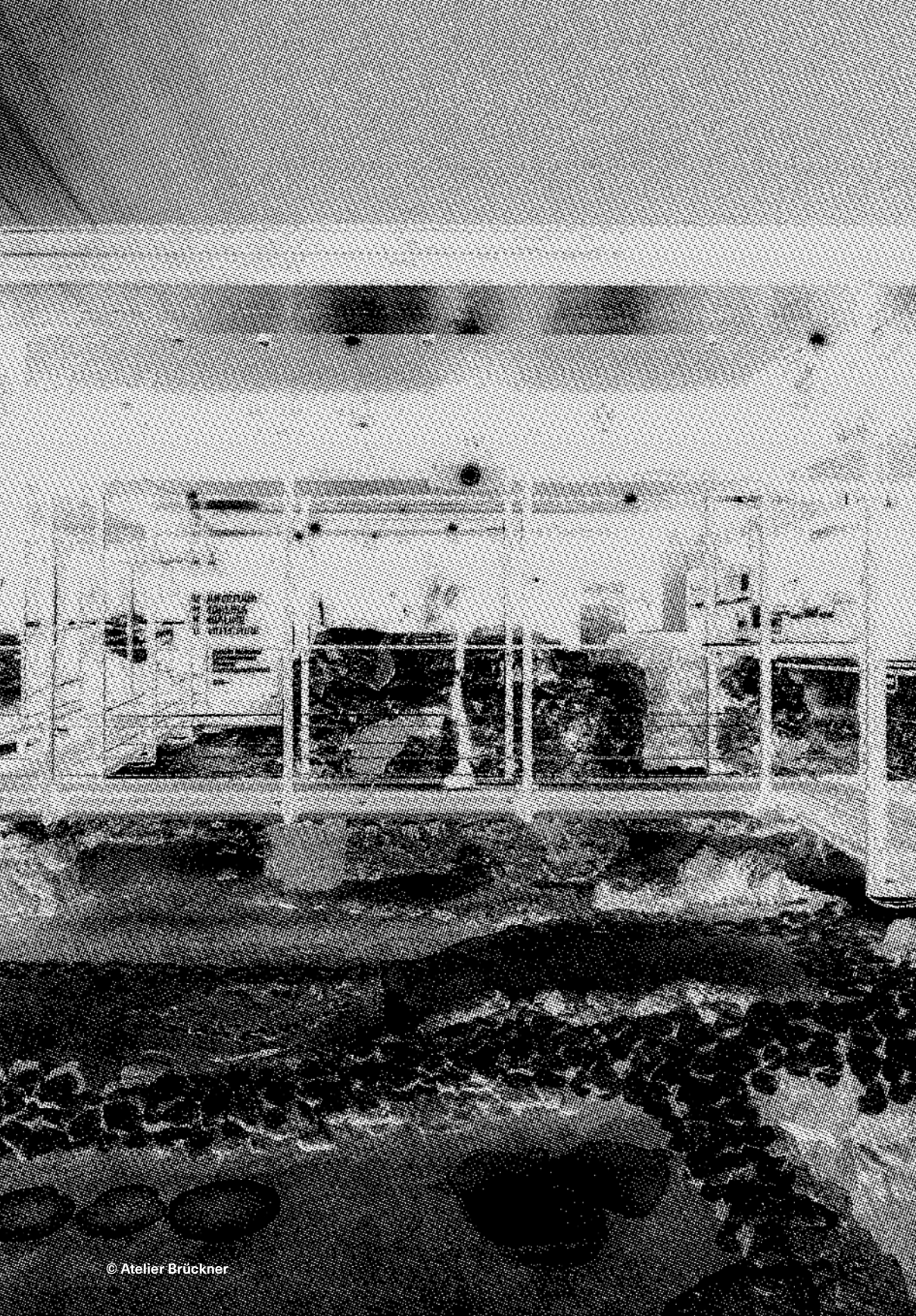# diid

disegno industriale
industrial design

theorìa
pòiesis
praxis

diid.it

Luca Baldini, Alberto Bassi, Sonia Belhaj, Angelo Bucci, Mario Buono, Sofia Collacchioni, Maria Claudia Coppola, Lucilla Calogero, Marcia Regina Diehl, Luca D'Elia, Sergio Degiacomi Garbero, Carlo Franzato, Valentina Frosini, Debora Giorgi, Lorenzo Imbesi, Silvana Kühtz, Elena Laudante, Beike Li, Elena Aversa, Claudia Morea, Michele Mauri, Birgit Mager, Elena Metzdorf, Maria Laura Nappi, Carla Paoliello, Le Chi Quynh, Corbin Raymond, Chiara Lorenza Remondino, Chiara Rutigliano, Paolo Tamborrini, Trinh Hong Thu

Colophon

© S. Kuhtz

Contents

Editorial

Open Debate

Designrama

Forum and Reviews

Editorial

This issue of the Journal features in the Open Debate section research projects that delve into the possible relationship between the cultures and practices of design and the concept of *civis*. By this term we mean both the spatial, structural, physical and analogical dimension of being together, dwelling, living, producing the territory in its various analogical urban forms and in the intangible dimension that allows us to transform the 'space' into 'place', because simultaneously we also live within a network of digital and direct relationships between people and between people and things.

What emerges is the development of an area of autonomy for 'civic technologies' that facilitate and optimise resources, and allow for development and dimensional scalability. Design offers this complex field significant support as a mediator bridging different areas of expertise and disciplines that contribute together to the result. But what interests us most is also design's ability to envision and shape, leveraging the expertise typical of codesign to engage citizens, cityusers and stakeholders, as well as the advantage offered by productive thinking in the testing and prototyping phases of services and products in progress.

As is often the case in today's complex reality, the result is a necessary systemic approach that maintains the possibility of deep dives into specific themes or problems for which the cultures and practice of design appear increasingly indispensable today.

Flaviano Celaschi
Editor-in-chief

Open Debate

The Open Debate section explores research on the relationship between design practices and the concept of *civis* encompassing both physical spaces and digital territories, networks, systems, and urban forms. Design plays a key role as a mediator across disciplines, leveraging co-design to engage citizens and stakeholders in creating and testing services and products. The importance of a systemic approach is emphasized, highlighting design's growing relevance in addressing complex societal challenges through deep, context-specific solutions: from Service Design for the Public Sector to the development of responsible planner systems in China, from scenario building that encourages community engagement to new sensory training for design/architecture and local-based NetZero city strategies. The Section highlights the importance in addressing the increasing complexity of interactions with products and systems, facing political, economic, and legal constraints.

Beyond Sight: Sensory Atmospheres and Design

Silvana Kühtz
Università degli Studi della Basilicata
silvana.kuhtz@unibas.it
ORCID   0000-0003-2208-9387

Abstract
What is an atmosphere? Does sensory fine tuning expand the understanding of reality? Can perceptions and atmospheres influence design and vice versa?

Multidisciplinary approaches that integrate sensory aspects are tools that open up possibilities for design. Nevertheless, design has often prioritized the visual, overlooking the crucial role of the other senses in shaping experiences. This essay explores academic practices and performances that cross disciplinary and synesthetic borders. Social design strategies and public initiatives that focus in particular on sensory atmospheres unveil different multifaceted points of view and narratives of the same place. This paper presents various communication/performative design tools including auditory/sensory training for design/architecture students and participatory workshops in peripheries. The paper also describes the methods of the research.

The visible itself has an invisible inner framework, and the invisible is the secret counterpart of the visible.
Merleau-Ponty, 1964, p. 216

Introduction. Atmosphere

Peter Zumthor (2006, p. 13) wrote:

> I enter a building, see a room, and — in the fraction of a second — have this feeling about it. We perceive atmosphere through our emotional sensibility, a form of perception that works incredibly quickly, and which we humans evidently need, to help us survive.

Atmosphere is an invisible force. It's the essence that lingers in memory, the intangible pull that draws us into captivating experiences. Crafting such an atmosphere demands meticulous attention to details: light, sound, materials. Sounds alone may have the power to evoke a sense of place and identity. The sounds of a particular region or culture can instantly transport us to that place, evoking memories and experiences associated with that place (Kühtz, 2022; Di Croce, 2020).

Djimantoro et al. (2020) stressed how the protection of historic sites should consider intangible dimensions. Historic cities are more than a mere collection of monuments; their atmospheres are as important and fragile (Korkontzila et al., 2020; Wrightson, 2000).

Products and environments inevitably have a sonic dimension, but the images/designs we produce are effectively mute documents that seldom convey the actual aural impact and experience of those products, spaces and places (Nixon et al., 2008, p. 1).

Space can express immediate emotional, somatic and visceral reactions (Gallese & Gattara, 2015). Mallgrave (2013) states that emotion is the real chemical and neurological means by which we meet and perceive the world.

One of the focuses of this paper is immersive soundscape and sensory experience. The research investigates the affective power of sensory experience, the results also unfold into sensory training for students and participatory workshops.

Sensory Design

Design involves an immersive sensory exploration of the physical structures/products around us. But many design approaches tend to prioritise visual aspects, overlooking other important traits of our sensory experience. As Levin (1993) put it: "I think it is appropriate to challenge the hegemony of vision – the ocular-centrism of our culture. We need to examine very critically the character of vision that predominates today" (p. 203).

In 2020 Spence made a thorough review of the literature that takes into account how we live in multisensory environments. Lupton & Lipps in 2018 pointed out "Sensory design enhances health and well-being [...] it considers not just the shape of things but how

things shape us [...]. It is grounded in phenomenology, that situates knowledge in the body" (p. 14). Nevertheless, most design is caged by the image.

As Pallasmaa writes (1994): "Every space has its characteristic sound of intimacy or monumentality, rejection or invitation, hospitality or hostility. [...] Sensory design slows space down, making it feel thick" (p. 31).

While the rational value of things is crucial, the feelings we attach to them are often more complex to articulate. Nevertheless, they play a constant and influential role in shaping our choices. At the Venice International Architecture Biennale, the sensory environment has increasingly taken centre stage. The French Pavilion in 2023 showcased "an architecture that offers visitors an experience that is simultaneously spatial, aesthetic, and acoustic".

The Invisible Materiality of a Soundscape

Since the late 1960s, R. Murray Schafer, musician, composer and Professor of Communication at Simon Fraser University in Burnaby, BC, Canada, studied the influence of the sonic environment on humans. He developed the term "soundscape" as "[an] environment of sound (or sonic environment) with emphasis on the way it is perceived and understood by the individual, or by a society" (Schafer, 1967, 1977).

Thinking about sound in design is more than just soundproofing and noise reduction. *Noise in Europe: New Methods and Best Practices for Implementing EU Policy*, by the European Commission (2019), highlights how noise is the second most significant environmental health issue in Europe after air pollution. Noise and its management do not appear clearly in any of the 17 Agenda 2030 goals, or associated targets (King, 2022). The fact that soundscape is not commonly taken into account in design might contribute to the ubiquitous noise problem in our cities today (Bild et al., 2016).

It seems fair to assume that education to perceptions in general should be part of the designer/architect curriculum, as they contribute to shaping a dimension in the aesthetic judgment of a place, a product, a choice.

By creating experiences that effectively stimulate multiple senses in a consistent manner, we can potentially improve people's quality of life while also producing more captivating, immersive, biophilic and unforgettable multisensory experiences (Algargoosh et al., 2022; Li & Kang, 2019; Cain et al., 2013).

It is therefore crucial to incorporate a comprehensive understanding of sensory atmospheres in both the teaching and practice of design, introducing students to relevant experiential exercises/practices.

Sensory Training for Future Architects/Landscapers/Designers

One of the outcomes of this research has been an in-depth process that over time has involved students (Architecture and Landscape Architecture programmes, Università degli Studi della Basilicata, Matera; Politecnico di Bari; Design Programme, Università degli Studi di Firenze) in a learning path that combines technical and perceptive aspects.

> We as architects are slow to understand many things and to feel them in the senses because we come from studies [...]. Architects, in order to understand all their beautiful profession, must have their constructions in mind, that is foresee them (see them first), and fore-feel them (Ponti, 1957).

Designers face complex problems that require a systemic approach. The boundaries between disciplines, increasingly blurred, prompt a multifaceted approach to teaching that encourages new connections. The academic courses Languages, Future, and Possibility[1] offered at the Università degli Studi della Basilicata since 2006 (Kühtz & Gallinari, 2017), The4Passions at the Politecnico di Bari (2018-2024) and Basic Design at the Università degli Studi di Firenze (2024), address some of these issues through non-traditional style lectures. Students participate in sensory experiences that expose them to different postures of perception Fig. 1, 2 and 3. This allows students to develop aural skills, work with sound recording and soundscapes. The experiments conducted throughout the lectures help students extend their awareness and encourage a shift beyond visual context.

Our senses shape our learning process and inform our perception of the world (Auinger, 2017). Intentionally engaging our senses can enhance our experiences thus expanding our understanding of the world. For example, taking a walk with a blindfolded companion can generate a completely new level of discovery. When students become more familiar with each other through sensory games, they can deepen their trust and exploration of the space around the campus or in the city by incorporating touch and expanding their visual imagination. One of the first effects of the *sensory games* proposed to the students is indeed the encounter with other people and the other participants, in a newfound complicity, that of the game. Bateson (1979) stated that play is an artifice with which the individual explores the universe, it is essentially a learning process in and of itself.

The Course Syllabus: Senses and Design.
The Sensory Design Method

We can forge new educational paths, deeply rooted in phenomenology, and think of educating the younger generations by planning a curriculum for all the senses (Kuhtz, 2022).

The training is composed of different phases.

There are at least three sensory sessions, and all are guided

1
The course implemented in the Faculty of Engineering exposes the students to critical thinking and new sensory experiences. Since 2014, it has been implemented in the Architecture programme under the title "Listening, Communication and Creativity".

sessions (classes comprise between 20 to 170 students).

1. The students/participants are invited to wear a blindfold without any previous preparation. This first step focuses on the possibility of sharpening their hearing capacity, developing a passion for listening, and for the different ways in which one might sense/listen to a place Fig. 1. In this session they are guided in paying attention to close and distant sounds, to the sound of their breath, to the sounds of the place itself. A soundtrack is also played at times; the tracks are chosen amongst a playlist accurately prepared with the intention to elicit different responses. Participants are also invited to listen to their bodies, their emotions and feelings in relation to these different sound exposures.

    Sometimes, still blindfolded, they are invited to draw on their notebook what they remember was in front of them, or a particular image they see in their mind. As soon as this initial 30 to 40-minute listening session ends, students are invited to write their perceptions down by hand on their notebook, and to share the experience with the class. Sometimes this session continues with the proposal of a different posture, that is another point of view (of listening) and the students are invited to lay down on the class tables Fig. 2, and share their impressions. The conversations that emerge offer the possibility to guide and educate students in describing, verbalizing and imagining the experience through sounds (and bodies), and prepare them for the following session, progressing to further embodying the sensory experience.

2. The second sensory session is generally performed outside the classroom, in the university premises or outdoors. QR code 1[2] shows a video shot during some of these experiential lectures. Students are guided to observe, touch, draw what they see and then to listen to the environment in which the lecture is being held as a place that offers different stimuli from those of the classroom. Guidance given to students is similar to that given in the first session, enriched by the fact that they are now called upon to experience movement and a sense of the group. Live musicians are invited to perform. One sensory game often used in these lectures involves taking blindfolded walks, and paying attention to the sounds (deep listening), asking: What is beauty? It is the key question students are invited to reflect upon.

3. In the third session the class is divided into small groups that can tailor their experience. They gather recordings and collect materials for a final project. This varies according to the outcome of the course. One outcome is a procedure to record all the experiences that can be summed up in a sound cartography that connects memories, emotions and descriptions with the visual impression (via photo, drawing). Sometimes this process takes the final form of a sound installation. This third session is therefore a collection of materials and the groups are invited to design a first draft of the project.

4. Several revisions will be necessary to finalize the soundscape/project as an outcome.

5. At the end of the course, participants fill out questionnaires about their experiences. For most of the students, this is their first sound-based experience. They underline how shut-

2
Sensory lecture from the course Listening, Communication and Creativity (QR code 1).

Fig. 1
Architecture students participating in multisensory experiences, Matera © S. Kuhtz.

Fig. 2
Design students participating in multisensory experiences, Florence © S. Kuhtz.

Fig. 3
Blind walking and listening (from top to bottom: students of the Politecnico di Bari, undergraduate and Ph.D. students from the Università degli Studi della Basilicata, Matera) © S. Kuhtz.

Fig. 1

Fig. 2

Fig. 3

ting their eyes opened their eyes to design: now they grasp what it means when the designer designs for fully sensing individuals and not just for vision. They found that sight somehow isolates us: when we see others, fear of embarrassment makes us less free to experience life. The sense of sight implies something external, whereas sound (linked with the tactile, smell and taste) induces an experience of reflection, and a deeper understanding of the human relationship to body and space. Thus, students learned that vision can somehow limit an experience, whereas sound may enrich it. Finally, students stated that they felt more connected to one another. These questionnaires encouraged the research and the experimentation in that this training not only prepares students of design for deep listening, but also, as a result, for better designing.

6   **Tab. I** describes the main steps of the method.

Sensory phases	Actions/guidelines	Outcomes

Phase one
Students engaged in sensory games
 	
Materials: pen, paper, notebook, pencil, a foulard
 	
Indoors
 	
3 to 6 hours
	• Blindfold without any previous preparation
	• Guidelines:
	  • Pay attention to close and distant sounds, to the sound of your breath, to the sounds of the place itself, of this class
	  • Listen to the sounds/music and noise that will be played
	  • Take mental notes of your bodies, your feelings, emotions, moods, perceptions
	  • Draw what you imagine is in front of you on your paper notebook
	  • Take the foulard off and write down all the impressions
		Students feel engaged
		
		Develop sensory skills
		
		Listen to the world in a broad sense, leading to greater trust and creativity
		
		Acquire a new point of view
		
		Write notes on perceptions
		
		Share points of view, learn to verbalize, describe the experience
		
		Prepare for the following session, having embodied the experience
		
		New Questions

Phase two Walking and sensing Outdoors up to 6 hours	• Guidelines/materials as phase one • In addition: explore the place, observe, touch, draw, write perceptions • Find a companion for the blind walk • While walking, focus your attention on small things, touch the ground, the trees, what smell is around? • While walking, ask yourself what is beauty for you? • Expand touch, sound and body experiences • Take the foulard off and write down all the impressions, also in a creative poetic form	Student socialization Development of mutual trust Deepen perception of space Written essays/poems Definitions of beauty Different views shared, adjustments to verbalizing, describing the experience Prepare for the following session, having embodied the experience
Phase three Create groups 3 to 6 people 3 to 6 hours	Gather experiences, recordings, and collect materials for a final outcome	Teams created Draft of the outcome Shared ideas There is space for the team work
Questionnaires	• What did you gather from this sensory design experience? • Write freely your impressions, perceptions, gains, pros and cons	

Tab. I
Main steps of the sensory design method.

In summary, body equals senses, attention to senses equals novelty, critical thinking, sometimes even embarrassment and shared experience. The same place can give us different perceptions, depending on how and where one is with their body.

In 2019 (Schröder et al., 2019), the general theme of training for future architects was the city of Matera, a UNESCO heritage site since 1996. The aim of the training was to find a way to evoke old/new atmospheres, both in contemporary urban spaces, and in the traditional countryside and old living styles. The first-year students designed both the soundscapes and their fruition decks. All the project ideas took one aspect of Matera's history and brought it back to the present. The sound installations created after phase three (which may be found in QR code 2[3]) are related to the 5 soundscapes designed by the students. They offer sound-narratives about Matera and represent a pilot study of how to integrate perception into the design of a city. The environmental perception of an architectural atmosphere goes far beyond visual spatial perception and refers to a more complex experience which counts on all the senses, including touch, smell, positional awareness, balance, sound, movement, curiosity and the memory of previous experiences. A space can be understood and appreciated through its acoustic resonance as much as through its visual shape.

Walking and Listening as a Participatory Practice

Encouraging people to imagine and appreciate the uniqueness of their surroundings through all of their senses fosters a deeper connection and appreciation even of a run-down area. Imagination and participatory heritage have the potential to be particularly powerful in peripheral areas, often marginalized and excluded from mainstream cultural institutions and narratives (Kuhtz, 2019). In peripheries, deep listening and immersive experiences are valuable, as they make it possible to go beyond typical complaints that generally do not solve problems in marginal areas. Hildegard Westerkamp, who studied with Schafer, underlined in an interview:

> A soundwalk is a wonderful discovery of certain places of the city. You are not only discovering the sounds, but you are present, you are seeing, smelling, hearing things you normally do not in your daily life. That kind of experience grounds you much more in your community and living space, having a very positive impact, because it just grounds you a bit more to where you live (Murph, 2018).

In particular, in different neighbourhoods the author focuses on walks intertwined with audio-sensory games, sensuous-scape practices, where a fundamental element of the experience is the possibility to encounter different people, residents, inhabitants, tourists. Since the 1970s, Hildegard Westerkamp (1974) has defined as soundwalk any excursion whose main purpose is listening to the environment.

Sensory workshops entitled Inhabit Poetically the City are sound-walks that take place in order to understand what the neighbourhood community but other stakeholders as well feel about a place, and are also designed to transform the atmosphere. The workshop format is developed based on the study of an itinerary and a map, which is then provided to the participants. The idea is to travel through the neighbourhood on lesser-known, off-the-beaten-track routes and listen to the place/city. Some experiences are designed in advance for the participants, following the phases of Tab. I: sensory games, blind walking, listening while writing, shared moments of reflection on beauty. Other experiences can be improvised, depending on what happens in the moment.

When walking, the urban environment is transformed into a landscape; it is visible and perceivable, and yet also invisible. By walking, one can experience reality using all the senses, making the city known through immersion and contact.

A series of sensory workshops like these were carried out in Conversano, Puglia, and in Matera, Basilicata.

Conversano, Bari, Italy (2021 and 2022)

The local Municipality asked for a sensory experience of both a specific peripheral area and of the city centre.

Here the tracks audible via QR codes, are the soundscapes resulting from the experiential labs with the residents. In a striking turn of events, residents who were highly critical of their neighbourhood seemed to have a collective awakening. The sensory experience acted as a catalyst, helping them identify positive aspects they had not noticed before.

In the tracks/soundscapes connected to QR codes 3[4] and 4[5] participants developed their reflection on the experience of the place, the ugliness/beauty they met during the workshop, and recorded their voice reading their own definition of beauty. The track is mixed with some of the sounds recorded during the workshop-days and the sax that was played by a musician in the group.

Matera, Italy (2022-2023)

In Matera, the author and her team conducted similar workshops with residents of a social housing estate as part of a participatory urban greening project called URGES (Urban Green Shapes), a collaboration between the university and the local Municipality. The difference with the previous example was the longer timeframe. The interaction with the residents could not be just a phase in itself, limited in time, but was the continuous thread woven throughout the whole process.

During the workshops, residents explored the area: for example they had to sit on a hill inside the local public park and imagine new possibilities, while also perceiving the park through their other senses, blindfolded. The workshops emphasise the importance of experiencing the world through all the senses, rather than relying solely on vision. Through listening games, participants explore how emotions can provide insights into the qualities of a place through walking and deep listening Fig. 4 and 5 (Kuhtz & Tizi, 2023).

4
Workshop Inhabit Poetically Conversano, periphery soundscapes (QR code 3).

5
Workshop Inhabit Poetically Conversano city centre soundscape (QR code 4).

A periphery can become a sensory experience, a generating void, filled with sounds, emotions, stories and voices. Atmosphere is also created by the shared experience.

Fig. 6
House concerts and dancing in the common area of a social housing estate, Matera © urges.

House concerts in the same place added another layer to the novelty, Fig. 6. Interviews both with the professionals involved and the inhabitants were carried out at the beginning and at the end of the experience.

QR codes 5[6] and 6[7] bring the reader to two different videos that document the workshops with the residents. The neighbourhood walks were designed to understand and enhance the specific points of view of those who live in that area, with moments of poetic reflection. The workshops were also an opportunity to experiment everyday places in a new way, by temporarily limiting the visual channel with blindfolds and activating hearing and smell, to connect with the context through new forms of environmental perception. Amongst the different experiences there was also a neighbourhood party attended by the authorities and the Matera Marching Band, which, for the first time, marched through the streets of this part of the city, adding a new sound to the landscape.

One of the residents in the interview exclaimed, "This is how the magic of living here is created. It takes little, and it takes a lot of effort at the same time."

Conclusions

The relationship between body, senses, atmosphere, and design necessitates a multifaceted approach to be fully understood. Understanding atmospheres requires going beyond sight and employing a multisensory register. How bodies experience spaces and their atmospheres through all the senses therefore becomes a crucial element for designers.

Training for designers can be constructed with a view to prioritize multisensory experience over purely visual representations. Instead of solely concentrating on how designs are rendered visually, a closer examination of the multisensory gestures that inform a sensory approach is of critical importance. This shift in focus allows for the creation of projects that resonate beyond the visual, engaging body and senses.

The fact that there is a lack of scholarly attention directed towards the numerous ways in which the senses influence human beings, not to mention designers, should only encourage further research.

Textures, scents, and the weight of materials evoke a deeper emotional resonance than mere shapes. This paper focuses on academic practices and training for designers in Italy that transcend disciplinary boundaries and engage multiple senses. The research also highlights the potential of sensory experiences in reviving and unveiling atmospheres as social design strategies.

A multisensory approach is not the ultimate answer to the complex problems encountered in design but contributes to fostering a deeper understanding of place and to promoting the well-being of communities.

Does sensory experimentation with people expand their understanding of a city/territory/landscape? How do sensory experiences modify people's perception of their condition and well-being?

These questions leave room for further investigation in that if it is true that an atmosphere is constructed by the people who use the place and by their mutual interactions, their relationship with the space, with their senses, and their moods, it is also true that feelings/emotions/moods are not measurable and change over time.

Integrating sensory awareness into the education of architecture/design students enriches their skillset and empowers them to craft more impactful and engaging experiences. The power of imaginative anticipation and inclusive social engagement holds immense symbolic and transformative value, one worth reflecting on, as done through the research presented in this paper, precisely because of its potential application.

Silvana Kühtz
She has a multi-disciplinary background: PhD at Imperial College of Science (University of London, UK), Master Course in Communication, degree of Engineering at the Politecnico di Bari (Italy), Theatre certificates. Senior Lecturer and Researcher in Design, she teaches Communication and Creativity in the Architecture and Landscape Architecture programmes, Università degli Studi della Basilicata, Matera; she is an Adjunct Professor of Basic Design at the Università di Firenze. Her research activities combine sensory and performative approaches for social design, social innovation, co-design practices.

References

Algargoosh, A., Soleimani, B., O'Modhrain, S., & Navvab, M. (2022). The impact of the acoustic environment on human emotion and experience: A case study of worship spaces. *Build Acoustics*, *29*(1). https://doi.org/10.1177/1351010X211068850

Auinger, S. (2017). *Quiet Is the New Loud*. Invisible Places 7–9 April. São Miguel Island, Azores, Portugal. http://invisibleplaces.org/2017/pdf/Auinger.pdf

Bateson, G. (1979). *Mind and Nature. A necessary unit*. Dutton.

Bild, E., Coler, M., Pfeffer, K., & Bertolini, L. (2016). Considering Sound in Planning and Designing Public Spaces: A Review of Theory and Applications and a Proposed Framework for Integrating Research and Practice. *Journal of Planning Literature*, *31*(4), 552–558. https://doi.org/10.1177/0885412216662001

Cain, R., Jennings, P., & Poxon, J. (2013) The development and application of the emotional dimensions of a soundscape. *Appl Acoust*, 74, 232-239. https://doi.org/10.1016/J.APACOUST.2011.11.006

Di Croce, N. (2020). La politica degli affetti nell'atmosfera urbana. Ambiente sonoro e autenticità nei mercati storici di Palermo. *Sociologia e ricerca sociale*, 122, 130-150. 10.3280/SR2020-122007

Djimantoro, M. I., Martokusumo, W., Poerbo, H. W., & Sarwono, R. J. (2020). The Historical Soundscape Analysis of Fatahillah Square, Jakarta. *Acoustics*, *2*(4), 847-867. https://doi.org/10.3390/acoustics2040048

Gallese, V., & Gattara, A. (2015). Embodied simulation, aesthetics and architecture. An experimental aesthetic approach. In S. Robinson, & J. Pallasmaa (Eds.), *Mind in Architecture: Neuroscience, Embodiment and the future of Design* (pp. 161-179). MIT Press.

King, E. A. (2022). Here, There, and Everywhere: How the SDGs Must Include Noise Pollution in Their Development Challenges, Environment. *Science and Policy for Sustainable Development*, *64*(3), 17-32. 10.1080/00139157.2022.2046456

Korkontzila, A., Karapostoli, A., Tsaligopoulos, A., & Matsinos, Y. G. (2020). Assessing the Effects of Noise on Sound Identities of Historical Landmarks. *Acoustics*, *2*(4), 719-734. https://doi.org/10.3390/acoustics2040039

Kühtz, S. (2019). Senses and beauty in the built space – The legacy of perception. *Abitare la Terra Dwelling on Earth*, *50*(3), 52-53.

Kühtz, S., & Gallinari, L. (2017). *Linguaggi, futuro e possibilità. Dell'avventura del pensare, delle mirabili cose che le parole fanno accadere e altre stravaganze*. SECOP.

Kühtz, S. (2022). Sensoriality, Arts, Poetry, and Sustainability. In W. Leal Filho, A. M. Azul, F. Doni, & A. L. Salvia (Eds.), *Handbook of Sustainability Science in the Future*. Springer. https://doi.org/10.1007/978-3-030-68074-9_65-1

Kuhtz, S., & Tizi, L. (2023). Abitare poeticamente il Sud. Retoriche e possibilità. *Tracce Urbane - Rivista Transdisciplinare di Studi Urbani*, *9*(13), 266-296.

Levin, M. D. (Ed.). (1993). *Modernity and the hegemony of vision*. University of California Press.

Li, Z., & Kang, J. (2019) Sensitivity analysis of changes in human physiological indicators observed in soundscapes. *Landsc Urban Plan*, 190, 103593. https://doi.org/10.1016/J.LANDURBPLAN.2019.103593

Lupton, E., & Lipps, A. (2018). *The Senses: Design Beyond Vision*. Cooper Hewitt, Smithsonian Design Museum and Princeton Architectural Press.

Mallgrave, H. F. (2013). *Architecture and Embodiment. The implications of the new Sciences and Humanities for Design*. Routledge.

Merleau-Ponty, M. (1968). *The visible and the invisible: followed by working notes*. Northwestern University Press.

Murph, M. E. (2018). *Max Neuhaus, R. Murray Schafer, and the challenges of noise* (Publication No. 118). [Doctoral dissertation, College of Fine Arts, Univ. of Kentucky, Theses and Dissertations]. https://doi.org/10.13023/etd.2018.233

Nixon, P., Milligan, A., McIntosh, L., & Baikie, K. (2008). Drawing Sounds. In A. Clarke, M. Evatt, P. Hogarth, J. Lloveras, L. Pons (Eds.), *Proceedings of E&PDE 2008. 10th International Conference on Engineering and Product Design Education, Barcelona, Spain, 4/5 Sept.* (pp. 252-258). E&PDE.

Pallasmaa, J. (1994). An architecture of the seven senses. In S. Holl, J. Pallasmaa, & A. Perez-Gomez (Eds.), *Architecture and urbanism: Questions of perception: Phenomenology and architecture* (pp. 27–37). Architecture and Urbanism Publishing Co.

Ponti, G. (1957). *Amate l'architettura. L'architettura è un cristallo*. Rizzoli.

Schafer, R. M. (1967). *Ear Cleaning*. BMI Canada.

Schafer, R. M. (1977). *The Tuning of the World*. Alfred Knopf.

Schröder, J., Cappeller, R., Rizzi, C., & Kühtz, S. (2019) *Matera Soundscapes: Design Research Workshop* (Englisch). Leibniz Universität Hannover Regionales Bauen + Siedlungsplanung.

Spence, C. (2020). Senses of place: architectural design for the multisensory mind. *Cogn. Research*, 5, 46. https://doi.org/10.1186/s41235-020-00243-4

Westerkamp, H. (1974). Soundwalking. *Sound Heritage*, *III*(4).

Wrightson, K. (2000). An Introduction to Acoustic Ecology. *Soundscape*, *1*(1), 10-13.

Zumthor, P. (2006). *Atmospheres – Architectural Environments – Surrounding Objects*. Birkhäuser.

83

The Open Debate section explores research on the relationship between design practices and the concept of *civis* encompassing both physical spaces and digital territories, networks, systems, and urban forms. Design plays a key role as a mediator across disciplines, leveraging co-design to engage citizens and stakeholders in creating and testing services and products. The importance of a systemic approach is emphasized, highlighting design's growing relevance in addressing complex societal challenges through deep, context-specific solutions: from Service Design for the Public Sector to the development of responsible planner systems in China, from scenario building that encourages community engagement to new sensory training for design/architecture and local-based NetZero city strategies.

The Section highlights the importance in addressing the increasing complexity of interactions with products and systems, facing political, economic, and legal constraints.
Flaviano Celaschi

Bologna
University Press