COLOUR CONVERSATIONS & COLLABORATIONS WITH COLOUR TOOLS

Melanie YONGE
Architectural Colourist, Issycouleur, 10 rue de Palestine, 75019, Paris, France.
Email: melanieyonge@issycouleur.com

ABSTRACT
Words captured from conversations in Milan Think Tank: morphology, meeting point, matrix, memory, material colour and material light. The power of image in communication, and the articulation of languages of colour and light in architecture were central to my research as an architecture student and continue to be important today as a practising architectural colourist. The dynamic role in the relationship between planes and volumes, through varied light and colour situations, has been central to my approach and involvement in using and making colour tools for the world of architecture and design, in turn manipulating and transforming space.1
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1. INTRODUCTION
Colour and light are ingredients that complicate and enrich the perception and the experience of spatial phenomena. Colour tools used to study the three-dimensional nature of colour and light in architecture are key to articulating fluently a language of colour and light. Full-scale models, as seen in the workshops of Dr. Leonhard Oberascher and the Light Labyrinth installation at the Fisher Gallery, set a future for spatial design. The subtractive mixing of pigments to create complex colours, as seen in the work of Aalto Colour sets up a stage for a meaningful interaction of colour and light.

2. FULL-SCALE MODELS

2.1 Workshop
Colour and light allow architects to analyse form and manipulate the volumetric characteristics of architectural space. In 1998, I joined Dr Oberascher, an Austrian consultant, colourist and psychologist, in two workshops at the Department of Spatial Stimulation at the Vienna University of Technology. We initiated a language of colour considering the movement of the human body within shifting coloured environments. Visual perception changes with every moment of observation. According to each individual’s way of seeing and the quality of the light unfolding continuously, the interaction of light and surface creates hues anew. The full-scale model was reconfigured with the passage of each...
the visitor through colour, light and spatial organization, allowing the visitor to interact with the environment according to individual needs and desires. New rooms were created with varying levels of stimulation. The pure forms of the volumes were destroyed by the use of multiple colours, but a new sense of spatiality and sensation was created. Colours were mixed to reflect different moods and different functions. Spaces capturing grey, highly chromatic primary colours or complex mixes of colour and light were achieved. Using a simple palette of blue, red, yellow and green painted surfaces, in combination with an equivalent palette in coloured light, a multitude of colours were mixed.
2.2 Light Labyrinth

Recognising the potential of full-scale modelling as a means to explore the interplay of light and colour, I brought back the concept to New Zealand to further develop and experiment with the structure and form of the labyrinth. *Light Labyrinth* was installed in 1999 at the Fisher Gallery as an interactive colour space. An aluminium kit-set engineered by Auckland University Architecture School students, the labyrinth is also a place of observation to facilitate conceptual colour and light design. It’s an experiment in space and over time to stimulate the visual appearance and psychological effects of various light choices and colour palettes. Nine rooms interconnected through the pivoting of the panels. Each movement changes the fragile but rich colour-space environment.

Over the course of the exhibition *Light Labyrinth* appeared in three versions. The students worked with a palette of colours inspired by the natural landscape of the East Cape in New Zealand. Drawn into the maze through a highly...
chromatic red panel, visitors to the first version of the labyrinth discovered themselves in a tunnel-like space, engulfed by the depth and moodiness of coastal greys and blues. Most visitors instinctively drifted towards the furthest corner, the perpetually changing light mixing created spellbinding waves of colour as the panels of the labyrinth swung back and forth. Workshops led by Dr. Oberascher, directed the subsequent evolution of the installation. The workshop process enabled architects, designers, artists and lighting specialists to transform the exhibition with new colour schemes, lighting plans, sound-scapes and layouts. Experimenting with translucent materials, gloss and texture overlaid and contrasted with painted panels the workshops observed the visual appearance and cognitive impact of their choices. The Labyrinth revealed that the true colour of a panel was continually altered by the colour of the light, the intensity of the light and the reflections emitted by its surrounding environment. Thus colour proved to be a virtual property, a complex and dynamic element of design communicated by simple and often inadequate semantics.

The lighter hues and the lengthier corridors of the second version of Light Labyrinth created a sensation of greater space, allowing the viewer to appreciate the colours of shadows and interplay of grades of blue and yellow on the corridor walls, juxtaposed against reflective and metal surfaces. Revolving panels meant that a warm vista could be overtaken by a gust of cool fluorescent light. In its final version, magenta lights and bubble wrapped panels again led
visitors to the far corner of the *Labyrinth*. Yet in reaching their destination there was no sense of arrival. Perception of the space was distorted by the shifting pale blue floor, which swept colour up the gallery walls. One’s orientation was equally challenged by the light sources as it gently swathed the space in various mixes of colour and intensity. *Light Labyrinth* was a place of intrigue. The mixing of light and the changing of surface colour was rich and powerful. Dynamic changes were visually, emotionally and intellectually challenging. Many found it intense, too intense and wanted to find a way out, often blocked by the passage and movement of someone else. Others played for hours, a game, an observatory. *Light labyrinth* has illuminated the potential of modifying architectural space with light and colour. Its sets the future of spatial design, with a stimulating conceptual palette from which to draw ideas, persuasively illustrating the beauty of space when colours are observed synchronically rather than successively.

### 2.3 Luminos

In 2002, I again joined Dr Oberascher in Frankfurt for a workshop with a further developed labyrinth structure, *Luminos 4*, which had sixteen cells of swivel doors using textiles, net, acrylic glass. He said, “*My own main interest was to develop tools that will allow us to observe, investigate and analyse different (and new) possibilities of how colour and light, material, surface and form can influence each other (perceptually) in the context of space and time; to observe and describe the colour and light caused by size and orientation of spatial elements, movement of spatial elements and of the observer, distance, angle and duration of observation, changes of illumination (intensity, spectral composition, angle, duration), and finally to systemize these observation and look for general explanations/rules.*”

### 3. COMPLEX SUBTRACTION MIXING

#### 3.1 Aalto Colour

Since 1992 I have collaborated with Prue Cook, the founder of *Aalto Colour*, to create colours and colour tools for architects. *Aalto Colour* approaches the making of colour from a fine arts perspective. Individual colours are made by building the colour on a palette, pigment by pigment, in the same way as the traditional artist. The language of colour is based upon human perceptions of the visible spectrum. Colour is not the property of objects, spaces or surfaces; it is the sensation caused by certain qualities of light that the eye recognises and the brain interprets. Light and colour are therefore inseparable. Surfaces absorb and reflect different wavelengths. It is the reflected wavelengths which determine what colour we see. When separated, any single wavelength will produce a specific colour impression to the human eye. The more pigmented the paint, the more wavelengths are created and therefore the greater the perception of depth. *Aalto* colours are all individually built to allow this full interplay of light and pigment. Inorganic pigments provide coverage and nuance, while the more transparent organic pigments give luminosity and a polychromatic dimension to the surface. *Aalto* colours are three dimensional due to their complex recipes. Standard industry paints, for the larger part made up three pigments, are two dimensional in appearance. *Aalto* colours reflect the nature of elements found in the natural world. Observation reveals that rocks on the beach are not just grey. The changing light from sunrise to sunset
transforms them through shades of red, orange and brown. At close view, we can see that the rocks are made up of thousands of particles which are white, grey, black, ocre, red ocre and so on. Aalto believes in colours that work in harmony, colours that endure, colours that take place in our natural world. For many years Aalto Colour refused to make a colour chart, believing that colours should be created with architects, designers and private clients for specific projects. Each colour made in function of the project’s concept, orientation of a room and the amount of natural and artificial light falling on the planes of building surfaces. A4 ‘brush-out cards’ are hand-painted so that the interaction of colour and light can be understood in-situ. The Aalto colour library became an important archive of the use of colour and light in New Zealand.

4. COLOUR TOOLS FOR ARCHITECTS

Fig.6
New Zealand colour and material landscape study by M.Yonge, 1996

Fig.7
Aalto Foundation, enduring colours that respond to our southern light, www.aaltocolour.com
4.1 Aalto Colour Books
In 1998, we edited four Aalto Colour Books. The first book was dedicated to white, aiming to clearly present the complex nature of white with its warm, neutral and cool effects. Books Two, Three and Four where dedicated to light, mid-range and saturated hues respectfully. The books were designed like the children's book known as ‘heads, bodies and legs’. Three individual adjacent pages separated the families of warm, neutral and cool shades while at the same time allowing the user to create harmonies of three. Subsequently, we recognised the demand for a small palette of colours in which each colour, due to its construction, would be compatible with the rest. The Aalto Foundation colours have been created as a response to the clarity, strength and the constant changes of the light in southern hemisphere and the landscape. The palette is inspired by the natural world; the climate and light, rocks and soils, flora and fauna and the landforms in Australia and New Zealand.

4.2 Aalto Foundation
The layout of ‘Foundation Range’ was designed as a game, like the children’s boardgame called ‘snakes and ladders’. The user can move, climb or slide up and down the palette making and seeing colour combinations. We made a tool to isolate a single colour or a group of four colours. The isolator invites the user to find their own harmonies of colours, thinking of associations of wall planes and objects in varied light situations. Cool colours are placed next to warm ones, in a close proximity, just as we see colours in the natural environment. Colours in the landscape are never seen in an isolated manner. Instead they coexist in harmony, creating colour conversations between themselves and with the light.

4.3 Colour Charts
In today’s environment, colour charts are printed en mass, computers generate infinite colour palettes with nearly 17 million colour possibilities with RVB recipes, and Pantone dominates the reproduction of colour in the production of surfaces and object. Architects are literally bombarded with colour choices. “The colour chart has largely supplanted the color wheel, which for three centuries embodied the attempt to organize color meaningfully and hierarchically according to spiritual and scientific theories. During the course of the past century, those systems have come to be understood as reflecting the human desire for order more than any intrinsic truths about color. Classifications once considered immutable are now recognized as reflections of personal choice or historical context. For example, Issac Newton’s decision in 1675 to identify the spectrum as seven colors rather than eight was based on his desire to make an analogy to the notes of the musical octave.”

5. CONCLUSION
Constructing careful colour conversations between applied paint, architectural materials and light allows spaces and building forms to become part of a greater language connected to their surrounding environment with a sense of identity and culture of place. An articulate language of colour is developed by observation, analyse and practise. Colours for architecture should be made for specific spaces taking into account the natural and artificial lighting environments. Complex colours recipes for applied paint reflect natural materials and allow a rich interaction of colour and light.
Colours made for and with architects in response to ideas, planes, forms, spaces, buildings and objects establish an eloquent dynamic between colour and light. Articulating a language of colour and light is critical to an architect’s success to manipulating space and circulation to create timeless buildings. A matrix of morphing space, creating meeting points, and inspiring memories of material colour, material texture and material light.

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REFERENCES