



# Living and Sustainability: An Environmental Critique of Design and Building Practices, Locally and Globally

## Abstract / Initial Proposal Form:

### 1. Paper / Proposal Title:

Ecologies of breathing. Le Corbusier, Siegfried Ebeling, and the building as skin

### 2. Format:

Written paper | Oral presentation

### 3. Author(s) Name:

Matina Kousidi

### 4. University or Company Affiliation:

Department of Architecture and Urban Studies, Politecnico di Milano, Italy

### 5 Abstract (300 words):

In the early decades of the twentieth century, the growing demand for the insulation of the proliferating glass envelopes and the ventilation of the spaces found therein, brought into question the regulating potential of the building exterior. To this enquiry, Le Corbusier responded with the "*respiration exacte*" and "*mur neutralisant*" techniques, aiming to infuse 'living air' into the double outer layer of the building – as his 1935 essay

"Glass, The Fundamental Material of Modern Architecture" suggests. For him, the adaptation of glass walls to their surrounding environment was "simply a question of the lungs" (Le Corbusier 1935) – breathing, responding, regulating. But Le Corbusier was not alone in exploring the performance of the building exterior as a breathing system. A few years earlier, the Bauhaus-alumnus Siegfried Ebeling developed his concept of the "breathing wall-skin [*Wandhaut*]" – a skin which articulated his vision of an energy-efficient, naturally-lit and porous building envelope. By comparing constructed space to the physiological membrane [*Raum als Membran*], in his homonymous 1926 essay, Ebeling accentuated the environmental significance of building and the necessity to accentuate the physiological aspect of architecture.

Due to an ongoing exploration into the potential of the architectural surface – in mediating between interior and exterior space, human dynamics and the environment at large –, contemporary architecture continues to borrow extensively meaning from the physiology of breathing; "it's alive!" exclaims, for instance, a recent project of Arup that challenges one to imagine "a public building that has a sensitive and multifunctional skin" (Hargrave 2013). Although the building exterior is being nowadays increasingly characterized as a breathing skin, the historical and theoretical contexts of such metaphor remains obscure and will be here further explored, along with its ability to enhance the perception of the built artifact, to interpret the materiality of space and to anticipate forthcoming design phenomena.

#### **6. Author(s) Biography (200 words each):**

Matina Kousidi is currently exploring the genealogies of the membrane notion in the nineteenth- and twentieth-century architectural discourse and the significance of the biological analogy for the evolution of architectural performance. She is a Research Associate at the Department of Architecture and Urban Studies, and an Adjunct Professor at the School of Architecture, Urban Planning and Construction Engineering, of the Politecnico di Milano. Previously, she held a postdoctoral position at the Institute for the History and Theory of Architecture gta (ETH Zurich), sponsored by a Swiss Government Excellence Research Scholarship.

She has conducted research stays at the Dessau Institute of Architecture (HS Anhalt), supported by a DAAD Scholarship, the University of the Arts London and the Institute for Research in Art and Design (FHNW Basel). Matina is a registered architect in Athens, Greece; she holds a PhD degree in architecture from Sapienza University of Rome and a postgraduate diploma in architecture from the National Technical University of Athens. Her work has been published in various architecture, art and design history

journals, such as *The Architectural Review*, the *RIHA Journal* and *the International Journal of Interior Architecture and Spatial Design*, and presented at various conferences and academic institutions across Europe. <[matinakousidi.com](http://matinakousidi.com)>