

THE JOURNAL OF THE SCHOOL OF DESIGN

Volume 1 Number 1

What should it look like ? Take a look...

Ray Berry, Michael Harris page 2

School of Design Curtin University of Technology

Associate Professor

Tony Russell AM page 4

The Centre for Teaching and Research in Design

Woman on rock

James Rogers page 7

The ambitions of flight

John Waddell page 8

Some heroes of modern philosophy

Alun Price page 9

Colour in the fourth dimension

Paul Green-Armytage page 12

Interactive multimedia and the graphic designer

George Borzyskowski page 15

T.A.F²

Lee Marter page 19

Paper in three dimensions

Wendy Welton page 20

Fear and loathing of counter culture in suburbia

Stevie Everton-Smith page 22

The design show 1992

page 24



showcasing three young west Australian photographers

THE JOURNAL OF THE SCHOOL OF DESIGN

CURTIN UNIVERSITY OF
TECHNOLOGY

Perth. Western Australia

VOLUME 1 NUMBER 1

DECEMBER 1992

editors

RAY BERRY

MICHAEL HARRIS

design and production

MICHAEL HARRIS

editorial board

ALUN PRICE

PAUL GREEN-ARMYTAGE

TONY RUSSELL

RAY BERRY

MICHAEL HARRIS

subscriptions and enquiries

RAY BERRY

School of Design

Curtin University of Technology

GPO Box U1987, Perth 6001

Western Australia

Telephone: (09) 351 2273

Facsimile: (09) 351 2980

ISBN 1 86342 236 6

© COPYRIGHT The School of Design
Curtin University of Technology
1992

This publication is copyright. Apart from any fair dealing for the purposes of private study, research, criticism or review, as permitted under the copyright act, no part may be reproduced by any process without written permission. Enquiries should be directed to the publishers.

What should it look like?



If we look at the magazines already published on or about design, they might serve as a model for what we wish to do. At least we can identify those things, in terms of style, content and approach, that we wish to avoid as well as directions we might follow and develop.

There are the DESIGN magazines.

Showcases for contemporary products and profiles on designers and commentaries on the state of the design profession. In Australia we've got: DesignWorld, Design Ink and the DIA's Designer Dialect, all reflecting the Australian scene as well as activities from overseas. In a similar vein there's the UK's Design, Design Week, Creative Review, the German Novum Gebrauchgraphic as well as a host of others like Directions and Domus. These are domestic and international publications which focus on specific design disciplines from architecture and interiors or graphics, advertising and media, to ones which have a wide ranging and eclectic brief, covering not only parochial issues for the design fraternity but raising issues that sets design in its wider context. The social, historical and economic arena in which designers, their clients and customers operate and have direct responsibility.

The hallmark of many of these publications is their mix of news content, events reporting, opinion, correspondence, yummy photography with high production values on glossy paper and bags of coffee table appeal.

I doubt that our budget will run to this level of production, but our brief is somewhat more limited and we are not trying to be full time publishers.



Then we have what I can only describe as the BORING ACADEMIC JOURNAL.

Cover to cover close set type, no pictures, the odd diagram, definitely a tome for the serious academic. A turn off for the average reader who, if she or he is anything like me, will scan the pictures and browse through the photo captions before deciding whether the article's worth reading. Even then, if the intro' paragraph doesn't nail me to my seat, it doesn't get a look in.

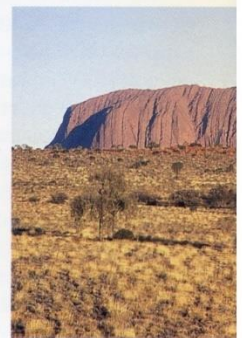
COLOUR IN THE FOURTH DIMENSION

PAUL GREEN-ARMYTAGE

"Viewed from afar, Ayers Rock looks like an impregnable fortress ... But while the massive bulk of the Rock appears immutable and infinitely durable, the constancy of its colours is as fleeting as time itself In the first light of morning, the Rock is suffused with a rusty flush. Later, as the sun climbs towards its zenith, the monolith

Chromaticity coordinates for the rock surface have been obtained by measurement: x0.411 y0.358 Y0.352 CIE 1931 I11 C. Those figures, and the means used to obtain them, would not bear close scrutiny, but that does not invalidate my point: while the rock surface may be uneven and somewhat mottled, from the point of view of colorimetry it does not change "colour". The colour of the rock surface is constant in a way that the skin colour of a chameleon is not.

Equally constant is the formula used to mix a paint from the Taubmans range which is identified by the name "Ayers Rock". The formula is useful to the paint company. Chromaticity coordinates for the rock surface would be useful to a geologist. Also useful would be a notation such as 10 R 6/6 which would locate the colour in the three dimensional space of the Munsell System. formula, coordinates and notation all deal with something physical, measurable and permanent, but they convey nothing of the actual experience of the Rock itself which does indeed appear to change colour and which draws tourists in their thousands. The three dimensions of a colour system are not enough to describe this. No account of the "changing



appears bleached When clouds trail across the sun, the hot-hued surface deepens to a richer brown ... After rain, Ayers Rock turns leaden Evening provides the most spectacular colour change. When the sun sinks low, its rays transform Ayers Rock into a gargantuan ember. Outlined against the wan blue heaven, the incandescent Rock seems to scorch the sand for miles around." (1)

colours" of Ayers Rock is adequate without reference to the fourth dimension - the dimension of Time. The different colours are particularly clear in photographs which have been taken at different times of day, from different viewpoints, at different distances and under different weather conditions.

W.D. Wright (2) has offered an answer to the question "what is colour for": "surely this ... to tell us about objects". Colour can certainly help us to distinguish between an orange and a lemon and to determine whether a tomato is ripe or not, but there is additional information about objects which can only be picked up when colours change. Perception of change

requires time and movement. If a change of viewpoint produces a change in colour at Ayers Rock, then the way in which the rock surface changes colour tells us something about the rock.

Important information about an object can be conveyed by the degree to which its surface is or is not glossy or textured.

It can be important to know whether a ceramic jug is glazed or not. Glaze is revealed by changes in colour - the highlights. One might conceivably interpret the highlights as patches of white paint, but that reading becomes impossible as soon as there is movement; when the angle of illumination changes, the positions of the highlights also change.

Richard Hunter (3) has pointed out how *"In assessing color, the eye looks at a uniform area of the object; to evaluate gloss and texture it looks for non-uniformity across the whole surface of the object, as indicated by variation in the intensity of light reflected from the object."* We are acutely conscious of such non-uniformity. Colour changes which indicate degrees of gloss and texture help us to identify and evaluate objects. These are the features which enable us to tell the difference between a brick and a glazed ceramic tile. Changes of colour alone, however, which appear in a "uniform area of the object",

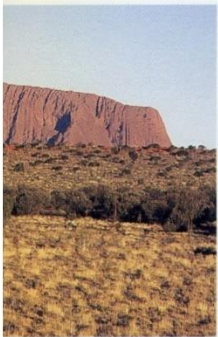
We notice the difference because it helps to reveal the form of the building but, having extracted that information, we discount the difference so that we are not misled into believing that different bricks have been used. On a smaller scale, we extract the information which reveals the texture of the bricks and then discount it so that we are not misled about the material from which the bricks are made; we can distinguish between those colour changes which are indications of texture and those which reveal that there has been surface staining or that the clay body of the bricks contains other ingredients.

Colour constancy might make tourists at Ayers Rock sceptical about the difference colours in the postcards and souvenir books. (A two dimensional photograph does not contain all the information required for colour constancy to operate.) It is the colour changes at sunrise and sunset which give credibility to the photographs. It is because, at those times, the interaction of light and rock surface produces such rapid and extreme changes in the "intensity and spectral composition of the light reflected to the eyes" that colour constancy breaks down and people want to ascribe the colour changes to the rock itself as though the

makes them seem to be part of the background.

Colour changes play a role in many branches of science. The litmus test reveals the presence of acid or base by a change of colour. Crystals of potassium ferricyanide appear orange. When added to a ferrous sulphate aqueous solution they turn blue. This tells us that a new complex has formed. Colour changes can play a role in the identification of minerals. Al Peger uses photomicrography to record the different colours which appear when a thin slice of rock, mounted on a microscope slide, is rotated in polarised light. This process makes it possible to measure the angles between the crystal axes and this, together with the colours and colour changes, contributes to positive identification of the minerals. In each case the before and after colours which "tell us about objects" can be measured.

More difficult to measure are surfaces where there are no physical changes in the object or light source but which exhibit different colours when seen from different viewpoints. These are the kinds of colour changes which tell us that a surface is glossy or textured, but which occur most dramatically when the surface is



are a different matter. Now we would judge that the object itself is different, that it has undergone some physical change. If it is, in fact, the same object, physically unaltered, we would not want to be misled. This is where the phenomenon of colour constancy comes in.

As Jacob Beck (4) explains *"Color constancy refers to the fact that the perceived color of a surface tends to remain constant despite changes in illumination that alter the intensity and spectral composition of the light reflected to the eyes."* So we read as uniformly coloured two walls of a building where one wall is in bright sunlight and the other in shadow. There is a very subtle interplay of consciousness and unconsciousness.

Rock had some magical property or were even alive.

Living things do change colour and these colour changes also "tell us about objects"; they tell us about changes in an organism's physical state. Green leaves turn brown when they die. The very fact that a lizard changes colour helps to identify it as a chameleon. With different pigments in special cells which can expand or shrink in different layers of its skin, a chameleon can display a repertoire of patterns to inform or deceive. A male can change colour to let a female know what is on his mind and change again to warn off a rival. Some chameleons escape predators with a colour pattern that

pearlescent. Allan Rodrigues (5) has described how at least three separate measurements, each with a different viewing angle, are required to establish whether or not two pearlescent surfaces will match.

Colour changes present problems and opportunities to those who apply colour - artists and designers. Colour constancy and the associated phenomenon of memory colour can make it difficult for painters to see and record accurately what is before them. These issues are raised by Roy Osborne (6) *"...it is not incorrect for a member of the general public to describe the entire facade of Rouen Cathedral as 'stone coloured' ... however, the Impressionist painter Claude Monet*

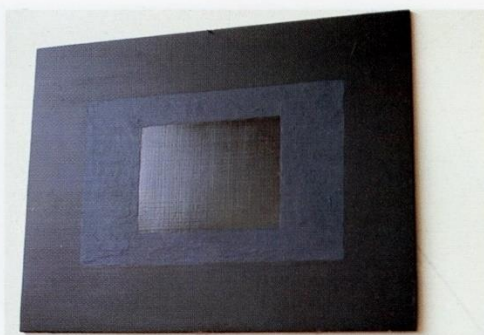
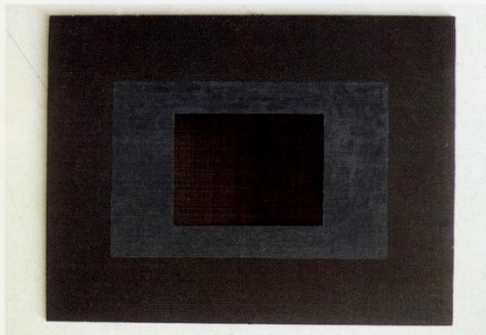
repeatedly depicted the Cathedral using numerous colour combinations, each observed accurately but under different conditions of illumination. Monet realised that they key to undermining constancy is to 'Try to forget what objects you have before you - a tree, a house, a field, or whatever. Merely think, here is a little square of blue, here an oblong of pink, here a streak of yellow, and paint it just as it looks to you, the exact colour and shape ...'

Monet is known to have had several paintings of the same scene in progress at the same time. As the changing light brought about corresponding changes in the colours he would put aside one canvas and take up another. It is interesting to compare his paintings of the "limestone coloured" cathedral with photographs of the "sandstone coloured" Ayers Rock.

Howard Taylor is a Western Australian artist who is also concerned with the interplay of light and colour, especially the way that changes of colour reveal form, texture and surface quality. Full appreciation of his work - painting no less than sculpture - is not possible from a single viewpoint. Because a change in viewpoint brings about a change in appearance the viewer becomes actively involved in Taylor's work.

New materials and new processes have extended the opportunities for

and laser light shows are some of the new media where movement and colour changes in controlled sequences are an intrinsic element. Effects of movement and changing colours can also be achieved when a design in cellophane tape on a slide of polarising material is projected through a second sheet of polarising material rotating in the projector beam. Colour, light and movement are united in the work of Peter Sedgley. The light itself provides the energy to activate motors which rotate dichroic glass filters. When beams of light strike these filters some wavelengths are transmitted, others reflected. Curved mirrors reflect the beams back again. The beams multiply, change direction and change colour in continuously changing patterns. The richness Segley's work is due in part to his exploitation of colour in the fourth dimension.



Black Figure
1988, Howard Taylor
Acrylic and oil on panel

designers to engage the public in a similar way. Designs printed on a surface in clear varnish appear lighter or darker than their background or they can disappear altogether as the surface is tilted towards or away from the light. "Shot" fabrics, similarly tilted, also change colour. Pearlescent pigments offer particularly dramatic possibilities. Not only can pearlescent surfaces change hue quite radically with a change in viewing or lighting angle they can also change from very light to very dark. Allan Rodrigues (5) has shown how this extreme lightness contrast can accentuate the contours of a three-dimensional object.

Animated films and videos, neon signs

Bibliography

1. Moffitt, Ian and the editors of Time-Life Books. *The Australian Outback*. Time-Life International, Amsterdam, 1976.
2. Wright, W.D. "Towards a Philosophy of Colour" in *The Rays are not Coloured*. Adam Hilger, London, 1987.
3. Hunter, Richard *The Measurement of Appearance*. Hunter Associates Laboratory, Fairfax, Virginia, 1972.
4. Beck, Jacob. *Surface Color Perception*. Cornell University Press, Ithaca, 1972.
5. Rodrigues, Allan. "Colorimetry of Metallic and Pearlescent Colours" in *Instrumentation for Colour Measurement*, AIC Interim Symposium, Berlin 1990.
6. Osborne, Roy. "Teaching Colour" in *The Artist*. April and May 1990.