TRANQUIL CITY: CONSIDERATIONS FOR IDENTIFYING AND EMBRACING TRANQUILLITY IN CITIES

G L Waters       Tranquil City, Anderson Acoustics

1 INTRODUCTION

Living in cities is exciting and can offer many benefits, but it can also be a risk to physical and mental health, due to factors such as exposure to pollution, reduced access to natural spaces, stressful environments and perceived inability to lead a healthy, balanced lifestyle.1

Experiencing a sense of ‘tranquillity’ on a regular basis, defined as “calmness, serenity, and peace”, can relieve feelings of stress, anxiety, mental fatigue and boost social cohesion. It is also generally understood to be experienced in healthier, greener and less polluted environments.2

The term is used in UK and Regional planning policy, such as the National Planning Policy Framework, and is emerging in cities, such as in the London Environment Strategy, Healthy Streets London and Welsh Urban Quiet Areas.3,4,5,6 Tranquillity is a wholly subjective experience, involving a relationship between mood, perception and physical environment, and therefore is inherently multidisciplinary and challenging to define, especially in complex urban areas. Tranquillity is often discussed in relation of the acoustic environment, ‘quiet’ and soundscape.

How can urban tranquillity be robustly, yet openly, identified and nurtured to promote healthier cities, enforce planning policy, as well as empower the public to lead healthier lives? What is the role of acousticians in understanding tranquillity in the context of other disciplines? How can the public be brought into the conversation on what tranquillity means for them in the cities that they live, instead of it being something of professional, academic or formulaic? Can the term be freely interpreted to ensure it represents the localities and communities, as well as the cities and countries in which it is being applied?

Tranquil City is a project helping city-dwellers and city-makers embrace tranquillity in the urban environment to promote healthy, balanced lifestyles, so that together we can work towards creating truly sustainable and liveable cities. We are a multidisciplinary team consisting of professionals and researchers in acoustics, air quality, sustainability, environmental psychology, socio economics, data science, urban planning and public engagement. We create everyday digital tools, conduct meaningful public engagement and provide unique applied research on the integration of tranquillity into the design of cities.

The intention of this manuscript and presentation is to openly discuss questions on the various applications of ‘tranquillity’ in the context of urban environments to promote healthier cities and lifestyles.

2 ACOUSTIC ENVIRONMENT, SOUNDCAPES AND TRANQUILLITY

It is important to distinguish the meaning of ‘tranquillity’ and its relationship with soundscape and acoustic environment. This is due to the term being inter-changeable with the discussion of quiet and quiet areas.

Acoustic environment is defined as “the sound at receiver from all sound sources as modified by the environment”.7 This is entirely measureable and objective, and a term that acousticians use on a daily basis. From an acoustic standpoint, a ‘quiet area’ is defined as one that falls below a certain threshold in relation to its objective acoustic environment, and one that is somewhat ‘undisturbed’ by general sound sources deemed as ‘noise’.8 However, it is acknowledged in the European Environment
Agency’s ‘Guide on quiet areas’ document that considerations of context and people’s perception are important.8

Soundscape is defined as the “acoustic environment as perceived and/or experienced by a person or people, in context”, bridging the gap between our environment and how it is perceived.7 The soundscape evokes a reaction in us, one that is dependent on the acoustic environment and the context in which we perceive it. This reaction is dependent on a variety of acoustic (objective) and non-acoustic (subjective) factors, described in ISO 12913-1 as seven distinct elements: “context”, “sound sources”, “acoustic environment”, “auditory sensation”, “interpretation of auditory sensation”, “responses” and “outcomes”. The key elements related to this discussion of tranquillity are “context”, “responses” and “outcomes”.7

Tranquillity is an emotional state, one as described by Herzog et al. as a state of “calm, serenity and peace”, that is experienced in the relationship between our environment and our own state of mind.2 The terms serenity and peace suggest that there are links between these feelings and ones of contentment and tranquility, where contentment relates to an untroubled state in which Fredrickson describes as an urge to savour the present moment and integrate momentary experiences into an “enriched appreciation of one’s place in the world”.9 These emotions can positively contribute to an individual’s sense of wellbeing.10 In this interpretation of tranquillity, it is individualistic and subjective, yet it is inherently grounded in the environments that we inhabit and the psychological relationships that we have with them. It should be emphasised that as an emotional state it is by definition time dependent and temporal.

This emotional state can be evoked by the surrounding environment, through our perceptions of and relationships with it, and therefore is multi-sensory, inter-dependent on the balance between visual, aural, smell and touch stimuli. For each sense, different qualities may help evoke this feeling, whether it’s the presence of nature, aesthetic form, sun light, warmth, quiet, texture, atmosphere or the presence of positive social interactions. This is a clear distinction between the definitions of soundscape and tranquillity, in which the former, albeit is understood in context with other senses and mental states, is primarily focussed on the perception and experience of the acoustic environment itself. It is acknowledged that relative quiet and the presence of nature may well be a dominant quality associated with tranquillity, but nonetheless, the emphasis is that it is a balance between multiple factors that is dependent on a person and their own psychological, physiological and environmental contexts. This point highlights the importance of acoustician’s responsibility to work in collaboration with other disciplines considering the contribution of sound, as one of many aspects that can affect a person’s perception and reaction to an environment.

In the context of the city, this multi-sensory balance and context is essential, where previously towns and cities have been attributed to detracting from the sense of tranquillity.11 Research, such as that conducted by Gregg Watts of the University of Bradford, has emphasised the importance of the term ‘relative tranquillity’, which has been used to distinguish the urban experience from the so-called ‘absolute tranquillity’ as experienced in more rural environments.12, 13 The importance of ‘relative tranquillity’ is that it brings subjectivity and context to the forefront of the conversation, as it is suggested that the presence of one quality, such as the visual presence of greenspace is known to help reduce the negative experience of road traffic noise.14 However, it raises the question, should the definition of tranquillity be segregated into various interpretations dependent on the context in that it is experienced? Formulas such as the Tranquillity Rating and Prediction Tool (TRAPT) derived by Watts et al., suggest that tranquillity can be predicted by an analysis and quantification of percentage of greenspace, sound pressure level from natural and non-natural sources, and that the identification of tranquillity in urban areas just requires a lower threshold to be considered acceptable.13

However, if we allow ourselves to peel back the multiple layers of how tranquillity has been defined previously, what are the core elements that define it and will this allows us to eliminate separate definitions of the term for different contexts and environments? A comprehensive review of various definitions of tranquillity carried out by the Landscape Institute shows that the term is often associated with being free from manmade disturbance, the natural environment, visual pleasing surroundings

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and feelings of safety. But if tranquillity is defined as an emotional experience of “calm, serenity and peace”, it is clear that definitions should not be limited to these qualities only and man-made features may be experienced as calming, serene and tranquil. Are these definitions, which have been somewhat defined in the context of rural environments, actually hindering the application of tranquillity in urban environments?

One further question that warrants discussion is in the urban context, how much does the experience of tranquillity depend on the environmental characteristics in comparison to that of the individual’s own state of mind at the moment in time? This raises considerations to the importance of the perceiver’s individual health, wellbeing, societal context and understanding of their surroundings on their ability to experience tranquillity in complex, urban environments. This inter-connectedness between the environments that we inhabit, our sense of place and own personal wellbeing, is in our opinion essential in determining tranquillity in cities and ultimately realising the potential benefits that it can provide.

The Tranquil City project defines tranquillity as an emotional state of calm, rest and gratitude that is experienced between one’s own state of mind and the environment that they inhabit. Our approach is to be open to the various interpretations of tranquillity from the individual level and to develop methods of relating collective subjective perceptions to establish trends in their relationship with objective environmental quality data and urban-form information.

3 TRANQUILLITY, CONNECTION AND WELLBEING

Emotional connections with a place can increase feelings of wellbeing and a strong emotional response can have heightened ability to form lasting connections in comparison to those of a more cognitive nature. In cities, opportunities for leading healthy, balanced lifestyles are sometimes skewed by the social pressures of living vibrant, busy and successful lives. Urban environmental quality and safety, in regards to noise, air pollution and traffic can have severe negative health and wellbeing implications. Higher stress hormone exposure linked to living in urban areas is likely to be a dominant cause of risks to mental health. These risks appear to be unavoidable by the average person and can vary depending on the affluence of the area, where it has been shown that within cities higher levels of chronic disease are experienced in more disadvantaged areas. These factors, as well as others, such as demanding jobs with long working hours, can be perceived to be at odds with healthy lifestyle practices, such as balanced diet, exercise and visiting restorative environments, which are good for our own physical and mental wellbeing. A significant cause of the negative health implications discussed, is the car-centred approach to city design and planning that has dominated in the 20th Century. This approach has led to significant increases in air and noise pollution, loss of green spaces, reduced ability and space for walking and cycling, and most importantly it has resulted in a de-prioritisation of the human-scale experience.

Despite these challenges, cities present significant opportunities to promote health and wellbeing on a global scale, as recognised by the Habitat’s New Urban Agenda and the United Nations Sustainable Development Goals (SDGs). Health and sustainable urban development are now understood to be intrinsically linked, where aims to promote health such as walking and cycling can in turn reduce the dominance of motor vehicles which contribute significantly to congestion, carbon emissions and pollution.

The Tranquil City approach addresses this concern and untapped potential by putting human perceptions at the forefront of city conversations and design. Our approach establishes a platform to listen to people’s individual perceptions and preferences, engaging with them to understand what is important and valuable. This alternative approach to city design, which focusses on understanding and nurturing the experience of tranquillity, can work towards how the human-scale can be brought back to the fore-front of city design and planning, and as a result improve the experience of cities to promote health, wellbeing, activity and improved environmental quality.
Tranquillity, where defined as an emotional experience, may therefore be a trigger to deeply set connections with our environment, which can therefore increase our ability to form lasting relationships with places and self-regulate their use as restorative environments in order provide relief from stress and anxiety. Where tranquility is associated with greenspace, it has been shown that populations living in greener areas are at a lower risk of health inequalities related to income deprivation. The perception and experience of feeling tranquil may also be associated with the practice of ‘taking notice’ of one’s surrounding environment and emotions towards it, which is linked to greater feelings of positive mental wellbeing.

This emotional experience of tranquillity in response to an environment is very much dependent on one’s own state of mind, willingness to explore the surroundings and perceived ability to do so freely and safely. In a theoretical sense, access to quality spaces that may evoke feelings of tranquility are freely accessible to all, but in reality, various barriers to accessibility exist, such as the level of social cohesion, an individual's feelings of inclusion or isolation, age and/or gender.

In experimenting with the concept of tranquillity and wellbeing, our team has identified two areas in which we are investigating further to help realise the potential benefit of the concept. These are identified as to promote ‘useable data on environmental quality’ and ‘social, community and engagement’. These are presented in a visual diagram that explores our perceptual, emotional and experiential relationship with cities, as shown in Figure 3-1.

Figure 3-1: Identification of key elements of people’s relationships with their urban environments to experiment with concept of embracing tranquillity to promote improved wellbeing.

It is generally recognised that in order to promote effective and lasting behaviour change, the intended goals for change need to be aligned with personal needs. Arguably, the most pressing need for effective behaviour change in our cities today is centred around the encouragement of active travel to reduce the dominance of motor vehicles, as discussed earlier in this chapter. It is our hypothesis that a focus on more positive aspects that can and are perceived to promote personal health and wellbeing, such as the experience of tranquillity, can in return promote lasting behaviour change centred around active travel and reduced reliance on motor vehicles. This is in relation to the alignment of intended global, city-wide and personal goals, such as the visiting and navigating towards more tranquil spaces can benefit personal health, reduce exposure to pollution and increase the appeal of walking and cycling. In turn, these practices where adopted on a city-wide scale will...
likely reduce car dependence, resulting in further reductions in air pollution, noise and emissions, as well as allowing for more space for walking, cycling and greenspace.

4 IMPROVING THE PUBLIC’S PERCEPTION OF THEIR OWN ENVIRONMENT

A key aspect of the public’s perception of their own environment is the information that they receive in regards to its quality and their resulting perception of quality. If cities are presented as bad for health, it is considered likely that people’s general perception of cities will be that they should escape these areas to feel healthy and well.

Presenting realistic, informative and ultimately relevant information on environmental quality is essential in building a relationship between people and their cities, which promote healthy practices and positive, lasting behavioural change. Tranquility is one positive experience that should be embraced in cities, as it has the potential to promote healthier lifestyles and is often not associated with urban areas. Tranquil City has been experimenting with this form of useable environmental quality data, presented in a positive, simple manner, and one that encourages people to share their own perspectives on tranquillity in urban environments. This is manifested in what we call Tranquil Pavements, and the first city experiment has been conducted in London.

In our OrganiCity funded projects, we have explored methods of presenting available datasets on noise and air quality in positive and easy-to-understand ways, as well as investigating correlations with the public’s perception of tranquillity and ‘healthier’ environments (relatively low exposure to noise and pollution). Combining noise and air quality datasets, from the Department for Food, Environment and Rural Affairs and the Greater London Authority respectively, our team derived a bi-colour indicator, which highlighted areas objectively away from noise and pollution. Relatively healthier thresholds were based on World Health Organization guidelines and included both NO₂ and PM₂.₅ measures of air quality, as well noise levels from road, rail, aircraft and industrial sources combined. It is our intention to expand this dataset to include other environmental and urban form aspects, such as greenspace, blue space, traffic counts, street types, building form and tree density information. The indicator isn’t intended to identify tranquillity through data, but to suggest where it may be more likely to be found due to reduced exposure to noise and pollution.

As a primary focus, above the background layer of environmental quality data, the map displays crowdsourced perspectives of tranquillity by people. These perspectives are contributed by posting to social media platforms, Instagram or Twitter, to the hashtag #tranquilitylondon. The intention is that this method of data collection is a simple and engaging way of exploring what tranquillity means for people. The remit was simple and open, asking people to share any perspective of tranquillity they wish to, as long as it’s a publically accessible location, e.g. not an individual’s own property or home. It was identified during early stages of the project that there was a notable initial barrier to the increased sharing of perspectives where a standalone app was required and that a significant majority of people were posting to these existing social media platforms every day. In this aspect, our approach contrasts with similar projects around crowdsourcing quiet spaces such as Hush City App.

Excerpts of the Tranquil Pavement London map created in collaboration with technology co-operative Outlandish, can be seen in Figures 4-1, 4-2 and 4-3.

As a person shares a perspective to the social media hashtag, that post information is pulled via the Instagram and Twitter APIs and displayed on the map. Once displayed, the user can click on the marker to reveal information as to the location’s noise and pollution exposure in the form of values and simple comments indicating whether it is considered low or high based on World Health Organisation thresholds, as can be seen in Figure 4-3.

As described previously, we intend to expand this dataset and the availability of it, so that people can easily understand the ‘quality’ of their local environment to aid understanding of healthier places and
areas they can visit and travel via, in order to reduce pollution exposure and benefit from environments that may lead to improvements in health and wellbeing. We also propose to develop a methodology in order to create inter-connections between the crowdsourced dataset and how it can inform the weighting of environmental characteristics which indicate the likelihood of experiencing tranquillity. This work is currently on-going.

Figure 4-1: Tranquil Pavement London displaying crowdsourced perspectives via social hashtag #tranquilcitylondon and a simple pollution indicator highlighting areas of low noise and air pollution exposure.

Figure 4-2: A more detailed view of the Tranquil Pavement London, displaying a ‘low pollution’ indicator every 20m using noise data from Department for Food, Environment and Rural Affairs (DEFRA) and air quality data from the Greater London Authority (GLA).
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Figure 4-3: Crowdsourced tranquil perspective, photo, location and description and the pollution information related to that location.

5 PARTICIPATION, INTERACTION AND ENGAGEMENT

In order to consciously develop the Tranquil Pavement London, we have held a range of public co-creation workshops and events to gauge people's reactions and thoughts on the tool and how they would like to interact with it. These include workshops with the public, built-environment professionals and school children as well as more informal walking events to explore and disseminate the ways the tool can be used to find and discover tranquillity in urban areas.

During a notable workshop event in January 2018, where the team presented the first version of the interactive Tranquil Pavement London web-app, participants were asked the following key questions when testing the platform:

- Are you likely to use the Tranquil Pavement London?
- Do you think the Tranquil Pavement London will encourage you to share your own perspectives on tranquillity?
- Is the pollution information understandable and helpful?
- Does the colour scale make sense to you?

These questions were answered in informal methods, asking people to add their responses on 'post-it-notes' on the question board, indicating where on the scale of 'yes' or 'no' their response is best placed, helping to start up conversations between people during the process. Each of the questions was answered with a majority responding 'yes', with large majorities responding positively towards the questions “do you think the Tranquil Pavement London will encourage you to share your own perspective on tranquillity?” and “is the pollution information understandable and helpful?”. More detailed responses were collated and were used to help refine the tool which was released in March 2018.

Other engagement events have focussed more on helping people to explore new areas of their city, hosting informal walking events that have been curating by the Tranquil City team. The team has hosted 11 walking events so far, in partnership with organisations including Better Bankside, Team London Bridge, Lewisham Council, City of London Corporation, Westminster City Council, National...
6 CONCLUSIONS

Tranquility is an emotional response that spans across multiple environmental quality, architectural and landscape disciplines, with a focus on individual subjectivity and experience.

Tranquility is distinct from the study of acoustic environments and soundscapes in that it is inherently multidisciplinary and relies on the balance between various environmental factors, multi-sensory input and psychology. It is more closely associated with soundscape in that it is assessed as a perception, when in context.

The concept of tranquility is included in national, city and local authority policy documentation, and therefore has significant potential for applied positive impact, where it is holistically identified, protected, and even enhanced and promoted within urban areas. Embracing the term in city design and planning can help bring the human-scale, perception and preference to the forefront of design practices and is in line with current trends in sustainable urban development which are intrinsically linked with the promotion of health and wellbeing.

A fundamental aspect of understanding tranquility in urban areas more clearly involves being open to the interpretation of tranquility and perhaps readdressing the core principles of the term, in contrast to using definitions and trends derived from more rural areas. This will allow for a greater and more nuanced study of the term, one which will be more representative in the context of the city.

Tranquil City’s approach is to acknowledge that the perception and experience of tranquility is diverse and depends on many factors that are primarily concerned with the individual themselves and their response to the environment. We are developing methods to widen the conversation of what tranquility means for people in the context of cities, being open to its various interpretations, and to establish connections with these perspectives to objective environmental quality and urban-form. Public engagement is core to our process of bringing a more human-centred approach to city design.

Tranquility can help evoke emotional connections with one’s surrounding environments and therefore has great potential to promote lasting healthier day to day practices, which in turn can result in improved city interactions. Due to the emotive nature of the term and the relationship it has with improved health, wellbeing and avoidance of noise and air pollution, it has strong potential to be used to promote behavioural change towards active travel, such as walking and cycling.

This paper highlights the importance for acousticians to work collaboratively with other disciplines and the public in the study and assessment of tranquility, considering sound as one of many factors that can affect a person’s perception and experience of an environment. It therefore stresses the importance of acousticians to go beyond the reduction of noise, to an approach that considers and applies sound as a positive attribute, akin to what is defined as the soundscape approach. This should be applied in the context of sustainable urban development practices that have significant potential to mitigate the effects of climate change and increase public health and wellbeing.
REFERENCES


