

Small-Scale, Big Impact

Regenerative and Sensory Potential for SMEs

Paulo Eduardo Tonin^{*1,2}, Marinella Ferrara¹, Elton Moura Nickel²
¹Politecnico di Milano (Italy), ²Universidade do Estado de Santa Catarina (Brazil)



1 Introduction

Escalating ecological crises demand more than harm mitigation – they call for regeneration

(Reed, 2007)

Design must actively restore both ecological and human systems. This study links **regenerative** and **sensory design** in the **built environments** of **SMEs** – especially **retail** and **exhibition** built environments



Source: Authors (2025)

The Second Skin: an Exhibition by Aesop at Milan's Design Week 2025

- While often applied at large scale and big companies (e.g. Aesop), **sensory** and **regenerative strategies can work in smaller settings**. The proposed approach draws on systems thinking, ecological restoration, and multisensory engagement – offering **practical, theory-based guidelines**
- SMEs face barriers**: limited budgets, lack of technical expertise, and short-term operational pressures (du Plessis, 2012; OECD, 2024). **Sensory design is underused**, with untapped potential for richer, embodied experiences

This **multidisciplinary** exploratory research is based on a **state-of-the-art** literature review, integrating academic frameworks from different fields of knowledge such as **Design, Architecture, Psychology, Phenomenology** and **Economy**

Regenerative Design + Sensory Experience

2 Literature Review

Regenerative Design + Sensory Experience: Engaging the Full Human Perception and Going Beyond Sustainability

- Cradle to Cradle** (McDonough & Braungart, 2002) envisions circular material systems and design as a force for ecological benefit. **Lyle** (1994) frames regeneration as a systemic process – mimicking natural functions to restore ecosystems
- Benyus** (1997) and **Capra** (1996) promote *biomimicry* and *systems thinking*, aligning design with nature's logic. **Shared vision**: regeneration is **not repair** – it's creating conditions for life to thrive
- Key contributions**: integration of **Sensory design**
According to **Pallasmaa** (2005) and **Malnar & Vodvarka** (2004), an overemphasis on vision has reduced spatial richness. **Sensory design activates all senses** – sight, sound, smell, touch, and taste – to foster emotional resonance, spatial awareness and well-being
- In **retail and exhibitions**, these qualities are crucial: user experience shapes both perception and memory (Merleau-Ponty, 1962; Erwine, 2017). Olfactory cues **prolong engagement** and enhance emotional memory; tactile elements improve interaction and spatial understanding. **Norman** (2004) confirms that emotionally engaging environments are seen as more usable, memorable, and trustworthy

3 Results

Synthesizing the insights obtained through the literature review, the study proposes **practical guidelines tailored to SMEs** (Table 1)

Recommendations include biophilic **interventions** (e.g., natural materials, daylight, ventilation), circular practices (e.g., reclaimed materials, modular components), and multisensory strategies (e.g., ambient scents, tactile surfaces, adjustable lighting)

Guideline Category	Regenerative Focus	Sensory Focus	Implementation
Use of Materials	Reclaimed, local, or biodegradable materials	Tactile surfaces, natural textures	Wooden crates, recycled textiles, vintage elements
Atmosphere Creation	Biophilic elements, natural light	Scent curation, ambient sounds, lighting adjustments	Herbs, essential oils, sound playlists
Modularity and Reusability	Foldable, recyclable structures	Adaptable visual and textural components	DIY modular stands, reused plywood, handmade signage
Community Engagement	Co-created installations, local partnerships	Local scent and soundscapes, participatory sensory elements	Workshops, customer-submitted memories
Educational Integration	Product life cycle transparency	Interactive sensory storytelling	Ingredient displays, QR-coded info stations

Table 1. Integrative Guidelines for Regenerative and Sensory Design in SME Environment

4 Conclusion

Design & User Connection

- The guidelines can indicate essential design features for interaction and ecological alignment
- Herbs & essential oils**: therapeutic and olfactory value
- Modular displays**: adaptability and material reuse
- Participatory elements** (e.g., user-submitted memories): anchor design in collective experience, strengthening spatial identity and emotional relevance

Regeneration in Practice

- Environmental and embodied regeneration**: native vegetation, living walls, and closed-loop water systems boost biodiversity and building performance. Regenerating through the senses.
- Social & cultural regeneration**: inclusive, community-oriented, and culturally sensitive sensory interventions
- Reed (2007): regenerative practice must be **collaborative and context-specific**, engaging local communities and ecosystems.
- Education is key**: building systems literacy among designers, business owners, and employees
- Implementation tools**: low-cost training, open-access toolkits, local supplier partnerships, and circular networks – enabling SMEs to adopt regenerative and sensory principles affordably

Aesop
The Second Skin

- Regenerative** gestures: slowness, tactile engagement, and mindful presence
- Sensory** immersion: handwashing ritual, cedar wood, and layered fragrances
- Restorative environment that heals, attunes, and deepens spatial connection

Conclusion & Impact

- As design shifts from **extractive** to **regenerative**, **SMEs are uniquely positioned to drive innovation**. Their agility and local embeddedness allow for solutions that are environmentally restorative and experientially meaningful
- This study delivers a conceptual and practical approach** – integrating regenerative and sensory design to create spaces that nurture biodiversity, cultural identity, and human well-being

Benyus, Janine. 1997. *Biomimicry: Innovation Inspired by Nature*. New York: HarperCollins. Capra, Fritjof. 1996. *The Web of Life: A New Scientific Understanding of Living Systems*. New York: Anchor Books. du Plessis, C. (2012). Towards a regenerative paradigm for the built environment. *Building Research & Information*, 40(1), 7–22. Erwine, Barbara. 2017. *Creating Sensory Spaces: The Architecture of the Invisible*. New York: Routledge. Lyle, John Tillman. 1994. *Regenerative Design for Sustainable Development*. New York: Wiley. Malnar, Joy Monice, and Frank Vodvarka. 2004. *Sensory Design*. Minneapolis: University of Minnesota Press. Merleau-Ponty, Maurice. 1962. *Phenomenology of Perception*. Translated by Colin Smith. London: Routledge & Kegan Paul. Originally published in 1945. McDonough, William, and Michael Braungart. 2002. *Cradle to Cradle: Remaking the Way We Make Things*. New York: North Point Press. Norman, Donald A. 2004. *Emotional Design: Why We Love (or Hate) Everyday Things*. New York: Basic Books. Organisation for Economic Co-operation and Development (OECD). 2024. *Which SMEs Are Greening?* SME and Entrepreneurship Papers. Pallasmaa, Juhani. 2005. *The Eyes of the Skin: Architecture and the Senses*. Chichester: Wiley. Reed, Bill. 2007. "Shifting from 'Sustainability' to Regeneration." *Building Research & Information* 35 (6): 674–680.

