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Designing empathies Architectural spaces between perception and operativity

Abstract

This paper develops the notion of designing empathies in order to rethink architectural space between perception and operativity. Starting from Peter Zumthor's Atmospheres (2006) and his claim that architectural quality lies in a building's capacity to "move" us, the argument reframes being emotionally touched as the threshold between embodied reception and projectual intention. The first part reconstructs a genealogy from Einfühlung (Vischer, Lipps, Wölfflin) to twentieth-century pedagogies (Moholy-Nagy, Bauhaus) and contemporary theories of embodied simulation (Gallese, Rizzolatti), showing how architecture is experienced through bodily mimicry, affective resonance, and sensory participation. The second part situates these insights within neo-phenomenology and atmospherology (Schmitz, Griffero, Böhme), where atmospheres appear as quasi-objective, spatialized feelings that seize the felt body and structure lived space beyond metric description. Through Zumthor's design principles and further examples (Le Corbusier's polychromy; Picon and Ratti's sensory cartographies), the paper argues that atmospheres can be approached as operative design principles: not fully controllable effects, but staged conditions—light, materiality, sound, thresholds, rhythms—through which experience emerges without being predetermined.

Keywords

Empathy, Pathic aesthetics, Atmospheres, Architectural operativity

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On 1 June 2003, Peter Zumthor was invited to Germany to *Wege durch das Land (Paths through the Countryside)*, a travelling festival of literature and music. He delivered a lecture at Wendlinghausen Castle titled *Atmospheres. Architectural Environments – Surrounding Objects*. Published in 2006, *Atmospheres* represents a fundamental theoretical, methodological, and aesthetic contribution to the elaboration of the concept of atmosphere in architecture. It is probably the first attempt in more than thirty years of reflections on the role of atmospheres and pathetic aesthetics in the architectural discipline to address this issue from a design-oriented perspective.

The reflection developed by Zumthor starts from the qualitative question of architecture: “Quality architecture to me is when a building manages to move me” (Zumthor 2006: 11). Being emotionally touched by a building would express its quality, that is, the very purpose for which it was designed and built. The qualitative dimension in this case would depend on an aspect that goes beyond form but “enters into us”, into our emotional and organic intimacy. In this regard, we should divide this claim into two parts: 1) first, the condition of being emotionally touched, and 2) second, the consequent quality that derives from it.

This distinction raises a broader theoretical question that remains largely unresolved within architectural theory. If architectural quality depends on the capacity of a space to affect us emotionally, can such affective conditions be intentionally designed? Or should atmospheres be understood merely as contingent perceptual effects that emerge independently of design intentions? The debate is far from settled. While several phenomenological approaches have emphasized the autonomy and irreducibility of atmospheres, architectural practice repeatedly suggests that designers consciously work through light, materials, colors, sounds, temperatures and spatial configurations to shape specific affective experiences. Starting from this tension, the present paper argues that atmospheres can be conceived not only as perceptual phenomena but also as designable conditions of architectural experience.

To address this question, it is first necessary to distinguish two different traditions of affective thought. While the empathic tradition (*Einfühlung*) explains how subjects project feelings onto forms, pathetic aesthetics and neo-phenomenology investigate how affective qualities emerge as atmospheres that exceed the subject and become spatially diffused. The passage from the empathic to the pathetic therefore provides the theoret-

ical framework through which atmospheres may be understood as possible objects of architectural design.

1. *From the Empathic to the Pathic. Einfühlung and Architecture*

Before addressing the use of pathic aesthetics within the field of architecture, it is appropriate to consider the birth of the concept of “empathy”, a faculty promoted by German aesthetics, notably by Robert Vischer, who, through the term *Einfühlung*, articulated the emotions aroused by natural and later artistic forms. Such identification, in subsequent neo-phenomenological reflection, recognizes the development of a properly “pathic” dimension that, in dialogue with architecture, deepens the theme of being emotionally touched by forms.

Starting from the feeling of “being emotionally touched” by a form, Robert Vischer, in the concept of *Einfühlung* (R. Vischer 1994), proposes a new scenario for the interpretation of feeling. Understood as “symbolic sympathy” (De Fusco 1964: 43), the term *Einfühlung* is indicated by Vischer in his attempt to explain the aesthetic contemplation of nature (Croce 1942: 216) and subsequently acquires its own speculative meaning, which makes it possible to transmit a vital feeling from the individual to the artistic object, thus understanding art in psychological terms. In contrast to the various interpretations of empathy in the early years of the Twentieth Century (Cohn 1901; Lange 1901; Groos 1902; Lipps 1903; Witasek 1904), which consider works of art not expressive in themselves but expressive through their analogy with certain physio-psychological attitudes of the observer (De Fusco 1964: 44), Vischer’s theory can be regarded as the first true theory of expression. In Vischer’s studies, empathy takes on an aesthetic character that no longer consists in the recognition of an objective property of natural or artificial things, but in a subjective action that borrows one’s emotion in constituting objects. Vischer introduces, in his doctoral dissertation *On the Optical Feeling of Form* (1873), the concept of optical feeling, inaugurating a predisposition and a pre-dimension for feeling the image or the form, through the echo of what the image or the form itself arouses. A kind of reverberation in which the nervous system strives to “feel itself into” or simulate something (Mallgrave 2013: 122). The productive dynamic of the object takes on, for the first time, an empathic connotation, through which, within its configuration, there is a reference to an aesthetic activism.

In the same context, Theodor Lipps maintains that the aesthetic feeling of sympathy does not represent merely a mode through which aesthetic pleasure can be experienced but rather constitutes its very essence. All aesthetic pleasure, including that aroused by architectural, tectonic, ceramic, and analogous lines and forms, is based exclusively on sympathy (Lipps 1897). In this regard, Lipps elaborates the theory of a spatial aesthetics, *Raumästhetik*, in which architectural and geometric forms express, through a mechanical force, psychological reverberations in the beholder, who in turn unconsciously imitates, through what is akin within him, the modes and the sense of those forms (De Fusco 1964: 45). An “inner imitation”, a kind of *mimesis* with the building or with the architectural structure, which calls forth an emotional configuration.

Subsequently, Heinrich Wölfflin develops empathy as an art critic in *Prolegomena zu einer Psychologie der Architektur* (1886); *Prolegomena to a Psychology of Architecture* (2013), in which he proposes a psychological interpretation of architecture based on its anthropomorphic aspects and proportional relationships with the human body. Wölfflin, taking up Vischer’s concept of optical feeling in architecture, asks how architectural forms can express emotions and moods (Wölfflin 2017: 8). Wölfflin argues that forms are never neutral; they are apprehended by our optic nerves, which in turn are connected to the motor nerves and function sympathetically with our internal organs. “What we know to be the conditions of our own well-being we expect everything else to possess. It is not that we demand to see a human shape in the forms of inorganic nature, but that we perceive the material world through the categories (if I may put it this way) that we have in common with it” (Wölfflin 2017: 11).

Despite their differences, Vischer, Lipps and Wölfflin share a common assumption: affective meaning originates in the subject and is subsequently projected onto forms. Architectural experience is thus understood through processes of identification, sympathy or inner imitation. This conception will later be challenged by neo-phenomenological theories of atmosphere, which no longer locate feeling primarily within the subject but in the spatially diffused character of affective situations.

In this sense, empathy remains fundamentally subject-centred: architectural forms become meaningful through the affective participation of the observer. Pathic aesthetics will later reverse this perspective by asking not how feelings are projected onto space, but how atmospheres are encountered as qualities already diffused within space itself.

The laws of architecture must, therefore, depend on our bodily experiences in sensing heaviness, lightness, and balance. For Wölfflin, the ar-

chitectural effect is achieved by overcoming inert matter in favor of a resonance with our organic well-being. (De Fusco 1964: 46). By the end of the Nineteenth Century, the elaboration of empathy and of an empathic aesthetics, from Vischer to Lipps and on to Wölfflin, marks a decisive turning point in the way the relationship between form and subject is understood. The act of creating thus takes shape as a process of vital transfer, in which matter is animated through the affective and bodily participation of the observer. Architectural work then becomes a site of correspondence between sensation and construction, a space in which form becomes lived experience and matter finds its harmony in the rhythm of our body. In this regard, architecture is no longer a set of static structures, but an organism capable of resonating with our interiority.

The imprint of empathy, from a formal and design-oriented perspective, also characterizes part of twentieth-century architectural culture. In this regard, László Moholy-Nagy, who joined the Bauhaus in Weimar in 1923, developed in *From Material to Architecture* a pedagogical approach grounded in direct sensory engagement with materials and forms (Mallgrave 2013: 129). As Moholy-Nagy argues, artistic education should be rooted in primary experiences rather than in abstract knowledge, allowing individuals to develop their own modes of perception and expression through direct contact with the world (Moholy-Nagy 1929: 19).

Moholy-Nagy's contribution marks an important shift. Whereas empathy theories primarily explained how subjects resonate affectively with forms, Bauhaus pedagogy increasingly focuses on the active organization of sensory conditions. The question is no longer only how architecture is perceived, but also how perceptual experiences can be intentionally structured through materials, textures and bodily engagement.

In the twentieth century, the development of empathy, particularly through the concept of simulation, found a renewed articulation in the notion of embodied simulation (Rizzolatti, Fogassi, Gallese 2006). In perceiving architectural space, we do not simply observe forms and materials but bodily simulate them, engaging with built environments both physiologically and emotionally. Architecture, in this sense, elicits movement, anticipation and sensorimotor participation, fostering a bodily understanding of space (Mallgrave 2013: 137-8). Yet embodied simulation largely remains within the horizon of the empathic paradigm, insofar as affective meaning is still grounded in the subject's response to forms. While this approach helps explain how architecture resonates with bodily experience, it does not fully account for the atmosphere of a place as something spatially diffused and shared. The question therefore shifts

from how subjects emotionally engage with architectural forms to whether affective qualities can themselves become a constitutive dimension of space. It is precisely this displacement that opens the path from empathy to atmospheres.

The historical trajectory reconstructed so far reveals a progressive displacement from an empathic model centred on projection and identification toward a pathic model centred on affective immersion and atmospheric experience. It is within this latter framework, developed by neo-phenomenology and pathic aesthetics, that atmospheres become a central philosophical and architectural category.

2. *Pathic Aesthetics, Atmospheres, and Architecture*

In introducing the precepts of a New Phenomenology as a philosophical orientation with greater inclusivity, Hermann Schmitz maintains that it should support certain sciences, notably group one: architecture (theory of dwelling, interior spaces, urban environments) (Schmitz, 2019: 47). About space, neo-phenomenological space is devoid of surfaces, just like that of our body, insofar as it is the felt body. Devoid of spatial extension is also the space of feelings, which Schmitz designates as atmospheres. (Schmitz, 2011: 94) “An atmosphere in the sense meant here is the unbounded occupation of a surfaceless space in the region of what is experienced as present” (Ibid.). The conception of feelings as private psychic states corresponds, according to Schmitz, to a psychological, reductionist, and introjectionist objectification; by contrast, he maintains that feeling, understood as being affectively involved by a feeling, is a “felt body gripped” through which the atmosphere assails the vital impulse (Schmitz, 2019: 100). Schmitz’s position represents a decisive break with the empathic tradition. Feelings are no longer projected onto forms by a subject but are conceived as atmospherically diffused presences that affect the felt body. The focus thus shifts from the projection of feeling by a subject to its atmospheric appearance as a spatially diffused phenomenon.

Building on this neo-phenomenological understanding of atmospheres, pathic aesthetics places them at the very centre of aesthetic experience. They are affective states that are not internal to the subject; instead, they are feelings diffused in external and (*peri*)corporeal space. Tonino Griffero, drawing on the theoretical elaboration of a *New Phenomenology*, introduces pathic aesthetics as a revaluation of aesthetics under-

stood not only as a philosophy of art but also as a general theory of sensible knowledge (*aisthesis*). It is grounded in the idea that *atmospheres*, understood as spatialized feelings and quasi-things, are central to the quality of human experience, and that aesthetics should focus on how one feels in a given space or situation (Griffero 2010a, 2010b, 2012, 2014, 2020). Pathic aesthetics aims to thematize sensible-affective perception in “general” (Griffero 2014: 168). It seeks to account both for the no-longer-fine arts, that is, arts oriented toward atmospheric immersion, and for “today’s aestheticization”, namely, processes of aestheticization included in what Griffero, drawing on Gernot Böhme, defines as aesthetic work. “This pathic aesthetics, therefore, appears to be directed not so much toward art as toward that sort of diffuse design that influences us daily and for which, with every one of our choices, we are at least co-responsible” (ibid.).

While remaining indebted to Schmitz’s neo-phenomenological framework, Griffero shifts the emphasis from the ontological status of atmospheres to their aesthetic efficacy. The central question is no longer simply what atmospheres are, but how they shape perception, orient experience, and contribute to the affective tonality of everyday life.

As opposed to *Einfühlung*, which develops within itself a new way of conceiving expression, pathic aesthetics turns to a new way of conceiving perception from an openly anti-psychologistic standpoint, presenting itself as a phenomenological theory of *atmospheres*, it is grounded in their “prototypical” form and in their non-internal character with respect to the subject: *atmospheres* have the power to spread into external and *felt body space*. In this regard, the feelings aroused by a work, a landscape, or a building are no longer internal but suspended in a pre-dimensional, pre-geometric space. Despite their significant constitutive differences, there is a similarity with *Einfühlung*: namely, a mimetic precision (Griffero 2014: 172), also at the unconscious level of virtual movements.

The difference is nevertheless crucial. Empathy explains affective experience through the subject’s engagement with forms, whereas pathic aesthetics treats atmospheres as pre-reflective affective realities that precede the distinction between subject and object. Yet the two perspectives are not entirely unrelated. Both seek to account for the affective dimension of experience and both acknowledge the body’s involvement in perception, albeit from radically different ontological premises.

An *atmospherological* aesthetics develops as a general theory of sensible and affective perception, foregrounding atmospheres as expressive qualities diffused in space, capable of profoundly influencing our mood

and our experience of the world. From this perspective, artistic *atmospheres* are not so much what they represent, but what happens within them, that is, what is present and perceptible. *Atmospheres* are generated, produced, evoked, and diffused, yet they cannot be expressed directly. “The atmospheric lies at the basis of our pathic life... Being the *prius* of our perceptual, affective, *leiblich*, and above all involuntary experience of the surrounding world” (Griffero 2014: 173).

Griffero’s contribution is particularly significant because it foregrounds the atmospheric as the pre-reflective ground of experience. At the same time, precisely because atmospheres exceed both representation and behavioral determination, their relation to architectural design remains problematic.

From an empathic perspective, this question appears less problematic, since affective meaning is already linked to forms intentionally produced by designers. From a pathic perspective, however, the issue becomes considerably more complex: if atmospheres exceed both subjects and objects, can they still be intentionally cultivated through architectural practice? The question of atmospheric design remains one of the most controversial issues within contemporary atmospherology. While atmospheres are widely acknowledged as central to human experience, there is far less agreement concerning their intentional production. It is precisely at this point that the positions of Schmitz, Griffero and Böhme begin to diverge.

Within this debate, Böhme develops the most explicit attempt to think atmospheres as objects of design. For him, contemporary processes of aestheticization aim to generate atmospherically attuned spaces, placing architecture at the centre of atmospherology. As he writes, “sensing our own presence is simultaneously to sense the space in which we are present” (Böhme 2006: 104). Before addressing architecture directly, Böhme introduces the concept of “making atmospheres” (Böhme 2020: 42). Atmospheres are not objects but “in-between” phenomena emerging through the arrangement of material and spatial conditions. Their production relies on atmospheric generators such as light, sound, colour, objects and spatial configurations capable of radiating perceptible qualities into space. Drawing on Plato’s *phantastikè technē*, Böhme argues that atmospheres can be intentionally produced through the careful organisation of such generators. Scenography offers a paradigmatic example: rather than representing an atmosphere, it creates the conditions under which a specific atmospheric impression emerges for a relatively homogeneous audience. In this respect, Böhme departs from more cautious

atmospherological positions by explicitly treating atmospheres as potential objects of aesthetic and architectural production, while acknowledging that their effects can never be entirely predicted or controlled.

This position leads Böhme to define atmospheres as the very “subject matter of architecture” (Böhme 2020: 100). Architecture is not primarily concerned with the construction of objects but with the generation of spatial experiences. Atmospheres are “attuned spaces” or “quasi-objective feelings” that shape perception, emotional disposition and ways of inhabiting the world. Accordingly, architectural design operates through elements such as light, sound, materials and forms, understood not as neutral components but as atmospheric generators capable of modulating bodily and sensory experience. Space itself is not conceived as an objective container but as an experiential dimension emerging through bodily presence and perceptual orientation.

From this perspective, architecture produces the conditions of presence rather than merely physical structures. Böhme therefore extends architectural practice beyond tectonic construction to include “non-classical” spatial media such as light and sound. These elements do not simply occupy space; they generate it, articulating affective tonalities and atmospheric qualities. A cone of light, a distant sound, or a particular acoustic environment can shape lived space as effectively as walls and materials. The possibility of intentionally organising such atmospheric generators constitutes, for Böhme, the strongest argument for considering atmospheres not merely as perceptual phenomena but as genuine objects of architectural design.

Architectural design elements that shape atmospheres do not fall under tectonics; rather, they function as atmospheric indices capable of influencing perception. Yet, as Griffero insists, atmospheric affordances remain fundamentally indeterminate. “While the environment can invite a certain action or even urge a person to do something, to an atmospheric affordance indeed one does not necessarily react with a given behaviour” (Griffero 2020: 101). Atmospheres therefore cannot be reduced to functional effects, behavioural outcomes, or fully controllable design intentions.

This point reveals one of the central tensions within contemporary atmospherology. If atmospheres exceed representation, prediction and behavioural determination, their status as design objects remains problematic. At the same time, architectural practice constantly operates through materials, light, sound, textures and spatial configurations capable of shaping affective experience. The challenge is therefore not simply to de-

cide whether atmospheres can be designed, but to understand in what sense they can be intentionally produced without being entirely controlled.

3. *Atmospheres as Design Principles*

If atmospheres can be considered potential objects of design, the question becomes how architectural practice operates upon them. Whereas empathic theories explain affective experience through the subject's engagement with architectural forms, atmospherological approaches raise the more demanding question of whether affective qualities themselves can become objects of design. While atmospheres cannot be fully controlled, architects routinely work through spatial and material configurations capable of orienting affective experience.

Taking up the incipit of *Atmospheres*, Zumthor traces the quality of a building back to an emotional response and asks how such a quality can be translated into a project. "One word for it is atmosphere" (Zumthor 2006: 11). Although Zumthor does not explicitly adopt the vocabulary of pathic aesthetics, his reflections are remarkable insofar as they shift architectural attention from the production of forms to the production of affective conditions.

In his proposal for creating atmospheres, Zumthor describes architectural design as a practice grounded in lived experience and sensory attention. Body, materials, sound, temperature, surrounding objects, the tension between interior and exterior, levels of intimacy, and light constitute the principal dimensions through which atmospheres can be intentionally cultivated. Rather than functioning as isolated architectural elements, these factors operate together as atmospheric generators capable of shaping the way a space is perceived and inhabited.

Particularly significant is Zumthor's attention to materials, sound and light, understood not merely as formal components but as elements capable of orchestrating sensory and affective conditions.

Memory also plays an important role, not as a nostalgic reference, but as a reservoir of lived experiences capable of informing future design decisions and shaping the affective qualities of space. In this sense, architectural design operates through the careful organisation of elements capable of generating affective resonances without determining them completely. Atmospheres emerge from the interaction between material configurations, bodily perception and lived experience, remaining open to in-

terpretation while nevertheless being intentionally cultivated through design.

Rather than abandoning the notion of atmosphere, Zumthor's later reflections broaden its scope. If *Atmospheres* (2006) focuses on the sensory and affective qualities of architectural space, *A Feeling of History* (2018) extends this concern to the experiential dimensions of memory, temporality and historical consciousness. The underlying assumption remains unchanged: architecture operates through the creation of affective conditions capable of shaping lived experience.

Zumthor's reflections make explicit a concern that can also be identified, albeit in different forms, in earlier architectural practices. Long before atmosphere became a central philosophical and architectural category, architects were already experimenting with spatial, chromatic and material configurations capable of shaping affective experience. Within architectural culture, Le Corbusier offers a different approach to the intentional cultivation of affective and perceptual qualities.

Although he never developed an explicit theory of atmospheres, several aspects of his architectural practice reveal a sustained concern for the affective qualities of space. Beyond the well-known Five Points of Architecture, his reflections on architectural polychromy demonstrate a clear awareness of the emotional and perceptual effects generated by colour.

Throughout the 1920s and 1930s, Le Corbusier conceived colour not as a decorative supplement but as an active spatial agent capable of modifying perception and shaping the experience of a building. In projects such as Maison La Roche (1923-1925) and later La Tourette (1956-1960), colour participates in the articulation of movement, orientation and mood, contributing to the overall atmosphere of the architectural environment.

Particularly revealing is Le Corbusier's discussion of the Pavillon de l'Esprit Nouveau (1925), where he explicitly associates chromatic choices with the creation of a "strong atmosphere". Reflecting on the use of intense colours, he describes their effect as producing "a slap in the face, a shock", but also "a strong atmosphere that silenced the detractors" (Le Corbusier 2003: 338). Although articulated outside any phenomenological vocabulary, this statement suggests an understanding of architecture as capable of producing affective conditions through the intentional organisation of spatial and sensory elements.

From this perspective, Le Corbusier's work reveals how architectural design may operate upon affective experience even in the absence of an

explicit theory of atmospheres. Rather than theorising atmospheres directly, he demonstrates how colour, light and spatial composition can be mobilised to shape the emotional tonality of architectural experience. While Le Corbusier's approach relies primarily on colour, light and spatial composition, contemporary architectural research increasingly explores atmospheres through digital technologies and environmental data. In this regard, the work of Carlo Ratti offers a particularly significant example.

Together with Antoine Picon, Ratti has investigated the possibility of mapping lived experience through digital technologies, sensors and real-time environmental data (Picon, Ratti 2023). Rather than focusing exclusively on the physical form of architecture, this approach seeks to understand how people perceive, experience and emotionally respond to urban environments.

A particularly revealing example is the pavilion Living Nature (Milan Design Week, 2018), in which Ratti recreated the atmospheric conditions of the four seasons within a controlled architectural environment. Through the integration of vegetation, climate-control systems, responsive membranes and energy-management technologies, the pavilion did not merely represent seasonal atmospheres but actively produced the environmental conditions through which they could be experienced.

If Zumthor's work demonstrates how atmospheres can be cultivated through materials, light and sensory qualities, Ratti's project extends the same question into the domain of environmental technologies. Atmospheres are no longer generated solely through architectural form but also through the dynamic modulation of climatic and environmental parameters. In this sense, Living Nature illustrates a contemporary expansion of atmospheric design, where digital systems become active participants in the production of affective and experiential conditions.

4. Conclusions

The question that has guided this paper can now be answered more directly. Atmospheres are not merely perceptual effects that emerge accidentally from architectural environments, nor are they entirely autonomous phenomena that escape every form of intentional intervention. Although they cannot be fully predicted, controlled, or reduced to behavioural outcomes, atmospheres can be intentionally cultivated through architectural design.

The distinction is crucial. What architects design are not emotions themselves, but the spatial, material, sensory, and environmental conditions through which particular affective experiences may emerge. In this respect, architectural design moves beyond the empathic paradigm of affective projection toward a pathic understanding of atmospheres as spatially distributed conditions of experience.

Light, sound, colour, temperature, materials, proportions, thresholds, rhythms, and environmental technologies operate as atmospheric generators capable of shaping the way a space is perceived and inhabited. Atmospheres therefore occupy an intermediate position between design intention and lived experience: they can be produced, but never completely determined.

From this perspective, Böhme's notion of "making atmospheres" provides one of the most convincing theoretical frameworks for understanding architecture as the intentional organisation of affective conditions. The cases discussed in this paper demonstrate different ways in which this operation takes place. Zumthor mobilises materials, light, sound, and memory to cultivate atmospheric qualities; Le Corbusier employs colour and spatial composition to shape perceptual and emotional intensities; Ratti extends atmospheric design into the domain of environmental technologies and digital systems. Despite their differences, these approaches share the conviction that architecture is concerned not only with the construction of forms but also with the production of lived situations.

The design of atmospheres should therefore be understood as both an aesthetic and a projective task. Far from being an accessory dimension of architecture, atmospheres constitute one of its fundamental operative principles. They offer a transdisciplinary field in which aesthetics, phenomenology, environmental design, technology, and architectural practice converge. Rather than remaining exclusively objects of perception, atmospheres can become tools of design, capable of orienting the creation of spaces that are not only functional or formally coherent, but also affectively meaningful and experientially rich.

To design atmospheres is not to design feelings directly. It is to design the conditions under which meaningful experiences may take place. Atmospheres are therefore not merely experienced; they are also, and increasingly, designed.

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