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- . *The Soundscape. Our Sonic Environment and The Tuning of the World*. New York: A. Knopf, 1977.
- . *The Tuning of the World*. London: Random House, 1977.
- Scott, James C. *Seeing Like a State: How Certain Schemes to Improve Human Conditions Have Failed*. New Haven: Yale University Press, 1998.
- Sennett, Richard. *Flesh and Stone: The Body and the City in Western Civilization*. New York: Norton, 1994.
- Sert, Josep Lluís. "The Human Scale in City Planning" (1944). In *Urban Design* (AA.VV.).
- Southworth, Michael. "Shaping the City Image." *Journal of Planning Education and Research* 5, no.1 (1985): 52-59.
- . "The Sonic Environment of Cities." *Environment and Behaviour* (June 1969): 49-70.
- . "Theory and Practice of Contemporary Urban Design: A Review of Urban Design Plans in the United States." *Town Planning Review* 60, no.4 (1989): 369-402.
- Strickland, Roy, ed. *Post Urbanism and Reurbanism: Peter Eisenman vs. Barbara Littenberg and Steven Peterson-Designs for Ground Zero*. Anna Arbor, Mich: University of Michigan Press & A. Alfred Taubam College of Architecture + Urban Planning, 2005.
- Thompson, Emily. *The Soundscape of Modernity*, Cambridge, MA: The MIT Press, 2002.
- Thrift, Nigel. *An Introduction to Time Geography*. Norwich: Geo abstracts, University of East Anglia, 1977.
- Truax, Barry. *Handbook for Acoustic Ecology*. Burnaby, CA: Simon Fraser University, second edition 1999, first edition 1978.
- Wagstaff, Gregg. "What is Acoustic Ecology's 'Ecology'?" *Journal of Electroacoustic Music* 12, London: Sonic Arts Network (1999): 16-19.
- Whyte, William H. *City: Rediscovering the Center*. New York: Doubleday, 1988.
- . "L'idea della strada sensoriale | The Idea of the Sensory Street." *Lotus*, no.118 (2003): 47-57.
- Winkler, Justin. "Paesaggi sonori." In *Musica e suoni dell'ambiente* 16, edited by Albert Mayr. Bologna: CLUEB, 2001.
- . "Soundscape studies: outlines of a growing research field." *IASA Journal*, no. 13 (1999): 7-13.
- Zardini, Mirko, ed. *Asfalto: il carattere della città*. Milan: Mondadori Electa, 2003.
- Zardini, Mirko, ed., *Sense of the city. An Alternative Approach to Urbanism*. Montreal: Canadian Center for Architecture and Lars Muller Publishers, 2005.

DEFINING A SOUND ECOLOGY OF URBAN SPACE

PASCAL AMPHOUX

How might we define sound ecology? How might sound ecology improve the sonic quality of a city, promote the sonic publicness of a space or forge the sonic identity of a territory? How can these notions help us to understand noise in terms other than that of nuisance or to reconsider the notion of musicality, to which one needs to train the ear?

This chapter reviews two decades of research developed in different contexts. Rather than fixing a single definition of sound ecology, it proposes six contrasting approaches to outline its contours and reveal its meaning: as an epistemological issue, an object of research, a theoretical model, a series of notions, a pragmatic model and as projects.

Sound ecology 1: an epistemological issue from sound in the city to the sounds of the city

An ecological approach replaces an objective analysis of *sound in the city* by a relational analysis of *sounds of the city*. In other words, it enriches the consideration of singular and isolated acoustic data in an isotropic urban space with an understanding of the paradoxical, complex and multi-scale meanings of the numerous and intertwined sounds of the city. The following three arguments clarify this:

1. When we speak of sound ecology, we open the possibility of a change of paradigm in the classic representations of acoustic space. These representations, by focusing on sound as though it were a simple object, almost always oppose noise and music, nuisance and aesthetics or pain and pleasure. We all know, however, that what might seem musical to one is sheer noise for another, what is appreciated here is disliked elsewhere, what is pleasant now might become disagreeable later. Sound ecology accepts and embraces these very paradoxes. This leads to a first argument.

Noise is indeed a degrading factor of the urban environment, which we should attempt to fight. But we tend to forget that *sound also has qualities*. Identifying, naming, then protecting or even enhancing these qualities constitutes an original way of fighting against noise, by acting on the physical, human or symbolic interactions between emitted sounds and perceived sounds. This requires a shift from a defensive attitude, the purpose of which is to protect us against nuisance, to an offensive one that aims at enriching the dynamic equilibria that constitute sound ecology.

2. When we speak of sound ecology, we replace a mode of thought focussing on a static analysis of sound sources and the conditions of their propagation in urban space by a mode that privileges the dynamism of sound sources (their movement, their variations and their interactions) and the fundamentally anthropological nature of sounds in the city (always culturally produced, located in a particular space and time and varying in meaning according to socio-geographic situations). These sounds or sound sequences must accordingly be considered not only as “acoustic values” (sound as physical data, measurable and objective), but also as “pragmatic values” (sound as a support for individual action or social interactions): in urban space, sound is known, experienced and perceived. Sound ecology aims to seize this very complexity. Hence our second argument.

Public space “sounds”: whether it is deserted, lively, secret or exposed, it allows dispersed or mingled, continuous or discontinuous, faraway or nearby sounds to be heard, which determine specific sonic climates. But inversely, sound enhances the public nature of a space: the multiplicity and mobility of sound sources, the presence of background noise, the symbolic impact of certain signals, sounds of steps and voices, are *sonic factors of publicness*—sonic characters that contribute to forging the public character of urban space, and that sound ecology must venture to identify and promote.

3. Finally, when we speak of sound ecology, we move from the scale of the sound to the scale of the city. More precisely, we take into account the patterns of interaction and retroaction of a sonic system that passes from one scale to another. From the punctual, local source to the sonic background that envelops a city, subtle transitions occur between the sound identity of a private or a collective space, marked by deeply experienced and well-identified emissions, and that of a major or a minor public space, marked by the patterns of sonic emission, reception and

action which happen in it; and between these sound identities and that of the city itself, characterised by spatial configurations and sonic matter absolutely specific to it. Sound ecology attempts to understand and promote these articulations between different spatial and/or temporal scales. Hence our third argument.

Cities produce varied sound atmospheres due to the diversity of their public spaces and sounds, ordinary or remarkable: markets, pubs, public squares, churches, lively boulevards, belvederes, playgrounds, the atmosphere generated by a grocer round the corner, a ringing bell, the rumble of the first tram in the morning, amongst many others. Each of these sounds characterises or typifies a space, a moment or an activity, so long as it is specific to the city under consideration, and gives it a *certain identity*: an intangible and inaccessible object which sound ecology must strive to define.

Sound ecology 2: an object of research from sound identity to sound cultures

The *sonic identity* of a city can be approached in two ways that correspond to two conceptions of ecology:

- either through the content of sonic space. In this case, it might simply be defined as the set of characteristics that are common to a place, a quarter or a city; but it would then be attached to a naturalist, structuralist and positivist model in which the sonic characteristics, however qualitative they may be, would remain physical elements of the urban environment;
- or by the way in which sonic space is identified. In this case, one must insist on the coalescence of three major characteristics of the notion of identity: *autonomy*, *recognition* and *belonging*.

1. *Autonomy*: What constitutes sonic identity is the set of sounds which give the impression that the city remains constant and itself—in reality or in the imagination, in time or in space, it has not changed (since yesterday or for a decade), and is the same from one end to another (even though different atmospheres can be distinguished). The city does not only produce “noise,” it embodies itself in its sonic productions and is heard like a coherent and *autonomous* whole. The sonic body of the city, as we shall see, “produces landscape.” More precisely, it places us in a relation

to the world akin to that of landscape: we are an active part of it but we perceive it as being independent of us.

2. Recognition: Consequently, this set of sounds of the city is what allows us to recognise and to identify it, that is, to differentiate it from other cities. Every city has a “sonic signature” that allows us to *recognise* it with certainty - when you hear Big Ben, you know you are in London, and more specifically in Westminster—or to situate events and objects within it—when you hear the train, you know it is 17h17, when you hear the screech of an old tram, you know it is line 10. These signatures are precious indicators of what we call our “sonic environment.”

3. Belonging: Finally, what constitutes a sonic identity is the set of ordinary everyday sounds by which the citizen, the inhabitant, the actor or the visitor identifies himself or herself. We all keep in our memory the traces of free-floating listening (*écoute flottante*)¹ to the city. There is also a collective and inter-subjective memory of these sonic spaces, of which each inhabitant, perhaps unconsciously, is the depository. These traces are part of the milieu² to which we *belong* (as much as it belongs to us).

These definitions are all as valid as one another, they are meaningful only because they are complementary and reinforce one another.

Consequently, *to fight noise amounts to fighting sonic identity*. A space that “sounds good” is not necessarily a silent or quiet space (not noisy), neither is it a very dense or lively space (noisy). It is rather a space of which the sonic atmosphere seems appropriate to the image one has of it. A new definition then arises: *sonic identity designates the relation of appropriateness that establishes itself culturally between the sonic characteristics of a place and the social representations of this same place*.

1. Translator's note: Pascal Amphoux's *écoute flottante* is a notion playing on the psychoanalytical technique of *attention flottante* (free-floating or evenly-suspended attention, from the German *gleichschwebende Aufmerksamkeit*), that is to say an unfocussed, undirected attention allowing the free association of ideas.

2. Translator's note: the term *milieu* in French is the word for environment. In Amphoux's categories, the term emphasises the social dimension of the environment and can thus be taken to mean the social environment or culture in which an individual lives and acts, and the people and institutions with which he or she interacts.

Sonic cultures arise from these relations of appropriateness or inappropriateness. Sensitivity to the neighbours' noise is not the same in social housing as in a middle-class apartment block. The atmosphere expected of a public space is not the same in Aachen, Naples or Copenhagen. And within the same city, the appropriate sonic space is not the same at night along a river as during the daytime at a market. What constitutes the noise of the one is in a sense the silence of the other. It is impossible therefore to act on noise independently from the culture which one addresses. This could be taken as a precept of sound ecology.

Sound ecology 3: a theoretical model from the emitter/receptor model to the three-modes-of-listening model

Classic representations of sound perception tend to oppose objective representation and subjective perception, sound stimulus and active response, acoustic measure and symbolic value, or, according to corresponding models in communication theory, emitter and receptor (sometimes mediated by a technical medium or by a transducer). Against these dualist representations, sound ecology must propose ternary models that introduce inter-subjectivity between subjectivity and objectivity, meaning between the physical and the symbolic, an implicit (rather than causal) relation between stimulus and response, translation between emission and reception or, more generally, dynamism, interaction or retroaction between terms that are usually opposed. How does the subject reconstruct the sound that has moved him or her? How does perception negotiate with knowledge or sonic actions and vice versa? To help respond to these questions, we have formalised a model that depends on a rigorous distinction between the terms *environment*, *milieu* and *landscape*.

By postulating the unity of the sonic world (the same sonic phenomena being found everywhere)³ and the diversity of the subject (who exercises diverse tasks, varies his or her interpretations or changes his or her point of view), our empirical research has shown that there are three ways in which the subject can qualify this world.⁴ Either it is considered as a *sonic*

3. Translator's note: Amphoux postulates the unity of the world (*l'unité du Monde*) in the sense that a phenomenon can be located everywhere, regardless of the situation and culture, and in opposition to the diversity of the subject qualifying the environment according to his or her own perception.

4. See for example Pascal Amphoux, et al., *Aux écoutes de la ville. La qualité sonore des espaces publics européens. Méthode d'analyse comparative. Enquête sur trois villes suisses* (Grenoble: CRESSON / Lausanne : IREC, report no. 94,

environment external to him/her but with which he/she has relations of emission or reception. Or it is considered as a *sonic milieu* in which he/she is immersed and with which he/she has relations through his/her activities. Or it is considered as a *sonic landscape*, simultaneously exterior and interior, with which he/she has perceptual relations through, for example, aesthetic experience. These three ways of listening to the sonic world can be given the following formal definitions.

1. By *sonic environment*, we mean the *set of objective, measurable and controllable facts of the sonic world*. In other words, the term designates the *representation* of the sonic world arising when one submits it to an objective, analytical, managerial “listening” (in a given culture). The object of this listening (*écoute* in French) is what one might call “acoustic quality”: the sonic environment is objectified, evaluated and manipulated according to criteria of acoustic quality to which not only the specialist but the ordinary user refers: spatio-temporal criteria (scale, orientation, atemporality), semantic-cultural criteria (degree of publicness, collective memory, degree of naturality⁵ or insecurity), criteria attached to the sound matter (reverberation, sonic signature, sonic metabolism).

2. By *sonic milieu*, we mean the *set of intense, natural and vivid relations that a social actor has with the sonic world*. In other words, the sonic milieu is the *expression* of the sonic world through practices, usages or customs relating to inhabiting, when perceived through “hearing” (*ouïe* in French), that is to say a free-floating, unintentional, ordinary listening which no one can escape since, according to the French saying, “the ear has no eyelid” (“*l’oreille n’a pas de paupière*”). The objective of hearing is the *sonic comfort* of the user, individual or collective, which refers to criteria of “sonic qualification.” This differs from “acoustic quality”: the sonic milieu is not of good or bad quality; rather, it is qualified, verbally or not, as comfortable or uncomfortable—which means that one is at ease or not in it, that it appears natural or incongruous, dead or vivid.

This leads to a necessary distinction between criteria of evaluation based on judgments of value (artificialisation, banalisation, stigmatisation), criteria of idealisation based on ideals or paradigms (privatisation,

1991). Published with a synopsis in French and German in the PNR “Ville et transport,” report no. 10 (Zurich: FNRS, 1995).

5. Translator’s note: *naturalité* is the degree to which the unfolding of the sound seems natural in the sense both of being close to nature and of being obvious or expected.

metropolisation, naturalisation) and criteria of imagination based on drifts of the imagination (visualisation, aesthetisation, invention of stories).⁶

3. By *sonic landscape*, we mean the set of phenomena that allow a sensitive, aesthetic and differed appreciation of the sonic world. In other words, the sonic landscape designates the capturing of the sonic world when one pays attention to it, such “attending” (*entente* in French) being the affective, emotive, sometimes even contemplative listening of a listener absorbed by what he or she hears.⁷ The object of this attending is what we call the “phonic beauty” of the sonic landscape.

We see above that “acoustic” quality refers to the physical and objectifiable dimension of the sonic environment, and “sonic” comfort to the lived and subjective dimension of the sonic milieu. “Phonic” beauty in turn connotes the contemplative dimension of the sonic landscape in the sense that, true to the Greek root *phonê*, it can be said to “speak” to us. But how does landscape speak to us? We are no longer concerned here with the objective quality of the environment, nor with the subjective qualification of this or that milieu; we enter what we call *qualitativeness*⁸ (or inter-subjectivity) that acquires for itself a value in itself. Such is aesthetic experience, by nature subjective, but nevertheless universal; such is what, elsewhere, we have termed “potential of audibility,” objectively open to all but always subjectively actualised.⁹

6. All these criteria and terms are coined and defined in the second volume of Pascal Amphoux’s *L’identité sonore des villes européennes, guide méthodologique à l’usage des gestionnaires de la ville, des techniciens du son et des chercheurs en sciences sociales* (Grenoble : CRESSON / Lausanne : IREC, report no. 17, 1993).

7. Translator’s note: the French word *entendre* translated here as “attending” has a double meaning of hearing and understanding, which is difficult to properly render in English.

8. Translator’s note: *qualitativité* is a non-grammatical neologism coined by Amphoux. Following Björn Hellström’s suggestion, we will translate it here, as “qualitativeness.”

9. For a full development of this theory, see Amphoux, *Aux écoutes de la ville*.

SONIC ENVIRONMENT
Objectifiable, measurable and
controllable facts
Representation
Acoustic quality
Listening (*écouter*)
Criteria of quality

SONIC MILIEU
Intense, natural and
lived relations
Expression of inhabiting
Sonic comfort
Hearing (*ouïr*)
Criteria of qualification

SONIC LANDSCAPE
Sensitive, affective, "differing" phenomena
Contemplative capturing
Phonic beauty
Attending (*entendre*)
Criteria of qualitiveness

To fight noise, seen from this perspective, is to fight against the lack of differentiation between ways of listening to the city. Identity and sonic cultures forge our ear and therefore our representations of noise; but our ways of listening, hearing or attending also forge our actions, our behaviour, our relation to others, as well as our perceptions and aesthetic sensitivity. These three modes of listening are present together and mixed in the ordinary experience of the city or urban space. However, distinguishing them conceptually gives us the means to act in differentiated ways on the sonic environment, milieu or landscape. We can also formulate the hypothesis that these three modes are universal—three universal dimensions of sonic experience—and they thus acquire an epistemological status, the opposite of sonic cultures that are by definition infinitely variable.

Sound ecology 4: between notions and concepts from single meaning to multiple meaning

Without excluding quantitative variables, sound ecology must add qualitative variables to the list of acoustic variables that allow us to characterise, through measuring, the properties of a sonic object (intensity, pitch, amplitude, rhythm, duration). Qualitative variables should not be considered as being purely subjective. Sound ecology must invent a precise and rigorous vocabulary, which helps to describe, semantically, the properties of sonic phenomena and their modes of interaction with the world in which they occur and to which they confer an identity. There have been many dispersed proposals for new words to designate isolated phenomena. Far fewer have been attempts to fix and to codify a full

vocabulary with numerous, relating words that form a coherent—if not exhaustive—whole.

Two such attempts to which I have contributed are a repertory of sonic effects by the CRESSON laboratory and a repertory of qualitative criteria based on the environment/milieu/landscape model evoked above.

1. The *repertory of sonic effects* is a tool of sound ecology located between facts, action and perception, available in French, English and Italian.¹⁰ In this truly interdisciplinary work, some one hundred effects are inventoried and rigorously defined. Amongst these, sixteen are treated encyclopaedically, through both theoretical and pragmatic approaches (supported by a large number of references and examples from situations observed through empirical research) and defined transversally and systematically across six disciplinary fields: physical and applied acoustics, architecture and urbanism, psychology and physiology of perception, sociology and everyday culture, musical aesthetics and electro-acoustics, and finally textual and media expressions. The repertory is divided into five principal categories: *elementary effects* such as reverberation, ubiquity or filtration, *composition effects* such as the cut out, mask or crescendo, *mnemo-perceptive effects* such as remanence, erasure or synecdoche, *psychomotor effects* such as the niche, parenthesis or irruption, and *semantic effects* such as imitation, repetition, dilatation or envelopment.¹¹ Table 1 gives an overview of this classification.

10. Jean-Francois Augoyard and Henry Torgue, eds., *Sonic Experience. A guide to everyday sounds* (Montreal and Kingston: Mc Gill-Queen's University Press, 2006).

11. For a rigorous definition of each of these terms, see Augoyard and Torgue, *Sonic Experience*.

Elementary effects	Composition effects	Mnemo-perceptive effects	Psychomotor effects	Semantic effects
Filtration Resonance Reverberation	Cut Out Drone Mask Wave	Anamnesis Remanence Synecdoche Ubiquity	Niche	Imitation Repetition Sharawadji
Coloration Delay Distortion Dullness Echo Flutter echo Haas	Accelerando Coupling Crescendo Cross-fade Decrescendo Doppler Emergence Mixing Rallentando Release Reprise Tartini Telephone	Anticipation Asyndeton Cocktail Delocalisation Erasure Hyperlocalisation Immersion Phonomnesis Wall	Attraction Deburau Desynchronisation Chain Intrusion Irruption Lombard Parenthesis Phonotonic Repulsion Synchronisation	Delocalisation Dilation Envelopment Narrowing Perdition Quotation Suspension

Table 1. Overview of the classification of sonic effects

2. Located between active, passive and emotive listening, a second tool of sound ecology is the *repertory of qualitative criteria*, which helps us to describe remarkable atmospheres or ordinary sonic situations, without judging them in positive or negative terms.¹² Some hundred criteria identified in cities belonging to different cultures (Germanic, Francophone, Italian) are named, defined and inventoried. The structure of this repertory adopts the ternary model presented in the previous chapter. It follows a fractal logic to deploy the three dimensions of environment, milieu and landscape at various levels of definition. The first level of definition concerns the distinction made above between criteria of “acoustic quality,” “sonic qualification” and “phonic qualitativity,” belonging respectively to environment, milieu and landscape. Within the category of criteria of “acoustic quality,” the second level of definition distinguishes between “spatio-temporal criteria,” “semantic-cultural criteria” and “criteria linked to sonic matter.” Within the latter category of criteria linked to sonic matter, the third level of definition distinguishes between “reverberation,”

12. Pascal Amphoux, *L'identité sonore des villes européennes, guide méthodologique à l'usage des gestionnaires de la ville, des techniciens du son et des chercheurs en sciences sociales* (Grenoble : CRESSON / Lausanne : IREC, report no. 17, 1993), Vol.1 Techniques of Enquiry, vol. 2. Directory of Concepts.

“sonic signature” and “sonic metabolism.” The “sonic signature” is in turn described at a fourth level of definition according to the three sub-criteria of sonic “emblem”, “cliché” and “postcard”. Here again, each criterion is defined rigorously, and it will by now be obvious that at each level, in the very definition of the criterion, can be found again the three original dimensions of environment, milieu and landscape. Table 2 presents this three-level fractal structure (the letters e, m and p designate the three fundamental dimensions).

ENVIRONMENTAL LISTENING THE ACOUSTIC CRITERIA OF QUALITY	E	MILIEU LISTENING THE SONIC CRITERIA OF QUALIFICATION	M	LANDSCAPE LISTENING THE PHONIC CRITERIA OF QUALITATIVENESS	P
Spatio-temporal criteria Scale Orientation Atemporality	e eee em eep	Criteria of evaluation Artificialisation Trivialisation Stigmatisation	me mee mem mep	Criteria of representativeness Typicity Rarity Authenticity	pe pee pem pep
Semantic-cultural criteria Publicity Collective memory Naturalty/Insecurity	em eme emm emp	Criteria of idealisation Privatisation Metropolisation Naturalisation	mm mme mmm mmp	Criteria of expressiveness Feeling of interiorisation Feeling of belonging Feeling of immersion	pm pme pmm pmp
Criteria linked to sonic matter Reverberation Sonic signature Metabolic structure	ep epe epm epp	Criteria of imagination Visualisation Aesthetisation Invention	mp mpe mpm mpp	Criteria of reflexiveness Schizophony Symphony Eidophony	pp ppe ppm ppp

Table 2. Three-level classification of qualitative criteria

To fight noise is thence to invent concepts that allow us to distinguish and to name specific relations between sonic emissions, sonic cultures and modes of listening, independently of the negative or positive character of the sound. Tools such as the two repertories presented above provide sound ecology with the conceptual means to reintroduce a qualitative dimension into the analysis of phenomena. No doubt these concepts, in the sense that they are precisely defined, are not far from being notions, as there is always some margin for semantic interpretation (many of these words rely on a dominant metaphor and have a mere evocative effect on the public). But this lack of sharpness is compensated by the rigour of the process of definition: intrinsic for the sonic effects, the definition of which relies on the coherence of the connotations arising from the six contrasting disciplinary fields; extrinsic for the criteria, the relative definitions of which are linked to a fractal logic that gives each term a triple connotation (pertaining to the environment, milieu and landscape).

Sound ecology 5: pragmatic models from undifferentiated noise to distinct pollutions

Hearing, listening, attending. If noise connotes a disturbance in the sonic world, it can take on three different meanings according to the type of listening involved. It is necessary to distinguish between environmental, milieu and landscape nuisances, corresponding to *acoustic*, *sonic* and *phonic pollutions*. For sound ecology, these have neither the same effects nor the same duration, nor the same remedies.

1. *Acoustic pollution* belongs to the field of *environmental nuisances*. In other words, it must be possible to objectify (they are held to be objective), evaluate and potentially control them. They introduce a disturbance in the environment or the sonic ecosystem. In this sense, they are closest to the common conception of sound nuisance which reduces its meaning to a psycho-physical notion of noise. However, three points must be clarified. First, as shown by the typology of criteria for acoustic quality, these disturbances can touch on spatio-temporal and semantic-cultural dimensions, in the same way that any sonic matter does (see table 2, first column). Secondly, in eco-systemic theory, a disturbance can occur at a certain level of organisation of the ecosystem without having an effect, or, on the contrary, while having an organising effect on another level. There is no reason why the same principle should not apply if we are trying to define a sonic ecosystem. Finally, observing the recent evolution of our sonic environment, we can formulate the hypothesis of a trend to medium values in this environment, a global evolution led by technical and social normalisation towards medium intensities, medium or deep pitches, continuous emissions, technological sounds, that push aside both noises of a high intensity and silence, as well as high-pitch, discontinuous and humans sounds.

This reveals a first perverse effect of contemporary techno-juridical “progress”: a lack of physical differentiation of the sonic environment (a proof of this being the disappearance of sonic signatures and the homogenisation of sonic atmospheres in the city, both at work and at home). Accordingly, acoustic pollution is linked less to the threat of increasingly loud noises than to that of acoustic uniformity in the urban sonic environment. This leads to the following definition: *one can speak of acoustic pollution when one no longer hears because one has learnt to hear only noise (the lack of differentiation of the sonic environment is caused by a focus of attention on the abnormal—on anything that is beyond the norm).*

2. *Sonic pollution* belongs to the field of *milieu disturbance*. This means that the disturbances in this case arise in the sonic milieu as it is experienced, in everyday life, intensely, naturally and vividly. “Noise caused by neighbours” is a paradigm of this category of disturbances, but other types of less well formalised disturbances exist, which affect the ordinary run of things, daily life, citizens’ behaviour, ritualised habits, conventions of usage, living conditions, social practices, interpersonal communication. Sonic pollutions are more difficult to objectify than acoustic pollutions; they are never considered as such and result from subjective positions in the patterns of social relationships. They are often neglected, since treating them would mean acting not on the sonic quality but on the sonic qualification of places, that is to say, according to our typology, on values, ideals or images. A sketch of the evolution of sonic behaviour reveals a general tendency in most European countries towards sensitivity or even hypersensitivity to noise (witnessed by the increasing number of complaints). It is deemed positive to show oneself, but ill considered to make one’s self heard (one should however note that, by some curious inversion, certain technological sounds considered “inevitable” are judged to be legitimate while certain human sounds always considered “preventable” are judged to be illegitimate).

This reveals a second perverse effect: a lack of behavioural differentiation in the sonic milieu (the symptom of which is the inability to accept the sonic emissions of the other as normal signs of identity of the milieu in which one lives). Further, the stigmatisation of sonic emission could go so far as to lead to silence, a sign of death of the social milieu and everyday life. This leads to the following provocative definition: *one can speak of sonic pollution when one no longer emits, because one has learnt to no longer produce noise (the lack of differentiation of the milieu is caused by the stigmatisation of emission and a focus on the unbearable).*

3. *Phonic pollution* belongs to the field of the sensitive and aesthetic, to *landscape disturbance*. In other words, they can be designated as disturbances of the sonic landscape. As the adjective “phonic” indicates, they occur when the landscape “no longer speaks to us,” when it is separated from the culture that has produced it, when there is no more resonance between the culture and the sonic landscape: when there is a loss of identity. These pollutions can affect one or the other of our criteria of qualitiveness, representativeness, expressivity or reflexivity of landscape. At this level, the remedies can only be creative.

But the supreme phonic pollution can be presented as another potential perverse effect: sonic landscape designs, elaborated thoughtlessly, that are

too imposing or superfluous. There is, in our opinion, a threat of confusion between different modes of listening, that is to say confusion between environment, milieu and landscape, between the acoustic, the sonic and the phonic, between objective quality, subjective comfort and cultural beauty (and so on). The confusion between modes of listening amounts to no less than abolition of listening, since it reduces the indifferent subject to an attitude of passive perception. It reduces the ear to listening without being able to hear or attend. Sonic landscape is ignored: it has become literally inaudible. This leads to a third definition: *one can speak of phonic pollution when one ceases to listen, because one has learnt to ignore noise (the lack of differentiation of landscape is caused by a focus on the inaudible).*

ACOUSTIC POLLUTION

Lack of physical differentiation
(uniformisation)
Focus on the abnormal
Disappearance of sonic signatures
One no longer hears because one has
learnt to listen only to noise

SONIC POLLUTION

Lack of behavioural differentiation
(individualisation)
Focus on the unbearable
Non-recognition of the other
One no longer emits because one has
learnt to no longer produce

PHONIC POLLUTION

Lack of perceptive differentiation
(acculturation)
Focus on the inaudible
Confusion of types of listening
One no longer listens because one has learnt to ignore noise

To fight noise is thence to militate for a clear conceptual distinction between the three types of nuisance, and to remember that sonic environment, milieu and landscape do not exist in and of themselves, are not parts of a territory that can be situated in space, but are only the names of three relationships to the world, which may well have a universal value. This requires the development of means to act on three different fronts by inventing operations targeted at achieving one or more of the aims below.

- *protecting the environment*, by acting on the criteria of quality: this should aim at changing norms to correct the effects of lack of acoustic differentiation in urban space (not only limiting high intensities, but also protecting relatively quiet zones, bringing out sonic signatures, differentiating between sonic contrasts at different scales, recomposing varying rhythms, and so on)

- *reinforcing the milieu*, by interacting with the criteria of qualification of the inhabitant. This aims not only at raising awareness of noise and the value of quietness, but also at revealing the sonic qualities of public space or neighbourhoods, increasing acceptance of the fact that noise is always that of the other and attempting to establish links between human values, ideals and varied sonic images.
- *composing or recomposing* the sonic landscape by retroacting this time on the criteria of qualitiveness. In this case it is the task of planners, landscape designers or sound designers to work on cultural and aesthetic models through the creation of *phonic spaces* that speak to us.

PROTECTING THE ENVIRONMENT

Defensive attitude
Technician
Control and elaboration of norms
"Acoustic correction"

REINFORCING THE MILIEU

Offensive attitude
User or inhabitant
Regulation of social interaction
"Social management"

COMPOSING THE LANDSCAPE

Creative attitude
Designer
Evolution of cultural and aesthetic models
"Phonic creation"

Sound ecology 6: projects from analytic position to creative project

Sound ecology must develop a concern for pragmatic and operational efficiency to supplement the analytical tasks of the acoustic discipline. It must replace the idea of an applied science by what we call "involved science" and mix the spirit of design with that of research. Analysts often feel they cannot understand the creative approach (simply because they have never acquired the know-how or experience). Inversely, designers often despise the dryness of research "that serves no purpose" and have no time or wish to understand its interest and complexity. Sound ecology must reinvent a link between the two. The models presented in this chapter are attempts to do this, and their implications for design practice can be shown at two different levels.

1. The repertoires evoked above and the rigorous vocabulary that they have developed prove to be operational both in analysis and in the

management or creation of urban sonic landscape. It is possible to act directly on certain criteria and effects (reverberation, filtration, the scale, the direction, sonic signatures and so on). It is also possible to act on the probability of the occurrence of other effects or criteria. Rather than merely respecting norms of protection and acoustic labels imposed by technocracy, one could conceive urban space (and equally so architectural or territorial space) as a *sonic space that can be composed*: one could imagine the narrative quality of a walk according to the diversity of sonic milieus through which it passes. One could deliberately seek the balance between sonic background, local ambience and emergent signals of an atmosphere, imagine the sonic contrast between rooms at the front and rooms at the back of an apartment which spans an entire floor (contrasts not only between quiet and loud but also between dull and reverberating, continuous and discontinuous, and so on), invent material configurations of public space able to generate effects of narrowing or dilatation, crescendo or decrescendo, opening or closing, cut out or envelopment, and so on. New professions are arising that require technical skill, social understanding and artistic practice: sonic designers or sonic ecologists.¹³

2. Furthermore, these models, without giving ready-made recipes, foster a radical change of attitude towards ways of imagining sonic space, even in places such as roads, motorways or airports, where physical noise is such that only acoustic protection is urgently necessary, that is to say in cases where the environmental disturbance is such that it eclipses the dimensions of milieu and landscape. The ecological approach does not deny the effect of over-exposure to noise on the health of the ear, the individual or the community. But it argues that if the *palliative act* is content with a technical reduction of the sound level, it is incomplete and insufficient. One will never know for sure how far noise levels should be reduced, where to place the norm and how to control respect (each of these values depends on national and technical cultures and on the historical time). The ecological approach pleads for an equal consideration of the technical, social and sensitive dimension in every sonic design. This overturns the very notion of acoustic protection.

With the designer-architect Filippo Brogini, I have been undertaking formal, landscape and territorial research to apply these principles to a programme that at first seems far removed from these concerns: a noise

13. An overview of the emergence of these new professions was presented in Sandra Fiori and Cécile Regnault, *Concepteurs sonores et concepteurs lumière*, (Grenoble: CRESSON, report no. 66, 2006).

screen. *Runninghami* (Ill. 1) is the continuation of an approach initiated by two earlier projects, *Ceresiosaurus* (Ill. 2) and *Desailopontès* (Ill. 3).¹⁴ Starting from the idea of modular structures with variable acoustics, we developed three principles that allow us to return to the theme of noise reduction, in the technical and usual sense of the word.

To fight against noise is, according to arguments developed earlier, to free oneself from the logic of mere acoustic protection. But a case such as a noise screen requires the opposite strategy. Acoustic protection must be addressed directly in *the search for an alternative design of acoustic screens*. For this purpose, we formulated the following rule: that the screen should serve other uses than its function. Hence, while the technical aim of acoustic protection must be ensured, the protection must also:

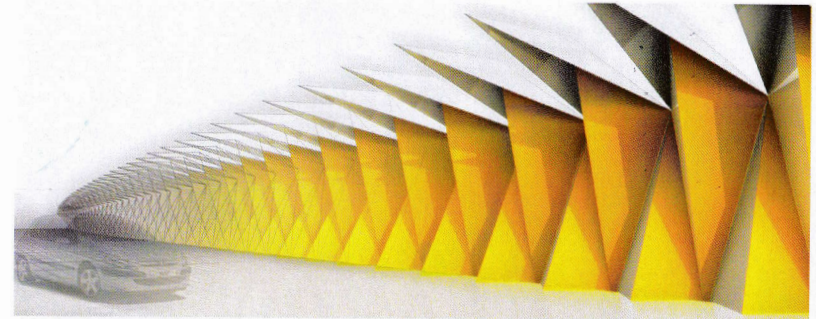
- open the possibility of new uses of the protected territory, a socio-economic aim which could be given priority in an urban or territorial project (renewal of public spaces, reconnection of pathways, reconstruction of the infrastructure's immediate surroundings);
- explore a true aesthetics of movement, a sensitive approach that could be held as a priority in a culture of mobility, one of the foundations of our contemporary society.

Translation from the French by Ariane Wilson

14. Further information on these projects can be found in the following publications by the author: "Du programme d'assainissement acoustique au projet de requalification sonore. L'exemple du viaduc de Chillon," *Les Cahiers de l'ASPAN*, August 2004, no. 2: X-XI and article of the same name in *Tracés, Bulletin technique de la Suisse romande*, April 2005, no. 7: 11-13; "La città suonante, Dalla teoria alla pratica", *Atlas, Rivista quadrimestriale dell'Istituto nazionale di urbanistica-Alto Adige*, Oct. 2007, no. 31: 39-52; "Performance technique, potentiel d'usages et perception esthétique, Un projet expérimental pour le viaduc de Chillon," in *Design et projet d'équipements publics* (Lyon : Certu, 2006): 179-198; "Le pli et la plasticité. *Runninghami*, un concept-design de protections phoniques pour les voies rapides du sud Loire," in *Design et projets d'espaces publics, "Infrastructures et paysages"* (Lyon : Certu, 2008): 83-103. For a detailed description of *Runninghami* (territorial, anthropological and constructive aspects): <http://www.bazarurbain.com/actions/runninghami/> accessed June 3, 2016.

Bibliography

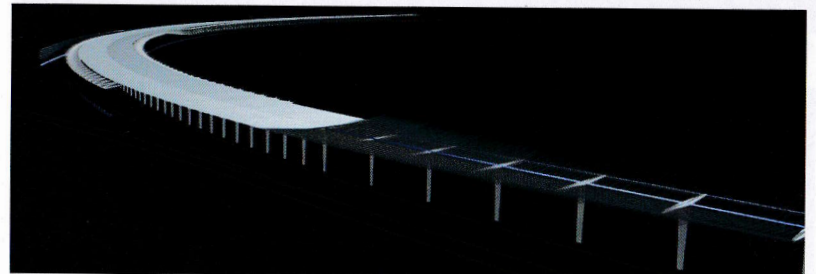
- Amphoux, Pascal. "La città suonante, Dalla teoria alla pratica." *Atlas, Rivista quadrimestriale dell'Istituto nazionale di urbanistica-Alto Adige*, no. 31 (October 2007): 39-52.
- . *L'identité sonore des villes européennes, guide méthodologique à l'usage des gestionnaires de la ville, des techniciens du son et des chercheurs en sciences sociales*. Vol.1 Techniques of Enquiry, vol. 2. Directory of Concepts. Grenoble : CRESSON / Lausanne : IREC, report no. 17, 1993.
- . "Du programme d'assainissement acoustique au projet de requalification sonore. L'exemple du viaduc de Chillon." *Les Cahiers de l'ASPAN*, no. 2 (August 2004): X-XI.
- . "Du programme d'assainissement acoustique au projet de requalification sonore. L'exemple du viaduc de Chillon." *Tracés, Bulletin technique de la Suisse romande*, no. 7 (April 2005): 11-13.
- . "Performance technique, potentiel d'usages et perception esthétique, Un projet expérimental pour le viaduc de Chillon." In *Design et projet d'équipements publics*, 179-198. Lyon: Certu, 2006.
- . "Le pli et la plasticité. *Runninghami*, un concept-design de protections phoniques pour les voies rapides du sud Loire." In *Design et projets d'espaces publics, "Infrastructures et paysages"*, 83-103. Lyon: Certu, 2008.
- Amphoux, Pascal, Grégoire Chelkoff, Christophe Jaccoud, et al. *Aux écoutes de la ville. La qualité sonore des espaces publics européens. Méthode d'analyse comparative. Enquête sur trois villes suisses*. Grenoble : CRESSON / Lausanne : IREC, report no. 94, 1991.
- Augoyard, Jean-Francois and Henry Torgue, eds. *Sonic Experience. A guide to everyday sounds*. Montreal and Kingston: Mc Gill-Queen's University Press, 2006.
- Fiori, Sandra and Cécile Regnault. *Concepteurs sonores et concepteurs lumière*. Grenoble: CRESSON, report no. 66, 2006.



1



2



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Illustrations 1-3. Pascal Amphoux, Filippo Brogini et al. (1) *Runninghami*, concept for the acoustic protection of large road infrastructure for the Département de la Haute Loire, DDE49, 2006. (2) *Desailopontès*, study for the acoustic protection of the Chillon viaduct, 2002. (3) *Ceresiosaurus*, competition entry for the acoustic protection of the motorway section of the Melide-Bissone ponte-diga, 2001, third prize.

Illustrations 4-5. Brandon LaBelle. (4) *Room Tone*, translating sounds recorded in an apartment into architectural models, 2008. (5) *Pirate Drumming*, four drummers in front of the courthouses in Nantes interpreting into their playing the descriptions received in real time via a mobile phone of of a person touring the city; Virtual Territories, Nantes, 2005.