

## **FIELD A[E]FFECTS**

### **Shaping Spatial Experience**

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In recent years the manipulation of light, sound, form and materiality within the practice of architectural and interior design has undergone radical changes. These developments have emerged in line with technical innovations in computer modelling, lighting technologies, multimedia systems, audio equipment, manufacturing techniques and material science. With the rapid changes in the nature of contemporary spatial design practice, and the media used in its shaping, it has become apparent that there is much to be gained from an examination of the base assumptions which a designer brings toward the physical environment. As the technologies used to both model and create spatial effects develop and evolve, it seems that spatial design thinking must similarly evolve.

The genesis of these thoughts around a renewed approach toward the act of spatial design was initiated through a series of experimental design projects which sought to question the basis of creative thought and expand the perceptual and cognitive tools that may be brought to the manipulation of objects and spatial phenomena. The foundation of this body of work involved the development of a theoretical and perceptive base to design, which eschews the conception of materiality and physical form as the central concern in the fashioning of objects and spaces, and embraces the comprehension of the physical fields that effect sensorial experience as its primary concern. A key to the development of this ethos is the idea that the design of our physical environment can be enacted through the manipulation of fields of wave-like phenomena. In this process the conceptual base for design is envisaged as the harnessing of fields of energy rather than the shaping of inert matter. Through the iterative and exploratory nature of design thinking, the practice addresses the inherent physical connection between light, sound, form and materiality in which the observation of the field-like behaviour of one kind of spatial phenomena can be employed to develop an understanding of another. Addressing the foundations of the design process in such a way has been instrumental in evolving a creative methodology in which the consideration and manipulation of the material and immaterial aspects of the physical world transcend the traditional boundaries that lie between the distinction of matter and phenomena.

## Studio-based Design Research

At the heart of this evolving practice lies an ongoing series of studio-based experiments, which are conceived of as pure investigations into the manipulation of specific media. Through a series of exploratory studies, both a technical appreciation of the phenomena being manipulated and a testing of their physical effects, sensorial affects and expressive properties have been uncovered. In these works the intention is to expose the physical qualities of the phenomena and media being manipulated and refine the perceptions that can be brought to the act of design. In the adoption of such a research methodology the aim is not to seek definitive answers or proofs or to construct an argument for the application of such techniques, rather the aim is to broaden the perceptive base from which approaches to design evolve and to develop a body of work and knowledge that ultimately begins to reference itself in the generation of design responses. Through the development of works around the specific investigations of generative processes and innovative use of media the intention is to define the scope of an ongoing design oeuvre. In such an approach, the creative act is seen as both the mechanism and the product of the research.

An important aspect of this methodology is the development of series or collections of works that emanate from the detailed observations of phenomena. These series of works manifest themselves through the use of specific media and materials, the concentration on particular working techniques and the referencing of external metaphors in the adoption of a finite form of expression. The individual works produced from this approach are conceived of as essential and iconic sculptural elements which display a clear relationship between their material form and the phenomenal field which they manipulate. Singularly the pieces expose a particular nature of the phenomenon they engage with while collectively they build a complex understanding of the manipulation of spatial experience. This development of the practice through the production of a series of interrelated works and a series of complimentary series introduces a narrative of concerns and principles that over time extends into a 'vocabulary of design'. In this process the narrative threads of a series of works and the rigor and expertise developed to execute them constitute a body of design knowledge.

While the production of the works is instrumental in refining the appreciation of the medium being employed and understanding the parameters of its manipulation, the central focus of the practice lies in the exploration of the relationship between the physical manifestation of specific phenomena (effect) and the resultant influence these phenomena have upon one's perception (affect). In seeking to produce works that express themselves as fields of energy, the pieces generate powerful affects that extend the viewers' perception beyond the scope of the everyday and into the qualities of the extraordinary. Their aesthetic power lies within their ability to invoke an experience that seems contradictory to one's preconceived expectations on the nature of objects and spaces. In this way, the works act as provocateurs of the senses, confronting the viewer with the conundrum of experience and challenging them to question their understanding of the physical world. This development of the practice, revolves around the idea that the works physical manifestation lies somewhere between the certainties of tangible form and the ethereal nature of fields of energy. Such an approach to the production of artifacts and environments suggests that the guiding principles of the

creative act can lie within these two poles of physical description, between field and form. In doing so the practice seeks to produce a third condition, a transcendent state, in which one's perception of their physical environment becomes the medium that is being manipulated.

## **A Phenomenology of Light**

The understanding and manipulation of the qualities of light has in many ways defined the nature of the modern life. Developments in the technologies of illumination in the twentieth century have seen our private and public spaces transformed by the potentials afforded by artificial light. We are in a generation that has come to rely on lighting systems. In our homes, workplaces, retail and cultural environments, on the facades of our buildings, along our streets, boulevards and freeways we are assisted, directed, informed, amused, entertained, comforted and confronted by myriad forms of lighting. In recent years, the pace of development in lighting and material technologies has increased to such an extent that the contemporary designer needs to constantly keep pace with the engineering innovations available to them. The control of light now far exceeds the specification and diffusion of appropriate lamps as new technologies such as data projection, light emitting diodes, plasma screens, optical films and sensor systems present a whole new set of parameters in the approach to lighting. In order to be able to employ contemporary lighting technologies the contemporary designer needs to be equipped with a sensibility that can assimilate the potentials of new lighting media and forge new and refined methods of their manipulation.

The qualities of light can only be fully appreciated when they are considered as a dynamic system. In this way the perception of light and colour can be seen as a question of relativity, as the apparent affect of a lighting condition is dependent upon its relationship to the nature of the ambient light and darkness which surrounds it. Our perception of a particular hue, saturation or brightness of light is dependent on its contrasting effect with the contiguous environment. Similarly the workings of the eye and brain have the ability to manifest further *gestalts*, illusions and after images that can be manipulated to shift and alter our experience of a particular lighting scenario. The potentials of manipulating that space between the stimulus of the optic nerve and the interpretation of the mind offer a new dimension toward the thinking about light and its orchestration.

In coming to terms with the manipulation of light and colour from a design perspective it was useful to consider Goethe's observations of light, particularly his focus on the experience of the viewer in the comprehension of light's properties and his postulation that 'colours are the deeds and sufferings of light, the deeds and sufferings of light with darkness'.<sup>1</sup> Goethe pictured that light and darkness relate to each other like the north and south poles of a magnet, and that colours arise at the borders where light and dark meet. In negotiating the boundary between darkness and light, it became apparent that white light (be it natural or artificial) obliterates coloured light's intensity and that darkness provides the perfect backdrop from which to achieve

the full depth of projected colour. Between these two extremes lie the ideas of colour emerging from darkness and that colour can be manifest as a shadow within a field of light.

Through the production of a series of sculptural light pieces, the controlled generation of coloured shadows and the subtleties involved in the manipulation of additive and subtractive colour effects were comprehended. In concert with the technical control of lighting media grew an appreciation of the subtle perceptual qualities of vision such as complimentary contrast, apparent colour, after image and gestalt. The pieces generated through this methodology of perception, sought to master the manipulation of visual effects so that subtly shift as they are experienced through the eye and in the mind of the viewer. From the development of startling experiential gallery-based pieces the work developed into proposals for more permanent architectural lighting scenarios. These investigations established the principles of understanding light not through its technical specification but rather through the manner of its perception and gave rise to a sensibility that can be brought to the manipulation of advanced lighting technologies. In doing so the works began to uncover the expressive potential of light and colour as an affective medium that can engender sublime moments of curiosity, wonder, delight and enlightenment.

## **Archetypes of Sound**

While vision has largely been regarded as the dominant sensorial faculty through which we negotiate the world, it must not be forgotten that human beings are constantly gauging the spatial aspects of their environment through the conscious and unconscious cognition of sound. In many ways our perception of sound is truly three dimensional, the stereo nature of our ears and their position on either side of the head make hearing an all encompassing act of perception. With this facility we are both able to perceive the depth, size, shape and materiality of our environments and can monitor and respond to the speed and proximity of people and objects as they move around us. We most often take this aural acuity for granted and it is perhaps only when the acoustics of sound sources we are hearing are either extraordinarily good or intolerably bad that we become aware of our aural environment. Unfortunately, within the professions of Architecture and Interior Design, the manipulation of sound in spatial environments and the control of a particular space's acoustic field is either largely ignored or is considered to be a highly specialised field that is serviced by sound artists, audio technicians and acoustic engineers.

In order to transcend the abstract and highly technical nature of sound manipulation and contemplate its control from an object maker's and spatial designer's viewpoint, it became necessary to define sound as a sculptural medium, a tangible physical field which can be shaped into expressive and compelling compositions that set up dynamic relationships within architectural space. In this undertaking it was important to come to the understanding that sound is in fact moving waves of air and that hearing is a physical reaction to the frequency and pressure of those air waves. In this sense sound can be considered as the ultimate haptic experience, as it is the result of a physical medium being felt by the sensitive membrane of our ear drum which is then converted

into the electrical impulses that are perceived. When it is of significant amplitude its vibratory power can be felt through the body, skin and bones.

Coming to terms with the idea of sound as a three-dimensional spatial configuration of moving air requires an appreciation of the intrinsic geometric order of wavelike behaviour that lies at its core. While the wavelengths of light are infinitesimal and as such perhaps too fine for us to imagine, sound's wavelengths and frequencies are at a scale that is closely related to the size of human beings and the architectural constructs that they inhabit. In this way we can start to imagine the dimensions of sound as specific fields of vibrating air through which we pass every second of the day. Adopting these perceptions in the formulation of a conception of sound as a physical entity required the understanding of its behaviour as a combination of specific frequencies and amplitudes which create fields of interference and degrees of resonances and reverberation within the objects and spaces that surround us.

The tracing of the deep connection between the comprehension of the nature of sound and its role in defining the fundamentals of musical theory, mathematics and geometry informed an approach to the conception of sound as a sculptural and spatial medium. The visualisation of sound fields as standing wave interference patterns and the appreciation of the resonant properties of particular forms and materials forged a conceptual platform from which to create dynamic acoustic interactions of sound, object and space. The development of these perceptions allowed for the conceptualisation of sounds and tones as physical entities with specific size and pattern making properties that can be shaped as a tangible spatial physical field. The approach to the shaping of architectural spaces in such a way involved the appreciation of the integrated and symbiotic relationship between the production of particular sounds and tones, the size and shape of the objects that resonate in their presence, the positioning of these resonant objects relative to one another and the interaction of the resultant sound field with the acoustic properties of the spatial enclosure in which they reverberate. These complex physical considerations are further augmented by an appreciation of the symbolic references and archetypal qualities that are inherent within the relationship between sound and form. In this way the knowledge gained from the sound installations acted as a guide to the comprehension of architectural and urban environments, not only for their acoustic potentials but as opportunities to create complex, dynamic and dramatic juxtapositions of sound and space.

### **Transient Materiality**

While the central approach to the development of this design ethos was enacted through the production of discrete investigations, the undertaking of the different series of studio-based projects in a concurrent fashion allowed for the cross-pollination of observations, concepts and techniques to infiltrate the manipulation of different phenomena. In considering the connections between light and sound it was appreciated that these two phenomena were closely associated through the wave-

like properties inherent within their manipulation. On the other hand the understanding of the nature of sound and its relationship with form uncovered the attributes of standing-wave patterns, the correlating geometric properties of vibrational fields manifest in physical media and the harmonic interaction of sound with the proportions of resonating objects and spaces.

This consideration of the mathematical and geometric principles and physical representations observed in optics and acoustics and their allusions to the realm of structural form was then further extended to conceive of material compositions in terms of the properties of wave-like behaviour. This design exploration was inspired and informed by the sublime and contradictory nature of twentieth century physics and the idea that the fundamental nature of matter is not only considered from the point of view of particles, but is also knowable through its underlying pattern of wave forms. The contemplation of the counter intuitive postulations of contemporary scientific thought led to the development of an approach to design which could bring together the concepts of wave-like phenomena, tested in the light and sound projects, as a way of conceiving of intricate fields of matter. In this thinking the ideas of structure and pattern are considered as examples of waveform, frequency, amplitude, rhythm, superposition and interference. In embracing this approach toward the modulation of form it was possible to conceive of architectonic elements as three-dimensional arrays, which work as both structural entities and as oscillating fields of optical gestalt.

The initial investigations into the potential conception of form as wave-like phenomena drew from the earlier studies of the properties of sound fields. These harmonic field diagrams were generated by the colour coding and visual mapping of different wavelengths and frequencies of musical notes which had specific origins relative to each other. The resultant graphical works produced not only a way of comprehending the nature of an intentionally calibrated sound field, but also displayed these acoustic effects as overlapping moire patterns which seemed to allude to the complex compositions of overtones, chords and beats that would occur in such an installation. In order to reconcile the incorporeal patterns of wave-like phenomena examined in the exploration of sound (and light) with the conception of complex three dimensional forms, I embarked on a series of projects that employed the nature of the point source geometries, used to map light and sound, as its basic principle. In these projects the initial interweaving of the properties inherent in the overlapping of concentric circular rings in a two-dimensional fashion, evolved into techniques for the manipulation of curved structural elements into polar arrays of intersecting geometries. This approach to the generation of form was then extended so that the arrays of structural elements not only produced compelling patterns but began to create effects which played upon the perception of the object and dissolved the solid forms into overlapping fields of interference patterns. In this way these projects began to synthesise the essence of field-like phenomena by creating works that seem to alternate between solidity and immateriality.

The work on the realisation of structural gestalts and the desire to dissolve the perception of form within fields of optical interference, led to a consideration of the aesthetics of dematerialisation and its role as one of the abiding conditions that define the sensory experiences of the contemporary city. With the advances in material technology enabling larger and larger surface

areas of glass and the development of optical films and filters that allow for the refraction, polarization and distortion of these surfaces, an exploration of the immaterial and illusory aspects of the modern city seemed potent and timely. In reviewing previous projects, I realised that my approach toward design had moved from a preoccupation with objects in space to the crafting of patterned surfaces and optical affects. The resultant arrays of these pieces held many simultaneous affects that would make the perception of the pieces oscillate between one perceived condition and another. I termed this quality 'optical syncopation', a condition in which the apparent dominant visual hierarchies within a piece are interrupted by the presence of other layers of pattern, which in turn create apparently changing gestalts within the unified whole. This design approach sought to extend the transparent and translucent nature of the contemporary city by transmuting the boundaries of materiality into pulsating, structural, optical fields which hovered at the edge of physicality and illusion.

### **(Con)temporary Urban Spatial Phenomena**

While at the heart of the project lie the series of studio-based experiments, which are conceived of as pure investigations of phenomena and perception, the understanding of the potentials of these discoveries and their application in the wider world needs to be framed in relation to different sites, circumstances and design briefs. Extending the conception and display of the work beyond the realm of the studio initially involved an engagement with the nature of contemporary gallery spaces. The gallery-based work was understood to exist within the traditions of late twentieth century perceptual minimalism and installation art in which the neutral void of the white walls of galleries act as a blank canvas in which works can operate on a primary level. In this situation sculptural and installation-based works can be presented in a concentrated and expressive form, in ways that can confront the audience with sensorial provocative encounters that challenge assumptions about perception and the nature of physical reality.

In positioning the adoption of these principles into the realm of the city, an appreciation of the typologies of space with which this thinking may intersect became paramount in defining the direction and concerns of the design practice. A primary form of this engagement with the spaces of the city has been offered through the construction of temporal design installations within showrooms in conjunction with annual design festivals. In these cases the work is usually called upon to respond to a curatorial theme or question and the nature of the physical manipulation is informed by the inherent qualities of the site. Such projects involve the careful interpretation and interaction with a commercial space and its daily operations and call for a finely attuned appreciation of all forces at play within the space, so that programmatic, thematic and phenomenal concerns are carefully balanced in a unique embellishment of the existing conditions. The design projects developed from such an approach operate to augment and amplify the phenomenological conditions of particular spaces and overlay these spaces with new dimensions of experience and meaning.

The undertaking of these projects has informed the development of a design sensibility which involves the identification, mapping and expression of the unseen forces existing within architectural environments. The comprehensive interpretation of such spatial phenomena provides a platform from which to expose the many layers of contextual reference and potential metaphors inherent within the sensorial qualities of a particular space. In this approach to design thinking, the essential creative act is seen as a marriage between the precise manifestation of phenomenal fields and the perceptual affects that they create. This linking of the realms of physics and psychology reconfigures the reference points from which to consider the act of design. In such a schema the essential design act is no longer one that is concerned with the conceiving of objects, spaces and buildings but rather is considered as a cross-disciplinary practice that is involved in the shaping of spatial experience. In this approach to design, the phenomenological appreciation of the body and its sensory faculties, as the mediator between physical sensation and mental cognition is explored and exploited. Under these terms design is viewed as the manipulation of urban spatial phenomena which structures our perceptual comprehension and subsequent interaction with the built environment. The conception of the designer as a practitioner who orders the perception of spatial experience offers the opportunity to re-imagine the act of design within the urban realm, so that disciplinary boundaries are challenged and dissolved and the city is viewed as a continuously transforming set of conditions which the designer modulates, amplifies and attunes in order to imbue our surroundings with a deeper resonance.