



What is a soundscape intervention? Exploring definitions and identification criteria and a platform to gather real-world examples

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ABSTRACT

Possible definitions for the concept of “soundscape intervention” and criteria that could be used to identify stages in a design-oriented framework are discussed. This is in line with the Part 4 of the ISO 12913 series on soundscape being currently developed. For some time already, the soundscape concept has attracted attention from policymakers and practitioners of the built environment, as it advocates for more engagement with local communities in design processes. This is reflected in several documents published by national and international agencies calling for consultation and participation of the public in the definition of soundscape interventions. However, this intended framework is still trying to bridge a gap with the planning and design community, possibly for the lack of conspicuous empirical evidence (i.e., case studies and success stories) showing the benefits provided by the soundscape approach, and some lack of consensus about what a “soundscape intervention” is in the first place. Therefore, an online platform will be presented that can be used for data collection of soundscape intervention examples. This relates to the preliminary stage of a project called “Catalogue of Soundscape Interventions (CSI)”, which has the long-term goal of observing frequent/recurring situations or strategies that can be collated into design toolkits and formulate design briefs that local authorities will be using to communicate with soundscape consultants.

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1. INTRODUCTION

Since the late 1960s soundscape studies have been rising steadily as a research field with an increased growth rate in the last 20 years approximately. Indeed, looking at the scientific production published in peer-reviewed international journals for the last two decades, one can observe a significant increase in the number of items published on soundscape with a focus on urban scenarios (i.e., excluding naturalistic and marine soundscapes and other very specific applications where the term soundscape is used) [1].

The soundscape concept has generally been able to attract attention from policymakers, as it advocates for more engagement with local communities [2]. This is reflected in several documents published by national and international agencies calling for consultation and participation of the public in the preparation and review of action plans and a more user-centred approach to the characterization, management, and design of urban acoustic environments [3-6]. However, this intended framework did not really make any significant breakthrough in the planning and design community [7,8] possibly for (a) the lack of conspicuous empirical evidence (i.e., case studies and success stories) showing the benefits provided by the soundscape approach; and (b) the lack of available systematic reviews of best practices in soundscape preservation, design and curation, which could serve as a theoretical basis for developing planning and design strategies.

Collections of successful soundscape design interventions are quite scarce [9,10]. Similarly, examples of summaries and practical guidelines to implement soundscape design (or preservation) actions do not appear frequently in landscape or urban planning and design literature [11,12]. Therefore, there is an overall need to collect comprehensive information on implementations of soundscape-related measures worldwide and to expand knowledge on soundscape case studies and examples to the practitioner communities (e.g., planners and designers), beyond the academic/research context.

2. AIMS AND METHODOLOGY OF THE “CATALOGUE OF SOUNDSCAPE INTERVENTIONS” PROJECT

The general aim of the *Catalogue of Soundscape Interventions* project is to develop a data collection tool and to create a knowledge base of sites and places around the world where specific measures have been put in place to a) design and/or curate the acoustic environment and its corresponding soundscape or b) to inform the future development of soundscape design and practice. These will be achieved by pursuing the following objectives and according to the corresponding Work Packages (WP):

WP1 - Website and Data Collection Tool:

- Developing a tool for data collection
- Creating an online catalogue of soundscape design examples

WP2 - Soundscape Design Taxonomy:

- Identifying recurring intervention patterns and levels
- Defining a taxonomy of soundscape strategies
- Releasing a technical report

WP3 - Outreach and Impact:

- Raising awareness on the benefits of soundscape design
- Bridging academia and industry
- Dissemination of research findings in conferences and journals



3. THE CSI PLATFORM FOR COLLECTION OF SOUNDSCAPE INTERVENTIONS

3.1. General platform architecture

To collect and disseminate data on soundscape projects/intervention/sites, the Catalogue of Soundscape Interventions website (<https://soundscape-intervention.org/>) was set up and launched in early 2022. The website is both an online repository to catalogue and showcase existing soundscape interventions and a data collection tool for new entries. The rationale behind selecting a website as a platform is to provide a comprehensible, easily and openly accessible medium that is not only limited to the research/academic soundscape community, but also reaches out to professionals, practitioners, local communities and the general public, reinforcing the aspect of public participation and facilitating networking.

The website is divided into two main parts, the *catalogue* (“Catalogue” tab) and the *submission form* (“Submit” tab). The main purpose of the catalogue is to provide an overview of all identified soundscape projects/interventions/sites across the globe. To enhance navigation, a custom world map was created to pinpoint the exact location of the identified soundscape projects/interventions/sites, using longitudinal and latitudinal reference data, see Figure 1. The map was integrated using the openly available Google My Maps API and will continually be populated with new data as the catalogue grows. Each individual entry has its own dedicated subpage, providing more detailed information, e.g., regarding the background and context of the project/interventions/site, its date of implementation, observations made and supplementary material, such as audios, pictures and publications. Depending on the amount and quality of information available, the scope of these subpages may vary considerably. To make it easier to browse through the entries, e.g., by use of specific keywords, a search field (“search intervention”) has been included.

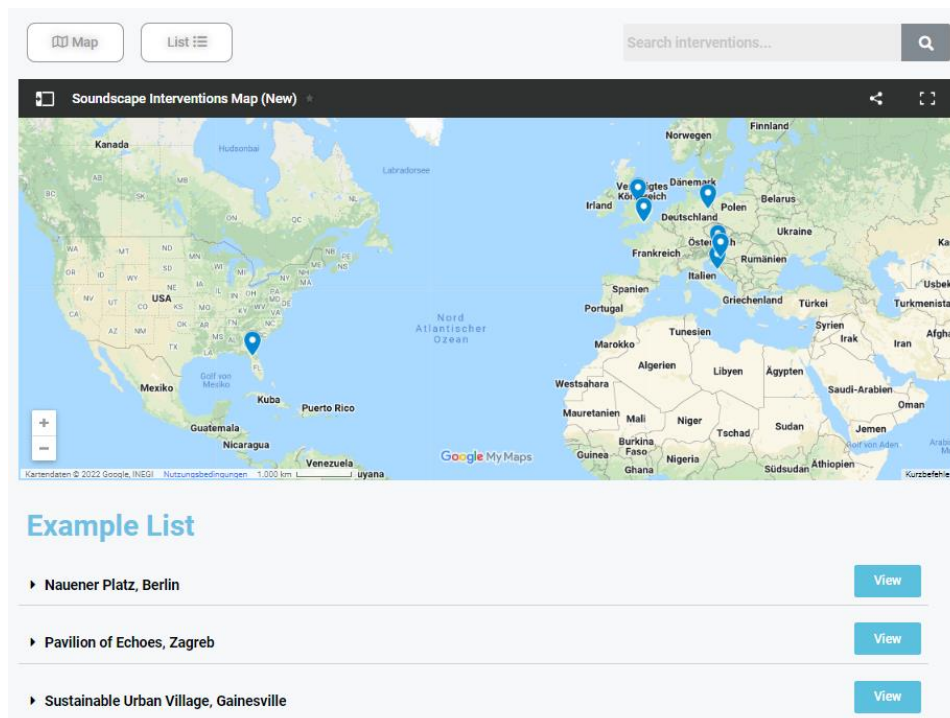


Figure 1: Screenshot of the website (<https://soundscape-intervention.org/catalogue/>), showing an excerpt of catalogued soundscape interventions (map + list).



The function of the submission form is to collect data on existing soundscape projects/interventions/sites worldwide in a single repository, especially those which have not been documented otherwise, and to thereby centralize this process. Some “archetypical” examples of soundscape interventions have been included on the website to indicate how to report a soundscape intervention and to highlight the broad range of potential interventions, see Figure 1. The main objective of the Nauener Platz soundscape project [13], a formerly neglected park in a social flashpoint of Berlin, was to improve the quality of life for residents by rebuilding a public space. To achieve this, combined methods, such as soundwalks, acoustic measurements, recordings and expert interviews were used to capture the character of the sonic environment and identify potential problems. The redesign included the installation of a gabion wall to mitigate traffic sounds, as well as audio islands playing naturalistic sounds to provide locations of optional distraction. A particular emphasis lied in integrating all relevant opinions into the redesign and involving the local community throughout the entire process. In Gainesville, Florida a soundscape case study was conducted as part of a site analysis for a proposed sustainable, urban village, aiming to improve transportation, infrastructure and urban development in the area [14]. Diverse strategies were used to explore the acoustic landscape, such as soundwalks, acoustic measurements, recordings, focus group discussions with various stakeholders, acoustical mapping and modelling. As a result, three categories of acoustical interventions were implemented to improve the sonic environment: mitigation of negative sounds (e.g. reduction of mixed traffic flow, encouragement of alternative transportation forms), preservation of desirable sounds (e.g. erection of barriers, promotion of zone activities) and addition of new acoustical elements to encourage design goals for the project (e.g., import of soundmarks, neutral or natural sounds, introduction of quiet areas) Employing acoustics as a means of engaging the public to interact with its environment and to make a public space more dynamic and enjoyable, is a strategy observed in parks since the 19th century. A Pavilion of Echo(es) was erected in a public park, Maksimir in Zagreb, Croatia, featuring a ceiling structure above a tiled floor, specially designed to produce a characteristic flutter echo effect, inviting by-passers and children to play and investigate the phenomenon [15].

The submission form can be filled out by any user visiting the website, without the need of registration. All entries are identifiable by a unique ID (ascending number) and collected in an online database, which can later be exported to offline formats. The threshold for the data collection process has been kept purposefully low to encourage use of the website and submission form, especially in early stages. The submission form consists of 18 items, 14 of which collect information on the soundscape project/intervention/site, such as its name/title, location, its implementation date and status, a basic description, the reasoning behind it, involved parties and target audiences, methods/strategies used and observations made, see Figure 2. The form items are a mix of commonly used questionnaire item types, including open text fields, drop down lists and single- or multiple-choice check boxes. While most of the items are optional, the provision of a name, location, basic description and information on the implementation date and status of the project/intervention/site is a minimum requirement for successful entry and therefore mandatory. The submitting party is also required to upload visual or audio material of the project/intervention/site and to confirm that no third-party copyrights are infringed when sharing this information. The provision of visual or audio information is necessary for two reasons. First, to enable verification of the project’s/interventions’/site’s existence and second, to generate material for the catalogue.

In regular, predefined intervals, submitted entries are exported to an offline format following submission and undergo a manual review process, see Figure 3. After the export, the first step in this task chain is a quality screen to check whether entries match the required criteria for inclusion into the



catalogue or not (see section 3.2). Inadmissible entries are excluded from further review and are consequently removed from the database. If the entry is not blatantly inadmissible, but fails to meet quality standards and legal requirements, the submitting party is contacted and asked to resubmit the entry with revised information. Entries that pass the screening are qualitatively analyzed (see section 3.2) and published on the website.

Please provide the following information:

Soundscape name *
 What is the name of the soundscape project/intervention/cultural heritage site? If a name is not applicable, please insert a location.

Soundscape location *
 Please insert lat/long geodata, if available. Otherwise specify the location as precisely as possible, i.e. road, city, country.

Brief description of intervention *
 What was the reason for the soundscape intervention? Please give a brief description of the context (background of intervention). What were challenges and ambitions? What were the outcomes, if available? [max. 200 words]

Detailed soundscape strategies
 What soundscape strategies were used? Please give a more detailed description, if available, i.e. masking of unwanted noise/sound enrichment, preserving local identity and or soundmarks, increasing public awareness or other (please specify). [max. 400 words]

Status of implementation *

Date of implementation *

Initiators and participants
 residents businesses local authorities national authorities/agencies (e.g. heritage) others

Were soundscape designers/researchers involved in this process?

If yes, who was involved?


Typical audience
 residents tourists commuters workers students other

Observations after implementation

Has this intervention been documented?

If yes, where can the documentation be found?

Upload material (max. 3 files and 60 MB; allowed formats: jpg, png, gif, pdf, wav, mp3) *
 No file chosen

I'm not a robot 

First name / Last name * **E-mail ***

Upload terms *
 I hereby certify that the material I upload complies with the [Terms and Conditions](#) and that I do not infringe third-party rights.

Figure 2: Screenshot of the submission form (<https://soundscape-intervention.org/submissions/>).

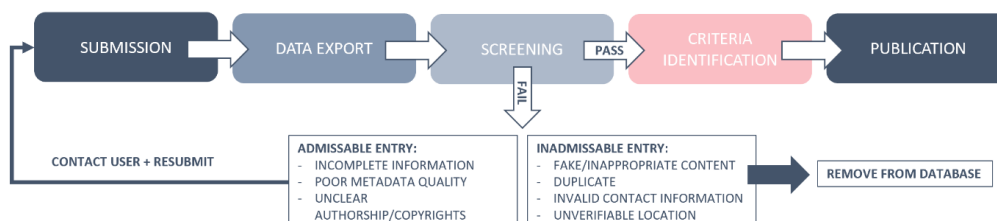


Figure 3: Schematic representation of the review process.



3.2. Criteria for describing a soundscape intervention

The main review process consists of two steps: screening and criteria identification. A checklist with a binary (0/1) rating system is used in both cases to simplify and standardize the process and to ensure objectivity across raters. The screening checklist consists of a total of eight items, phrased as yes-or-no questions, see Table 1. For further consideration in the review process, the first four questions (items 1-4) have to be rated affirmatively (1), otherwise the entry is marked as inadmissible, leading to its removal from the database. This is the case with fake or inappropriate submissions, duplicates, invalid contact information and unverifiable locations. If one or more of the remaining questions (items 5-8) are rated with “0”, e.g., due to incomplete information, poor audiovisual quality or unclear authorship and copyrights, but the entry is generally admissible based on the first four items, the user is contacted and asked to resubmit.

Table 1: Screening check list; each item receives a 0-1 score depending on whether the criterion is met or not.

Topic	Item #	Checklist item
<i>Basic Information</i>		
Contact	1	Has the submitting party provided real contact information?
Content	2	Is the data free of any harmful/inappropriate/offensive content?
Soundscape name	3	Does the soundscape project/intervention have an identifiable name/title?
Soundscape location	4	Has an exact location of the project/intervention been provided?
Indicators	5	Is it clear who has initiated the project/intervention?
Date	6	Is it clear when the project/intervention was initiated/carried out?
<i>Metadata</i>		
Audio/picture	7	Does the provided audio/picture data have adequate quality?
Copyright	8	Is author- and ownership of the provided audio/picture data clear?

While the screening checklist is used to preprocess data and to sift out inadmissible entries, the criteria identification checklist is used for qualitative data analysis. In lack of a common nomenclature for the definition of a “soundscape intervention”, the first step in this analysis is to document how the term is understood by different communities, not only on a theoretical basis, but by taking a closer look at real-world examples. This may not only facilitate a better understanding of potential definitions, but also uncover frequent/recurring situations and strategies. Following these findings, the second step is to derive criteria that qualify a project/site as a “soundscape intervention” and to then



establish a taxonomy, based on quality indicators. Deriving such criteria and developing quality indicators is a work in progress and therefore the criteria identification checklist presented here should be understood as a first attempt at homogenization, which is prone to change.

The criteria identification checklist consists of seven items, phrased as yes-or-no questions and respectively rated with “1” or “0”, see Table 2. In future, a more fine-grained scoring system may be introduced, depending on the elaborateness of the entries submitted. These seven items address different methodological aspects of the project/intervention/site, e.g. its background, its aims and objectives, the strategies and data collection methods used, the level of public involvement, its outcomes and its evaluation by the scientific community. Unlike the screening list, no cut-off score has to be achieved for inclusion into the catalogue. The items are added up cumulatively with a high score indicating higher quality (max. 7). This scoring is used for internal purposes only and is not published on the website.

Table 2: Criteria identification check list; each item receives a 0-1 score depending on whether the criterion is met or not.

Criteria	Item #	Checklist item
Methodology <i>(Quality Indicators)</i>		
Background	1	Has the reasoning/background for the project/intervention been sufficiently explained?
Aims & Objectives	2	Are the aims and objectives of the project/intervention clear?
Methods	3	Have typical soundscape strategies been used to carry out the project/intervention?
Data collection	4	Has data been collected with standardized methods?
Public involvement	5	Has the public been involved? i.e. advisory/cooperative/user-led involvement
Outcome	6	Has the outcome of the project/intervention been documented?
Peer review	7	Has the project/intervention been reported in peer-reviewed journals?

4. CONCLUDING REMARKS

In this paper, we presented the preliminary stage of the project called “Catalogue of Soundscape Interventions” (CSI). The rationale for this project is to provide a tool for data collection and communication and to streamline the process of selecting examples of projects/interventions/sites of cultural valence in public spaces around the world that are meaningful in terms of soundscape approach and are directly or indirectly driven by it. The ultimate goal is observing frequent/recurring situations or strategies that can lead to a general definition of “soundscape intervention”. These can then be collated into a “design toolkit” and formulate “design briefs” that local authorities will be using to communicate with soundscape consultants/researchers. Furthermore, based on the collected data, the



project aims to develop a taxonomy of soundscape design, indicating potential layers and levels of classification, e.g. type of intervention (conservation/preservation actions as opposed to active modifications of the acoustic environment), degree of public involvement, duration and prominence of intervention, effects on users etc. A “design toolkit” and a taxonomy, developed based on data reflecting successful measures implemented in many countries around the world, may also become an informative source for the standardization process currently taking place within the ISO 12913 series.

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