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Abstract: We present an experiment run along the lines of a pilot experiment in China based on collages and narratives to illustrate the participants' experience with urban sceneries. Its aim was to develop a conceptual model based on narrative analysis that linked objects of the environment to the perceived properties of the soundscape. Participants in groups of two were free to clip any image they wanted from a selection of magazines—the same for all groups within each country—and free to add comments or drawings on their collages. Then, they had to present their collages to the other participants, and the presentations were recorded and transcribed. The structural semantic model that underlies the descriptions of the collages and narratives is presented. The results of the analysis were comparable with previous studies, since ideal urban environments should be calm, quiet and green, but urban environments should also promote cultural activities and the possibility to escape outside the city. The analysis also allowed for attaining the emotions created by soundscapes. Thus, the semantic model can be used as a conceptual model for a soundscape, from which guidelines for soundscape planning and design can be derived, as well as suggestions for innovative soundscapes.

Keywords: soundscapes; imaginaries; collages; narratives; semantic analysis; guidelines

1. Introduction

In the last two decades, urban soundscape research has been a very active area of research internationally. Numerous sessions have been organized in the major acoustical congresses, and many publications have been published in journals ranging from acoustics to landscaping and urban planning. One of the major goals of this research, which was partly presented at two conferences [1,2], was to derive soundscape descriptors that could be used in predictive models of soundscapes in order to conceive and design desirable soundscapes [3].

In their literature review of empirical research on soundscapes, Aletta et al. [4] identified three modes by which participants can experience acoustic environments: in situ, simulated or reproduced, or recalled in memory. To each of these modes are associated specific methods and tools for data collection, and each of these modes has specific advantages or limits with respect to ecological validity, experimental control, or relationships between cause and effect. Aletta et al. further reckoned that recalling an environment in memory and the associated method of narrative interview are affected by many biases and can only be relevant when working with residents.

From their extensive analysis of the literature and the relative strengths and weaknesses of the three modes of experiencing acoustical environments, Aletta et al. [4] concluded that there is a need to develop and standardize appropriate soundscape descriptors. They argue that these must be of the semantic scale type in order to obtain numerical data that can be analyzed by multiple regression analysis. This also requires the development of

new indicators for characterizing acoustic environments. Thus, collecting soundscape data, characterizing the acoustic environment, and modeling through regression analysis are the three bricks of the conceptual model they propose.

The work presented in this paper aims to revisit the recalled-in-memory mode and show that, when properly associated with the imaginaries of the participants, narrative analysis gives direct access to guidelines for soundscape planning through a semantic conceptual model that allows for directly linking objects of the environment to the perceived properties of soundscapes and, more generally, to the perceived properties of any type of environmental atmosphere. This work illustrates this with research on the imaginary soundscapes of the Z generation both in France and in Korea and shows how imaginaries can provide a tool for defining the key features for soundscape design. Narrative analysis thus short-circuits the detour by the conceptual model of Aletta et al. [4] for modeling the relationship between the physical and perceived properties of the acoustic environment, presented as a necessary step toward predictive soundscape models. The methodology resorts to marketing techniques such as projective research techniques, complemented by semiotic analysis. No interview biases the narratives of the participants, as the experimenter interacts as little as possible with the discourse of the participants, only prompting for precision when necessary. The key finding is a confirmation of the early implementation of the same technique with young Chinese customers when imaging driving through an imaginary city [5]: when describing their "experiential imaginary", young Chinese people resorted to fairy tales where natural elements played the role of helpers.

After presenting the background for the present research and the methodology adopted, we describe the experience and its results. They present similarity with the results of classical studies of soundscape perception. The present method further allows deriving the emotions linked with soundscapes, from which we propose guidelines for soundscape design.

2. Materials and Methods

2.1. Background

2.1.1. Projective Techniques

When trying to develop new concepts or ideas, the traditional solution is the use of brainstorming. Introduced by Osborn in 1939 but first formalized in 1957 [6], brainstorming belongs to the freedom approach of idea generation [7], where participants are induced to express all the ideas that come to their minds. Brainstorming consists of discussing freely all these ideas within a group of participants. Despite its popularity, brainstorming suffers from a number of blocking mechanisms that limit creativity, such as fear of negative evaluation by the other participants [5,7]. As a consequence, brainstorming is not adapted to disruptive innovative thinking, and other methods have to be preferred.

In the present research, following the example of Taupin [5], we opted for projective techniques, defined by Morrison et al. ([8], p.63) as involving "the use of stimuli that allow participants to project their subjective or deep-seated beliefs onto other people or objects". More specifically, we chose associative methods that connect the research object with words, images, and thoughts (in our case, mostly with images), although words and drawings were also called upon, with the latter belonging to expressive methods. In this way, we hope to catch the imaginaries of the participants.

Imaginaries should not be mixed up with imagination, of which they are products. According to Wunenburger [9], "Imaginary is usually meant as a creation by a given individual of a whole world for itself. Imaginary designates a language made of narratives, mental images, symbols and metaphors, dynamic and consistent shapes that have a grammar and a structure. Body experiences, feelings, emotions are highly valued." In other words, "atmosphere", understood as the perceived environment, "is the raw material of imaginaries" [10]. As a consequence, the imaginary generates atmosphere and meaning, and this meaning is analyzed with the help of the second tool implemented in this research: semiotic analysis of narratives.

2.1.2. Semiotic Analysis of Narratives

Taupin [5] obtained narratives from his subjects, and their analysis turned out to be a key feature of his experiment. To do so, he resorted to Greimas's theory of narratives or, more specifically, to his semiotic analysis [11].

Semiotic Square

The semiotic square, or elementary structure of meaning, is constructed upon an opposition (Figure 1). The two contrasting signs S_1 and S_2 on the top line are completed by a secondary opposition between Non S1 and Non S2 on the bottom line. Further relationships include the following:

- Contradictions between contradictory signs on diagonal lines;
- Implications between complementary signs, orientated from the bottom to the top on vertical lines.
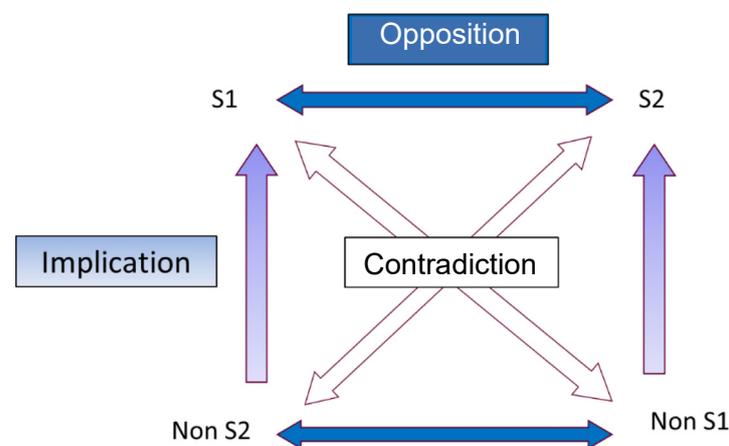

Figure 1. Semiotic square.

S1 is arbitrarily considered positive, and S2 is arbitrarily considered negative. S = (S1 + S2) is the complex axis, and Non S = (neither S1 nor S2) is the neutral axis. The construction of a semiotic square proceeds from the top opposition to the construction of Non S1 by contradiction of S1 and then to the construction of Non S2 in that order.

Floch [12] proposes a semiotic square dedicated to the valuation of objects. By analyzing advertising materials, he identified a fundamental opposition between practical and utopian values. Their contradictions on a semiotic square are ludic and critical values, respectively, with implications between critical and practical values on the one side and ludic and utopian values on the other. Taupin [5] made use of this "valorization" square to classify the narratives he obtained, adding that the first implication axis (critical implies practical) is linked to usage and the second (ludic implies utopian) to affects and emotions.

Actantial Model

The actantial model (Figure 2) was developed by Greimas from Propp's "Morphology of the Folktale" [13]. Greimas found it possible to reduce Propp's seven spheres of actions to three pairs of actants opposed on three axes:

- The quest (or desire) axis links the subject (or hero) to the object (of the quest);
- The transmission axis links, through the objects, the sender who initiated the quest to the receiver who benefits from it;
- The power axis opposes the helper to the opponent in their interaction with the subject.
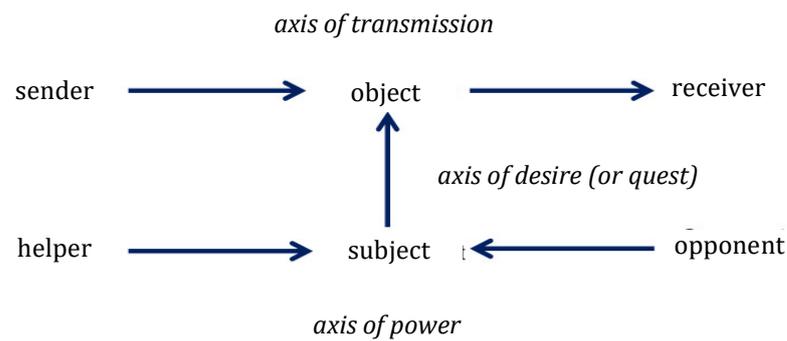
Figure 2. Actantial model.

The sender is a superior authority that defines the value of the object. This value is transmitted to the hero, who becomes both the receiver and the subject, and goes on the quest. The last two actants either help the subject to get or prevent the subject from getting the object. During the quest, the subject must acquire competences and skills through the qualifying test, where he or she acquires the "know-how" and the "ability" to act. Then follows the decisive test, where the subject acquires the object, and the glorifying test, where the sender rewards or punishes the subject. The three tests are integral parts of the quest.

It should be noted that actants are not the characters of a story but correspond to structural roles played in turn by the characters or by objects. They can also remain outside the story, playing an implicit role, as is often the case with the sender.

2.2. Methodology

Taking into account the fact that sound is not fully conceptualized, at least in European languages [14], the corresponding representations cannot all be considered as collective, but many of them remain individual in the sense of Durkheim [15]. As a consequence, soundscape representations are not easily communicated with words, but are more easily communicated with images and drawings, which are associations that also belong to projective techniques (see Section 2.1.1). This led Taupin [5] to ask his test persons to realize group collages and then to verbalize them. Indeed, Greimas [16] has shown that descriptive texts are narratives with an actantial structure. Thus, we hoped to obtain narratives that could be analyzed with Greimas's semiotic and actantial models. Note that we first considered asking participants to select and edit sound examples but ruled this out because of pragmatics, as manipulating a visual object requires no technical skill. Aside from that, both Western European and Eastern cultures are visual, as attested by the predominance of visual concepts in their languages [14].

The present methodology is based on Taupin [5]. First of all, in order to introduce the small score of participants to urban soundscapes, each session began with half an hour of soundwalking, in both cases around the university campus where the experimentation was taking place. Through a mix of streets with traffic and more quiet parks, the participants were able to catch the diversity of urban soundscapes that does not reduce to traffic noise only. In Seoul, participants met at the entrance of the School of Architecture of Hanyang University. They first walked uphill past a few buildings before walking down through landscaped staircases lined with trees, creating a park-like atmosphere, to the main entrance of the university on Wangsimni-ro. They followed the street down to the bank of the Jungrangcheon stream, passed under the railway bridge, and walked uphill through a back street back to the School of Architecture.

In Paris, participants met on Place Jussieu in front of the Pierre et Marie Curie Campus of Sorbonne University. They walked through a side street to the botanical garden, which they crossed in its length. They then crossed a main road to get to the bank of the river Seine, designed as a green sculpture park to separate it from a railway line and the main road. Crossing back to the main road, they re-entered the campus through the back entrance under a high building that screens the campus from the road. They then walked to the

meeting room through a lawn. Thus, the participants attained some aspect of an in situ experience [4] in the experiment, with the greener atmosphere probably being in Paris rather than in Seoul.

Then, the participants met in a classroom and had to divide into groups of two, ideally one female and one male, and the experimentation started. In both cases, one or two moderators, whose role was to explain to the participants what was expected of them, led discussions and steered the participants through the protocol, which had been handed out to the moderators in written form.

After an initial greeting, the moderator explained the aim of the session: open the mind of the participants and have them talking freely about their feelings when walking in urban scenery. The participants were then asked to turn off their mobile phones and reminded that, because the discussion was an open-minded discussion, every idea was valid, and they had to talk freely since we were looking for their real and diverse thoughts. They were also informed that the whole process would be recorded and that, in order to make the record clear, they should not interrupt others' talking or speak at the same time.

After a short introduction where everyone introduced themselves in order to know each other better, the first exercise started. It was different in Seoul and Paris. In Seoul, mobility profiles were used as a warm-up exercise, where each group built a characteristic persona of typical mobility profiles in the Korean city. They could illustrate the courses and activities of their personas with images from the magazines and should answer the question of how this persona characterized the quality of his or her transport. Then, they had to cite five words that came to their minds regarding the mobility environments they associated with the persona.

In Paris, the first exercise consisted of several games. In the first one, papers were handed out to everyone, three of them having questions. Whoever found a question had to write the answer on the paper, hide the answer from the other participants, and give it to the moderator. One of those who found a question told it the others, who then asked him or her questions one by one. He or she could only answer yes or no. The others had to guess the original answer as quickly as possible. The second game consisted of word associations; the moderator said a word, the next person said the first word that came to his or her mind, and so on for several rounds. The last game played with associations induced by urban landscapes, in order to learn the true feelings and experiences of the participants when they traveled around a city. Six pictures of unknown Asian cities were shown, and participants had to tell all the words that came to mind at the sight of the urban landscapes.

The second exercise was the collage exercise, where participants had to use their creativity, use vivid images to describe their experience when walking in urban scenery, and show their real thoughts as much as possible. Ten magazines or so, sticky notes, pens, and colored papers were distributed to each group. The magazines were the same for each group and as diverse as possible while covering a broad scope of leisure life. The participants were then asked to create the city soundscape where they would enjoy the best mobility. They had first to indicate if they were walking, driving, or some other mode of travel. Then, the brainstorming step started. The participants in each group looked in the magazines for pictures which could describe the feelings corresponding to their answers to the last questions in the previous exercise. No limit was set on the content in the pictures. The participants had to cut them out of the magazine and write some key words, sentences, or simple figures on the sticky note to describe their feelings or thoughts when facing the pictures.

In the next step, the participants had to create image boards. In each group, participants had to stick the cut-off pictures and sticky notes on large paperboards that were distributed by the staff. When the collages were finished, each group had to then show their thoughts to the other groups and explain why they chose the pictures, key words, sentences, and simple figures to describe their feelings and thoughts. This part was recorded in order to transcript the verbatim later on. At the end, each group had to name its image board according to the keywords they wrote on their board.

This was followed by the voting step. After the presentations of each group, all participants had to use the colored papers (two for each participant) to vote for the key words, sentences, and pictures which best matched the feeling of the group which had just presented.

After the presentation of each group, the staff took pictures of the boards as a record.

A total of 14 students (7 females and 7 males, ages between 21 and 26 years) participated in the Seoul session in mixed groups (1 female and 1 male), while 18 students (8 females and 10 males, aged between 17 and 22 years) participated in the Paris session in mixed groups, but with one group of 2 males. They were informed that the results of the research would be published. Note that the participants were never asked for narratives and only to explain their collages to the others.

3. Results

As in [5], we did not obtain comments, but narratives. When describing their paperboards, participants successively pointed at some specific pictures on them, tracing a virtual path on their collage. In Seoul, lines joining the pictures often materialized the paths. However, the paths did not always match the narratives.

Common to both sites was the relevance of the classification scheme proposed by Taupin [5], which relies on the presence of three features in the narrative: an actantial scheme involving all actants, a quest with its object and tests, and the presence of elements such as water, air, and nature as helpers. However, they do not reduce to the five elements of the Chinese cosmology (wǔxíng: metal, wood, water, fire, and earth), or to the four elements of ancient Greek philosophy (air, water, fire, and earth).

Figure 3 presents one collage obtained in Seoul, together with the English translation of the corresponding narrative, and Figure 4 shows one collage obtained in Paris with its corresponding narrative. The moderator had to prompt for some precision in Paris but not in Seoul, where a few supplementary interviews were made with some of the participants to play the role of prompts.
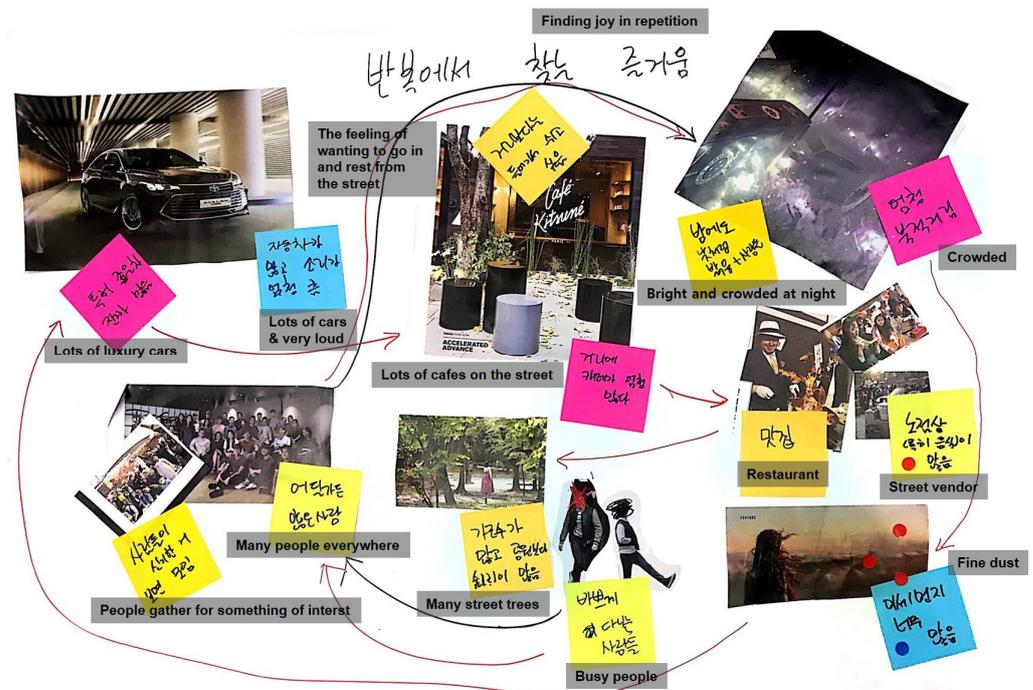

Figure 3. "Pleasure in 'Repetition'" collage obtained in Seoul with the corresponding narrative (English translation).

Presentation: We have always thought that people in the city are always busy and busy. The first thing that comes to mind in Seoul is the crowded crowd at night. However, we think people feel a lot of tiredness because many people use subway public transport at similar times. We think people have a lot of interesting and fun activities to solve this fatigue. So, people are gathering together and enjoying it. To express this, we put a picture on the bottom left. And even in repetitive everyday life, many people spend a lot of time trying to find a lot of restaurants or a lot of cafes. Seoul has a high proportion think finding the joy in life when compared with other cities, go to the cafe through the act of enjoying food from places such as street vendors. And we thought that there are a lot of cars in Seoul and we can find many good cars in particular. But we thought the car noise was much worse than other cities. There are a lot of parks abroad, and in Seoul, there are more street trees than parks, so overall Seoul seems to have a strong forest feel. We thought that there was a small green space in the middle rather than a big park, so we put a picture in the middle. And the picture on the bot-tom right has recently had a lot of fine dust, so we tried putting people's attention.

Interview: We thought that the high population and vehicle density of the city could affect the noise of the city, and the environmental factors such as fine dust could also affect the soundscape visually and physically. These noises cause irritation and fatigue to people, and people think that they can get into the inner space such as restaurants and cafes to get out of it, to have fun or rest, or to find green spaces like forests. we felt that the overall feeling about the city was loud and desolate, and many people walked quickly in expressions. We thought that there were a lot of vehicles, a street tree, and a cafe.

Figure 4. "Super-Pose" collage obtained in Paris with the corresponding narrative (English translation).

B: so we have a city that is rather dynamic, so there are many people in the streets, there are singers, people who hitchhike, where we can eat too, with a whole new system: the food that is brought by small trains in the restaurants.

G: with cooks on board then who can, so who receive the orders, and who can prepare them on the train and suddenly they get the train around in town and it saves the number of cooks, so it's more handy. Uh then we also wanted to show that it was a city where there was a lot of animations, so there is a show of Harley motorcycles, as well as the singers, who are there to show that there is really a lot of entertain-ment in the city. Then we have a cycling club, right here, who likes to go for a little bit of a slam, and that's all there. We also wanted to show that this town could be in a lot of different sets, so we put icebergs, the mountain, and uh that. (Laughter)

B: And also we hesitated between putting either buildings or houses but we rather put buildings because it is more economical in terms of building materials, space, and that is what it is needed in the cities. Otherwise we put some cars that are all elec-tric of course, because we should not skimp on electricity, so I think that's it.

G: There are also cars that are also miniaturised. You can adopt your car. It's super handy. And we also have a lot of other means of travel like, so I had introduced the cycling club, but you can also come by bike to the restaurant, or on skateboard take his photos for insta, it can be handy. And I think I've been around, if you have any questions.

Mod.: What do the cars on the right mean?

G: It was to symbolize that there were, perhaps, still remnants of motorways, but that now there were no more gasoline cars on them ... that we did not destroy the mo-torways that's what I meant.

Mod.: So it's more to show the motorway than the cars actually?

G: Yes.

Mod.: And so why are all the characters in the lower left?

G: This is because it is the district of activity of the city and that the rest was rather for going on vacation, so uh... Finally, people are rather having fun in the city than going on vacation, but they can do it if they want to, that's why there's a little bit of it too, for example there are people who make a picnic, I don't know if we can see them.

Mod.: The hitchhikers who are in the centre, can you tell us about them?

G: In fact they wanted to go to the restaurant but they changed their mind, and they will go to the plain that is there. And so to go there, they are obliged to take the road that is there, but they do not have an electric car because they have no money.

Mod.: Okay, so it's characters who wanted to move to the right?

G: Yes, but also it is also as well to symbolize the cleaner means of transportation, like hitchhiking.

Mod.: Good; so they move to the right.

The similarity of structure with the Chinese collages and narratives led us to apply the same grid of analysis as in Taupin's work [5]. Table 1 presents the semantic analysis of Figure 3. The steps for carrying out the analysis were the following:

1. First, find in the narration the hero and the object of the quest. Usually, these are rather obvious.
2. Find the three tests of the quest, which are also rather obvious.
3. Find the helpers and the opponents from the roles they play in the tests.
4. Find the sender, usually the narrator, and the receiver, whom the narration is addressed to.
5. Finally, fill in the other cells of the grid.

Table 1. Semantic analysis of the example in Figure 1 (Seoul).

Matrix for Content Analysis of Experiential Narratives	Categories and Invariants	S7: Pleasure in "Repetition"
Actantial units Enunciations of "do" and "be"	Functions ("do")	We think, use, gathering enjoying, spend time, find, go, enjoying food, walk quickly
	Indices ("be") + atmospheric indices	Busy and busy, comes to mind, feel, there are, car noise, street trees, putting people's attention
Categories of actants	Subject	Tired people
	Object	Pleasure (cf. title)
	Sender	I or we (the authors of the collage)
	Receiver	People in the city
	Helper	Other people, food, greenery (cf. images)
	Opponent	Cars, dust (= pollution), crowd at night (top left and right + bottom right corners of the collage) = all that creates "noise"
Initial lack	-	Tiredness, irritation, fatigue
Figures (sensory perception) and themes (concepts) Recurrence of semes that can be identified in several signs of the same text	Characters	We, people, crowd, vendors
	Mythical figures	-
	Metaphors	Street trees = strong forest feel
	Rhetorical figures Hypotyposis	-
	Philosophical figures (Taoist way of thinking)	-
	Regrouping by themes and prototypical categories	Green, forest,
	Isotopies	We, people, fatigue, repetitive, everyday, high proportion, a lot of
	Isotopies that are "forms" of atmospheric components	Busy people, crowded at night, subway, a lot of restaurants, a lot of cars, car noise much worse than in other cities, street trees rather than parks, a lot of fine dust
Euphoria vs. dysphoria (Positive-pleasure vs. negative-displeasure)	Feelings and emotions	Tiredness, interesting and fun, strong forest feel The city is loud and desolate, expressionless
3 tests	Qualifying: Principal: Glorifying:	People together (bottom left image) Cafés (top middle image) Small green space in the middle
Value objects of the experiential quest	modal elements (competences) (know-how, can-do)	Can find many good cars, can get into
	Value object of the quest	Finding the joy in life, have fun and rest, find green space
	Value object of transmission	Fun

Ideally, the analysis should be carried out by several investigators independently, but most of the time, only one investigator carries out the analysis, which is checked by the other investigators and amended if necessary. The latter solution was applied in the present research.

Note that isotopies designate redundancies of textual elements that anchor the key features of the text, and semes correspond to units of meaning.

In Table 1, we recognize the presence of a complete actantial scheme and a complete quest with natural elements as adjuvants. This points to a utopian valorization of the narrative, according to Floch's valuation square. Complete analysis of all collages and narratives led to Figure 5, where the letter S, resp. P, corresponds to Seoul, resp. Paris, and the numbers correspond to the arbitrary orders of presentation. Note that P2 appears twice as its narrative corresponds to critical valorization, but its collage corresponds to ludic valorization, as the bottom-left to top-right axis represents an implicit quest toward the setting sun as explained in the narrative.
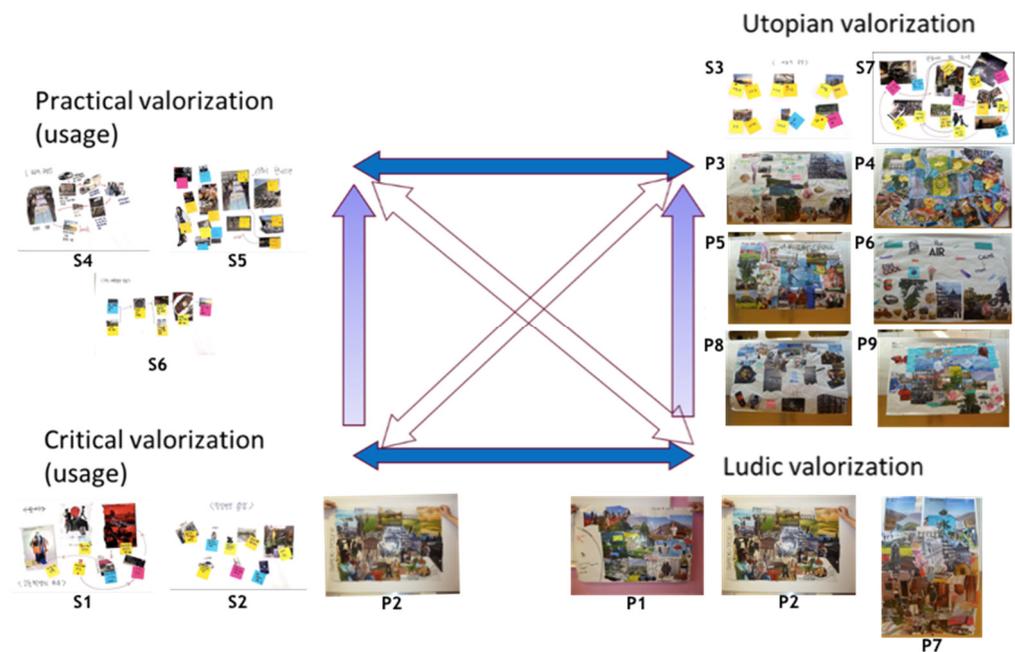

Figure 5. Classification of collages and narratives according to Floch's valuation square.

Table 2 presents examples of the actantial structures for the four valorizations. Practical and critical valorizations are characterized by some missing actants, the absence of the object, or the absence of the three tests of the quest. Utopian and ludic valorizations are characterized by full actantial structures with a quest and the three tests, as well as references to nature (greenery, mountains, and sometimes the sky) and to mythical figures (e.g., dragons, monks, and Venice). Indeed, Venice is referred to as the "Serenissima" in the title of one collage, and the monk is pictured as a Jedi from Star Wars, including its laser sword, with a reference to spirituality in the narrative.

Within the implication relationships in Figure 5—that is to say, between the critical and practical valorizations on the one hand and the ludic and utopian valorizations on the other—differences were subtler and essentially amounted to whether the narrative was descriptive or not (i.e., the presence or lack of a story in which the subject was implicated). In other words, there were no real tests in the critical and ludic valorizations due to the absence of a proper quest toward an object of value.

The salient features of the semantic analysis of all the narratives are summed up in Table 3.

Table 2. Examples of actantial structures for the four valorizations.

Categories and Invariants	S4 "Composition of School Road"	S1 "High School Student's Day"	P1 "Diver City"	P4 "Gif upon Bures"	S7 "Pleasure in "Repetition""
			The Actants in the Actantial Model		
Subject	We	I or we, high school student	People, we, I	We, one, people we know	Tired people
Object	Noise less audible	-	Living and very diverse landscape	Nature	Pleasure (cf. title)
Sender	We	We	We, it, I	We	I or we (the authors of the collage)
Receiver	-	-	People, they, we	Our friends, them	People in the city
Helper	The Han River, earphones, and music	Gathering with close friends, speech	Green spaces, the Calanques, hill, sea	Roads, railways, the ease of transportation	Other people, food, green (cf. images)
Opponent	Subway noise, tired road	Noise of the city, cold air	Concrete jungle, concrete, traffic	The airplane	Cars, dust (= pollution), crowd at night (top-left and right + bottom-right corners of the collage) = all that creates "noise"
Initial lack	-	Very tired every morning	Stimulating environment	Quick access to nature, no stop	Tiredness, irritation and fatigue
			The 3 TESTS of the Actantial Model		
Qualifying test: Decisive test: Glorifying test:	-	-	Very urban part Very, very focused part on spirituality, religious Green spaces, quite varied landscapes	Park in the middle Activities around: bars, night outings Access to nature	People together (bottom-left image) Cafés (top-middle image) Small green space in the middle
Modalities (skills) modality of knowing-how-to-do, modality of being-able-to-do	Modeling, relaxed through earphones and music	-	We are null at drawing You can see, they can go, one cannot reach it, it can be said, it can replace, what one wants, one can project and see, it can represent	We can leave for where we want when we want, we can leave, one can go where one wants, looking around while moving, they can leave for where they want	Can find many good cars, can get into
Object of value (quest)	-	-	-	Leave the city, nature	Finding the joy in life, have fun and rest, find green space
Object of value (transmission)	Restoring fatigue, relax	-	We have a lot of things	Change air, what suits them … in their life	Fun
Valorisation	Practical	Critical	Ludic	Utopian	Utopian

Table 3. Salient features of the semantic analysis of the narratives (C = critical, P = practical, L = ludic, and U = utopian valorizations).

Narrative	Helpers	Opponents	Feelings and Emotions	Reward	Val.
S1: High school student's day	Gathering with close friends, speech	Noise of the city, cold air	Anguished look, tired, I feel cold. The overall feeling for the city is despicable and indifferent.	-	C
S2: Everyday holiday	The five senses	A lot of daily noise, noise level	Unconsciously, not conscious, the feel of complex interaction with the five senses	The restaurant	C
S3: Daily life in Seoul	Sun, market, clothes, children talking	Crowded, noisy crowd	A sense of relief, desire to buy clothes, curiosity about what clothes to wear, a sense of achievement and hard feelings, some boredom and comfort at the same time, feel the concentricity	Relief	U
S4: Composition of school road	The Han River, earphones and music	Subway noise, tired road	Feeling tired	Restoring fatigue, relax	P
S5: Well-begun is half-done	Other places, restaurant, large mart, small party	School, graduation, Wangsin-ri street	Envious feelings, feeling of being lively and happy, feels warm to prepare for Christmas. Felt very loud, felt as loud and unpleasant noise, like loud and unpleasant nose, feel sympathetic, very sensitive, feels warm, not uncomfortable, feel good, do not feel at all sensitively.	-	P
S6: Everyday life of college students	Coffee, meat (?), acoustic environment	(Dangerous) scooter, professor's voice, acoustic environment	The crowded, loud, and annoying feeling; were nervous, expressing noisy feelings, feel frustration and tiredness, feel relieved and satisfied, feel exhausted, our mind is finished. Feel nervous and uncomfortable, feel calm and warm, feels tense, feel frustrated; feel various discomfort, calmness, etc	Quality of life (?)	P
S7: Pleasure in "repetition"	Other people, food, green (cf. images)	Cars, dust, crowd at night, noise in the city	Tiredness, interesting and fun, strong forest feeling. Irritation and fatigue, the city is loud and desolate, expressionless	Finding the joy in life, have fun and rest, find green space	U
P1: Diver city	Green spaces, the Calanques, hill, sea	Concrete jungle, concrete, traffic	Dreary, sad, stimulating, alive, put in the spotlight, spiritual, mysterious, flourishing	Living and very diverse landscape	L
P2: Super pose	Train, electric cars, bike, skateboard, road, cleaner means of transportation	-	A little bit of slam, want	Car, plain Setting sun (on collage only)	C/L
P3: Universalis	Tourism that finances, chick districts	Abused men and women, cars	Quietly, nice, very pleasant to live, not too suffocating, more beautiful	Very pleasant city to live in	U
P4: Gif upon Bures	Roads, railways, the ease of transportation	The airplane	A cocoon, silent, "alone in front of oneself", communicate the least, healthy loneliness	Leave the city, nature	U
P5: The floral city	Plate of food, forest, nature, on foot	Means of locomotion	-	The ideal city To live one's life	U
P6: The air city	Nature, heritage, culture, electric cars, bikes, public transportation	Noise pollution	Quiet, sad, gray, warmer, nicer, pretty	Reinvent the city, make it close to nature	U
P7: Babylon	Nature, bikes, electric scooters, animals	-	-	Need for nature, for colors	L
P8: Serenissima	Bridges, paths, museums, cinemas, concert halls, restaurants, cafés, solar energy	Business district, regulated life, the new city	A little stressful, quiet and calm, nostalgia, soul, nice	The city Vintage style, history	U
P9: Title.exe	Belief(s), religions, superheroes, technologies, birds	The enemy	Quieter, more Zen, greener, more relaxing	Fresh start Live together in peace	U

4. Discussion

As was found out by Taupin [5], we observed a predominance of utopian valorizations. If we considered each city independently, this was mostly the case for Paris, with a more even distribution in Seoul where practical valorizations slightly dominated. This may be a side effect of the slightly younger age of the participants in Paris, but it is more probably an induction effect of the soundwalk in Paris and of the warm-up exercises in Seoul. In Paris, walking through the botanical garden certainly induced the predominance of green nature in the collages and the narratives, with two mentions of the introductory soundwalk (P4 and P5). In Seoul, we obtained the mobility profiles of the participants (i.e., a replication of the first warm-up exercise). This probably explains the predominance of utopian valorizations in Paris and practical valorizations in Seoul as well.

Nevertheless, even in Seoul, we recovered the importance of natural elements as helpers, namely water, air, and nature (forest and mountain, but also animals, as well as the Han River in several Korean narratives). However, there is no evidence that they reduce to the five elements of the Chinese cosmogony even in Seoul or even when assimilating the sun with fire. Additionally, questions from the moderators were often necessary in Paris to have participants citing nature, although it was present on their collages, as if it was evidence.

In both cities, other people were also assimilated to helpers, together with music and food. Restaurants and cafés were often cited, mostly in Seoul, in connection with gathering with friends. "Green" modes of transportation, such as bikes and electric cars, were further considered helpers in Paris. On the other hand, roads, cars, and traffic, together with crowded subways, noise, and pollution, were unanimously considered opponents.

4.1. Comparison with the Literature

When compared to previous studies, Jeon et al. [17] came to similar conclusions using a very different methodology based on soundwalks. Participants were free to choose the stopping points, but they had to fill in closed questionnaires based on the work of Axelsson et al. [18]. Analysis led to classifying urban soundscapes in four classes, two of which included natural features such as water and green areas, but also mountains, which enhanced acoustic comfort. However, the overall impression was not necessarily improved compared to urban open spaces. On the other hand, noisy soundscapes achieved lower scores.

In their seminal study of soundscape perception, Axelsson et al. [18] used unidirectional semantic scales to evaluate 50 soundscapes in a laboratory environment. Principal component analysis reduced the set to two dimensions, corresponding to the oppositions Unpleasant-Pleasant and Uneventful-Eventful, respectively, with additional semantic scales orientated at 45°: Monotonous-Exciting and Calm-Chaotic. Pleasant was positively correlated with Calm and Exciting, as was Eventful with Exciting and Chaotic. This compares well with our finding that both nature, supposedly calm, and gathering with friends, such as when eating out, had the status of helpers in the narratives.

Axelsson et al.'s study was later completed by an international comparison [19] that basically confirmed the original findings, but with small variants. This later study is very relevant for the present one, as it includes France and Korea, the two countries of the present study. The major differences are that Calm is strongly correlated with *Pleasant* in France, and Monotonous correlates with Uneventful in Korea. However, the study mostly points out to the problem of translation, as French and Swedish attributes are not always semantically nor grammatically equivalent (see [14]); thus Ennuyeux (boring) is not equivalent to Enformig (uniform), nor is Plaisant (a gerund, equivalent to English "pleasing" but not to "pleasant") grammatically equivalent to Trivsam (which is passive and whose etymology means "looking good"). This is why the narratives were collected in the mother tongue of the participants, and ideally, they should be analyzed by native speakers.

Guastavino [20] conducted a very similar study, as participants were asked to use their own words to describe the "ideal urban soundscape". However, the similarities stop

there, as she used open questionnaires, taking great care of the wordings in the wake of Dubois [14]. For example, she carefully avoided asking for a "description", asking instead what would be the ideal urban soundscape according to the participants. She found out that the ideal city would be warm-hearted, lively, and peaceful, therefore being noisy but enjoyable, all qualifying adjectives that are also present in our narratives. She further found out that other people, nature, and birds were pleasant, but cars, vehicles, and most horns were unpleasant. This is in agreement with our findings, if one considers that pleasant features are helpers and unpleasant ones are opponents. In fact, although Guastavino carefully avoided using the French gerunds "plaisant" (literally: pleasing) and "déplaisant" (literally: unpleasing) and instead used the qualifiers "agréable" (enjoyable) and "désagréable" (un-enjoyable), her findings correspond to the actantial structure of the power axis of Figure 2. Furthermore, what she calls "mental representations", following Durkheim [15], is very similar to our concept of "imaginaries".

Raimbault and Dubois [3] also addressed the question of the ideal urban soundscape for city users. They came to the conclusion that "semantic properties [. . .] play a decisive role because sounds fulfil distinctive functions" and that evaluating urban soundscapes requires one "to analyse of the semantic properties attributed to sound sources". However, they did not investigate further these distinctive functions, which are impersonated in actants in our narratives, nor did they describe the semantic properties of sound sources beyond a taxonomy of urban soundscapes, which opposes transportation and work noise in favor of people's presence. The latter category is considered lively and relaxing in a connection with nature. Thus, their taxonomy implicitly considers people and nature as helpers and transportation and work noise as opponents. However, instead of focusing on these roles, they focused on locations; that is, they overlooked the importance of the quest.

As a consequence, we consider that the semantic model can be used as a predictive model for the perceived properties of soundscape.

4.2. Toward Guidelines for Soundscape Planning

With the help of our conceptual model, it is now possible to derive guidelines for soundscape planning, which was one of the goals of the present research. Based on the salient features of the semantic analysis of the narratives (Table 3), three principles can be brought forward. Note that interrelationships between the person, activity, and place in space and time, as pointed out by ISO/TS12913-1 [21], systematically exist in narratives, as actants are defined by their activity in relation to the quest, which is anchored in space and time.

4.2.1. Natural Elements as Helpers

We have previously insisted on the importance of natural elements in many narratives, where they play the role of helpers in opposition to pollution and noise, which are opponents. However, nature is omnipresent in the French collages, where it appears as greeneries (forests, fields, as well as hills, trees, and flowers), but also as water and air and even as birds and other animals, and sometimes even as mythical animals (e.g., dragons). Thus, planning of city parks certainly is a key element for pleasant soundscapes if we consider that pleasant features are helpers, as mentioned in Section 4.1.

The urban renovation of Paris in the middle of the 19th century points out that greeneries do not reduce to urban parks and squares exclusively. Bringing nature inside the city, as was the aim of Alphand, the chief gardener in Paris, when he planted trees along the boulevards [22] certainly contributed to the international attraction that this city still enjoys. However, trees and water are not enough; friends and good food also contribute to pleasant soundscapes, as do cultural activities. However, cars, crowds, and dust, generating noise and pollution, are unpleasant.

As in the reference experiment [5], non-polluting means of transportation also contribute to pleasant soundscapes.

4.2.2. Emotions and Feelings

The recurrence of the word "feeling" in the Korean narratives led us to investigate the emotions and feelings expressed by the participants. The Korean students mentioned many emotions and feelings when explaining their collages, in contrast to the dryness of their collages. The French students usually needed questions from the moderator to express their affects, in contrast to the exuberance of their collages. Generally speaking, one should indeed speak of affects, as pointed out by Scherer [23].

The affects mentioned by the participants were consistent with and strengthened the narrative model. In Korea, they opposed tired, boredom, frustration, and desolate to satisfied, warm, fun, and comfort; in France, they opposed sad, gray, and a little stressful to warm, pleasant, and relaxing. Using the affect categories of Scherer [23], they expressed a "lack" through sadness, desperation, disappointment, and tension or stress, as opposed to a "reward" through amusement, pleasure or enjoyment, relief, or relaxation or serenity. In fact, affects specify the types of actants they qualify (e.g., helper vs. opponent) as well as the initial lack vs. the final reward. These affects, most of them being utilitarian emotions according to Scherer, do correspond to those of the Chinese reference [5], with the addition of aesthetic emotions such as harmony.

Scherer [23] was also able to place all these affects on the traditional space formed by the two dimensions of valence (positive-negative) and arousal (calm-excited). By translating positive into Pleasant and excited into Eventful, one recovers the two-dimensional space of Axelsson et al. [18], a further confirmation of the affective nature of soundscape appraisal.

Compared with the traditional appraisal method of soundscapes, the narrative method presents the advantage of designating the objects or events that elicit the emotions. Thus, guidelines for soundscape design can be derived from narrative analysis. The ideal soundscape should create strong positive utilitarian emotions through the adequate display of nature and also cultural activities that gather friends.

4.2.3. Quest and Reward: Experiencing Soundscapes

We stressed in Section 3 the importance of the quest in the participants' imaginaries. In fact, far more important than the quest itself, which aims at filling a lack, is the reward that the subject or hero, almost always the narrator, wins at the end of his or her narrative journey. At this level, there were some differences between the Parisian and Korean students, where the former were seeking quality of life through nature and culture and the latter were also seeking relief, fun, and joy in life. By comparison, the participants of the Chinese experiments were seeking pleasure, harmony, and happiness, but also, for some of them, quality of life. Thus, quality of life seems to be the minimum level of reward being sought after.

The importance of the reward should not be underestimated in the planning of soundscapes. This is in accordance with the Fun Theory, an initiative revived by Volkswagen at the occasion of the "Piano Stairs" in Stockholm in 2009. People ignored an escalator when they realized that they could play music by using the adjacent stairs transformed into a gigantic keyboard, thus having fun [24]. Several other experiences of the same kind within the same initiative illustrated that the reward is a key feature and can even lead to changing habits [25].

More fundamentally, the existence of rewards points out that, beyond projective techniques that aim at unfolding the imaginaries and discovering the mental representations and affects of the participants, the present research made use of experiential techniques that aimed at discovering the experience lived by the participants and the pleasure it gave them [26] (i.e., the interrelationship between the person, activity, and place in space and time [21]), thus inductively opening new avenues. In this experience economy [27], it is essential to stage memorable experiences, as King Louis XIV of France achieved when he introduced public lightning in the city of Paris or invented a brand-new city experience with the Marché St. Germain [28]. Indeed, the participants to both experiments in Seoul

and Paris left the classrooms in euphoric moods and repeatedly expressed the pleasure they felt during the experience.

5. Conclusions

The present study applied an innovative methodology for observing the imaginaries, or mental representations, of young urban dwellers based on collages and narratives. It is based on a rigorous semantic theory that makes it possible to identify the helpers for and opponents to improving soundscapes in the city and the emotions associated with their actions. Moreover, this methodology makes it possible to identify the features of the ideal city beyond its soundscape. Unsurprisingly, the ideal city should be calm, green, have a lot of nature, and promote soft means of transportation, but it should also promote cultural activities, such as eating out with friends, and the possibility to quickly escape to recreational areas (e.g., mountains or the sea), both of which were not really expected. All these features are sources of amusement, enjoyment, or simply relief and serenity (i.e., quality of life at the absolute minimum). This proves the importance of reaching the imaginaries and the power of the present methodology that, beyond the actual results that were clearly induced by the preliminary exercises, systematically links the subject actant to an activity and place in space and time [21]: the glorifying test, where the subject obtains the object as a reward.

Beyond soundscapes, semantic analysis of the imaginaries obtained with collages and narratives provides a new conceptual framework for developing predictive landscape models that are not based on quantitative correlations between acoustic metrics and perceived properties by means of multiple linear regressions [4], and it supplements them with a qualitative semantic model as advocated by Raimbault and Dubois [3]. Specific evaluation questionnaires can also be constructed with descriptors derived from the semantic model, such as opponents and helpers, including rating the affect associated with these two actants as well as with rewards. In addition, radically innovative soundscapes can be designed by focusing on the rewards (i.e., on the experience of the city users).

Note that further studies should incorporate a complete analysis of the collages along the line developed by Durand [29]. They have only been used as support for the narratives so far.

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