



The collaboration with natural elements, Amsterdam
Photo by Callum Parker

Sound: An Underappreciated Aspect of Healthy City Life

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Urban planning is not only about creating livable places or climate-proof cities. It is also about creating healthy environments for urban dwellers. The current COVID-19 crisis teaches us that people with underlying health conditions, such as diabetes mellitus, chronic lung disease and cardiovascular diseases, are significantly more vulnerable to develop severe COVID-19 symptoms (Chow et al. 2020). This evidence supports an understanding that healthy people are more resilient towards diseases and virus outbreaks.

The COVID-19 crisis obviously has struck Amsterdam too. This makes us, urban planning students from the University of Amsterdam, aware that our health is fragile and precious. The recent revival of the topic of health puts new emphasis on how cities relate to health, a foundational subject for the practice and academia of urban planning (Barton & Tsourou, 2013). As planners, we need to shape cities in such a way that cities contribute to health, instead of forming a burden on urban dwellers' health. Coming from an Amsterdam perspective,

where sound (reduction) is an important topic in municipal planning (Municipality of Amsterdam 2020a), we advocate for an increased appreciation of sound as an aspect of urban planning for healthy cities.

By now, it is well known that constant exposure to noise has negative effects on dwellers' physical and emotional health: exposure to traffic sound (the main driver for noise pollution in Amsterdam), street-level noise and general city "ambient noise" causes stress reactions. According to an

article in the Environmental Health Perspectives journal: "Reactions to a stressor can be psychologic [feelings of fear, depression, sorrow], behavioral [social isolation, aggression, excessive use of alcohol, tobacco, food, drugs], and somatic [cardiovascular, gastrointestinal, respiratory illnesses] in nature" (Passchier-Vermeer & Passchier 2000, p. 126). However, sound can also positively impact health: natural sounds from animals and vegetation function as stress relieving (Hedblom et al. 2014, 2017). Therefore, planners should not only focus on noise reduction, but also should actively try to plan for sounds that benefit health.

To critically assess sound in cities, this article uses the concept of "soundscape" as defined by Porteous and Mastin: "The true soundscape study examines the entire continuum of sound, including both negative and positive qualities, and includes both wanted and unwanted sounds" (Porteous & Mastin 1985, p. 170). This article first will explore the types of sounds that impact dwellers' health and will then discuss approaches to improve the urban soundscape.

Urban sounds can be categorized into two categories: human-made (anthrophone) acoustics and natural acoustics (Rehan 2016). Human-made acoustics can be divided into sounds from traffic and sounds from human activities (such as socializing, work, etc.). Natural acoustics can be divided into biophonic sounds, coming from other living

organisms, and into geophonic sounds, coming from natural physical processes such as wind and water (ibid.).

Furthermore, sound can also be classified as wanted, or pleasant, and as unwanted, or noise. According to Schafer (1997), sound becomes noise in three ways: (1) by being an unwanted sound; (2) being an unmusical (non-periodic) sound; and (3) any loud sound. However, completely quiet cities would not function as well; absolute quietness drives people crazy (Valle 2019). Therefore, when planning for a positive soundscape in cities, it is important to critically think about wanted and unwanted sounds. The complexity of soundscapes also influences the evaluation of sounds. If the information someone can obtain from the soundscape is low, it is perceived to be unattractive and boring. If the soundscape becomes too complex, it becomes "unreadable" and leads to annoyance. This, however, is very subjective (Ipsen 2002).

One critical aspect of sound management in cities is to mitigate unwanted sounds as much as possible, to which there are a variety of solutions. In the study of city noise, regulations to control the sound of traffic and construction for example can be one potential solution. However, historically, urban planners have focused too much on the mitigation of noise (Moudon 2009). As an example, sound barriers these days are used in many different cities as ways to mitigate road noise (ibid.). In fact, the construction of sound barriers has become mandatory according to environmental impact assessment procedures in many countries (Arenas 2008).

The Municipality of Amsterdam recently passed the "Amsterdam Noise Action Plan 2020-2023", an encompassing plan for noise reduction in the city with a range of measures to mitigate noise. Nevertheless, as is also acknowledged in this plan, there is still very little attention for the interpretation of sound and potential positive sounds



The sound of water fountains as natural sound, Paris
Image Credit: Faezeh Mohammadi

(Municipality of Amsterdam 2020a).

A more encompassing solution for dealing with noise in cities is mitigating unwanted sounds while also encouraging positive sounds. This could be achieved by creating and increasing urban green spaces. More greenery allows for more absorption of noise pollution, especially traffic noise (Davis et al. 2017; Nordin, et al. 2016). But more greenery also encourages people to walk and cycle to their destination, thus reducing the need for urban transport forms that contribute to noise pollution. Greenery thus not only mitigates but also could function as a reducer of urban noise. Research even shows that, although the relationship between greenery and noise can vary, cities that have more (and more porous) green space on average have lower levels of noise (Nourmohammadi et al. 2021).

Increasing the amount of green space has other benefits as well: it can add wanted sounds to the soundscape, as it creates geophonic sounds and attracts organisms that produce biophonic sounds. A city like Amsterdam, for example, is actively increasing its biodiversity, which has positive effects on dwellers as well as on plants and animals (Municipality of Amsterdam, 2011, 2020b; WWF 2020). A green city attracts more organisms than a city dominated by cars and concrete noise barriers. This can be achieved by reducing emissions from cars but also by increasing the quantity of nature. Increasing the

amount of green spaces attracts more animals to the city, which provides wanted animal sounds (Fuller et al. 2007).

Other wanted sounds that contribute to the soundscape are natural sounds, such as fountains, and geophonic sounds, such as rustling trees (Andringa & Lanser 2013; Ratcliffe 2019). Research shows that by adding pleasant and wanted natural sounds, unwanted sounds are deemed less unpleasant (Rådsten-Ekman 2010). Sound can also provide situational awareness and increase the safety of an area as it tells people where they are and allows people to hear their surroundings (Andringa & Lanser 2013). Church bells or the sound of a tram let people know where they are in the city. Besides that, “quiet and pleasant sonic environments allow the listener full freedom and control over mind-states”, which increases the wellbeing of dwellers (Andringa & Lanser 2013, p. 1440).

To conclude, cities produce a lot of sound. To plan healthy cities, we as planners need to think critically about the acoustic aspect of our profession. Some of the urban sounds are necessary, wanted and pleasant to listen to, while other sounds are not pleasant and unwanted. Historically, more emphasis has been put on the reduction of unwanted noise in cities. However, there are also a lot of possibilities when thinking the other way around. As pleasant sounds often originate from nature (biophonic and geophonic sources), adding more nature and green space can help to change

the soundscape, and therefore enhance the wellbeing of people and the health of nature and animals.

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City Center, Amsterdam
Photo by Charl van Rooy



Resources

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