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The Limbic in Architecture

Project Introduction

This thesis originates in my personal experience of a rush of pleasure which I associate with designing buildings and my interest in how far it is possible to share and convey this pleasure to the viewer and user of the buildings I design. It introduces the concept of the limbic in architecture. The thesis has two aims. The first is to establish and explain the importance of architecture as a visual and sensory stimulant prompting an emotional response which may be either subliminal or intense. The second is to provide a theoretical answer to the question of whether it is possible to design to enhance this limbic response.

The thesis sets out to demonstrate that the experience of architecture for both architect and viewer is only fully understood in terms of the limbic or pleasure system in the brain. This is not to deny the vital importance of the creation of functional spaces through architecture, and in particular its role in providing shelter, but it gives weight to the fundamental role of architecture as a sensory and aesthetic experience.

It makes the claim that, however mediated by essential technical expertise and intellectual analysis, the design and appreciation of architecture is primarily driven by emotion - in the sense that it draws on unconscious visual processes and associated limbic pleasure. It approaches this through considering contemporary research into and understanding of the limbic system in our brain and its role in enabling us to distil, make sense of and appreciate our environment and, in particular, our visual environment. It builds on Professor Semir Zeki's pioneering scientific investigation into the brain's response to art. It extrapolates from this to speculate on the role of the limbic system in creativity and lays stress on the central role of the visual imagination. It turns to Naum Gabo and his contribution to kinetic art as an example of an approach to limbic design and uses him as a case study to illustrate a possible connection between the pleasure experienced by the designer and the viewer. It uses this as a basis for speculating on and making some suggestions about approaches to design which draws on and enhances the limbic in architecture, while recognising some limitations.

Project Contents

The thesis follows two parallel paths. The first is an academic text which develops ideas emanating from scientific research. The second is a personal response to these ideas. I have included watercolours, sketches and personal memories which are fundamental in my understanding of the ideas and theories involved in this thesis. Therefore throughout the academic text are images and personal memories which complement the ideas it contains. The intention is to emphasise the validity of both objective analysis and subjective experience and the interconnection between the two. Both elements are brought together in the appendix which illustrates my own approach to designing limbic architecture utilising concepts outlined in Gabo's manifesto.

Section 1 Bio Aesthetics

My Image of a Personal Space

The academic text is written in three sections. The first, entitled Bio Aesthetics summarises past and current writing on and speculation on the innate human emotional response to art and architecture and on aspects of the drive to create. It outlines contemporary scientific evidence of the human brain's inner visual processes and their association with the limbic or pleasure system. It describes the brain's propensity to break visual information down into a number of component parts and then to reconfigure it to create patterns and make sense of a constantly moving environment.

It emphasises that we do not see objectively but constantly strive to reconstruct and give meaning to our visual world. It specifically highlights research into the nature of the brain's limbic response to art. It focuses in particular on Zeki as the pioneer of experiment on the brain's response to art and the leading scientist in the field of neuro-aesthetics and his exposition of the universal laws of the visual brain. It describes how artists have either intuitively or consciously sought through art to distil the essence of this unconscious process and tease out the associated emotional response. It explores the creative visual imagination of the artist who draws on limbic processes to crystallise internal images 'in the mind's eye'. It speculates on the link between the creative limbic process and the limbic response in preparation for subsequent discussion of whether it is possible to design for the limbic in architecture.

Section 2 Naum Gabo, a Case Study A Personal Response to Limbic Stimulus

The second section is devoted to an extended case study of Gabo as a sculptor who both unconsciously and consciously designs for a limbic response through his emphasis on space and motion. By adopting a reductionist approach and abstracting essential features from our visual environment he mirrors the process of the visual areas of the brain. It follows Gabo's work from the first creative spark, distilling an essence of visual motion 'in the mind's eye', though the first attempts to capture this on paper and then to the final sculpture.

The dissertation emphasises the predominant role of the 'right hand brain limbic process'. This drives the sculptor's visual imagination and is key to the evolution of a sculpture which satisfies and resonates with the brain's search for pattern from a moving environment. It draws attention to the first abstract drafts which seek to crystallise this imaginative process. This is combined with Gabo's appreciation of an excitement in the qualities and potential of the design materials, and is followed by meticulous and detailed design drafts as basis for realising the sculpture. However the 'initial spark' remains the constant reference point. Gabo's account of this process, his initial drafts and final working as a sculpture are well documented. The case study is used tentatively to propose a link between this creative 'limbic process' and the way in which the spaces of the final sculpture capture and hold the gaze.

Section 3 Application to Architecture Architecture: My Passion

The final section extrapolates to architecture and attempts to answer the two central questions raised in this thesis. It asks how far a contemporary scientific understanding of the limbic system can be extended to apply to architecture and concludes that it can. This raises some questions about the additional dimension architecture brings as a three dimensional medium and one which creates inhabitable spaces as well as playing a role in the visual environment. These are partially addressed although not fully explored. It speculates on the second question of whether it is possible to design for limbic architecture. It draws on Gabo to make some suggestions about an approach following his process of the initial creative spark, distilling the essence on paper and realising the final design, and it recognises some limitations. It attempts to reconcile the subjective nature of aesthetic response with some underlying universal principles through emphasising the dynamic nature of the process. It proposes the essentially emotional nature of our response to our experience of our visual environment as a challenge which the architect must address.

