



Sensory Readings in Architecture

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This paper will review selected readings in the field of architecture by architects that deal directly with the topic of sensory perception including Juhanni Pallasmaa, Joy Monice Malnar and Frank Vodvarka, Stephen Holl, Alberto Pérez-Gómez, Peter Zumthor, Anna Barbara and Anthony Perliss. The list is not exhaustive, but rather focuses on texts that, within the field, are frequently referred to in discussions on the senses. Many of the texts lament the loss of a multi-sensory design of the built environment in a vision-dominated world.

An early publication that brought the topic of the senses in design to the forefront in contemporary academic architectural discussions was the 1994 Special Issue of *Architecture and Urbanism* journal entitled *Questions of Perception – Phenomenology of Architecture* featuring articles by Steven Holl, Juhani Pallasmaa and Alberto Pérez-Gómez. Their cumulative articles and examples in the text work to remind the reader of the importance of a generative imagination, an ethical world-view and encourage a phenomenological approach to architecture that celebrates experience. Pérez-Gómez sets the stage for the phenomenological approach by giving an historical account of architecture's arrival at an empty formalism, searching for meaning and finding it in a poetic resistance. Pallasmaa's article entitled *An Architecture of the Seven Senses* laments the current full engagement in architectural experience at favour of the art of the eye. He embraces a multi-sensory approach to the matter, space and scale of architecture being "measured equally by the eye, ear, nose, skin, tongue, skeleton and muscle"¹ and presents the senses as a generator for sensory thinking as well as contributing to reason. Through a series of evocative examples that describe each sense and their intimacy as it relates to space, Pallasmaa reveals the way in which the non-visual senses fold us into space and become a part of it versus vision that sets us apart from what we see. He finishes the article by setting the task of architecture as one of allowing us to place ourselves in the continuum of culture through embodied experience and memory.

Steven Holl begins his article critiquing his own medium for the discussion – namely that text can perhaps not do justice to questions of perception. He appeals to a

¹ Pallasmaa, *Questions of Perception*, p.30

heightened “sensitized consciousness” to everyday experience and he sees wordless architecture as the perfect medium to awaken all the senses by freely allowing the inhabitant to blend the sensory menu offered up by the space. Where architecture moves beyond simple perception of phenomena, such as in nature, is in its intentionality or the motivation to understand the mental phenomena behind its creation.

Holl presents a series of projects that deal with a variety of phenomena that explore elements of perception and design. The idea of these projects is not to present a totality or summation on perception, but to illuminate discrete fragments that each contribute to the process of design and enhance the sensory experience of that place. A final article entitled “Archetypal Experiences of Architecture” also by Holl, seeks to confirm the fragmentary nature of experience and traces Holl’s first and subsequent visits to several key architectural spaces such as the Pantheon in Rome, Rochamp, Ryoanji Temple in Japan and the Johnson Wax building by Frank Lloyd Wright. Each experience, sometimes separated by twenty years presented a new series of sensation to Holl, some due to weather or the seasons, some due to the time of day, and some due to the changes that had occurred in Holl himself. The overlapping of the fragments create a changing new perception of the space, and lead Holl to believe that architecture is always perceived as partial views, in turn creating a way of looking at the world, in a way, linking back to the first article by Pérez-Gómez, and enticing the reader to read it again.

After working on the A+U journal, Juhani Pallasmaa produced a series of books, beginning with *The Eyes of the Skin – Architecture and the Senses* (1995/2005) followed by *The Thinking Hand* (2009) and *The Embodied Image* (2011). Steven Holl writes the Preface for the book, and notes that it builds upon the work on phenomenology first delineated in *Questions of Perception* in 1994. *The Eyes of the Skin* focuses on the primacy of touch and in the second edition of the book, he states that the title was meant to create a short-circuit between our perception of vision as superior and our sense of touch. He also opens the discussion on peripheral vision as a new and enticing part of vision that is overlooked in discussions on perception in architecture.

The nine short essays that make up the first part of the book outline the hegemony of vision in Western culture, held in esteem since the ancient Greeks. He reviews theorists who have opposed ocularcentrism and their supporting texts including Nietzsche, Sartre and Merleau-Ponty and presents the concepts of the narcissistic and nihilistic eye in the barrage of non-participatory images of contemporary culture. Before the domination of vision, many cultures were orally centered, based on a tradition of story-telling and proximity rather than on separation from the object viewed. Early construction types can also be traced back to a more haptic and corporeal type (mud huts etc.) and yet since Alberti and early Renaissance perspective through to the detached eye of modern city planning, Pallasmaa follows

the dominance of vision in architecture. In parallel with this flood of images and focusing on space, comes a loss of the temporal in architecture. He sees the shift in the use of natural materials, craftsmanship and details designed for the human body which age with time to modern materials such as steel and glass which do not gain patina and which hide their processes of construction as further moving architectural experience from a fully sensual encounter to a purely visual one. He ends the first part by presenting hope for a new balancing of vision in the realm of the senses by the distracted view, or peripheral vision – a distracted looking enabled by the flow of images and technology rather than the dominance of a single image.

The second part of the book traces the suppression of the other senses which has happened in tandem with the dominance of vision. Beginning with Merleau-Ponty's concept of the body at the center of perception and experience, and Bachelard's concept of the 'polyphony of the senses', Pallasmaa reinforces the importance of the collaboration of the senses in perception to create a fully embodied material and spiritual construct. He traces the importance of the spaces of shadow as presenting a moment where vision is subdued and less clear, allowing space for the imagination to engage. Spaces such as the magic of the chiaroscuro in painting, in the shadows of Japanese architecture as described in Tanizaki's "In Praise of Shadows" and in the twilight spaces of the city. Pallasmaa then sets out seven sections each dedicated to a sense basically repeating the text written in *Questions of Perception* with only slight alteration. Borrowing on the Aristotelian model, Pallasmaa adds the engaged roles of perception, memory and imagination to his earlier text, stressing the importance of these realms to evoke sensory experience and hence enhance future perceptions.

The text concludes with two short sections outlining a host of architects from modernism onwards that have focused on various individual senses as well as a few whose work have engaged the full sensory realm, including Frank Lloyd Wright and Alvar Aalto, Glenn Murcutt, Steven Holl and Peter Zumthor, opening the discussion on the senses to move from one of text, to one sited in the built work of the architect.

Four years after republishing *The Eyes of the Skin*, Pallasmaa published "The Thinking Hand – Existential and Embodied Wisdom in Architecture" which elaborates on the contemporary perceived separation of the body and the mind, of sensing and reasoning, of practice and theory. He focuses on the hand to illuminate this separation, in particular as it relates to the acquisition of knowledge in the realm of craftsmanship. He notes that the loss of this corporeal knowing through direct experience is slowly leaving our systems of education, and being treated solely as technique, rather than knowing. While the focus of the text is the hand itself and the creative process, it nonetheless reinforces his position of the collaboration of the eye (vision), hand (haptic)² and mind along with the other

² Pallasmaa, *The Thinking Hand*, p. 82.

senses. Further in the text, Pallasmaa revisits his earlier assertions of the primacy of touch³ and that thinking should be understood as embodied thinking and not separated from the senses.⁴ He states that architects must think with their bodies in order to design, which includes engaging embodied memory and thoughts to imagine and communicate a design that is both designed with and for a sensual body.

Pallasmaa's most recent book, *The Embodied Image – Imagination and Imagery in Architecture* (2011) focuses primarily on the proliferation of the image in contemporary culture and the specific demise of the poetic and embodied image and imagination at the hand of empty images and vision severed from the other senses. He calls for a resurgence of the multi-sensory image⁵ to allow vision to reintegrate and mingle with the other senses to reinvigorate the design process, our means of representation and finally our built architecture.

The title of the book, *Sensory Design* (published in 2004) by Joy Monice Malnar and Frank Vodvarka gives the reader hope that a new multi-sensory scope for architectural design is being explored in the 335-page text as the opening line of the book poses the question “What if we designed for all our senses?”⁶. Borrowing much from the work of Pallasmaa, the text unfortunately leaves the reader wanting a clearer exploration despite many topics being covered and many references included. Malnar is an associate professor of architecture at the University of Illinois at Urbana-Champaign and Vodvarka is an artist who has written on the history of architecture.

Over the course of twelve chapters, the book proposes to “explore the nature of our sensory response to the spatial constructs that people invest with meaning” and from that understanding, create a design typology for significant spaces.⁷ The book attempts to cover a very wide range of topics, and each individual chapter reaches so broadly that to summarize the book, it is necessary to cover chapters individually.

The opening chapter deals with sensory response and cultural memory and through a few examples concludes that a place perceived in both cognitive and sensory terms is unique and of interest to the collective memory and distinguishable as a type – a place sensed (or a sense of place).

³ Pallasmaa sees all the senses as extensions of the sense of touch, with the body membranes of the other sensory organs all in some way being “touched” by stimuli. Ibid. p 100.

⁴ Ibid, p 107.

⁵ Pallasmaa, *The Embodied Image*, p.50.

⁶ Malnar and Vodvarka, p.ix

⁷ ibid.

The second chapter overviews a selection of art movements including De Stijl, the Bauhaus, poetry and phenomenology, the Enlightenment, CIAM and the work of Frank Lloyd Wright and attempts to discern their position with respect to the senses and the concept of cultural memory. The authors put forward a concept of sensory experience; namely a) involuntary sensing: immediate physical response to stimulus, b) conditioned response: based on prior knowledge of the stimulus, and c) remembered sensation: response conditioned by memory associated with a particular place and time which have created a sensory imprint on the beholder.⁸ Unfortunately, the examples used rarely seem to engage the enticing sensory concepts presented at the outset of the chapter, perhaps due to a misalignment of the ideas of the original theories with the concepts of the authors.

In chapter three, the authors propose that to fully understand spatial constructs, both perception, which they define as organized sensation, and a mediating intelligence⁹ are required. They begin with a brief review of classical theory of the senses, and then review the theory of historian Geoffrey Scott and psychologist, J.J. Gibson. Scott includes the concepts of weight, pressure and resistance into our sensory perception of objects via bigness: actual bigness (measurement), visual bigness (appearance of bigness) and the feeling of bigness (bodily measurement). They lean on Gibson's 1966 theory of the perceptual systems to expand the classic five senses into a larger system of sensing including orienting, auditory, haptic, taste/smell and visual. Following on this summary, the authors include a short review of Gestalt theory that sees perception as a response to a field of sensation which then we actively structure. They further question how culture might influence perception, especially if we are active in the structuring of our perceptions and touch on the theory of David Howes which describes the importance that each individual culture accords to each modality of perception. The authors pull from various sources with aim to create an operational device (formula) that might allow us to design with the senses in mind.

The fourth chapter looks to pinpoint where meaning resides in architectural space and they present a collection of various theories which present answers to this question such as; centerpoints of interest, collections (of personal objects), social constructs, patterns, and bonds understood via dwelling. They critique the projects of modernism as sterile and form-based being conceived without attention to the non-visual senses. With modernism as the legacy for contemporary design, the authors see our lack of focus on full-sensory design being rooted in the theoretical issues of modernisms universal aims, and oppose it to the vernacular that they see as architecture-without-theory of local tradition. The authors seem to search for the concept of the senses in generalizations, and in secondary sources without really investigating a specific example apart from its "ism".

⁸ Malnar and Vodvarka. p 21

⁹ *ibid*, p 41.

The fifth chapter questions what qualities make a place sacred, with hopes that it will reveal an essence that can then be harnessed in contemporary design. The aim seems to suppose that qualities or a “sense of place” are transmittable over both space and time (cultures). Their case studies range from ancient Rome, Greece and China to eighteenth-century France and garden design but focuses primarily on the form and spatial arrangements of these buildings, with quotes from various texts that include reference to other senses. In the end, their analysis is primarily a generalized visual account of a selection of landscapes that delays discussion of the senses until further chapters.

The sixth chapter sets out to engage haptic “knowing” including both direct touch and bodily perception of motion, weight and substance as we move through space. The authors draw descriptive fragments of haptic experience from wide-ranging sources including Japanese gardens and tea-houses, the Spanish steps in Rome and the Vietnam veterans memorial in Washinton, D.C. and present summarized descriptions of the experience of these spaces. These descriptions lead to the discussion of “types” of haptic experience and present points and connections as keys in haptic design. The chapter then expands to further unrelated fragments that deal with the concept of haptic perception but conclude the chapter without a summary on hapticity.

The seventh chapter inspires the reader with its title “Sensory Cues” with hopes that the senses will now be introduced as the catalyst that will bring together the disparate pieces presented thus far in the book. They use the theory of Yi-Fu Tuan to set the concept of abstract space against the concept of value-laden place and his focus on the non-visual aspects of place, in particular smell and sound. The authors provide a general review of a selection of authors who have written on the concept of smell, revealing its connection to older brain structures that regulate emotions and motivation, and seem to want to provide the reader with a concept of olfactory perception that applies across all cultures, contrary to an argument presented earlier in the book that seemed to imply a culture-specific sensory schemata. Several interesting ideas by other authors are presented in the text, such as Schafer’s distinction between visual space which we look into, and sonic space which we stand in the middle of begin to build a phenomenology of spaces, but the ideas are left as fragments which are perhaps the “cues” referred to in the chapter’s title. Lastly, the authors discuss the sense of touch such as Frank Lloyd Wright’s matching of textural scale to building scale, and the expansion of the concept of the haptic such as active touch, kinesthesia (information derived from muscle movement) and spatial extension (extension of touch beyond one’s physical limits). The chapter concludes with the statement “an entire spatial structure can be constructed out of the envelope created by our senses” but does not propose how this might be done.

Chapter 8 begins with an exploration of ornament and the sensuality of doorways and gates, and a broad survey of design concerns with these elements. The authors distinguish between the inherent qualities of materials (localized, sensual) versus the intention of a design (external, formal) as two opposing generative notions for architecture. They give some attention to the detail, as the joining of two building elements, and present it as a sensory and symbolic event. They use studies on visual fixation that reveal that observers spend more time looking at contrast and detail or more specifically, the joint, rather than the individual parts, bringing detail to the forefront in visual design.

Chapters 9 and 10 deal with objects and light. The authors present the objects of our perception or more specifically our possessions as “sensory repositories of experience” being at once mnemonic, instrumental, symbolic and concerned with identity. Several concepts of luminosity, color and form, as well as several short case studies in art and architecture are reviewed which mainly present the form-based aspects of architecture. Both chapters end with a note about the senses but dedicate little time in the text to discussing them.

As we work towards the conclusion of the book, the authors take a surprising turn in Chapter 11 by both reviewing a host of sensory schematics, and then constructing their own “sensory slider”, a tool by which they measure the “sensory nature” of a structure that they propose as the structure for a sensory typology based on a phenomenological point of view. Its categories are Visual, Sound, Odor, Basic Orienting, and four types of Haptic: Gradient/Context, Tension/Resistance, Compression/Expansion and Degree/Range. The ensuing Sensory Slider charts are used to review existing buildings and are posed as a design tool to assist in the pre-design phase of planning. The effectiveness of this tool however, is dependant on the designers knowledge of materials and methods to make sensual spaces, and so is rather left as a tool to critique the authors view of the sensory.

The book concludes with the chapter “Getting Somewhere” that reveals the authors notion that sensory “data” will produce relevant design information that will revive sensory architecture. When discussing sound and odor, the authors note the problem of human interpretation and subjective responses in the collection of data, and the typical attitude towards correcting sensory problems rather than exploring sensory richness in the analysis of data. They turn to digital immersive environments as a potential solution to enable designers to employ a more sensual design methodology (for example feeling the texture of a material while sketching in three dimensions). Their proposal implies that our design tools are part of the problem regarding attrition of the non-visual senses in design, but this topic was not explored in their book. Their conclusion focuses on the importance of the calculation and hence prediction of sensory response, the tools that can assist us with measuring sensory response and the importance of changing the design process to be more inclusive of the full sensory and mnemonic potential of space.

In returning to the title of the book “Sensory Design”, it seems that although the authors reach broadly to reinforce their belief that sensory response and memory are critical functions of a building, the content of the chapters leave the reader wishing for more focused development of the idea and more focused and evocative examples. They struggle with engaging in sensory descriptions perhaps because they appear to rely on secondary sources rather than first-hand experience, leaving the reader feeling unengaged in what should be a phenomenological journey. Their short engagement with any one particular theory also makes it difficult to engage the ideas of either the author or the referenced text, and remains more like a catalogue of references than a developing idea. While the ideas implied by the titles and chapters certainly are areas that need developing in the field of architecture, this book unfortunately falls short of filling that gap.

In 2006, Anna Barbara and Anthony Perliss published *Invisible Architecture – Experiencing Places Through the Sense of Smell*, Peter Zumthor published *Atmospheres – Architectural Environments – Surrounding Objects* and the Canadian Center for Architecture in Montreal published *Sense of the City: an Alternate Approach to Urbanism*. This surge in interest in the non-visual senses in the field of architecture builds upon the prior texts described in detail in three distinct ways. It is the technique of these last three texts that I wish to focus on, rather than a detailed summary of their contents. While the first five books reviewed in this paper detail the full spectrum of sensory perception with their context being an overtly and overly visual world, these last three books each take a unique approach to writing about the senses in architecture.

Invisible Architecture looks at one specific sense, that of smell, in a detailed and playful way, through work by artists, interviews, and essays that turn our attention to the evocative and invisible sense in the seemingly visual practice of architecture. The authors present a series of questions on odor and how to engage it in the design process. The book is a collection of very short segments on an olfactory theme interjected by other short essays, projects, interviews, images and diagrams that serve as extended footnotes. While at first this tapas approach to writing seemed to scatter the argument, the book serves more as a reference book of olfactory ideas in architecture, allowing the reader to enter the text at any point and be engaged in the topical discussions on odor in architecture. The book presents as more of a project than a text in its format, and as such is successful in being evocative and stirring the imagination on the invisible aspects of architecture.

Sense of the City is a collection of essays by Wolfgang Schivelbusch, Norman Pressman, Emily Thompson, Mirko Zardini, Constance Classen and David Howes that presents an evocative rethinking of the city based on the senses. It also engages the same project approach to a book, presenting images, data, archival work and a collection of essays that serve as anchors in a flow of speculative and imaginative

works that ask for a rethinking of the city in terms of a fully sensory mode. The book can be entered at any point as each essay and project can serve as an entry point to this imaginative rethinking.

Zumthor's *Atmospheres* reprints a lecture that was given by the Swiss architect in 2003 that illuminates his concept of atmosphere, which is ultimately a sensorial perception of place. His language is first-person and intimate as he describes projects and multi-sensory inspirations that have allowed him to create buildings of immense sensorial delight. His observations are distinctly fully sensory, his memories profoundly material and his buildings engage all the senses at once. The book serves as a working example of the texts explored thus far in this review by combining a generative approach to architecture that is clearly led by an enmeshed sensory approach to the making of architecture.

The texts reviewed here present a selection of seminal texts on the topic of the senses in architecture that revived discussion and interest in the field and which serve as key texts for others that followed. Their strategies are all unique, with later texts building upon the earlier work, and yet which reveal that careful observation and attention to examples that are experienced is critical to a phenomenological approach to architecture. If we are going to write about the importance of enmeshed experience, then we should at least practice what we write as theory. Architecture is a lived and fully sensorial experience and should be investigated as such.

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