

# Seeing and Design — Designing for Seeing: Mind/Body Dualism and the Reincorporation of Material into the Environment

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## THE PROBLEM OF PERCEPTION AND THE DESIGNED ENVIRONMENT

Ask the average practicing architect to describe the production of a project and you will doubtless be proudly shown photographs of the project which augment a monologue about the ideas and concepts expressed in the project. For designers, representations and conceptual symbolic content, whether graphic, photographic, or verbal have displaced actual experience. The *image* of a building or space often becomes more credible for a designer than the building itself. As Juhani Pallasmaa has stated it, the over emphasis on conceptual dimensions actually stems from an over reliance on the "retinal gaze" that causes alienation from our environment.

"The architecture of our time is becoming the retinal art of the eye. Architecture at large has become an art of the printed image fixed by the hurried eye of the camera. The gaze itself tends to flatten into a picture and lose its plasticity; instead of experiencing our being in the world, we behold it from the outside as spectators of images projected on the surface of the retina.

The current over-emphasis on the intellectual and conceptual dimensions of architecture further contributes to a disappearance of the physical, sensual and embodied essence of architecture."

Architect Walter Gropius, in 1970, restated the profound influence of visual perception on the production of buildings, reminding the design professions that, "If we can understand the nature of what we see and the way we perceive it, then we will know more about the potential influence of man-made design on human feeling and thinking." Gropius' attention to the effect of our mode of visual perception on the production of architecture suggests that designers should recognize that the way we see greatly determines how we choose to configure our built surroundings. Gropius' appeal to understanding the "nature" of visual perception implies that insight into *how we know* our surroundings will allow our designs a greater bond with human nature.

This paper is an attempt to suggest a theoretical relationship between visual perception, design methodology, and material essence. I believe that most of us unknowingly hold sets of assumptions about how visual perception relates to the way humans operate in the world. In turn, these sets of assumptions unwittingly form the basis for design decision-making that is a determinant of such aspects as the shape, color, material surface, configuration, and detail of the built surroundings. I think it fair to say that for most designers this basic set of assumptions is not an elaborate epistemological formula. Rather, it is a simplified, philosophically dualistic model of visual perception, one that separates mind from matter — of meaning from material — through the mediation of images, thereby limiting the possibilities for meaningful and complete interaction with the architectural environment. The limitations of these interactions can be identified in the epistemological implications of the specific underlying model of visual perception.

## MODELS OF VISUAL PERCEPTION

Contemporary psychologists have modeled the study of visual perception following two main currents: those positing that *abstract representation* is the primary source of meaningful experience are opposed to those proposing that experience is *concretely* based in perceptual acts. The first model encourages abstract visuality, moving the generation of meaning away from any concrete physical origin into a realm of singularly mental conceptualizations. The latter encourages a visuality inextricably bound up in a bodily origin, in the directly experiential, in materiality, and ultimately in acts of construction and making.

### Cartesian Dualism and Visual Perception

Models of visual perception dependent upon abstraction are derived from the work of Renaissance philosopher Rene Descartes, who recast the Platonic distinction between the "world of forms" and the sensory world into a dualism of mind and body. Thought was held to be privileged over experience. Descartes' claim that nothing could be known for

certain but one's own thoughts effectively reduced one's *being* to "thinking substance." The world of material things, for Descartes, was unknowable, except through the mediation of abstract, mental constructs or images, or through objectivizing narratives such as those of science.' A Cartesian point of view prioritizes thinking over feeling and purports the operation of thought within a non-holistic model of human/environment relations.

Descartes' dualistic philosophy postulated a characterization of the visual system which was new to Renaissance philosophy and altered forever what was considered to represent a consciousness of seeing. For Descartes, the visual process was, in effect, characterized as a mechanistic optical system which focused an image on a receptive retina for subsequent interpretation by an interior thinking being, the Cartesian *cogito*.<sup>4</sup> The chain of causality from matter to mind that was interred on perception by Descartes obtained an inscrutable threshold between inside and outside. That mind is the source of visual perception was a presupposition of mind/body dualism and justified what Descartes described as the delusory nature of sensory experience.

A drawing by Descartes to illustrate his investigation of the visual system reveals a strikingly simplistic representation of Cartesian dualism.<sup>5</sup> For Descartes, the grey shaded area represents that which happens inside the body and, in particular, inside the mind. The little man looking at the image on the backside of the eyeball symbolizes the idea of an interpreting mind which is called upon to give meaning to the dots of sensation making up the retinal image. The concept of an internal, analogous human-form is referred to by science as a *homunculus*, literally a "little man." The white background of the drawing represents an exteriority filled with objects with illuminated surfaces, the specific "points" of which occur on a coordinate system of relations. The interiority of Descartes' *cogito* is preserved in the symbolic separation of the homunculus from all sensation of physical materiality.

In general, Descartes' drawing of retinal image formation with an homuncular observer encapsulates a simplified yet highly symbolic and influential dualistic model of visual perception which is at the center of nearly all scientific investigation into vision since. Out of the Renaissance came a powerful model of visual perception that consists of three components: 1) external physical *things* in the medium of light, 2) an optical eye which produces an image on the retina, and 3) a mind, or soul acting as interpreter of retinal images. What I call *adualistic model of visual perception* presupposes that the eye delivers a meaningless profusion of light on the retina, the sense pattern of which we are conscious only in terms of an interpretive reconstruction, as an image. Descartes' model can be characterized as advocating a "primacy of *the image*."

In fact, as a model of the visual system, the sequence of occurrences representing dualistic visual perception is one with which most people, when pressed, would agree because the common understanding of the visual system has come via

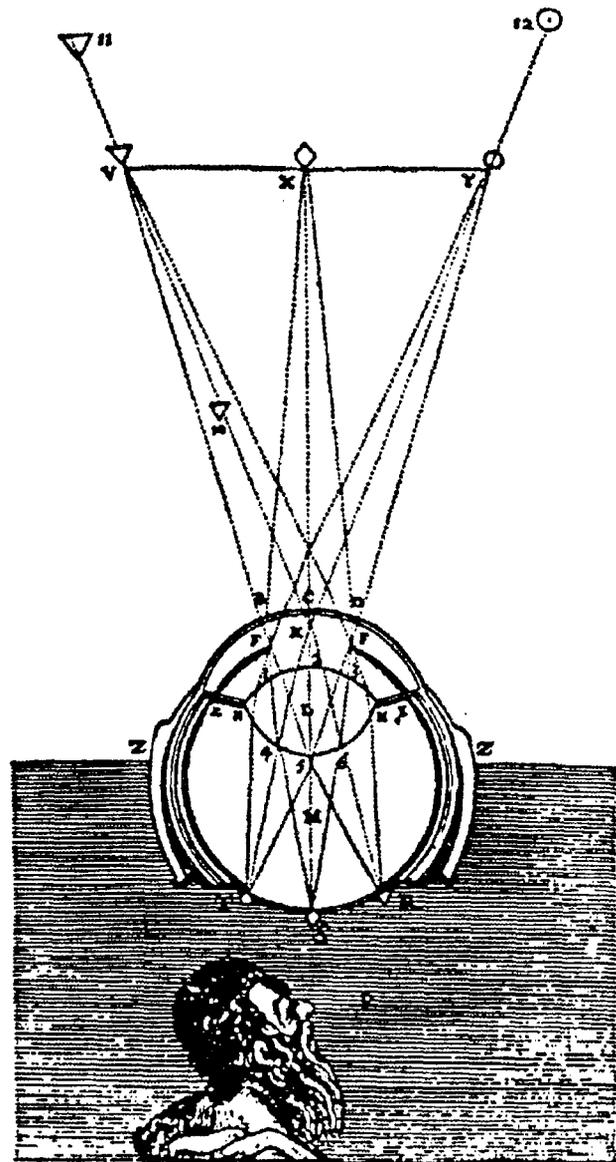


Fig. 1. Descartes' drawing of a homunculus viewing the back of the retina.

the easy rhetoric of the simple diagrams of visual perception learned in beginning level biological science courses. In the centuries of investigation after his theories, Descartes' ideas became a dogmatic paradigm for an epistemological separation of interior from exterior and of subject from object.<sup>6</sup> As a paradigm, this separation has formed the underpinnings of the production and reception of both artistic and non-artistic objects. For example, Modernist production has effectively dematerialized the surfaces of the physical world in favor of abstract meanings derived from the priority given in the retinal image.

### Embodied Models of Visual Perception

Eschewing mind/body dualism is another model of visual perception that acknowledges the substantiating effect of our

*embodiment* on the structure of our experiential relations. The unification of body and mind in perception is succinctly characterized in the following remarks from an anatomy textbook:

"Every person has a body, or more properly *is* a body. Whatever else he is may be of large moment to some, but in the end even the most hopeful persons rely upon the bodily mechanisms to develop their notions of soul. To the extent that it results in neglect of the human organism, it is to be deplored, for, whatever the manner of speech, to say that one 'is a soul' is not the same as saying that one is a body.

Science describes in detail what the body is and how it works. Art, in an individual life, is represented by the kind of living that goes on. One does not live with the body or in a detached world of spirit outside the functions of the organism. Life is the functioning of what is called body. An artistic life is one that functions fully, beautifully, and in accordance with the nature of the organism." <sup>7</sup>

What I shall term an *embodied model of visual perception* necessarily includes the concrete by distinguishing the realm of material things in terms of their resistance to the purposefulness of our actions upon them. An embodied point of view operates in the holistic context of the *physicality* of our activities in and about the material world and in so doing supports the development of meaningfulness inclusive of that physicality. An early proponent of a non-Cartesian point of view was philosopher Maurice Merleau-Ponty, whose "theory of the body" <sup>8</sup> was chiefly offered as a solution of the mind/body problem.

Merleau-Ponty characterizes our embodiment as endowing our consciousness with a physical subjectivity in the perceptual act. Through our embodiment, the act of perception is the locus of our innate and acquired capacities and orientation toward the world. Merleau-Ponty believes that, as an embodied consciousness, we find ourselves always already in the world due to our corporeal scheme situating itself according to the nature of our physical surroundings and our "tasks-athand." Merleau-Ponty would hold that I am not hermetically removed from concrete experience of the world and my body; rather, I **am** the world as I "inhabit" my body in space. Body is not a mere "thing," it is a "body subject," the locus of my innate and acquired capacities and orientation toward the world. The world is not "objective," rather my embodied experience is that through which there comes *to be a world* for me.

Likewise, J. J. Gibson's *ecological approach to visual perception* posits that we experience our surroundings directly and not through mediating stages of processing by the brain. Against a dualistic model of visual perception that results in a "pictorial mode of perception," Gibson has distinguished what he believed is a more "natural perception" involving an ecological relation of a sentient organism to its visual environment.

"Eventually I came to realize how unlike the pictorial mode of perception is from a natural one. The former is perception at second hand; the latter is perception at first hand. Eyes evolved so as to see the world, not a picture. Since this became clear to me I have tried to give up any use whatever of the term "retinal image." <sup>9</sup>

In claiming to abandon the centuries old retinal image model, Gibson has redefined the nature of the visual system around the central assumption that the physical surroundings, as environment, are physically structured in relation to an observer and form the *ground* against which an observer lives and moves around. <sup>10</sup> Gibson believes that visual perception operates due to, and within, the medium of light as a function of the reflectance properties of material surfaces. Light is reflected from surfaces with respect to their textures, pigmentations, and respective configurations and arrangements. The *structure* which exists in the surfaces of the physical surroundings *structures* the light which reaches the eye position of an observer in an "ambient optic array." "No information is lost because environmental *information* "is given in the optic array" and is "picked up" by the visual system rather than being constructed by the mind out of retinal "sense-data". Observer movement gives rise to stability or change in the optical structure, in turn exposing the "invariant" aspects of the optical structure that are univocally related to the environmental source of the reflectance. Simply stated, the relative position of the surfaces and edges of objects in the visual field differs as an observer changes position and is registered through the immediacy of the optic array. Thus, optical information affords direct perception of the environment without mental interpretation of sensory stimulus. Optical information "specifies" the material features of the environment (e.g., surface quality, position, size, shape, texture) for the perceiver. Also specified inherently in the optic array is the position and size of the observer relative to that of the objects in the environment. Properties such as size constancy, spatial orientation, and distance occur without "visual thinking".

Like Merleau-Ponty, Gibson suggests that perception is not the mind's view of the world but an innate awareness of operating physically *within* the world. Both Gibson's and Merleau-Ponty's embodied modes of visual perception imply that the perception of the material existence of things is *innately meaningful*, rather than being meaningless until interpreted in the perceiver's mind. This meaning, bound into embodiment, is one that connects us, through a form of perceptual description, to the extant materiality of our surroundings.

## ARCHITECTURE AND MODELS OF VISUAL PERCEPTION

Simplistic adoption of a dualistic model of visual perception by a designer, knowingly or not, predisposes an architecture prejudiced to a configuration dependent upon reception pri-

marily through mental operations (e.g., rationality and signification). Meaningfulness can only be developed in these operations through the acceptance of an intersubjective context at the expense of immediate experience. Furthermore, patterns of architectural decision-making with an underlying dualistic model of perception tend to embrace the many forms of the image as the basis of perceptual acts, resulting all too frequently in an architecture of "easy symbols"<sup>12</sup> – an assemblage of outrightly readable cues functioning for superficial pictorial apprehension. Interpreting pictorial cues in the world takes form in terms of a "language of signs."<sup>13</sup> Architecture built for reception as an interpretation of signs thus requires a mentalistic "reading" of the signs contained within its visual structure without regard for its actual physical substance. The attendant cultural narrative thus becomes the chief measure of meaningfulness, excluding measures of an individual's experiential relation to his or her immediate surroundings through their embodiment. Interpretation can be muddled.

For example, Charles Moore's Piazza d'Italia, in New Orleans, as it exists today, is in a state of dilapidation precisely because its physicality does not correspond with its intended imagery. An intentional reference to the mass and solidity of Roman buildings portends a similar requirement of materials and craftsmanship. In its dilapidated condition, the correspondence of the physicality of the Piazza d'Italia with its current imagery is outside any purely abstract reading – perhaps posing a narrative commentary on the part of the designer pointing out the inauthenticity of an imitation Rome in New Orleans.

The structure of any system of architectural knowledge assumes an underlying epistemological position, especially regarding the nature of visual perception. However, most design activity occurs outside any overt awareness of a particular attitude toward the question of perception. Judging from the image-heavy buildings of the latter twentieth century, the question of perception seems to be more commonly answered by architects in a blind acceptance of its value measured simply as a cultural artifact, resulting in a building's "meaningfulness" being located primarily within mainstream, cultural, symbolic life.

There is no denying that our minds and their attendant abstract structures exist. Symbolism, whatever the source, is an intrinsic aspect of our reflective experience. However, the experience of symbolic and representational meanings in the built environment in disassociation from any concrete materiality threatens to loosen our apprehension of our own physicality and force our lives into a level of abstraction contrary to our continued well-being. What is demanded of architecture by Cartesian dualism cannot be physically realized without continued denial of Nature and may be best attained within an artificial realm such as cyberspace.<sup>14</sup>

A model of visual perception bound to the concrete, by contrast, is operative from the uniquely individual perspective of embodiment. Mind and body are unified within a moment-to-moment specificity of the material surroundings.

An embodied model of visual perception predisposes an architecture that is meaningful within a contingent materiality that substantiates experience in the moment-to-moment judgments of our actions rather than within global, canonical decree.

Meaningfulness for architectural theory has traditionally been derived from such abstract intersubjective structures as canons, rationality, signification, and through a mirroring of society's power structures. Inherent in these abstract structures is an obfuscation of the primary situation that is each embodied individual. As abstraction increases in stature, the body, our embodiment [our nature], occupies a diminished position in inverse relation until we, as individuals, can identify with only those minuscule aspects of the universe that may have slipped through the filter of cultural convention. This shift in measures of value toward the cultural can impose on the individual being a sense of diminished connectedness with the things of the world. Inversely, by achieving a more tenable relatedness in the direct participation achieved through an embodied perceptual model, one can be in possession of the physical surroundings within a living wholeness in which the world and the perceiver are unified in a reciprocity of [creative] actions. Against the shift in measures of value caused by an underlying dualistic approach, architecture needs to be designed to afford the full participation of human actions by addressing its perceptual primacy and thereby establishing its fundamental presence.

There are aspects of architecture more profound than the apprehension of represented meanings. An element of the concrete must exist for the built environment to become viably affirmed as "real," that is, for its representational symbolism to become substantive. A Gibsonian "ecological approach" requires this affirmation as an enabler of our trust in our perceptions as viable information about our surroundings. Within the formation of our Being, the primacy of perception is always already established as a link between an individual observer and his or her environment in the concreteness of the world. When that world is configured in such a way as to demand abstracted apprehension apart from its concreteness, our living moment-to-moment experience becomes disembodied and diminished in fullness. Likewise, a world devoid of abstractions would provoke only an automatic, bodily response and would allow no conceptual, reflective connectedness.

## A MATERIAL BASIS FOR ABSTRACTION IN ARCHITECTURE

An underlying model of embodied perception asks that we consider the shape of the experience of architecture instead of the shape of the architecture alone. An underlying dualistic model of visual perception, on the other hand, asks that we consider only the shape of our idea, our interpretation. In both cases we base our actions on our consideration of our experience. Regarding embodied perception, our consideration is based on reflective interpretations within a spatial and tempo-

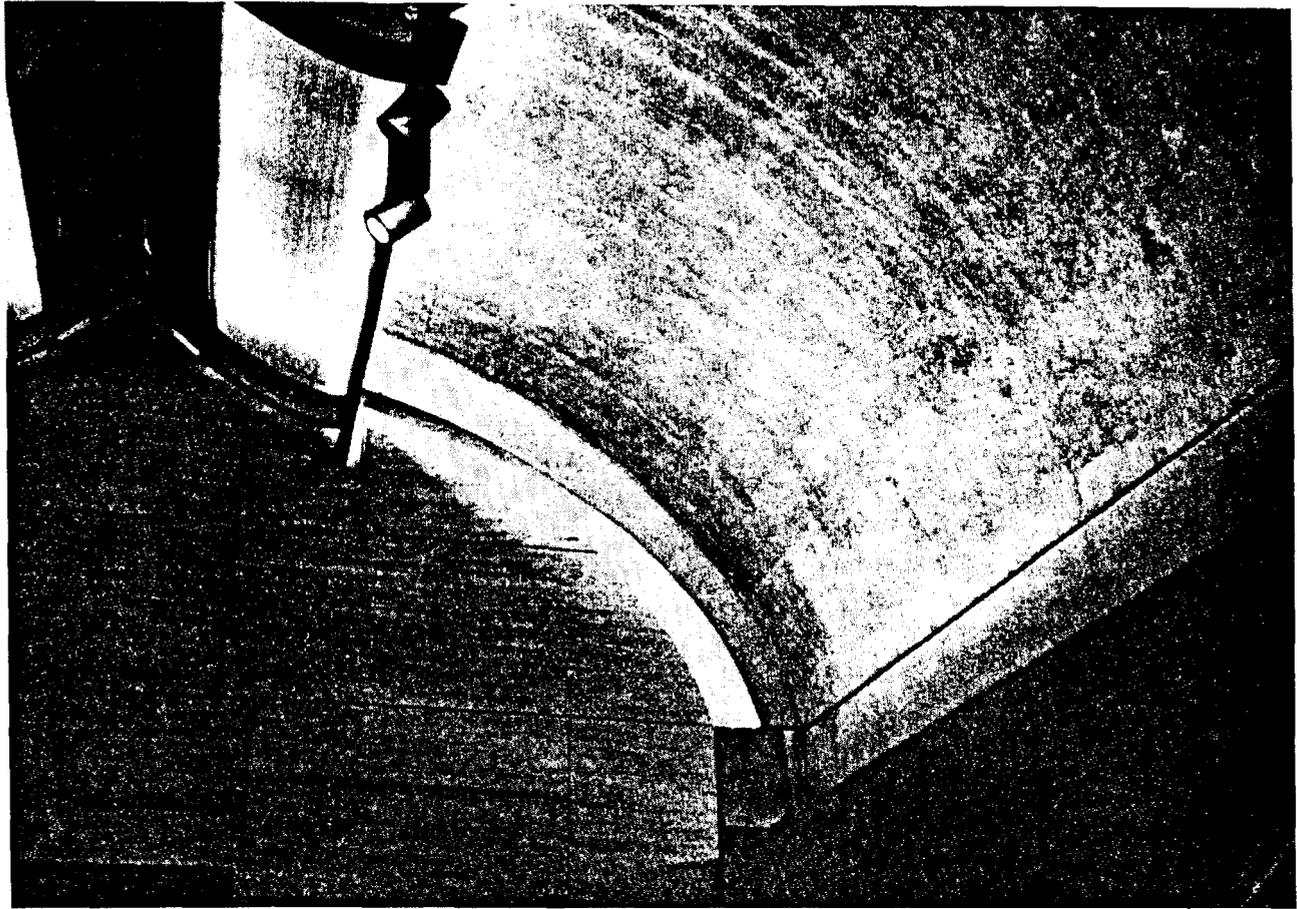


Fig. 2. *The Kimbell Art Museum - Detail of vault interior.*

ral contiguity with our bodily experience. Thus, reflection arises from our direct contact with the surroundings. In the second case, our reflective interpretation is cast in ideas - ideas whose meanings depend on the elusive intersubjective realm of culture. It is important to recognize that neither abstract ideas nor the concreteness of the physical body can occur discretely. The experience of architecture must necessarily involve the relation of the abstract to the concrete.

Understanding the visuality of architecture through an embodied approach to visual perception reveals that the relation of the individual to the culture is masked and distorted by an underlying dualistic approach to visual perception. An embodied model of visual perception posits the presence of the individual as the central referential axis of depth in experience, centering meaningfulness in an ontological primacy. On this basis, the aesthetic agenda of architecture becomes the expression of the "collective" upon the contingency of the "individual." For this to be evident through the experience of architecture, a level of design refinement must be achieved through a material basis for representation in which acts of careful making, emphasizing concreteness, are an essential feature. Thus, the making of architecture can actively construct a cogent material basis for representation.

It must be recognized that there are differing degrees of abstraction that comprise the dimensions of experience. This suggests a possible approach to architectural design in which specific acts of construction can reveal relations between abstract and more concrete levels of experience." If the central components of the experience of buildings are simultaneously abstract and concrete in embodied perceptual experience, this will allow the emergence of the meaning of both individual (direct) and cultural (abstract) levels. To accomplish this, the depiction of abstract content must be supported by specific materials and methods of craftsmanship within the visibility of the techniques of making.

The relation of the abstract to the concrete is evident in Louis Kahn's Kimbell Art Museum. Generally, an underlying epistemological model of embodiment anticipates, almost automatically, the perceptual apprehension of any abstract content in balance with a corresponding presence of materiality, the Kimbell accomplishes this harmony through a reduction of the representational references to that which has a substructure in the material presence of the constructed surfaces of its materials. This balance is manifest at both distant and detailed scales chiefly through methods of craftsmanship that develop the individual materials in a discreet joinery, thereby manifesting any fictive apprehension within

one's experience of the building itself. The detail of making the building that is evident in its material surfaces and its clear joinery has as its purpose the achievement of a holistic object rather than a composition or construction so as to limit engagement of the viewer with referential abstractions. The treatment of its surfaces fosters a visuality of reciprocal relations between abstractions and their concrete substructure, giving within the experience of the building, a deep, holistic engagement.

It is in the execution of detail that architecture can most easily fail to sustain the symbolic roles called for by its abstract "program." Delivering architecture as a symbol is not simply a matter of procuring an abstract image. A symbol must be sustained on the substantive level of its materiality – its making – or it will, by appealing only to abstraction, call into question its relation to the individual, and hence, the individual's relation to culture. If the visual surfaces of architecture present the conditions of their own visuality, then it behooves architects to more consciously consider the nature of how we see as a foundation for design decisions. Do we want an environment that is in full accordance with our nature as perceiving beings or do we continue to unconsciously accept a model of visual perception that drives our built surroundings to culturally bound abstraction?

### CONCLUSION: IMAGE-MAKING VERSUS EXPERIENCE-MAKING

The issues addressed in this inquiry have been biased toward the observer of architecture, the occupant as onlooker and participant. Only hinted at has been the possibility of a theoretical approach regarding the production of architecture. A central finding of this inquiry has been to call for a more careful construction of the material aspects of abstract representations in architecture, not as an adjunct component, but as essential to its coherent and complete reception. Observation and production are not mutually exclusive. Rather – and this is one of the main points of this inquiry – they are inseparable actors upon one another. The very act of perception is the guarantor of the interaction between the made and the experienced. A material's essence is given, by degree, a potential for visibility or it is subverted by the actions taken upon it in its material formulation as an element of our physical surroundings. Failing to account for the physicality of abstraction in the equation of architecture can, and frequently does, lead to the unsuccessful execution of an otherwise salutary project. The reality of the intrinsic life of the medium of expression – the material – is not a peripheral but a central consideration when an object is designed and built. It is my hope that an inquiry of this sort can help to clarify distinctions between architecture as image-making versus architecture as *experience-making*, thus resulting in the production of built form that reduces the overt use of symbolism unsupported by material presence.

What we build depends on how we think we see. When representational content forces cultural interpretation to take

precedent over our embodiment, our sense of connectedness to a greater universe is only possible through a cultural narrative, thus subverting the individual connectedness uniquely inherent to our embodiment. If perception is embodied, as Merleau-Ponty, and J. J. Gibson suggest, and as the work of Louis Kahn and other anonymous architects of buildings exemplify, then architecture can have hope of recovering its vanishing material basis, and we as occupants, can look to architecture for a more "perfected relation,"<sup>16</sup> not just to culture, but to our natural groundedness on this earth.

### NOTES

- <sup>1</sup> Juhani Pallasmaa. "An Architecture of the Seven Senses" *Questions of Perception Architecture and Urbanism (A+U)* (July 1994).
- <sup>2</sup> Walter Gropius, quoted in John Barr, *The Assaults on Our Senses*. (London: Methuen, 1970), p.8.
- <sup>3</sup> Rene Descartes. "The Optics," *A Discourse Concerning the Method of Rightly Directing One's Reason*. (1637) (Trans. by P. Olscamp). Ind.: Bobbs-Memml, 1965. and *Selected Philosophical Writings of Descartes*. J. Cottingham, et. al., Trans. (Cambridge, 1985).
- <sup>4</sup> Descartes. "The Optics" (1637).
- <sup>5</sup> Anatomical studies of the eyeball had been extensively developed prior to Descartes' investigation and are reflected in the accurately detailed representation of the physiological structure of the eyeball as well as the detailed construction of the optics of light reaching the eye. However, Descartes' representation shows a single eye literally as a disembodied object, as a "dead eye," isolated from any ecological factors, such as its placement in a head or relation to the other eye. It is depicted as a mechanistic object separated from the external world, floating in the grey netherworld of the mysterious *interiority* of the body. Lindberg, David C. *Theories of Vision from Al-Kindi to Kepler*. (Chicago: University of Chicago Press, 1976).
- <sup>6</sup> Extrapolations of Descartes' model have been the preferred model for scientific inquiry into perception within the bounds of this "visual process." Countless physiological and psychological experiments have attempted to explain the workings of perception at the scale of the nervous impulse of the retinal cells, usually in an attempt to discern how mere light energy, transformed into electro-chemical reactions, can result in a conscious grasp of one's physical surroundings.
- <sup>7</sup> Franz Frohse; Max Brodel; Leon Schlossberg. *Atlas of Human Anatomy*. (New York: Barnes and Noble, 1942).
- <sup>8</sup> Maurice Merleau-Ponty, *Phenomenology of Perception*. *Phenomenologie de la Perception*. (1945). Trans. Colin Smith. (London: Routledge & Kegan Paul, 1981). and *The Primacy of Perception*. James M. Edie, (Ed.). (Northwestern University Press, 1964).
- <sup>9</sup> James J. Gibson. *History of Psychology in Autobiography*. Edward G. Boring and G. Lindzey (Eds.) (New York: Appleton/Century/Crofts, 1967), p. 140.
- <sup>10</sup> Gibson. (1979) Op. Cit., p. 246.
- <sup>11</sup> Gibson. (1979) Op. Cit., pp. 65-92.
- <sup>12</sup> Donald Judd. "Art and Architecture 1984." *Architektur*. (Munster, 1989), p. 187.
- <sup>13</sup> John Lobell. "Architecture and the Structures of Consciousness" *Form; Being; Absence: Architecture and Philosophy*. *Pratt Journal of Architecture*. (New York: Rizzoli, 1988), p. 206.
- <sup>14</sup> Michael Benedikt. (Ed.) *Cyberspace: First Steps*. (Cambridge, MA: MIT Press, 1991).
- <sup>15</sup> Robert Irwin. "Some Notes on the Nature of Abstraction" *Perception and Pictorial Representation*. Edited by Calvin F.

Nodine and Dennis F. Fisher. Praeger Press, 1979, pp. 217-27.

- <sup>16</sup> A quotation of D. H. Lawrence is to the point: "If we think about it, we find that our life consists in this achieving of a pure relationship between ourselves and the living universe about us. This is how I "save my soul" by accomplishing a pure relationship between me and another person, me and other people, me and a nation, me and a race of men, me and the animals, me and

the trees or flowers, me and the earth, me and the skies and sun and stars, me and the moon: an infinity of pure relations, big and little ... that makes our eternity, for each one of us ... This, if we knew it, is our life and our eternity: the subtle *perfected relation* between me and my whole circumambient universe." Lawrence, D. H. "Mortality and the Novel," *Selected Literary Criticism*. Anthony Beal (Ed.) (New York: Viking, 1956), p.109.