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ACOUSTIC ATMOSPHERES IN PLACE

Angeliki Sioli & Elisavet Kiourtsoglou (eds)

THE SOUND OF  
URBAN ARCHITECTURE

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# Atmospheres that Touch

Angeliki Sioli and  
Elisavet Kiourtsoglou

Hearing about the death of Fernando Pessoa, the famous Portuguese poet, Ricardo Reis returns to Lisbon from Brazil. He wanders the streets of the city, lost in his thoughts, during the day, and then retreats to a small hotel. One of the first nights, he notices that “when one awaits to sleep in the silence of a room that is still unfamiliar, listening to the rain outside, things assume their real dimension, they all become great, solemn, heavy.”<sup>1</sup> He lies in bed in an attempt to fall asleep, surrounded by his small hotel room and its basic amenities, immersed in the room’s silence as disrupted by the sound of the rain, attuned to the felt impressions these acoustic dimensions create, receptive of the emerging atmosphere of an unfamiliar place: great, solemn, heavy. Although a fictional character—the product of the imagination of the author José Saramago—Ricardo Reis’ thoughts connect eloquently the actual elements that inspired the creation of this book: the embodied experience in a place of a given scale, the prevalent acoustic conditions and the perceived atmosphere.

This collection of essays explores how sound and architecture work together in creating acoustic atmospheres that influence our embodied experience of place. In doing so it discusses how acoustic experience and atmosphere are connected with the scale of the place itself, scale understood in this context as the relative size of the place. The contributors to this volume look at three main scales of the built environment—rooms, buildings and cities—and examine acoustic atmospheres within domestic environments, private spaces, public institutions, urban monuments and cityscapes, and how these are experienced by inhabitants and users. The case studies discussed span from the end of the 17<sup>th</sup> Century to the beginning of the 21<sup>st</sup>, with the majority belonging to the 20<sup>th</sup> Century. The authors demonstrate how acoustic atmospheres can be tangible architectural phenomena, not because they can be measured or quantified, but because they “touch” the embodied active participant, agreeing with Murray Schaffer’s poetic assertion that “hearing is a way of touching at a distance.”<sup>2</sup>

## The Atmospheres of Place

The notion of atmosphere in architecture has lately been attracting considerable attention. Theoreticians and practitioners of architecture, especially within a Western context, refer to the growing awareness of the role atmospheres play in design as the “atmospheric turn” in the field.<sup>3</sup> A number of architectural publications and conferences have attempted to bring to the fore a discussion on atmospheres and places as vital for our contemporary architectural world.<sup>4</sup> This shift seems to respond to the concern, raised by both academics and practitioners, that in recent decades architecture has been in a state of crisis, a victim of design trends that focus on form or function but fail to prioritize the users and the actual experience of place.<sup>5</sup> Approaching place through the design of atmospheres seems to expand the conversation beyond these trends. As Christian Borch characteristically argues, “an atmospheric perspective pays attention to how architecture and urban planning are able to provide nourishment to the multisensory experiences.”<sup>6</sup>

The study of what exactly constitutes a spatial atmosphere, however, is not straightforward. Atmospheres have an elusive and temporal character and their perception can be at times subjective. Voices from the contemporary continental philosophical discourse attempt to tackle these noted difficulties. Gernot Böhme’s *Atmospheric Architectures: The Aesthetics of Felt Space* (2017) and Tonino Griffero’s *Atmospheres: Aesthetics of Emotional Spaces* (2016) constitute foundational texts for understanding the experience of a place’s atmosphere, as discussed in this book. Böhme’s philosophical claim that sound is among the objective means by which atmosphere can be generated, is the basis from which this book evolved.<sup>7</sup> His definition of atmosphere as “attuned space” and “a shared reality of the perceiver and the perceived,” underpins our approach. Griffero’s focus on patterns of emotional tones in different places and their impact on the felt body supports our investigations. He unpacks how atmospheres affect our emotions, our bodies’ reactions, our state of mind and, as a result, our behavior and judgments, a topic of concern for architecture and one our book looks at carefully.<sup>8</sup>

More recently, Bruce Bégout, through his work *Le Concept d’Ambiance* (2020), argues that atmospheres can demonstrate how absolute immersion in the environment that surrounds us takes place. Paying attention to the atmospheres of a place—in our case the acoustic atmospheres—opens us up to perceiving the vibrancy of the environment we are part of, he explains, making us aware in the most convincing way that there is no division between the self and the world.<sup>9</sup> For Bégout moreover, the elusive character of atmospheres should not be seen as a problem but rather as a condition which merits further study.

## The Scale of Place

Our joint project, as editors, on architecture and sound began with a session we chaired at the 72nd Annual International Conference of the Society of Architectural Historians in 2019. We believed that sound could offer a tangible parameter in the study and understanding of spatial atmospheres, because sound has the capacity to actually create a unique space of its own, or even endow space with a character of its own that at times may be difficult to escape.<sup>10</sup> Our main interest was how architects and designers could approach acoustic atmospheres by recounting the experience of place. We asked for compelling case studies of architectural design, urban planning and art installations in which either the acoustic atmospheres were an integral part of the design or the place's acoustic properties were consciously incorporated into the design itself. Our approach was grounded on the theoretical frameworks of phenomenological hermeneutics and sound studies.

Through the contributors' suggested topics, it became evident that the case studies were defined by the scale of the places under examination. This observation aligned with the recent literature on architecture and sound that poses scale as a defining parameter when it comes to the experience of place. For example, Michel Fowler, in his *Architectures of Sound* (2017), posits that sound offers an embodied understanding of the limits and boundaries of physical space, in terms of both the infinitesimally small and the extraordinarily large. More specifically he explains that people "sense the auditory dimensions of architectural space through (...) a sum of vibrations that each approach the ear at slightly varied time distributions."<sup>11</sup> These varied time distributions and delays "are the result of sound waves essentially mapping out the physical boundaries, the tangible architectonics of the reflective surfaces that surround us."<sup>12</sup> The scale of the place that envelops us acts as a pivot between the acoustic qualities, geometry and dimension of place as gauged against its auditory qualities and characteristics.<sup>13</sup> In more experiential terms, Griffero adds to this conversation that "geometry is incapable of justifying the (not only metaphorical) volume of a Sunday silence or the narrowness of a living room, perhaps metrically identical to another which is yet perceived as more spacious."<sup>14</sup> In other words, the limits of our surroundings influence our perception of sound, and vice versa, the perception of sound affects our impression of our environment's dimensions.

## The Sound of Place

Sound studies have expanded in scope beyond the purely musicological paths, employing methods and epistemological tools from diverse disciplines, such as architecture, acoustics, history and psychology. Most importantly, sound studies have focused on analyzing sound through space (rather than through time metrics as used to be the case for music) and have underlined the societal forces and cultural backgrounds that interact with and define sonic environments. Sound has progressively become an element of analysis of human culture. Starting with R. Murray Schafer's iconic work *The Soundscape* (1977), sound was understood as an element of separation between culture and nature. Schafer merged music and noise, studying sounds produced by humans, animals, machines and nature.<sup>15</sup> Following in his path, the French research laboratory CRESSON coined the term "sonic effects" to describe dimensions of soundscapes in cities and architectural spaces, arguing that both the production and perception of sonic effects are related to specific temporal circumstances and human intentions. For historians, this interest in the sonic environment added another element to the analysis of human society: sound can actually function as a cultural mode of perception and knowledge. For example, Alain Corbin argued that a soundscape is constructed and perceived inside a historic timeframe, exactly like a landscape.<sup>16</sup> Active listeners actually choose the point of audition, loading with meaning and emotion the sounds heard, while also appreciating and understanding them.

Moreover, the history of science has shown that even the "physicality" of sound is socially and historically constructed. Emily Thompson, in *The Soundscape of Modernity* (2002), argues that the rise of the science of acoustics at the beginning of the 20<sup>th</sup> Century had a major impact on the culture of listening in America and the development of a certain architectural design that privileged "dry" sound.<sup>17</sup> Interested in the relative nature of sound perception and appreciation, sensory archeology had as an objective the understanding of human activity through the reconstruction of sensory experiences. Excellent examples of this kind of scholarship, such as Bissera V. Pentcheva's *Hagia Sophia* (2017), Deborah Howard and Laura Moretti's *Sound and Space in Renaissance Venice* (2010) and Niall Atkinson's *The Noisy Renaissance: Sound, Architecture, and Florentine Urban Life* (2016), aim to reconstruct the original conditions that influence the interaction between sound, space and people.<sup>18</sup> What was heard and how played an important role in the encounters of the members of society with the divine and the political power of the time, setting a rhythm for everyday life. Sonority was a dimension of the experience of place, not an element of a neutral Cartesian space.

The importance given to active listeners in terms of creating and perceiving sonic environments has also changed their role in the design of architectural space. As Barry Blesser and Linda-Ruth Salter argue, experiencing space by attentive listening allows perception of an aural architecture, beyond three dimensions. In a way, subjects

function as “aural architects” whose individual psychology and social backgrounds interfere with the available technology and create an “aural representation” of the place they are in. As subjective as this version of space can be, aural architecture underlines the familiarization and appropriation of the space through sound.<sup>19</sup>

## The Experience of Place

One could of course argue that the embodied perception and felt atmospheres in a place can be subjective and thus not of great value for a study such as the one we wish to carry out. However, we believe that beyond the subjectivity of any experience—conditioned by countless parameters like gender, race, ethnicity, education, disposition or context—architecture and the acoustic atmospheres it encompasses have the potential to reveal elements of place that can be sensed and shared by a wide and diverse audience. These atmospheres have the potential to touch chords that transcend our subjective experiences. In line with phenomenological hermeneutics, the contributions to this volume focus on acoustic phenomena and attempt to explain them through an empirical study of place and sound, showing that sound asks us to investigate architecture not as an intellectual but as an embodied experience. Phenomenological hermeneutics, in Heidegger’s own words, strives for interpretations that are “not grounded in human consciousness and human categories but in the manifestness of the things encountered, the reality that comes to meet us.”<sup>20</sup>

The contributors to this book study in close detail precisely this “reality that comes to meet us” and moreover exemplify that atmospheres are culturally and historically defined. Indeed, as Richard Palmer explains “phenomenological hermeneutics believes that understanding is a historical act and as such is always connected to the present. (...) From this point of view to speak of ‘objectively valid interpretation’ is naïve, since to do so assumes that it is possible to understand from some standpoint outside of history.”<sup>21</sup> The articles demonstrate how each time period’s cultural norms, spatial discourse, and available technology allowed architects, interior designers and composers to prioritize the creation of specific acoustic atmospheres. Many times, it was the creation of these very atmospheres that ensured the programmatic success of the architectural or urban design.

Prioritizing the embodied experience and the subsequent interpretation of architectural acoustic atmospheres, the contributors also seem to align with the intentions set recently by what philosophers Richard Kearney and Brian Treanor call carnal hermeneutics. Carnal hermeneutics propose, “at a moment when questions of matter, flesh, and body call out for new rethinking, to revisit the deep and inextricable relationship between *sensation* and *interpretation*.”<sup>22</sup> Such a move, the philosophers believe, “may help us better understand how we are constantly *reading* flesh, *interpreting* senses, and *orienting* bodies in passion and place even as we symbolize and dream.”<sup>23</sup>

## **The Acoustic Atmospheres in Place**

The case studies presented in this volume refer to and are analyzed from a Western perspective. The feelings, sensations and types of hearing discussed reveal primarily Western theoretical and practical preoccupations. The emotional power of sound in the living rooms of North America, the dramatic nature of sound in European theaters and concert halls, the metaphysical echoing of sound in Medieval and Renaissance churches, the social or celebratory sonic environment of exhibition spaces or public urban environments fill the pages of this book. Many of these architectural typologies dependent heavily on sound in order to immerse their audience in a specific mood, and it is through specific acoustic atmospheres that architectural space is experienced at its fullest, creating a meaning related to each culture and historical time. The case studies presented and analyzed are either not widely known in the literature or well-known ones which have not been studied from the perspective of acoustic atmospheres.

Although not the main focus of this book, we would be remiss not to acknowledge that “the production of architectural atmospheres amounts to a subtle form of power that aims to achieve its effects by working on a nonconscious level.”<sup>24</sup> Shops using Muzak or modern drone (or atmospheric) music invite customers to stay longer and consume more. In less radical examples, we can claim that every encounter with architecture may influence or affect the mood of the user in a subtle, unconscious way. Entering a well-furnished room, running through an empty building or walking around narrow, echoing medieval streets create a certain atmosphere that affects us.<sup>25</sup>

The authors of this book listen attentively to how the experience of place was imagined, conceived, designed and produced by architects, artists, musicians and engineers in order to provoke a certain feeling or impression. Specific qualities of sound or soundscapes were orchestrated, more or less consciously, to create or work with a certain atmosphere. The contributors amplify with their work the role of sound’s embodied effect on the user or inhabitant of a place. They focus on sound’s capacity to influence the mood, emotions and intellect of an engaged participant, even guide their behavior consciously or unconsciously.

## **The Sound of Architecture**

The book’s sections are titled: “Room Vibrations,” “Building Pitches” and “City Tunes” respectively, and each section opens with a chapter that examines acoustic atmospheres at the given scale, as they are discussed in a theoretical or historical treatise. Following this chapter, each section includes four articles that discuss specific case studies at the same scale.

## Room Vibrations

The first section opens with a piece by Anna Ulrikke Andersen, who illuminates the role of sound and music in Norberg-Schulz's renowned *Genius Loci: Towards a Phenomenology of Architecture* (1980). She examines the rooms in which the architectural theoretician wrote one of the most influential treatises of the 20<sup>th</sup> Century. She discusses how specific sounds and musical pieces related to these rooms sparked ideas of embodied experience in place that were incorporated in the author's work. The piece has a speculative nature, trying to imagine the sounds heard inside and outside the environments in which the theoretician worked.

Following this imaginative opening, the section features four articles on rooms where architectural atmospheres and recorded music co-exist, moving from the private realm of the home to the public realm of public installations. The focus is two-fold: how the recorded music resonates in space, altering the atmosphere in the rooms in which it is performed, and how the design of specific atmospheres in a room influences the creation and recording of music.

Focusing on the middle-class North American living room at the turn of the 20<sup>th</sup> Century, Michael Windover and James Deaville consider how musical instruments like the piano affected interior design decisions and the acoustic experience of early 20<sup>th</sup>-century homes. The next two articles of "Room Vibrations" study analogue and digital possibilities for the creation and recording of music. Timothy Carey traces the history that led to the design and creation of the first professional recording studios. He shows how impromptu solutions to harness the acoustic qualities of promising reverberant rooms were gradually codified in the design of recording studios. Diving further into the topic of studios and their atmospheric qualities, Clemens Finkelstein examines in detail Jimi Hendrix's facility Electric Lady. The article unpacks the technological advances in the creation of different atmospheres in the studio room, which affected the composition and recording of music. In the last piece of this section, Ross Elflin shows how modern composers Alvin Lucier and La Monte Young play with the materiality of specific rooms in order to create and record unique sound atmospheres.

## Building Pitches

The book's second section shifts the scale of the conversation from the room to the public building. The opening piece studies Claude-Nicolas Ledoux's Theater of Besançon (1784) as presented in his treatise *L'architecture considérée sous le rapport de l'art, des moeurs et de la législation* (1804). Examining the architect's intentions for the acoustic performance of the theater, Paul Holmquist discusses the creation of a synesthetic architectural atmosphere shared by the spectators, an atmosphere which according to Ledoux was meant to offer moral guidance.

Echoing this piece on theater, the articles in “Building Pitches” examine three building typologies that are highly dependent on sound: concert halls, religious buildings and exhibition spaces. Carlotta Darò presents a method that allows architects to predict the acoustic atmosphere of a concert hall during the design process. It is an analogue technique based on large-scale models that work in parallel with computational design and help correct and attune the atmosphere of the building that is under construction. Joseph L. Clarke and Federika Goffi examine, in their respective contributions, specific acoustic atmospheres in two well-known historic churches. Through archival work, Clarke imagines the sound of the chapel of Le Corbusier’s Notre-Dame du Haut in Ronchamp (1955). Although the chapel’s campanile was never built, as Le Corbusier had hoped, the article shows clearly the architect’s intentions and attempts to design a specific sound atmosphere. Goffi explores the collaboration between architect Renzo Piano and avant-garde composer Luigi Nono for Nono’s last composition, *Prometheus: Tragedy of Listening* (1981–1985). Both architect and composer emphasized the creation of an acoustic experience that would achieve the aural immersion of participants in the socio-cultural and political conditions of the world around them. The section closes with Elisavet Kiourtsoglou’s article on the renowned Philips Pavilion (1958) and the embodied experience of its audience. Designed by architect and composer Iannis Xenakis in collaboration with Le Corbusier, the pavilion offered a unique acoustic environment for the performance of two specially composed pieces of electroacoustic music. The article analyzes the relation between the representation of sound by the composers and the acoustic atmosphere perceived by the audience.

### City Tunes

The last section of the book opens with an article that examines what is considered to be the first treatise on acoustics, Athanasius Kircher’s *Phonurgia Nova* (1673). Cécile Regnault unpacks connections between sound city, landscape and outdoor large-scale spaces by looking into Kircher’s concept of the “sounding city” and his various “city instruments.” She concludes her contribution by connecting Kircher’s thinking to the contemporary discourse on the aesthetics of atmospheres.

“City Tunes” then presents four distinct aspects of acoustic atmospheres in the city: the psychological, aesthetic, political and pedagogical aspects of city-sounds. Angeliki Sioli focuses on the random, insignificant sounds of modern London and examines the effect they have on citizens’ consciousness and actions. Looking in detail at Virginia Woolf’s *Mrs Dalloway* (1925), she demonstrates how sound influences

our perception and appropriation of urban space, and why literature is an ideal tool to study this topic. Karen Van Lengen discusses urban sound installations and how they can either reveal historical aspects of a site or create new and unexpected space in the public domain. She examines how sound installations can foster communicative relationships among citizens and reveal sonic elements of the city's architecture. Pamela Jordan continues the conversation on sound's power to influence our conduct in a city by analyzing the Berlin Wall as a sonic infrastructural space. She looks into the acoustic environment the Wall created in the heart of the city and how citizens reacted to it. She then examines the acoustic environment of the contemporary memorial of the Wall and the dramatic shifts in sound atmospheres it has led to, emphasizing constantly the political nature and power of sound. The last article takes the reader to the Latin American cities of Bogotá, Colombia and Valparaíso, Chile and unpacks pedagogical approaches focused on the study of sound in the urban environment. Klaske Havik and Michael de Beer argue for the need to raise sound awareness in architectural pedagogy. They present writing assignments that can train students to sense and capture acoustic urban atmospheres, and elaborate on how such training can enhance students' design abilities, leading to projects attuned to the sounds of the environment they are conceived for.

## Echoes

Instead of a formal afterword, the book concludes with two pieces that tune the readers to the palpable voice of two academics. The interview with Alberto Pérez-Gómez touches on many topics unpacked in the various articles in this collection, adding how sound has been treated in the Western architectural discourse historically, how contemporary theories look at the act of hearing and listening in place, and how atmospheres, acoustic or not, can be approached within an educational setting. The piece by Ricardo Castro narrates moments of eloquent silences in unique architectural places around the world. It is a piece containing the personal reminiscences of a dedicated architectural traveler, which hints poetically at the fact that not only the experience of place but also the memory of this experience is basically just an atmosphere.

We hope that the pages of *The Sound of Architecture* recount what was heard and felt in specific historic moments in different scales of places, making louder the importance of acoustic atmospheres for the study and understanding of our wondrous built environment and the difficult task of architecture. With this hope in place, we leave the act of reading and *listening* to you.

## Notes

1. José Saramago, *The Year of the Death of Ricardo Reis*, transl. Giovanni Pontiero (Orlando; Austin; New York; San Diego; London: Harvest Book Press, 1991), 23.
2. R. Murray Schafer, *The Soundscape: Our Sonic Environment and the Tuning of the World* (Vermont: Destiny Books, 1994), 12.
3. A-Chr.Engels-Schwarzpaul, Böhme's translator in English, mentions in the introduction of *Atmospheric Architectures* that the works of Böhme contribute in this atmospheric turn. [Gernot Böhme, *Atmospheric Architectures: The Aesthetics of Felt Spaces* (London; Oxford; New York; New Delhi; Sydney: Bloomsbury, 2017), 5.]
4. In 2013 the journal *OASE* published the issue *Building Atmospheres*. The publication dealt with the noted difficulty in defining atmospheres. It presented theoretical perspectives on the topic, Zumthor's creative design process and positions by the Finish architect Juhani Pallasmaa. Pallasmaa continues publishing on the topic. His piece "Place, Space and Atmosphere: Peripheral Perception on Architectural Experience," (2014) discusses the necessity to finally abandon a visual approach to architecture and focus on embodied synesthetic atmospheres. Similarly, the volume "Atmospheres" by *The Journal of Architectural Education* (2019) discusses the need for an "atmospheric turn" in architecture and architectural education, focusing on the political dimension of atmospheres. The annual international conference "Atmospheres organized by the Faculty of Architecture, University of Manitoba since 2008 (atmos.ca) and the conference of the Ambiances network (once every 4 years) are important factors in the ongoing discourse. More tightly connected to our acoustic emphasis, the architectural journal *OASE* published in 2009 an issue on Sound and Architecture, titled "Immersed." The volume examined the auditive dimensions of various cultural practices in space, from the multifarious standpoints of the hearing subject. The *Journal of Architecture* with the issue "Sound Modernities" (2018) brought to the foreground the epistemological dimension of acoustics for the history of modern architecture.
5. Alberto Pérez-Gómez's *Architecture and The Crisis of Modern Science* (1985), Dalibor Vesely's *Architecture in the Age of Divided Representation: The Question of Creativity in the Shadow of Production* (2006), Juhani Pallasmaa's *The Eyes of the Skin, Architecture and the Senses* (2005) and *The Thinking Hand: Existential and Embodied Wisdom in Architecture* (2009), David Letherbarrow's *Architecture Oriented Otherwise* (2008), are only some of the most representative studies on the issue.
6. Christian Borch (ed.), *Architectural Atmospheres: On the Experience and Politics of Architecture* (Basel: Birkhauser, 2014), 15.
7. Gernot Böhme, *Atmospheric Architectures*, 3.
8. Tonino Griffero, *Atmospheres: Aesthetics of Emotional Spaces* (Abingdon Oxfordshire, UK: Routledge, 2016).
9. Bruce Bégout, *Le Concept d'Ambiance* (Paris: Seuil, 2020), 32.

10. Gernot Böhme, *Atmospheric Architectures*, 76.
11. Michel Fowler, *Architectures of Sound: Acoustic Concepts and Parameters for Architectural Design* (Basel: Birkhäuser, 2017), 44.
12. Ibid.
13. Ibid., 9.
14. Tonino Griffero, *Atmospheres: Aesthetics of Emotional Spaces*, 36.
15. By analyzing such diverse soundscapes Schafer offered the first “sonic ecology,” appreciating the diversity and aesthetics of natural sounds while almost demonizing the postindustrial sonic pollution. (R. Murray Schafer, *The Soundscape*, 71–102.)
16. Alain Corbin, *Les Cloches de la Terre. Paysage sonore et culture sensible dans les campagnes aux XIX siècle* (Paris: Albin Michel, 1994).
17. Emily Thomsphon, *The Soundscape of Modernity. Architectural Acoustics and the Culture of Listening in America, 1900–1933* (Cambridge, Mass: The MIT Press, 2002).
18. For more see: Bissera V. Pentcheva, *Hagia Sophia: Sound, Space, and Spirit in Byzantium*, (University Park, PA: Penn State University Press, 2017); Howard Deborah and Laura Moretti, *Sound and Space in Renaissance Venice: Architecture, Music, Acoustics* (New Heaven: Yale University Press, 2009); Niall Atkinson, *The Noisy Renaissance Sound, Architecture, and Florentine Urban Life*, (University Park, PA: Penn State University Press, 2016).
19. Barry Blesser, Linda-Ruth Salter, *Spaces Speak, Are You Listening? Experiencing Aural Architecture*, (Cambridge, Mass: The MIT Press, 2006).
20. Martin Heidegger, *Time and Being*, trans. Joan Stambaugh, red. ed. (Albany, N.Y.: State University of New York Press, 2010), 26–37.
21. Richard E. Palmer, *Hermeneutics, Interpretation Theory in Schleiermacher, Dilthey, Heidegger, and Gadamer* (Evanston, IL: Northwestern University Press, 1969), 46.
22. Richard Kearney and Brian Treanor (eds.), *Carnal Hermeneutics* (New York: Fordham University Press, 2015), 27.
23. Ibid.
24. Examples of designing and staging events that can affect massively emotions and opinions can be recounted in Hitler’s reflections on mass propaganda or the first celebration of Fete de la Fédération in Paris where spectacles directed the attention of the crowds. [Christian Borch, “The Politics of Atmospheres: Architecture, Power and the Senses,” in Christian Borch (ed.), *Architectural Atmospheres*, 73–77.]
25. Ibid., 80–82.