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Colour-Theory and the Houses of Hayes & Scott

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If Queensland architectural culture is typically framed only in terms of climatic determinism, this paper draws attention to an often overlooked and long standing aesthetic impulse born out of the consideration of architecture as art. It will discuss one manifestation; the use of colour in the domestic work of local architectural partnership Hayes & Scott born out of a sustained interest by the local architectural culture through the 1940s in colour’s role in architecture. Colour was also a persistent theme in the teaching of Robert Cummings who revised the Perspective subject at the Brisbane Central Technical College to become Perspective and Colour in 1935, the year he took charge of the Diploma in Architecture. In the 1950s Hayes & Scott experimented with the application of colour as interior decoration and externally to achieve moments of productive tension as they tested its potential in the articulation of architectural form and concepts of heritage.

1. At this moment the journal made a significant shift from an organ of the New South Wales chapter to including material from other chapters, starting with Queensland.


Colour’s role in architecture was a theme returned to on a number of occasions in Architecture, the journal of the RAIA over the course of the 1940s.1 In “Colour and Architecture,” Sydney architect Walter Bunning (1912-1977) declared that “any job is capable of being thought out on the drawing board in every detail, and that colour should be decided exactly at the same moment as the idea and should be shown on the drawing,” a possibility he claimed was held back by the lack of a standardised system of colour notation in Australia.2 He used examples related to the impact on everyday life from the adoption of the Ostwald System in Sweden to recommend its potential to improve the quality of architecture here, and discussed a range of historical and contemporaneous approaches to colour that responded to different climatic conditions. Turning attention to Sydney’s subtropical climate he advocated white buildings with projections to cast shadows over surfaces relieved by textures or patterns in subtle colours following Italian precedent.
In “Colour,” spanning over two issues, Frank Costello (1903-1989) drew on the thesis on colour he submitted to the Board of Architects of New South Wales in 1939 to give an overview of the principles of colour harmony, contrast and discord, described as analogous to “elements of construction.” This account sat adjacent to an advertisement for Ripolin Enamel Paint. Costello who was later to become City Architect and Planner with the Brisbane City Council referred in passing to Frank Lloyd Wright’s claim that colours required the same ordering process as forms and also English architect William Harvey (1874-1951), author of Colour in Architecture who defined the limits of colour’s use in terms of integration with or concealment of structure. In relation to colour itself Costello argued:

It is not always realised by architects that as in all design, the use of colour calls for the observance of established principles of use. There must be balance and correct interrelation between the colours in their chromatic and tonal properties as well as in areas and shapes. Expression of character, fitness for purpose, restraint and refinement and scale are all required just as much in colour as in other forms of architectural design.

Costello laid out approaches for colour’s potential integration with city form in his second essay. A photograph of the National Radiator Building, London (1929), designed by Raymond Hood (1881-1934) and Gordon Jeeves (1888-1964) for whom Costello had briefly worked, clad in polished black granite with colourful friezes and cornices introduced “Colour: Its Application in Architectural Design,” which established principles for the use of colour as a design element in conjunction with architectural form. He defined two categories after conducting what he claimed was a broad historical overview. The first, the use of a colour of strong intensity across the whole wall surface with emphasis on “smaller elements” by form or colour contrast applicable for groups of buildings, town centres, institutional buildings or individual buildings on island sites.

The second category identified low intensity colours as appropriate for application to the façade of individual buildings using shades and greyed hues with emphasis on smaller features through increased colour intensity. Costello went on to present ten principles that extended the focus of the first two articles, borrowing in part from the ideas of English architect Owen Jones (1809-74), author of The Grammar of Ornament (1856),

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particularly in relation to articulated form. He raised the issue of the limited availability of coloured building materials like sandstone, bricks, glass, ceramic tiles and vitreous enamels and advocated working with a limited paint palette in the face of harsh climatic conditions: “Paint manufacturers can produce nearly any desired colour—but here the climate is against the designer, for paint pigments soon lose their first freshness, and even change in colour in a comparatively short time.”

“Colour is Light” was a lecture presented to the Illuminating Engineering Society, Queensland Division, by Queensland architect Edward Weller (1903-79), who had worked briefly for Walter Burley Griffin (1876-1937) and Marion Mahony Griffin (1871-1961) in Sydney. Weller discussed the close inter-relationship between illumination and a range of arts in which colour plays a role. He gave an account framed by scientific advances over time starting with Newton and the history of the physics of light, developments in the understanding of matter and energy, the visible spectrum, colour perception, colour and heat including luminescence and finally colour and harmony drawing on the chapter on harmony in artist Maitland Graves’ book *The Art of Colour and Design*. He noted the potential of colour to give the impression of coolness in tropical and subtropical climates. Other topics broached were light and pigmentation, light’s effect on colour, art in illumination (lighting), dramatic effects and abstract film (cinema).

In “Painting toward Architecture,” Harry Seidler (1923-2006) claimed that pure colour was an invention of modern art and identified its role in architecture as; “in the form of carefully placed accents in large spaces of neutral quiet zones.” He was taught by Josef Albers (1888-1976) at Black Mountain College who developed his approach to colour after his time at the Bauhaus in Dessau. Certainly as John Gage has revealed, colour had become a central preoccupation of painters in the nineteenth century and by the end a paradigm of visual law, but science and colour-theory played an important role as well. After a chance meeting with the American painter Albert Munsell (1858-1918) at Harvard in 1905, the German chemist Wilhelm Ostwald (1853-1932) who joined the colour committee of the Deutsche Werkbund in 1912, collaborated with the paint industry in his own country to produce sets of carefully calibrated hues that amounted to a mathematically derived “rational system of harmony.” Both Ostwald and Munsell developed colour-order
systems based on the new techniques of psychological testing for colour discrimination in an attempt to represent “universal” colour relationships. Ostwald’s ideas were immediately taken up by the De Stijl Group and had significant resonance in the “confused aesthetic atmosphere of the Bauhaus in the 1920s.”

At the Bauhaus in Weimar, Ludwig Hirschfeld-Mack (1893-1965) taught colour, assisting Johannes Itten (1888-1967) who had developed a theory relating to the harmony of contrasts. Itten had been a student of painter Adolf Hoelzel (1833-1934), himself following critic Charles Blanc (1813-82) who had argued that the “fixed laws” of colour could be taught like music. Hoelzel disagreed with Ostwald to insist that the eye or subjective taste must be the final arbiter of colour, importantly making no distinction between colour-theory as applied to the fine and decorative arts. The influence of the Bauhaus in Australia was no doubt propelled by the arrival of Ludwig Hirschfeld-Mack in Australia as émigré in 1940.

In *Australia’s Home*, first published in 1952, Melbourne architect and critic Robin Boyd (1919-71) included a brief historical overview of the built form of Brisbane with a particular focus on the recent development of St Lucia in the western suburbs. Boyd singled out the work of Hayes & Scott for praise and at the same time dismissed most Brisbane architects and builders as guilty of a “southern stylist,” the implication being that its terracotta roof tiled houses looked too much like a Melbourne suburb. Boyd’s contempt for popular taste implicit here predates his more developed complaints in *The Australian丑陋*. He did however acknowledge a “reasonable compromise” in the design approach of Hayes & Scott for their “return to first principles” through the updating of the raised floor of the timber Queensland house to take advantage of the space under the house “with concrete-framed, partly enclosed, utility ground-floors.” Boyd could have been describing the perspectival representation of a Hayes & Scott house prototype with no veranda that appeared in Brisbane’s *Courier Mail* newspaper in June 1950 under the heading “The ‘new look’ in Queensland homes,” the depiction of a house on a site sloping down to the street addressed by a balcony with substantial roof overhang projecting out over it. Turning to interior decoration, the newspaper article echoed Edward Weller to recommend greens and blues to make rooms appear larger and cooler and the use of warm colours including reds, oranges and yellows for visual stimulation. It concluded with the comments:

Architects are trying with notable success in the newer suburbs to persuade home-owners to use pinks and grey-greens, whites and unusual greys instead of the usual cream and browns for exteriors.24

It would appear that Robin Boyd and Peter Newell were aware of this newspaper article when they wrote “St Lucia: A Housing Revolution is Taking Place in Brisbane” for Architecture in 1950. It, in turn, informed Boyd’s account of the suburb in Australia’s Home, in particular his remarks about the abundance of colourful painted houses across the suburb and the effective use of colours other than white as a remedy to the problem of glare.25

In St Lucia, Brisbane, the most remarkable architect-instigated revolution occurred. By 1950 this area contained not merely the greatest concentration of progressive buildings in Brisbane; it had nearly every progressive building in the State. St Lucia had attracted the younger architects after the war for obvious reasons. It was high, richly wooded and unexploited. Most sites surveyed a wide view of the twisting Brisbane River. They sold for a few hundred pounds each, despite the fact that they were within three miles of the city. An architects’ colony grew up. They built for themselves and their clients in a manner seldom seen before in Brisbane. The traditional elevated timber house was lost. It was not always replaced by something more logical or more suitable for the climate . . . White, blinding in Queensland’s sun, was rarely used. Pale pinks, greys, light and dark olive greens in broad floods of paint soon made St Lucia one of Australia’s most colourful suburbs.26

When Robert Cummings took charge of the Diploma in Architecture at the Brisbane Central Technical College in 1935 he immediately transformed the Perspective subject into Perspective and Colour. In a short radio lecture, “The Importance of the Study of Art and Architecture,” delivered on radio station 4QG Brisbane that year, he made the case for the teaching of the history of art and elementary principles of design in the education curriculum to benefit the built environment, particularly he argued in Australia, a young and developing country with no great artistic traditions and still with “our own traditions to develop.”27 He went on to outline elementary principles common to all the arts, including architecture: unity, proportion and composition, contrast applied to forms, size (scale) and colour including depth of tone and texture. In relation to modern


architecture, Cummings declared as one might have expected, the importance of truthful expression of structure and function for the achievement of beauty and more surprisingly the potential of ornamentation to add character and express structure and the accentuation of elements, citing the perspectival effect embodied in Leonardo da Vinci’s *Last Supper*. He emphasised the significance of scale to the overall composition. Further, he argued that a knowledge of colour was of the greatest importance to design, in particular a knowledge of the natural order of colours and an understanding of their location in the colour circle to facilitate control of colour harmony, contrast and discord. He recommended the careful selection of a few well-designed objects “in harmony” for the interior decoration of rooms and made mention of an exhibition of contemporary industrial design at the Royal Academy in London that included rooms designed “in every detail” (*Gesamtkunstwerk*) by architects themed in close collaboration between artist and industry in the manner of the Deutsche Werkbund.28

In 1951 Cummings gave a lecture on furniture and interiors to the Women’s Club in Brisbane.29 He framed this discussion within an abstract definition of interior decoration: “An interior in common with other forms of design, broadly expresses itself in terms of line, form, colour and texture.” He delivered three lectures on colour-theory at the university in 1953.30 His sources included *Colour Dimensions* by industrial colour consultant Faber Birren (1900-88) published in 1934 and two books by Maitland Graves, *The Art of Colour and Design* (1941) and *Colour Fundamentals* (1952).31 The second lecture, “The Effect of Light or Light Sources on So-called Colours or Colouring Matter,” drew on material covered by Edward Weller and dealt with differences between natural and artificial light sources and the consequences for visual sensation with an explanation of hue, tone and intensity and the difference between cool and warm colours. He followed with an account of research that revealed colour preference according to gender, the phenomenon of after images as well as colour contrast, the juxtaposition of colours, optical illusions and effects achievable through the use of glass and texture.32 In “Colour Notation” he explained Ostwald’s colour solid with its achromatic vertical scale and chromatic colour circle and Munsell’s colour system designed to allow accurate colour description in terms of hue, value and chroma (saturation), both examples that were covered by Faber Birren in his book *Colour Dimensions* who had developed his own Birren Colour Equation for colour matching.33

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30. The first lecture on Colour Theory is missing from the Cummings archive.


32. Robert Cummings, “Colour Theory 2: The Effect of Light or Light Sources on So-called Colours or Colouring Matter,” lecture, July 29, 1953.

This sustained interest in colour underpinned by colour-theory and approaches to its application in architecture drawn from the accumulation of Beaux Arts, Arts and Crafts and early modern sources across composition, architectural and urban form and climatic response fed directly into Queensland’s architectural culture post-war. The first house in the 1940s that as Campbell Scott remembered, employed colour as all-over effect was the Jones House, Narrow Neck on the Gold Coast by Austrian émigré Karl Langer (1903-69), painted a muted plum-mauve.34

Initially Queensland architects Hayes & Scott (1946-84), like most architects of the time, used colour as a significant component of interior decoration according to principles laid out by Cummings and Weller. In the 1940s and 1950s, their interiors typically relied on walls painted in abstract planes of colour, compositions that relied on explorations of colour-theory, in particular differences between cool and warm colours and the claim of colour’s potential cooling effect in a hot climate. This approach was offset against uniform colours chosen for house exteriors, with windows and other elements often highlighted in white for dramatic effect.35 Campbell Scott recalled site visits to confirm colour tints by mixing paint with a putty knife on glass with the builder on site.36 The Hood House, St Lucia (1947), perhaps influenced by the over-all effect achieved by Karl Langer, featured in “The ‘New Look’ in Queensland Homes,” to stand for a new approach to “small ‘modern’ homes.” It was presented to the readership through a photograph taken from the street accompanied by a plan to reveal a house form articulated by a terracotta-tiled roof and chimney painted a dark colour set on a white-painted masonry plinth. A column at the entry and the

34. Angela Reilly, “Interview with Campbell Scott: Early Practice,” May 7, 1998. The Mrs Lance Jones Senior House as described by Scott was probably a refurbishment as it first appears in the Queensland Country Telephone Directory in May 1940.

35. Sealing, priming and painting timber white was accepted practice for weather protection at this time in the local architectural culture. In the Specification of the Ritchie House, Indooroopilly (1956), Hayes & Scott specified Permoglaze Sealer Primer No. 1, Robbialac Plastron Pigmented Sealed, Robbialac Wood Primer as sealer, Tanox Primer and Permoglaze Zinc Chromate Primer as primer, Tanox Undercoat and Permoglaze Undercoat No. 2 as undercoat and Tanox as Finishing coat (oil paint).

living room’s floor-to-ceiling bay view hopper windows were also painted white. Similarly, the Cooper House, Broadbeach (c. 1948) was result of two army surplus buildings joined together on-site and painted brown, fused together by an entrance and chimney painted white.

The Stephens House, Bardon (1952) was the subject of the *Courier Mail* article “Cliffside Home Frames a Unique View of Brisbane.” It featured a front door painted primrose (yellow) set against an olive green exterior. In the living room on the second floor the remainder of the wall above large windows that faced east and framed a view of Government House, Brisbane River and mountains beyond was “deep vivid red” to contrast with the sky while the other three walls were painted in graduated shades of blue. The colour strategy described for this room recalls Weller’s advice: “Cool colours (greens, blues) make rooms seem larger and cooler.” The article mentioned that the walls were painted primrose in the laundry and set against a bright red floor, colours again recommended by Weller for visual stimulation.

Between 1953 and 1962 Hayes & Scott experimented with the use of colour externally as an abstract component of composition, within proportions generated according to the golden section, either to emphasise specific elements, usually as planes of colour often at the entrance in an approach not too far removed from Costello’s second category derived from the Arts and Crafts, or as part of a strategy for the articulation of form and structure. Colour was integrated to amplify structural logic and signify changes in function internally.

The first house by Hayes & Scott that experimented with external use of colour was the Pfitzenmaier House, Surfers Paradise (1953) a renovation to an existing single-storey brick house nestled in the sand dunes. The result was a two-storey white painted brick and timber butterfly roof form with angled vertical timber blades to screen a veranda that cantilevered over the garage and faced west to the street. Integral to the composition of the front façade, a Naples yellow rectangular panel was incorporated to allow for a future stair, offset below the screen to function as a balustrade. The external timber wall obscured by this screen on the veranda was painted a dark green with white painted timber frames to the glass door of the bedroom. The dining room alcove adjacent to the kitchen was highlighted with a primrose curtain and featured floor to ceiling glass. Glass sliding doors with hopper windows above were again painted white, the standard method of sealing

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external hardwood timber door and window frames locally at the time. The garage doors were also white with offset vertical black stripes. Internally, the colour scheme balanced pale grey and charcoal with red and primrose in a combination of “neutral” achromatic and visually stimulating chromatic colours. The main bedroom of the Blockey House, Surfers Paradise (1953), another beach house completed around the same time featured a deep green and white striped wall facing a wall in plain green in the master bedroom.40

The Cutts Beach House, Surfers Paradise (1954) was an extruded gable slab-on-ground house that featured bright colours externally used to signify changes in use, set against a broad application of olive green as background colour, a preferred house colour in different shades often returned to. A burnt orange panel below casement windows was used to highlight the dormitory zone of the house adjacent to a white garage door again featuring black vertical stripes at the edges. Burnt orange was also used to highlight the front door set into a plane of yellow. The entry, positioned under a rectangular opening in the roof to illuminate the entrance was screened by a curved white brick wall with black top course to form a wind-protected outdoor area adjacent to a white barbecue plinth integrated with the chimney, both capped in black.

The Falconer House, Toowoomba (1954), located at the top of the range was again a white painted form with black edging with gloss-white painted bricks internally. Here doors painted primary colours red and yellow were used to amplify elements and reinforce living and dormitory zones.

The Fraser House, Surfers Paradise (1956) was clad in horizontal chamferboard and painted light grey. From the street, the left bay of this tripartite composition included blue panels over the window to a shallow cantilevered veranda with a translucent fixed glass balustrade below, divided by a thin structural element expressed in white. This façade again featured vertical timber blades, this time in the middle bay precisely aligned with window elements in the first to screen the entrance and an aluminium framed door and window set. On approach the soffit of sunshades over windows and the ceiling of the double height breezeway were revealed as lemon yellow with the front door highlighted in white.

The Harvey Graham Beach House, Surfers Paradise (1957) was initially a simple rectangular flat-roof form with white painted brick end walls that featured a square mural bisected by diagonal lines to compose multi-coloured triangles. This mural addressed the street and was repeated at the entrance perpendicular and made reference to the mural at the entrance of Case Study House No. 9 (John Entenza’s House) at Pacific Palisades in Los Angeles (1949) a result of the collaboration between Charles Eames (1907-78) and Eero Saarinen (1910-61). If the original mural was black and white, Hayes & Scott’s was composed of triangles of black, teal blue, Naples yellow and burnt sienna in a conflation with later coloured elaborations on the same theme explored by Charles and Ray Eames (1912-88). The difference between these colours did not register in black and white photographs of the house.

Inside the floor was black concrete to unify an intricate colour scheme throughout that changed over time beneath an expressed steel truss ceiling. A steel truss carport and pergola was added.


Figure 3. Harvey Graham Beach House, Surfers Paradise (1957) (source: Fryer Library, The University of Queensland.)
later and the mural facing the street painted over. Another house from the same time, the Simpson House, Northcliffe (1957) was painted olive-green and featured a monochromatic red panel that aligned with windows adjacent to make a privacy screen in the first bay of the veranda addressing the street, recalling Costello’s second category.

The Jacobi House, Indooroopilly (1957), an atypical project overseen by Campbell Scott with assistance from Malcolm Cummings, was an abstracted pyramid-roof form that featured a central chimney painted black on a white plinth-like base. Exposed roof beams painted salmon pink were then elaborated as thin vertical piping expressed at the corners and in the middle of the elevation with joints in between highlighted in black. This compositional strategy served to divide each half of the elevation into tripartite grey-green panels into which openings were then set.

Figure 4. Jacobi House, Indooroopilly (1957) (source: Fryer Library, University of Queensland.)

Figure 5. Herford House, Surfers Paradise (1958) (source: Fryer Library, University of Queensland.)
The Herford House, Surfers Paradise (1958) was a two-storey house that continued the exploration of this theme with a salmon coloured panel set back above the entry, painted circular steel columns and floor beams and expression of window bays and veranda balustrade, all highlighted by salmon pink.

The Griffin House, St Lucia (1957) was an idea for a project home prototype designed for and built by local builders Griffin & Knowlman based on Hugh Stubbins’ winning entry in the Realistic House for Georgia competition of 1946. Built on a site sloping down from the street this was another house that incorporated murals, in this case panels of orange and yellow that addressed Hawken Drive composed symmetrically but inverted as a significant component in the composition of the front elevation this extruded gable form with clerestory pop-up. It demonstrates the sustained intention to make colour a significant aspect of the overall formal and material resolution of the house at the level of “elements of construction.” It reveals a commitment by Hayes & Scott to colour as an important design aspect, in this case with the potential to add positively to everyday experience.

Campbell Scott was dismissive of the murals Edwin Hayes designed for the Harvey Graham Beach House as too decorative, even though the mural was precisely calibrated to the openings at the entrance in its doubling. This criticism points to an underlying tension between the two practice partners. Nevertheless they maintained a remarkable consistency of approach in this phase of their work often with limited budgets. This at a time when cheap new paint technologies available post-war and commitment to architecture as art in the local architectural culture allowed colour-theory to be put to the test.