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Mediating sonic worlds: Critical approaches to boundary objects in Sound-Driven Design

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Editorial: Mediating sonic worlds: Critical approaches to boundary objects in Sound-Driven Design

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1. Sonic Boundary Objects in Design Research

This theme track for DRS 2026 Edinburgh critically examines boundary objects – work arrangements, artefacts and representations facilitating cooperation across diverse social groups (**Star, 2010; Boujut and Blanco, 2003**) – at the intersection of sound and design. Our fundamental question is: how effectively can objects informed or defined by sound and listening fulfil this important role in design (**Tharchen, Garud, Henn, 2020**)?

Sound-driven design (**Delle Monache, Misdariis, Özcan, 2022; Delle Monache, Özcan, Misdariis, 2024**) addresses complex socio-technological challenges induced by sound to design for sonic habitability: positive auditory experiences that enhance well-being, foster social connection, and promote a more harmonious relationship between humans, their technologies, and their environments (**Findeli, 2010**).

Sonic boundary objects leverage sound and listening to structure information and bridge perspectives among different communities of practices. By telling stories, enhancing performance or creating a setting, annotated sounding prototypes, experiential sound maps, audio segments or sonic sketches, semantic portraits, etc. (**Rocchesso, Delle Monache, Barrass, 2019; Susini et al., 2024**) contribute to transmit, preserve and receive oral know-how. They act as mediators between ill-structured ideas and specific solutions, empowering



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diverse groups of listeners to align understanding, cooperate and mobilise action (**Grond, and Devos, 2016; Özcan et al., 2022**).

However, a critical lens is essential. How do the ephemeral and subjective qualities of sound challenge the stability required for a boundary object to have a common identity? How do boundary objects shape listening instead? What methodologies effectively capture and represent sonic experiences for genuine shared understanding without oversimplification? How do power dynamics and work arrangements influence the creation, interpretation, and use of sonic boundary objects?

As established in our call, sound often presents an "ill-structured" problem due to its ephemerality and the diverse "social worlds" it inhabits—ranging from urban planning and service design to creative technology and healthcare. By positioning sound in the construction of boundary objects, we explore how it facilitates "work arrangements" that bridge these worlds, moving from broad, abstract aspirations to tailored, actionable design interventions.

The contributions in this track are divided into two thematic sections: those focusing on the conceptual and theoretical development of these objects, and those demonstrating their efficacy in applied design contexts.

2. Sonic Boundary Objects Under Construction

The first section examines the foundational frameworks that explain how sound is stabilised into a collaborative tool. Central to this is the work of **Delle Monache et al. (2026)**, who propose the term "Soundary Objects." They argue that the stability required for collaboration arises from the "plasticity of listening," where stakeholders construct shared meaning through situated interpretation rather than the sound wave alone.

This conceptual stabilisation is further explored through metaphor and infrastructure. **Collins (2026)** demonstrates how speculative sonic metaphors—drawing on nature and emotion—allow designers to mediate shared understanding for objects that do not yet exist. In a more geopolitical context, **Rivero and Offenhuber (2026)** examine how sound translates the "bureaucratic infrastructure" of the U.S.-Mexico border into embodied encounters. Their work shows how sonic artifacts function as boundary objects by reframing rigid borders as spaces of "sonic habitability" and collective sense-making introducing auditory conditions that reframe relations among human, technological, and environmental actors.

The material parameters of these objects are refined by **Cera et al. (2026)**, who use a unified set of "intrusive" urban sounds to bridge scientific experiments, artistic installations, and app design, proving that a shared sonic palette can structure diverse informatic needs. **Ward and Taylor (2026)** highlight the "attunement" required in human-machine collaboration. Through the *Soul Song Sensorium*, the wearable instrument becomes a boundary object negotiating the tensions between artistic intention and the unpredictable behaviors of creative technology. Finally, from a complementary angle, **Agraway et al. (2026)** draw on design anthropology and ethnomusicology to demonstrate the participatory and cultural value of Indian folk music as a co-designed cultural artefact encoding multiple layers of meaning while maintaining community-specific coherence.

3. Sonic Boundary Objects in Action

The second section shifts focus to how these boundary objects operate within specific design ecologies to catalyse change and facilitate sensemaking. In the realm of exhibition design, **Kirkegaard (2026)** introduces the "Atmosphere Jukebox," a device that allows heterogeneous teams—curators, historians, and architects—to negotiate sonic atmospheres. This challenges the "visual-first" bias in museums and supports a shared imagination of visitor journeys. Similarly, **Riva and Zhang (2026)** reframe sonic boundary objects as "bindings" within narrative exhibitions, using oral stories and local community sounds to promote social inclusion and mutual understanding.

The application of sound extends into the systemic and personal. **Kuštrak Korper and Rodrigues (2026)** explore the representational capacity of sound in service design. Their framework demonstrates how auditory prototypes assist in collaborative sensemaking for complex service situations, regardless of the participants' sound-design expertise. In the sensitive context of healthcare, **Choubey et al. (2026)** use participatory workshops to bridge the gap between designers and users. By mapping the contextual factors of sleep through sonic ideation, they transform a deeply personal, "ill-structured" experience into a series of tangible design prompts.

Finally, **Enge et al. (2026)** ground these actions in the material phenomenon itself. By introducing "autographic sonification," they argue for a design process that starts with the phenomenon's self-inscription. This ensures that the resulting data is treated as a material trace rather than an abstract reference, reinforcing the boundary object's connection to the physical world.

4. Conclusion: Sonic artefacts as boundary objects for design

The contributions within this theme track directly address our fundamental question: **how effectively can artefacts and representations informed or defined by sound and listening fulfill the role of boundary objects in design?** As demonstrated throughout these sessions, while the ephemerality and subjective qualities of sound pose a challenge to the "stability" usually required for a common identity, they also offer a unique form of "interpretative flexibility." The researchers here have shown that stability is not found in the acoustic wave itself, but through the "plasticity of listening" and the design of shared lexicons, speculative metaphors, and material traces.

The contributions above suggest that sonic boundary objects and the bindings they offer do more than just bridging perspectives; they actively **shape how we listen** and **how we communicate about sound-relevant concepts**. They provide the necessary "work arrangements" for diverse social worlds—urban planners, healthcare providers, and local communities—to align their understanding without oversimplifying the complex sonic experience. Furthermore, these contributions remind us that the **empowering quality** of sonic boundary objects is inherently woven into these work arrangements. By utilizing methodologies such as participatory ideation, designers can capture sonic experiences in ways that facilitate dialogues amongst diverse groups to mobilise action and negotiate

shared space. Thus, sound can become 'designed' even in its physical absence as the substance of sound would be represented in the work arrangements of sonic boundary objects.

Ultimately, by transforming sound from an ephemeral afterthought into robust artefacts and representations for cooperation and collaboration, we move from broad, abstract aspirations toward a tangible "sonic habitability." This track establishes that narratives regarding sound (i.e., depiction of the broader impact and relevance of sound beyond its immediate use) are essential design tools that foster social connection and promote a more harmonious relationship between humans, their technologies, and their environments. At DRS 2026, we invite you to engage with these sonic boundary objects as the vital materials through which we co-create a more sound-conscious and inclusive future.

Acknowledgements: This track represents an ongoing initiative of the DRS Sound-Driven Design SIG. As part of this broader effort, we wish to specifically recognise the Symposium on Sound-Driven Design¹, hosted at Ircam in September 2025. While organised concurrently with this track, the symposium provided a vital space for the early reception and shared exploration of the themes culminating here in Track 12.2 at DRS2026. We extend our gratitude to all the organising partners of the Symposium, the participants for enriching those early dialogues, and to the authors contributing to this track for broadening and evolving these concepts.

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Stefano Delle Monache works on practices, methods and representations for sound-driven design, especially in collaborative, multi-stakeholder settings. He investigates appropriate sound-driven research methodology instrumental to contribute to the understanding of the embodied and multisensory nature of design.

Nicolas Misdariis investigates the design process at the intersection of environmental sound and soundscape perception, auditory display, human-machine interfaces and interactive sonification. The research collaboration with industrial stakeholders provides the ground for a systematic inquiry of the real-world sound design practice through action research projects.

Elif Özcan works on sound-driven design and research in the fields of mobility, space operations and healthcare. She explores how to shape the sounds and soundscapes of complex environments with multiple listeners and multiple sound sources. Her connections to industry and expertise in sound-driven research makes her approach both fundamental and applied.

Daniel Hug is a sound and interaction designer, co-director of the Master's program in Sound Design at the Zurich University of the Arts and an international lecturer in sound studies and sound design. His work explores sound design for health technology and movement, audio communication, sound design methodology, and participatory sound design processes.

Sara Lenzi is a sound designer who enjoys incursions in sound art, and an activist on the importance of sound in communication. She investigates data sonification design and the use of sound to gather insights on datasets and complex phenomena.

Sandra Pauletto works at the intersection of sound and music computing, media production, sound design, sonic interaction design and sonification. She explores sonic augmentation possibilities often with a focus in sustainability and health, and investigates the transfer of established sound production practices to develop novel sound design tools.

Davide Rocchesso is interested in sound modelling, interaction design, and multisensory perception and action. His focus on research-through-design practices in continuous multisensory interaction is aimed at developing sound synthesis models that are perceptually coherent, efficient, and controllable. He has led international research projects on sound modelling, sonic interaction design, and sonic sketching.

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