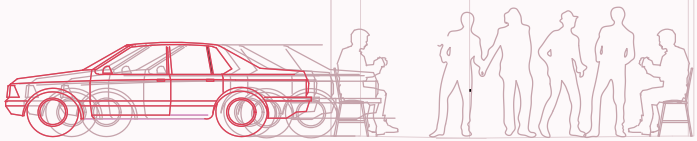
Commercial Court, 2.30PM, weekday
The fact that this spot is pedestrianised, at a distance from main vehicular routes and sheltered by 4-6 storey buildings makes for a very pleasant acoustic environment in which to hold a conversation. The sounds that come to the fore - chatter, footsteps - give this spot a sense of vibrancy.

dB reading
54-60 with peaks at 65 with bursts of traffic nearby

Conversations
Reasonable/pleasant

Predominant Sounds:
Chatter, footsteps

Background Sounds:
Faint construction - drilling, bicycle, rustling bags, children talking



INTERNATIONAL EXAMPLE
ZADAR SEA ORGAN (2005)

In order to attract tourists through **the creative animation of public spaces**, Zadar County, Croatia, commissioned architect Nikola Bašićand acoustician Ivan Stamaćto create an acoustic installation for a new coastal promenade. One might think that the **Zadar Sea Organ** (2005) is simply a set of beautifully made granite steps which lead into the Adriatic Sea. However, when one listens closely, one can hear low tones emitting from the steps themselves. The site is a fantastically vibrant public space, heavily populated by families and teenagers who sunbathe and play in the water. It simultaneously welcomes both locals and tourists.

Through a system of carefully-tuned pipes and short tunnels, the *Zadar Sea Organ* uses the movement of tidal and human-made waves to force water and air into the instrument. The size and lengths of the pipes create different notes, just as with a traditional church organ. The artists were careful to tune the pipes to mimic the sounds of traditional male choirs of the area, lending yet another layer of site-specificity to the sounds. The sounds also reflect the seasons and times of day. At high tide, the organ is more active; when a speedboat zips past, the rhythms of the organ become faster as well.

The *Zadar Sea Organ* has not only been successful in attracting tourists, but it has won international design awards because of the exemplary public space it has created. The city has thus successfully commissioned a sound project which not only engages tourists but also draws locals to play here. The entire built environment around the Sea Organ has been carefully designed and constructed, with a very high standard of materials for the walkways, benches, and the steps themselves. Because of the robust nature of the materials and the tidal aspect of the organ's power, one can imagine this instrument playing for decades, if not for centuries to come.

6

ECONOMIC GROWTH

When sound is considered by designers, it can add significantly to the economic viability of a city. Oftentimes, this is not an intended aspect of sound installations or soundscapes, but sound can have a profound effect on the economic profile of a city nonetheless.

BELFAST EXAMPLE
DONEGAL STREET

Donegal Street is home to several independent businesses, arts organisations and cultural institutions. It receives less footfall than some of the commercial streets nearby, and so local businesses depend on word-of-mouth to survive. However, our study shows that there are further barriers to economic prosperity caused by the sound quality on the street. Even once you do discover Donegal Street, it is not a place in which you would want to spend time because the presence of cars and buses is so prominent.

The predominant sounds on Donegal Street are all related to traffic. Because the two-way traffic is quite fast-moving and the road is wide, each side of the street feels sonically disconnected from the other. This possibly reduces the number of visitors who walk up and down the street.

However, once a year on Culture Night, the street is filled with the sounds of celebration. On this night the traffic is barred, and the street is filled with stalls, music, and crowds. This is not a quiet sound environment but a cheerful one and also a time when visitors might be drawn to the activity and, in so doing, discover small businesses and organisations like the Belfast Exposed gallery, or the John Hewitt bar.

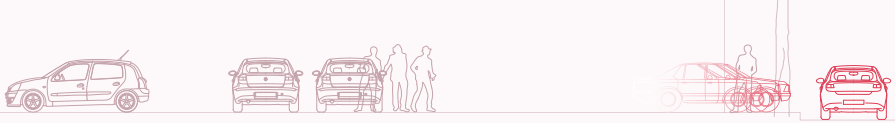
Predominant Sounds:
Seagulls, traffic, loud bursts of passing traffic

Background Sounds:
People talking, car doors closing, construction noise, cars starting, birds

Donegal Street, 4.15PM, weekday
The predominant sounds at this point are all related to traffic. Although the passing traffic is sporadic, cars parking and leaving the carpark contribute a range of engine and braking noises that overall make it hard to have a conversation here.

dB reading
57-73 for passing traffic

Conversations
Poor



INTERNATIONAL EXAMPLE
FORGOTTEN SONGS (2009–11)

Many cities have used cultural activities as a means to boost economic activity. Some, like the Guggenheim in Bilbao, have been enormously successful, while others have been expensive failures. In some cases, art projects that impact on economic activity do so by accident.

As part of the AUS $9 million George Laneways project in Sydney, a group of artists, designers and sound experts came together to create a sound installation, **Forgotten Songs** (2009-11). Led by artist Michael Hill, this team identified indigenous birds that once inhabited the unloved, forgotten alleyway Angel Place in downtown Sydney. They recorded the songs of these indigenous birds, many of which are now endangered. Hill and his team installed these recordings in 120 birdcages hung across the width and length of the narrow alleyway.

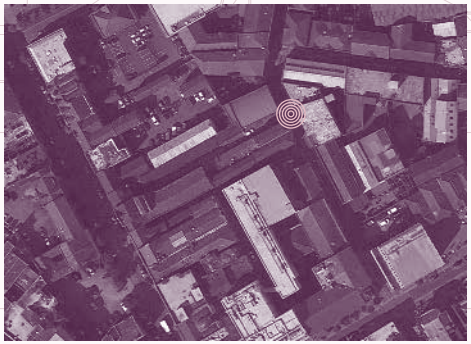
The project is powerful on many levels. It is visually striking, with the birdcages creating ever-changing shadows across what used to be an uninhabited, derelict space. Likewise, F*orgotten Song*s draws attention to the importance of preserving local animal species and the sounds they bring to a city. These sounds are subtle and multi-layered: they have less opportunity to become repetitive and annoying for those who live and work nearby. Perhaps most importantly, they are **local sounds**. These are not noises imported from other environments but instead reflect the history of that specific place.

What the artists did not expect was the significant economic impact of the project. By enlivening this formerly dead alleyway, they created new opportunities for small, independent businesses. After the installation of *Forgotten Songs* business owners decided to open new bars and cafes in Angel Place. The sound art installation brought much-needed footfall, key to the success of small businesses. Thus, *Forgotten Songs* had a significant impact on the area's economic sustainability.

7
SHARED SPACE

Increasingly many designers and policymakers want to ensure that cities have shared spaces for people of different backgrounds, socio-economic groups, ages and abilities. A consideration of shared space must include the physical aspect of how a space is designed and maintained. Sound is critical to creating spaces that will feel welcoming to a variety of groups at the same time.

BELFAST EXAMPLE
HILL STREET



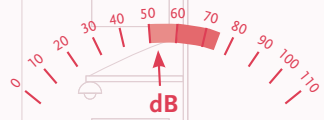
Looking at photographs of Hill Street -- narrow, cobbled, and lined with many thriving eateries and businesses -- you might expect it to be filled with events throughout the year. Interestingly, this is not the case. The part of the street we studied is actually very underused, and the businesses and cafes keep their activity inside: it doesn't flow into the external space. Our study found that although the route is not flooded with the din of traffic noise heard in many of Belfast's streets, the car still provides an obstacle to other forms of lively occupation.

Many people are drawn to Hill Street to see the street art. However, this part of Hill Street was not a place where we were able to stop and hold a conversation. Although relatively peaceful most of the time, the intermittent interruption of a car driving past seemed especially loud due to the narrowness of the street. This was more distracting than the constant stream of traffic noise along Botanic Avenue, the loudest street in our study. Although this is an area filled with people sitting outside the numerous bars and pubs, nobody was taking over this particular spot. The small carpark located here adds to the problem. This is a place that could be taken over relatively quickly by the artists, performers and late-night revellers who enliven the nearby Entries. Alternatively, it could become a place shared by those escaping the noise of the bars. However, the space swings uneasily between quiet and very loud, which is unpleasant for either group.

Predominant Sounds:
Laughter and chatter, loud bursts of passing traffic, footsteps

Background Sounds:
Bicycle, distant traffic, distant construction noise

Hill Street, 4.30PM, weekday
Most of the time the acoustic environment was extremely pleasant. However, due to the narrowness of the street and quietness of it when cars do pass, they are distracting and seem very loud. Conversations stop completely. This is exacerbated by the positioning of a small carpark at this spot.



dB reading
50-55 with peaks at 74 when cars pass

Conversations
Generally reasonable but interrupted approximately once per minute

INTERNATIONAL EXAMPLE
VOICE TUNNEL (2013)

The **Voice Tunnel** (2013) project by artist Rafael Lozano-Hemmer in New York City exemplifies how cities can collaborate with artists to enable diverse publics to enjoy shared spaces. The installation, sponsored by the Department of Transport's Summer Streets programme, opened the Park Avenue tunnel to pedestrians. The installation featured 300 spotlights activated by people's voices. The artist described this as 'tuning into people's different realities to create... a concert of voices inside the tunnel, all live, all crowdsourced, all what people wanted to say' (Lozano-Hemmer 2013). The project allowed users to experience a space normally devoted to vehicular traffic. For one long-time resident, the project 'made me see another part of the city in a wonderful way.'

The artist says that he wanted to 'create an experience that would bring people together, that would create a sense of choir, of people speaking not just to each other but also to their city.' Not only were thousands of people part of the shared experience, but the fact that the voices reflected so many different **accents and languages** also showed how diverse the city is.

The shared aspect of the installation was crucial to attracting thousands of participants. For Lozano-Hemmer, the sound of all the voices coming together gave the 'sense of a party, a lot of people speaking at the same time... a very urban experience'.

Voice Tunnel is an example of how **creative stewardship of sound** can bring people together and enable people to understand their cities and each other in new ways.

8
BIODIVERSITY

There is an increasing awareness that urban areas can be rich in biodiversity, and many cities are beginning to celebrate this unrecognised wealth in their environments. Crucially, those who plan cities now understand that this can occur throughout urban areas, and not just in green spaces or urban wildlife preserves. Sound can play an extremely important role in highlighting biodiversity.

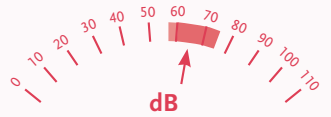
BELFAST EXAMPLE PART I
DONEGAL STREET

The flora and fauna of our cities can contribute enormously to our wellbeing: the sound of trees, birds and water have been shown to have a therapeutic effect on people. Yet birdsong, a widely appreciated sound, is itself negatively impacted by the acoustic environment (Arroyo-Solís et al., 2013). Early morning traffic causes birds to rise up to two hours earlier than they would otherwise. Accordingly, many of us never get to enjoy the birdsong in our streets, even if the city has invested in planting trees.

Predominant Sounds:
Seagulls, traffic, loud bursts of passing traffic

Background Sounds:
People talking, car doors closing, construction noise, cars starting, birds

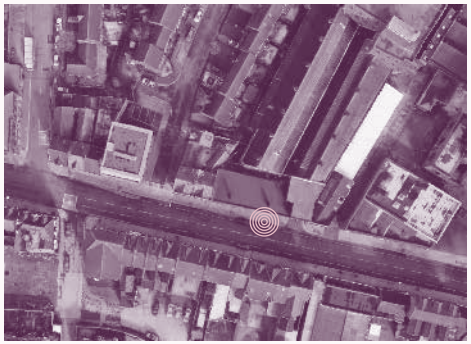
Donegal Street, 4.15PM, weekday
The predominant sounds at this point are all related to traffic. Although the passing traffic is sporadic, cars parking and leaving the carpark contribute a range of engine and braking noises that overall make it hard to have a conversation here.



dB reading
57-73 for passing traffic

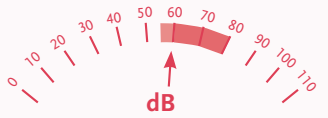
Conversations
Poor

BELFAST EXAMPLE PART II
NEWTOWNARDS ROAD



More than half of the streets we listened to in our exercise were lined with trees. However, we did not hear them. Usually it was only when taking notes and photographs that the presence of trees became known to us. It is likely that people would be more aware of the trees that surround them if they could hear them at different points along their walk. Sometimes trees are planted as a way of ameliorating the annoyance caused by traffic sounds, but our study shows that more design steps need to be taken. We must not only reduce the annoyance of traffic noise but support birdsong and other sonic markers of biodiversity.

Newtownards Road, 6.15PM, weekday
The spot where this reading was taken is on a pavement next to traffic that was stopping and starting due to traffic lights. Therefore the peaks of traffic noise were very loud compared to the relatively calm background noise level of 55 dB. This, combined with the close proximity to the moving traffic made the bursts of traffic noise particularly unpleasant.

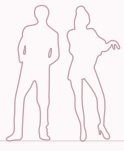


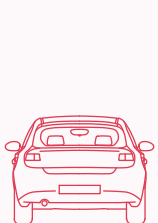
dB reading
55 - 65 with peaks at 80 when buses pass

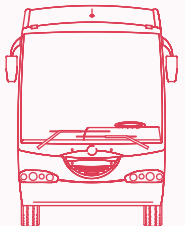
Conversations
Poor/reasonable

Predominant Sounds:
High speed traffic passing, chatter.

Background Sounds:
Rustling tree, footsteps.







SAFARI 7
Base Camp
Get Ready
Go on Safari
SIEMENS
Urban Coop
Frankenfish
45 Rd
Hunters Point Av
Vernon-Jackson

INTERNATIONAL EXAMPLE
SAFARI 7 (2009)

Celebrating local birdsong is one way of using sound to engage with biodiversity. Sound can also be a very powerful tool in educating the public about the environment. A collaborative project led by SCAPE Studio in New York City which set out to build 'urban-ecology consciousness worldwide' exemplifies this approach (Orff, 2016, p. 158).

SCAPE describe **Safari 7** (2009) as a 'self-guided tour of urban wildlife along New York City's 7 subway line' (Orff, 2016, p. 151). The project involved several public events as well as printed maps and podcasts. As commuters sat in the subways traveling between Manhattan and Queens, they could listen to descriptions of the richness of the wildlife around them. For the project's authors, the subway itself became an 'urban classroom' which allowed people to understand the biodiversity of their city and the importance of protecting this natural environment. The podcasts were designed to coincide with the passing of the subway train over or along a specific area. Thus the descriptions of urban wildlife were timed in such a way that they 'exposed the hidden intersections between people, flora, and fauna at each stop and neighbourhood along the route' (Orff, 2016, p. 154). SCAPE engaged a number of different demographics with their podcasts: commuters, workers, schoolchildren, and teachers.

SCAPE's creative use of sound and everyday technology was not limited to New York City. Indeed, they launched similar projects in São Paulo and Beijing, showing that the creative ideas behind the project are transferable to other places, and that the concept of **acoustic biodiversity** is widely applicable and engaging.

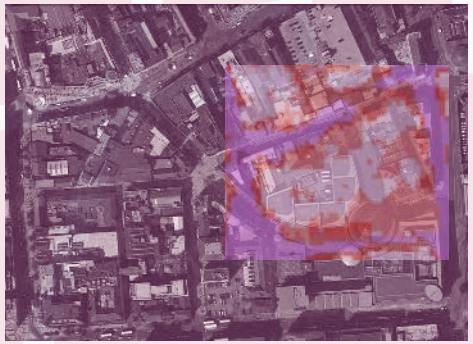
9 PLACEMAKING

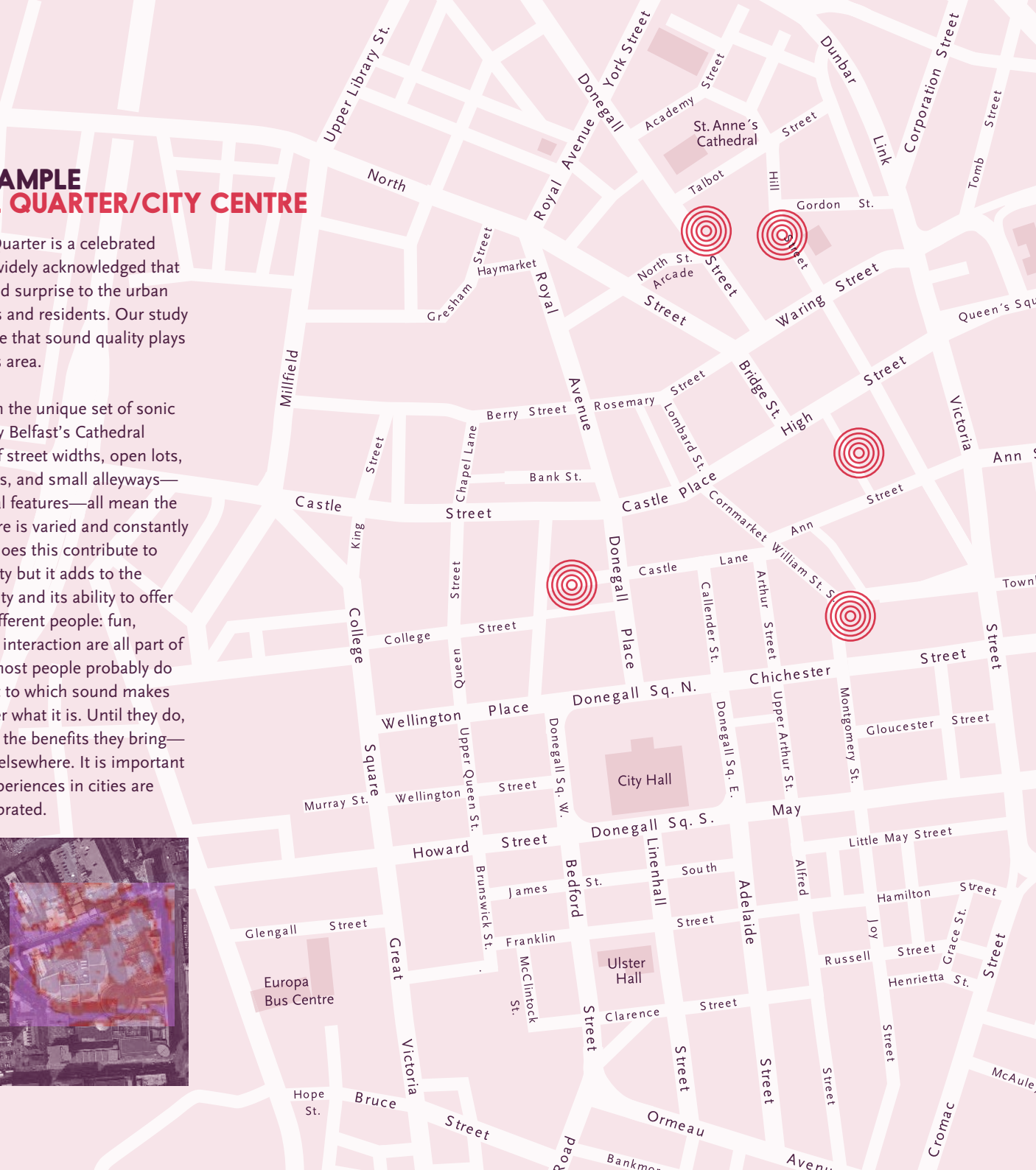
The idea of placemaking dominates most city plans across Europe and indeed much of the world today. For many decision makers a city which sets itself apart from others is essential to economic success as well as to the health and well-being of residents. But without a strong consideration of sound, placemaking seems weak. Sound should be a key part of any urban design analysis, and it should be included in local development plans at multiple scales. A city's visual landscape is only one element of its uniqueness. Its acoustic environment, often disregarded, should be understood as contributing equally to its distinctiveness.

BELFAST EXAMPLE
CATHEDRAL QUARTER/CITY CENTRE

Belfast's Cathedral Quarter is a celebrated part of the city. It is widely acknowledged that it adds singularity and surprise to the urban experience of visitors and residents. Our study shows the critical role that sound quality plays in the success of this area.

Our study has shown the unique set of sonic experiences set up by Belfast's Cathedral Quarter. Its variety of street widths, open lots, cobblestone laneways, and small alleyways—among other physical features—all mean the sonic experience there is varied and constantly changing. Not only does this contribute to the vibrancy of the city but it adds to the area's singular identity and its ability to offer different things to different people: fun, respite, surprise and interaction are all part of the offer. However, most people probably do not realise the extent to which sound makes the Cathedral Quarter what it is. Until they do, these qualities—and the benefits they bring—won't be demanded elsewhere. It is important that unique sonic experiences in cities are highlighted and celebrated.





INTERNATIONAL EXAMPLE
LISTENING SITES IN BONN (2010)

Sound artists can play a crucial role in placemaking and in recognising the unique character of urban areas that might otherwise be ignored.

Perhaps the best example of this is sound artist Sam Auinger's **Listening Sites in Bonn** (2010). This project formed part of the **bonn hoeren** scheme (2010-2020), in which a different City Sound Artist is appointed to create sound works for the city of Bonn each year. In *Listening Sites in Bonn* Auinger set out to show residents and tourists alike the distinctive qualities of Bonn's acoustic environment. He created a **listening map** of the city that highlights its unique acoustic features. Thousands of copies of the map were distributed through tourist centres in Bonn, and the map is still available online.

Auinger's map draws attention to the sonic effects a visitor can experience in places they might not normally encounter. For example, it directs people to discover the unique acoustics of the medieval Bonn Muenster cloister, hidden in the middle of the city. Auinger also shows how there are unique types of sound effects which can be heard across Bonn, from what he calls the 'cut-out effect', in which large buildings block out the sound of traffic, to wonderfully described sound sequences that take people through various paths in the city. Auinger uses images and text in clever ways to help the user locate various places in which to listen.

Auinger's map was so successful that it has been developed into a guided tour. The guide uses the map to introduce visitors to the unique features of Bonn in an unprecedented way. Not only are Bonn's built heritage and political history part of what makes it distinctive, but so too is its acoustic environment. Auinger's project thus shows how an understanding of sound can be essential to placemaking efforts in cities.

IV. KEY POINTS

1 Acoustic environments can significantly improve—or negatively impact upon—living and working conditions. Sounds can attract and repel people, whether tourists, residents, or any member of the public. Planners and decision makers **must take the acoustic environment into account**.

2 A person **does not need to be an expert acoustician** to understand a sound environment. In our study we show how a simple listening exercise that can be done anywhere can reveal a great deal about the acoustic environment.

3 Urban sound is typically characterised in negative terms: **as unwanted noise**. We aim to show how **creative uses of sound** can increase the vibrancy and vitality of urban spaces.

4 **Noise maps**, while useful, do not tell us which parts of the city are acoustically pleasant. **Noise levels** do not necessarily correlate with economic growth. However, **positive sounds** do strongly correspond to vibrant cities. Noise maps should be used in conjunction with other kinds of sound analysis that reveal the positive aspects of a soundscape.

5 A public space is most successful when designers anticipate and encourage human activity, providing **formal and informal** places to meet and interact, and places to sit and listen. In order for public spaces to flourish, sound must be a key consideration in their design.

6 **Simple design solutions** can vastly improve acoustic environments. Our study shows how small interventions such as planting mature trees and widening pavements can have enormous impact on an acoustic environment and thus the public's ability to inhabit and enjoy a public space.

7 The acoustic environment is crucial to the design of **walkable streets**: if there is no respite from loud traffic noise then people might be discouraged from walking along a route. Preferably a walk would sound so good that it would encourage people to walk more.

8 The **distinctiveness of local soundscapes** is something that city planners and decision makers should support and celebrate. Local soundscapes can be studied, preserved, and more carefully designed. Unique elements in the soundscape can substantially add to a city's character.

9 Sound should be a key part of any **urban design analysis**, and it should be included in local development plans at multiple scales.

10 Sound can be much more than noise which pollutes. Sound can make a **considerable positive impact** on how spaces are lived in, worked in and played in for generations to come. Our study has shown that this positive impact can be seen in such varied domains as: biodiversity, economic growth, safety, health and well-being, accessibility and inclusivity. Sound is essential to the creation of **vibrant, vital cities**.

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PROJECTS

Forgotten Songs (2009-2011)
Michael Thomas Hill. Supported by Dr Richard Major, Fred van Gessel, Lightwell, Freeman Ryan Design and Aspect Studio.
Curator: Steffen Lehmann
Part of the Laneway/City Spaces Project by City Arts Sydney (2008-2013)
Photo credit: Paul Patterson, City of Sydney

Impulse (2015-2016)
Mason White, Lola Sheppard and Alex Bodkin: Lateral Office. Supported by CS Design, EGP Group, Generique Design, Mitchell Akiyama, Robocut, Iregular and Maotik.
Client: Quartier des Spectacles
Photo credit: Ulysse Lemerise
Drawing Credit: Lateral Office

Light Neville Street (2009)
Media and Arts Partnership (MAAP), Hans Peter Kuhn, Andrew Edwards, Bauman Lyons Architects, ARUP.
Client: Leeds City Council, Northern Way and Yorkshire Forward.
Photo credits:
Simon (doggonwheels @ Flickr.com)
MAMF Photography

Listening Sites in Bonn (2010)
Sam Auinger, Bonn City Sound Artist 2010. *Bonn Hoeren – Urban Sound Art*: Beethovenstiftung für Kunst und Kultur. Supported by Bonn Information and the Urban Planning Department of the Federal City of Bonn.
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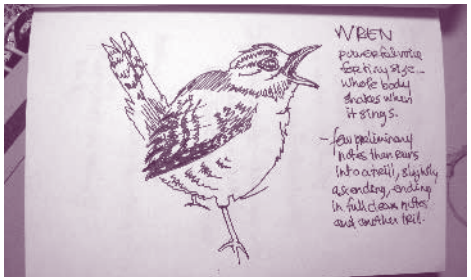
Image credit: Sam Auinger
Photo credit: Creative Commons

Safari 7 and Safari 7 Reading Room (2009)
Janette Kim and Kate Orff, Urban Landscape Lab, and Glen Cummings, MTWTF.
Supported by Columbia GSAPP, Studio-X and SCAPE Studio. Sponsored by CeX, Complete Entertainment Exchange, Ito En, and Izze Sparkling Juice.
Photo credit: Ho Kyung Lee

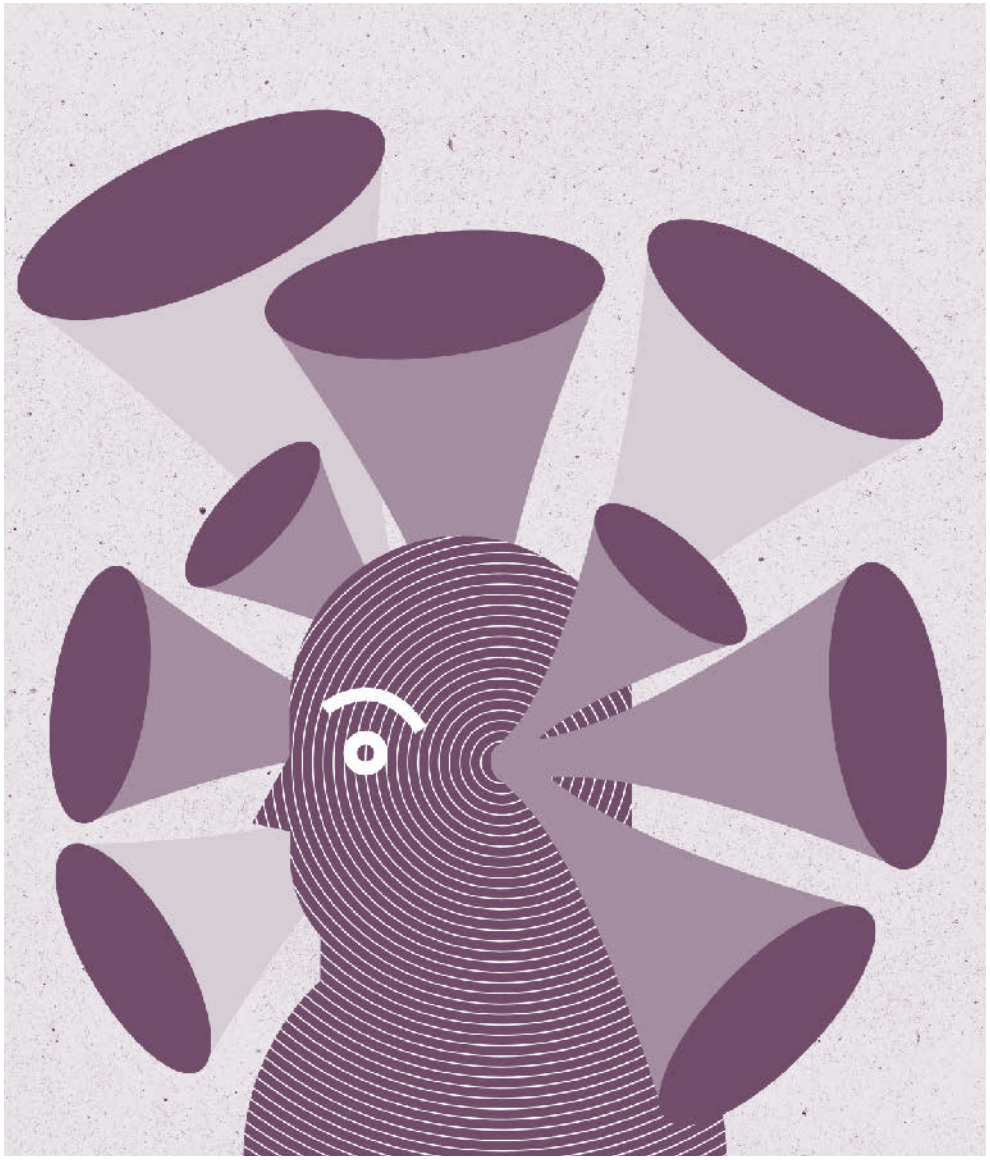


Sing City (2010)
Annah M. Kassen: Major Project for MDes Service Experience Design and Innovation at London College of Communication, University of the Arts.
Photo credit: Annah Marick Kassen

Voice Tunnel (2013)
Rafael Lozano-Hemmer. Supported by Stephan Schulz, Jordan Parsons, Julie Bourgeois, Karine Charbonneau, Guillaume Tremblay, Claudia Espinosa and Worldstage. Commissioned by the Public Art Program of the Department of Transportation, NYC.
Photo credit: James Ewing

Sounding Brighton 2011
at Brighton White Night (2011)
West Street Story: Martyn Ware, The Illustrious Company
Part of *Sounding Brighton* by The Noise Abatement Society with local stakeholders, the COST Action TD0804 *Soundscapes of European Cities and Landscapes* and ISO Working Group 54 on Perceptual assessment of soundscape quality.
Hosted by *Brighton & Hove White Night* supported by Brighton and Hove City Council, Arts Commission Brighton and Hove, ACE (SE), Interreg IVA France (Channel) England and ERDF.
Photo credit: Creative Commons 2.0: https://pxhere.com/en/photo/445632

Zadar Sea Organ / Morske Orgulje, Zadar (2005)
Nikola Bašićwith Ivan Stamać Supported by Matija Galošić, Dr. Prof. Vladimir Andročec, Tomislav Heferer and Goran Ježina.
Client: Lučka Uprava Zadar
Photo credit: Filip Brala



ABOUT RECOMPOSING THE CITY

Recomposing The City was founded in 2013 by Gascia Ouzounian (Music, University of Oxford) and Sarah Lappin (Architecture, Queen's University Belfast). Our project has brought together several dozen local and international researchers from a variety of disciplines: music and sonic arts, architecture and planning, geography, anthropology, film studies, and creative writing. Since its inception in 2013 Recomposing the City has hosted over twenty concerts and lectures, two symposia, a cross-faculty postgraduate seminar, and several exhibitions.

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