

Bringing sound to the design table: A guide for urban planners

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Abstract

Sound is a key but overlooked component in how we experience the city. Professionals of the built environment are aware of the importance of sound, yet rarely consider it proactively in their practice. They feel ill-equipped to think about sound early in their projects, and when asked, they request a best practice guide for decision-makers. This article presents a sound design guide co-designed with urban experts to look like the urban design and planning guides they know and use in their practice. Specifically, it provides guidance on how different urban design decisions may impact the sound environment. Developed through an iterative process of document analysis, interviews and work sessions with urban experts, the guide is organized into general guidance providing contextual information and methods for readers to adapt to their own projects, as well as sample exercises of realistic situations to illustrate that information and to help readers practice thinking through the sound component of an urban project. We aimed to be more descriptive than prescriptive or exhaustive, as readers know best what their own projects will look like. The guide is meant as an opportunity for practitioners to think through the sound components of their project to strengthen them.

Keywords: *soundscape, urban design, urban planning, sound design guide, knowledge mobilization*

1. Introduction

Sound is a key but overlooked component in how we experience the city. Professionals of the built environment (defined as “those who plan, design, or enact interventions, either physical or policy, at a range

of urban scales” [1, p. 2], including, but not limited to architects, designers, engineers, landscape architects) make decisions that impact everyday sound environments [2]. They also are aware of the importance of sound yet rarely consider it proactively in their practice. That is, sound often receives attention once it becomes a problem.

Practitioners feel ill-equipped to think about sound early in their projects [1], [3]. They specifically report a lack of resources (whether technical, social, or political) and knowledge as the main obstacle [3]. Sound environments are complex by nature, and it is especially complicated to assess the impact of each individual source on people’s experiences, let alone their interactions and their spatiotemporal evolutions [3]. Additionally, when asked about what they feel they need most to better take sound into account, whether documentation, tools, resources, training, communication, they request a best practice guide for decision-makers in priority [4].

To fill this gap, soundscape research is increasingly focusing on integrating soundscape and urban practice [5], [6], including by offering concrete directions [7]. Other researchers have also proposed soundscape guidelines for the design of urban spaces. For example, Brown and Muhar [8] offer guidance to define soundscape objectives for the design of an outdoor space, or Cerwén et al. [9] presenting a tool to introduce wanted sounds.

We want to argue here that, in addition to mapping out how urban form, usages, and soundscapes co-inform each other, we should capitalize on professionals’ existing practices and knowledge. We aimed to do so in the present work by co-creating a sound design guide that looks like the urban design and planning guides they know and use in their practice.

Specifically, we took the problem from the opposite angle than what has been done before. Rather than focusing on guidance to modify the sound environment as a standalone component (e.g., creating objectives, introducing sound sources), we provide guidance on

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how different urban design decisions may impact the sound environment. For example, if a street redesign project focuses on improving safety for active users, we did not want to add another item to design for. Rather we wanted to offer guidance to analyze how decisions to improve safety also impacts the sound environment so that planners could have more arguments to support their projects.

2. Method

The present work was conducted through an iterative process of document analysis, consultation (interviews) and co-design (work sessions) with urban planning experts to develop a sound design guide that meets the needs of professionals of the built environment.

We analyzed the influence of urban street design interventions on the sound environment from four urban guides from three countries:

- the *Urban Street Design Guide* by the (U.S.) National Association of City Transportation Officials [10]
- the *Global Street Design Guide* by the (U.S.) National Association of City Transportation Officials [11]
- *Gestion intégrée du bruit environnemental* [Integrated management of environmental noise] by Vivre en Ville (Québec, Canada) [12]

- and *Voirie urbaine: guide d'aménagement* [Urban streets: planning guide] by the Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement (France) [13]

In parallel, we conducted interviews and work sessions with a total of (at the time of writing) 4 practitioners at different steps of the process.

In the present article, we focus on the work sessions between the first two co-authors, conducted over a week in March 2026, and the resulting version of the guide (see Fig. 1, 2, and 3).

3. Results

3.1 Co-design process

Based on the previous version of the guide [14], we interviewed urban planners to gather their impressions and see if the tool could be useful to them. They expressed interest and the need for such a tool, but they felt that the guide as it was did not help them understand clearly what to do when. Following this assessment, it was clear that more work was needed to better speak the language of professionals of the built environment.

Co-author #2 was invited to improve the guide with the first author, owing to his experience with translating academic information into actionable

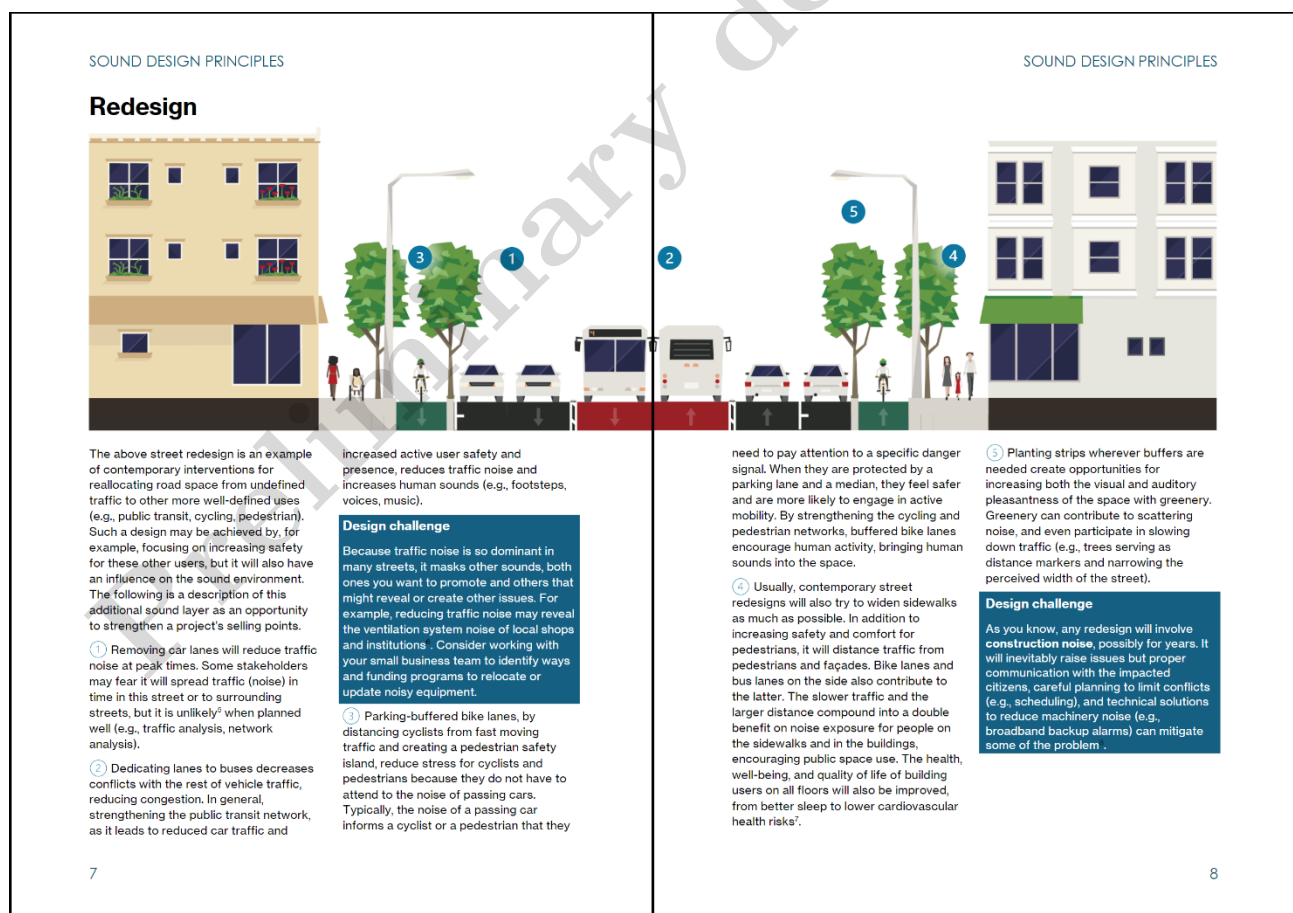


Figure 1. Practical illustration of a sound analysis for a street redesign, from the guide.



Figure 2. Excerpt from the guidance section.

information for professionals of the built environment from both his education and his academic and municipal work.

Over the course of a week, the two co-authors broke down the guidance from the previous version of the guide, reframed it in a non-academic language, and added practical guidance and considerations for planners. Additionally, two illustrated exercises were created, representing two realistic street redesign scenarios, a first towards the beginning of the guide to illustrate the type of analysis a sound expert might conduct, and the second for them to practice their new knowledge at the end of the guide. Efforts were also made to render the guide visually appealing to designers and planners.

3.2 Resulting guide

Find the guide and its history (in French and English) at: <https://osf.io/4euyn/overview> [15].

The guide is organized in three main sections:

- general sound design principles and an illustration of how a sound expert might apply them to a design project (see Fig. 1)
- the guidance section, the main section, providing contextual information and methods for readers to adapt it to their own projects (see Fig. 2)

- and a practical exercise for readers to practice thinking about the sound component in their design practice (see Fig. 3)

The guidance section is additionally organized into six categories, from the physical to the social:

- main sound sources of interest in the city (e.g., traffic, trucks, humans)
- what can happen when sounds interact (e.g., masking, emergence)
- how the built environment contributes to our experience of the sound environment (e.g., street canyons, barriers)
- how sound matters in inclusive design in the city (e.g., age, disability)
- bigger picture questions (e.g., public health, culture)
- and soft strategies to improve both a design and its social acceptance (e.g., communication, sound art)

As much as possible, beyond descriptions of factors to think about, we provided tools and methods for readers to use on their own and cited everything for them to be able to dig deeper.

The main body of the text for each category offered the background to understand the sound aspects and was complemented with text inserts offering informational stepping stones to think through their urban decisions, as well as practical tools and methods to put this new knowledge into practice. We also linked frequently

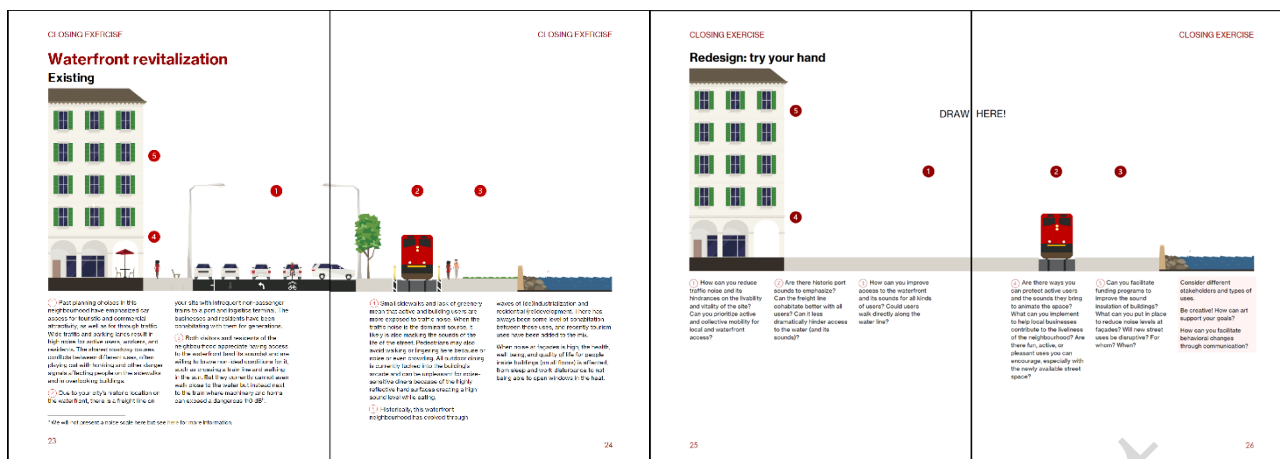


Figure 3. Illustration of the closing exercise for readers to practice. On the left, a realistic existing situation; on the right, a lightly-guided practice exercise for readers to draw and write out a redesign implementing what they learned in the guide.

between different categories, highlighting the interconnectedness of the different considerations, even between information categories.

4. Discussion

Professionals of the built environment feel ill-equipped to think about sound early in their projects [1]. Accordingly, soundscape research increasingly focuses on integrating soundscape into urban practice [5]. When asked, professionals request a best practice guide for decision-makers [4].

Within this context, we have repeatedly argued for capitalizing on professionals' existing practices and knowledge, through co-creating tools that speak their language and fit their workflow. In the present work, we worked with (as of yet) 4 practitioners to iteratively develop a sound design guide for street (re)design.

The resulting guide is written and structured in a way that speaks to planners: avoiding jargon, connecting to their priorities (e.g., facilitating discussion with stakeholders, constituents' buy-in), clear structure, design examples and exercises illustrated in familiar ways (e.g., street cross-sections). It specifically takes the question from the opposite angle than what has been done before. Rather than focusing on the sound environment as a standalone component to be shaped regardless of urban form (e.g., creating objectives, introducing sound sources), our guide provides guidance on how to analyze urban design decisions from the lens of their impact on the sound environment.

In the future, we would like to develop this type of guide for all types of urban interventions (or see it done by others), starting with public spaces.

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