A S T U C E :

Ambiances Sonores, Transports Urbains, Cœur de ville et Environnement

Propositions pour un guide méthodologique

Programme PREDIT - Coordination ADEME (Emmanuel Thibier)

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INRETS

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Urban Soundscape Assessment

ASTUCE: Sound Ambiences, Urban Transport, City centre and Environment

A PREDIT project supported by a research grant from ADEME

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J. BEAUMONT.

The goal: to provide a relevant methodology to improve the environmental quality of city centers by considering the concept of soundscape proposed by the Canadian composer R. Murray Schafer.

Urban Soundscape Assessment

The project was composed in 3 phases:

Phase 1: How to bring together their own methodologies applied on two urban areas where several modes of transportation are available, among which the tramway

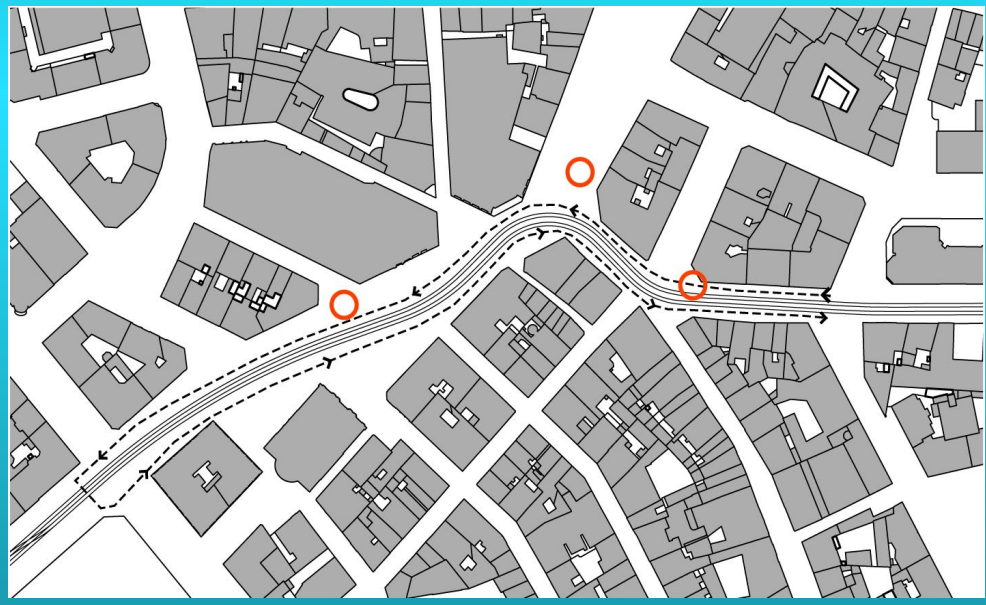
Phase 2: Establishing the link between the data from the phase 1and those which result from the measurements or calculations meeting the standard NF S 31-130 or the European directive being used to establish the noise maps

Phase 3: To create a specification chart aiming to develop a methodological guide of sound ambiences, from subjective to rational, a toolbox, which links keywords as territory, implementation, transport, heart of the city, perception, feeling, acoustics, acoustic energy or noise level

Phase 1: Presentation of the Studied Sites

Bordeaux
PLACE PEY-BERLAND

Grenoble
RUE FÉLIX-POULAT



Phase 1: Presentation of the Studied Sites

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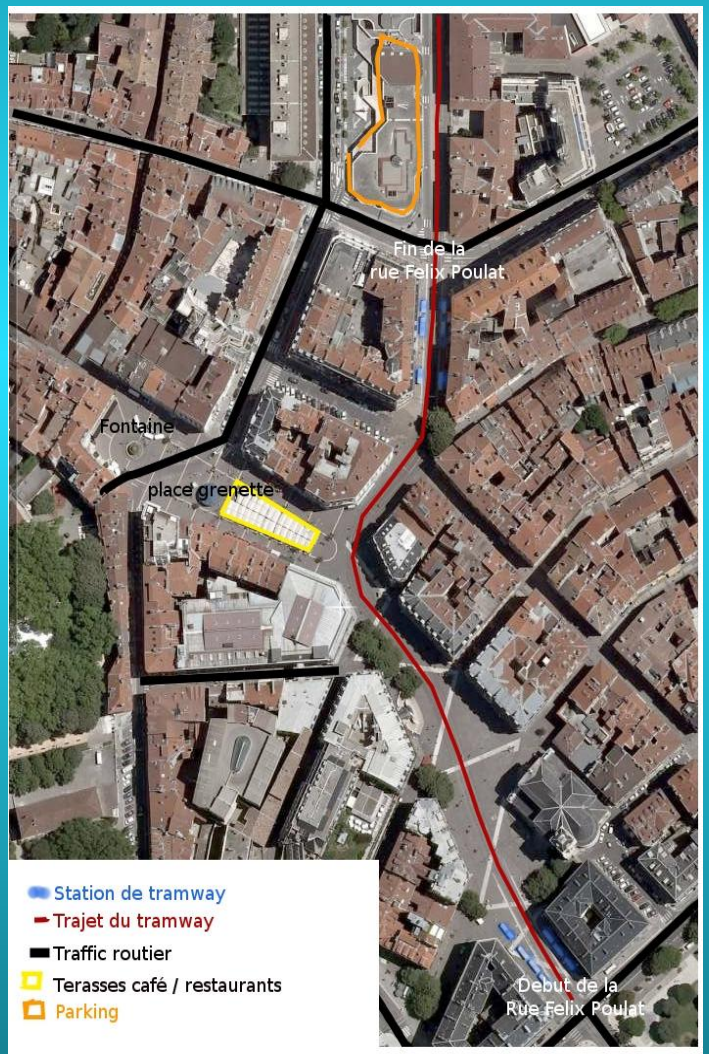
Phase 1: Presentation of the Studied Sites

Maps of tramway lines

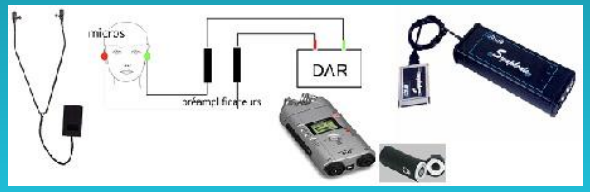
Bordeaux

Grenoble

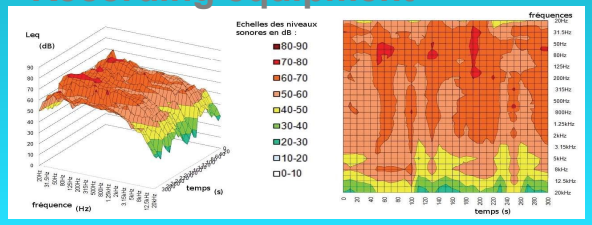


Phase 1: Methodologies used for the Study

The method of GRECAU is based on the evaluation of site as it is and as it is perceived by the city dwellers.



Recording equipment



Data from the soundwalk

Subjective survey

The method of CRESSON calls on their memory and their imaginary abilities to underline their expectations with regard to the urban soundscape.

The commented walks

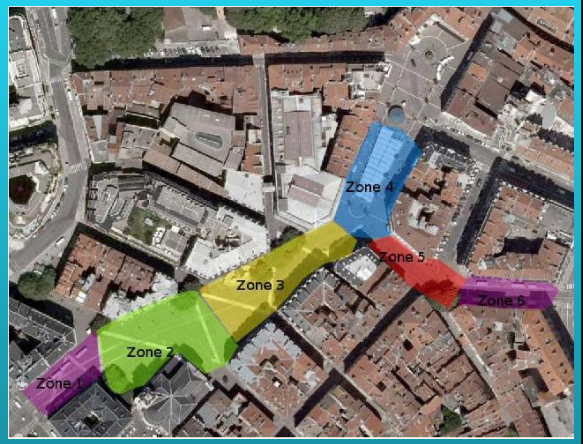
Comments on amplified listening

Phase 2: Some soundscape's Data

Zone	Main sound identity	Sound sources to remember
1	Calm in an open space	Sound of the fountain and the chirping of birds emerge with the passage of trams, cars, motorcycles.
2	Fairly noisy in an almost closed space	Cars, motorcycles and trams
3	Noisy in an almost closed space	Sounds of footsteps, discussions, nature (birds,…), cars, motorcycles and trams
4	Very noisy in an open space	Tram, crossing roads, car park exit
5	Fairly quite in an open space	Sounds of discussions, playing (football, skate-board…) and of singing birds
6	Very noisy in an almost closed space	Cars, scooters and trams
7	Calm in an open space protected by the cathedral	Sounds of discussion, footsteps and outdoor cafés

Bordeaux

Grenoble



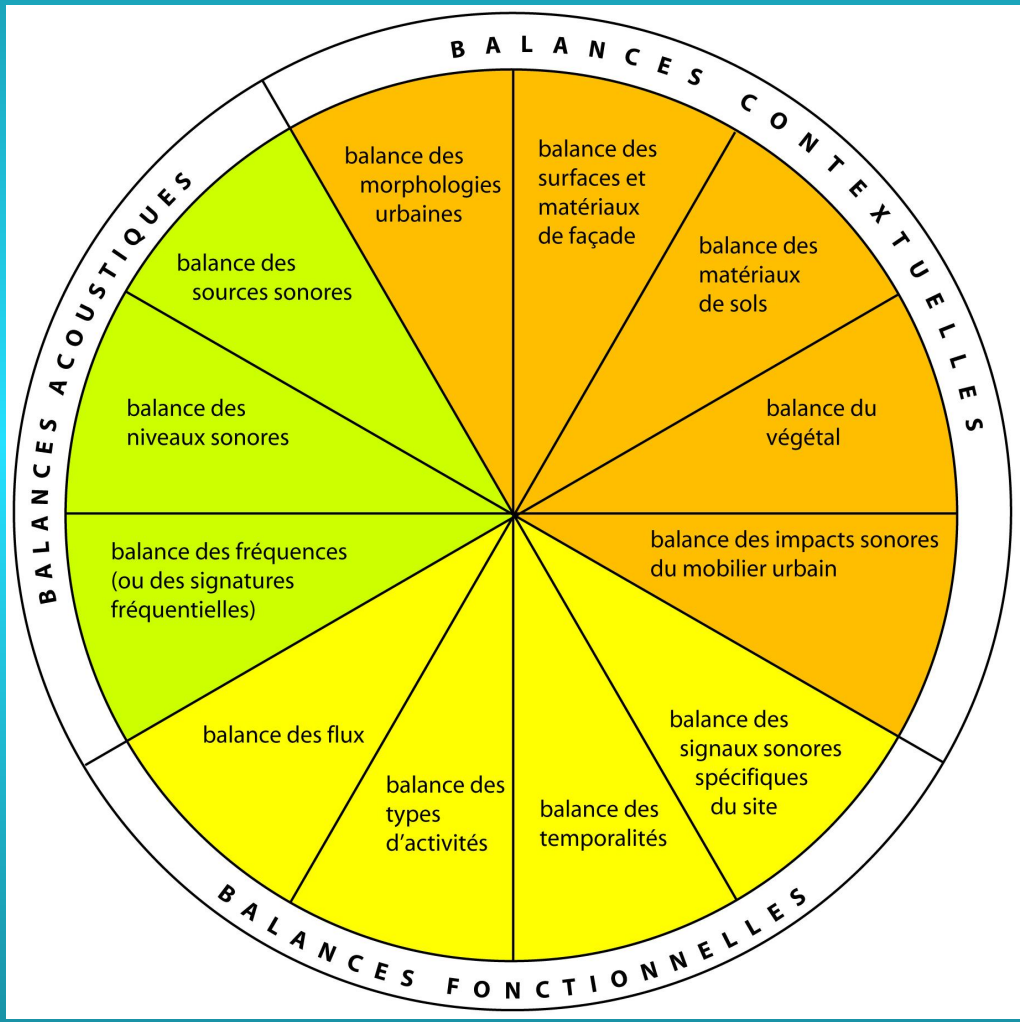
Zone	Main sound identity	Sound sources to remember
1	Very narrow and noisy U-shaped area	Trams, cars, motorcycles and cycles.
2	Fairly noisy in an almost open space	Pedestrians and trams
3	Fairly noisy in a well differentiated space on each side of the tramway in a U-shaped street	Carousel, shops, trams, some motor vehicles, conversations and sound of footsteps
4	Fairly quite in an almost open space	Cafes, restaurants, ice cream sellers, fountain, traffic
5	Very mechanical ambiance sound in a narrow U-shaped street	Trams, motor vehicle, rollers and skaters, and sound of footsteps
6	Very noisy in a very narrow U-shaped street	Open shops, conversations, cars, scooters and trams

Phase 3: Proposals for a Methodological Guide

The sound markers of centrality: twelve balances

- **Contextual balances**

1. The balance of urban morphologies
2. The balance of surfaces and facade materials
3. The balance of soil materials
4. The balance of vegetation
5. The balance of noise impacts of urban furniture



Phase 3: Proposals for a Methodological Guide

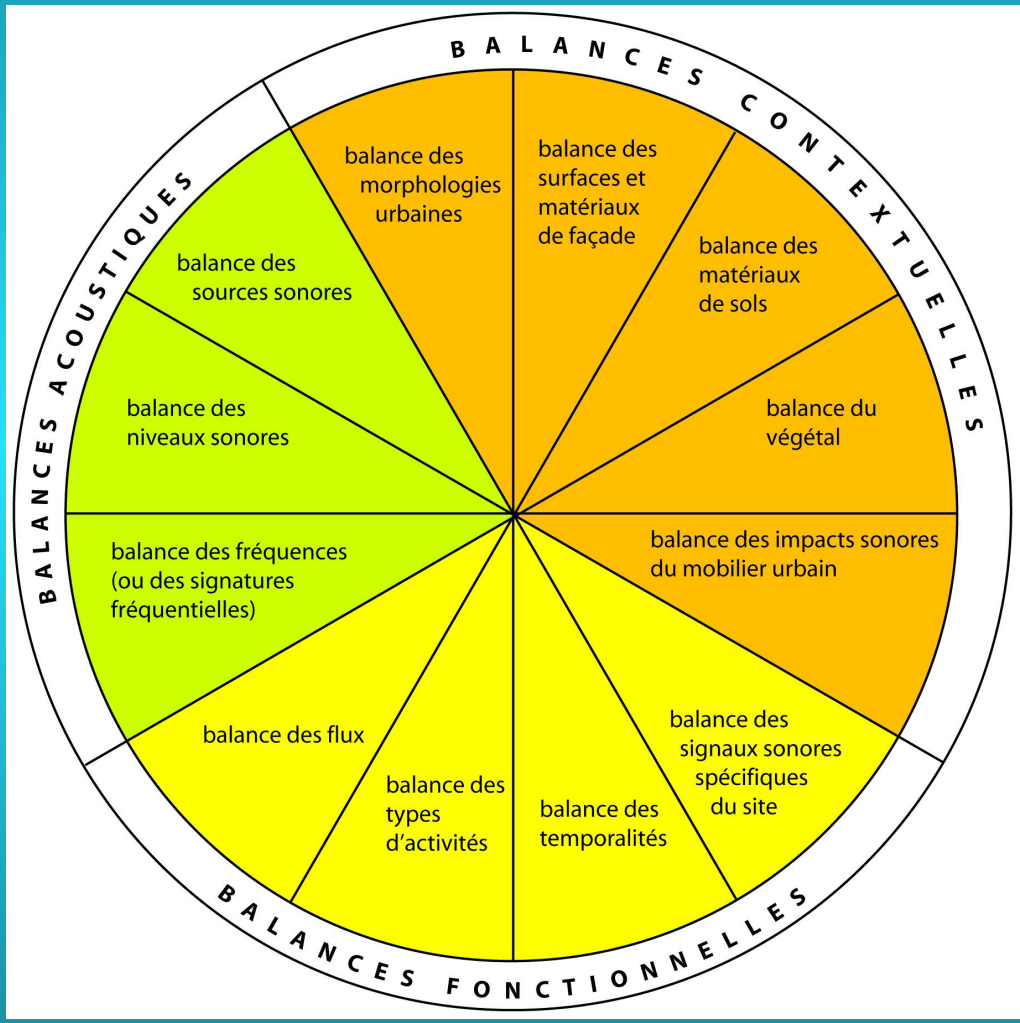
The sound markers of centrality: twelve balances

- **Acoustic balances**

6. The balance of sound sources
7. The balance of sound levels
8. The balance of frequencies (or frequency signatures)

- **Functional balances**

9. The balance of flows
10. The balance of activity types
11. The balance of temporalities
12. The balance of site-specific sound signals



Some example of balance

The balance of urban morphologies

La Place Grenette ; des facades de l'entrée sud vers la fontaine jusqu'à la entrée nord

Some example of balance

The balance of urban morphologies

MAIN CHARACTERISTICS				
SILHOUETTE	SKYLINE	FORMES	*Other*	
Loose urban tissue, built-up urban density, clustered residential area, Haussmannian building, medieval urban fabric ...	*Regular, rugged ...*	*Open, L, U, amphitheater form, closed on four sides, covered...*		

EQUILIBRIA	
VERTICAL CONFIGURATION OF THE BUILT ENVIRONMENT	LOW — HIGH
URBAN FABRIC	OPEN — CLOSED
BUILT FRONT	BROKEN — CONTINUOUS
URBAN COMPOSITION	SPACED — COMPACT

BALANCE OF URBAN MORPHOLOGY - SUMMARY

One-sentence summary that condenses the main features

Conclusion

The indicators, which combine subjective and rational elements, are involving not only the knowledge of experts observing the site but also the expertise of residents and practitioners who reveal by their stories the objective facts, the feelings and projections.

This guide does not replace the methods of each spatial discipline but intents to be a framework for an open mutual dialogue.

By proposing indicators adapted to the qualification of urban environmental noise in addition to the prescribed indicators as the Lden or the Lnight which are used for the noise maps, this project would like contribute to show all the interest and the potential of sound for city management and design.

Merci de votre attention
Thank you for attention