

international working party for
documentation and conservation
of buildings, sites and neighbourhoods of the
modern movement

Modern Colour Technology

Ideals and Conservation



preservation technology
dossier 5
july 2002

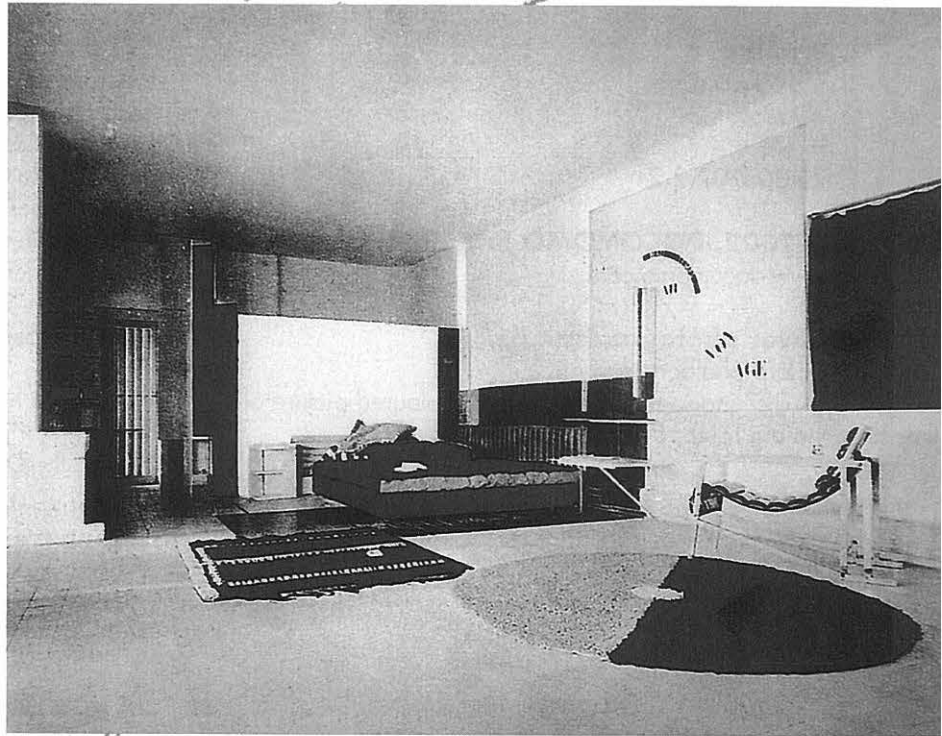
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la fontaine blanche

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Colophon

Modern Colour Technology Ideals and Conservation

Proceedings International DOCOMOMO Seminar,
May 12-14, 2000, Leuven-Antwerpen, Belgium

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Printing

Tripiti, Rotterdam

ISBN

90-805702-2-2

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www.docomomo.com

Cover photographs

Colour photograph:

E 1027 maison en bord de mer, Coloured picture of
the big room, *L'Architecture vivante*, 1929

Background:

Maison Guiette, colour indication of Guiette – on the
advice of Le Corbusier – for the hall

**International DOCOMOMO Seminar,
May 12-14, 2000, Leuven-Antwerpen,
Belgium**

Organisation

- DOCOMOMO International Specialist Committee
on Technology
- Onderzoeksgroep Monumentenzorg Moderne
Architectuur, Katholieke Universiteit Leuven

Cooperation

- Rijksdienst voor de Monumentenzorg Nederland
- Ministerie van de Vlaamse Gemeenschap, Afdeling
Monumenten en Landschappen
- Stad Leuven

Financial support

- Arte Constructo
- FWO-Vlaanderen
- Rijksdienst voor de Monumentenzorg Nederland
- Sigma Coatings
- Sikkens

Special thanks

Georges Baines
Jean-Marc Basyn
Danie De Sadeleer
Emmanuelle Groenen
Elizabet Iglesias
Ivana Lazanja
Teresa Patricio
Birgitta van Swinderen
Jan Van Vaerenbergh

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Introduction

by Els Claessens

An obstinate misunderstanding exists that allows Modern Movement architecture to be known predominantly as an architecture of white walls. However, colour forms in many buildings an integral part of the design and plays a prominent role. Well-studied shades of colour and specially chosen surface textures refute a reductive or too limited conception of MoMo architecture.

When restoring such buildings, the aspect of colours is often much underestimated.

Therefore, a DOCOMOMO Technology Seminar was dedicated to the restoration of colour applications in Modern Movement architecture.

The DOCOMOMO International Specialist Committee on Technology (ISC/T) focuses on Modern Movement building technology, and aims at developing appropriate conservation and restoration techniques for Modern Movement architecture, for instance by regular exchange of recent experiences.

In this way the ISC/T organises yearly a seminar. In 2000 the fifth seminar was organised in Leuven about 'Modern Colour Technology. Ideals and Conservation'.

The previous seminars were: 'Curtain Wall Refurbishment' (Eindhoven, 1996), 'The Fair Face of Concrete' (Eindhoven, 1997), 'Reframing the Moderns' (Copenhagen, 1998), 'Wood and Modern Movement' (Helsinki, 1999). A sixth seminar has meanwhile taken place, 'Stone of the Modern. Principles of Cladding' (Rome, 2001). The proceedings of these seminars are published as DOCOMOMO preservation technology dossiers.

We were able to organise the seminar on Modern Colour Technology within the framework of the research project *Monumentenzorg Moderne Architectuur* that ran from March 1997 to December 2000 at the faculty of architecture of the *Katholieke Universiteit Leuven*. Our initiative coincided with the wish of the heritage department of the *Ministerie van de Vlaamse Gemeenschap* to draw international attention to recent Belgian research and restoration projects on texture, colour schemes and composition of render and paintlayers.

The collaboration between both initiatives resulted in a three day seminar.

The first seminar day was organised under the cloak of the DOCOMOMO ISC/T and consisted of contributions by international experts. A first part of the contributions analysed the use of colour and colour theories in Modern Movement architecture and a second part focused, by means of a series of case-studies, on the technical and scientific aspects of colour restoration. The seminar location was the current Leuven city library, a building initially built as a

technical school by Henry Van de Velde.

The renovation works, under the direction of the architect Georges Baines, were being finished at the conference date.

The second seminar day was organised by the heritage department of the *Ministerie van de Vlaamse Gemeenschap* and dealt with Belgian case studies.

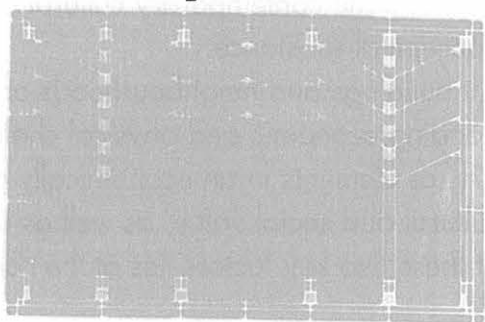
The seminar location was the *Koninklijk Atheneum* by Eduard Van Steenberghe, in Deurne near Antwerp.

During that day Belgian research and restoration examples were presented, some of which we were able to visit during the third day of the seminar.

Most of the papers presented at the seminar are published in the proceedings at hand. To blend the contributions into this international DOCOMOMO dossier, not all Belgian case studies though could be included. In the selection we have made, we tried to strike the double scope: raising the awareness of the prominence of colour in Modern Movement architecture and developing a correct attitude and technique for restoration.

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History and Development



Opening

Colour and Modern Movement architecture

The architecture of the Modern Movement glorifies the dynamic spirit of the Machine Age, but its inheritance appears more at risk than that of any other period. By the late 1980s, many modern masterpieces were already demolished or changed beyond recognition. Their vulnerability is due to their relatively young age, the often innovative technology, the functions they were designed to perform, and the contemporary cultural climate that is geared towards volatile images rather than conceptual substance.

The preservation of significant buildings and neighbourhoods of the Modern Movement, as works of art, presents a demanding economic and physical challenge. The continued life of both the icon and the ordinary, as elements in an economically driven world, depends upon the shared recognition of their cultural and social value, as well as upon their continuing economic viability. The reconciliation of these two key factors lies at the core of the founding, in 1988, of DOCOMOMO International.

by Wessel de Jonge



The 'black boxes' of Iceland show that the understanding of the Modern Movement as 'white architecture' is evidently false.
Photo: Wessel de Jonge.

The objectives of DOCOMOMO are to act as watchdog whenever important Modern Movement buildings anywhere are under threat; to foster interest in the ideas and heritage of the Modern Movement beyond our own circle; to remind those in power of their responsibilities towards this recent architectural inheritance; and to exchange ideas, knowledge and experience regarding the history of the Modern Movement architecture, conservation and education. Within this perspective, in 1994, the DOCOMOMO International Specialist Committee on Technology has been created to bring together experts on technological developments in the 20th Century and specialists on modern conservation technology. The ISC/Technology has so far initiated a data base on experts in the related fields, and four seminars on technological themes relevant to modern conservation. The findings of these studies are published in dossiers on the conservation and repair of exposed concrete, modern windows, glazing and curtain walls, and on modern wood constructions. The present, fifth technology seminar has been staged to address Modern Colour, a theme that may seem much more abstract than the above but highly relevant to those who are actively involved in modern conservation. The use of colour in the Modern Movement has been underestimated and disregarded for a long time, but recent developments in research and practice provide increasing evidence of the significance of colour to the architects of the Modern Movement.

Colour

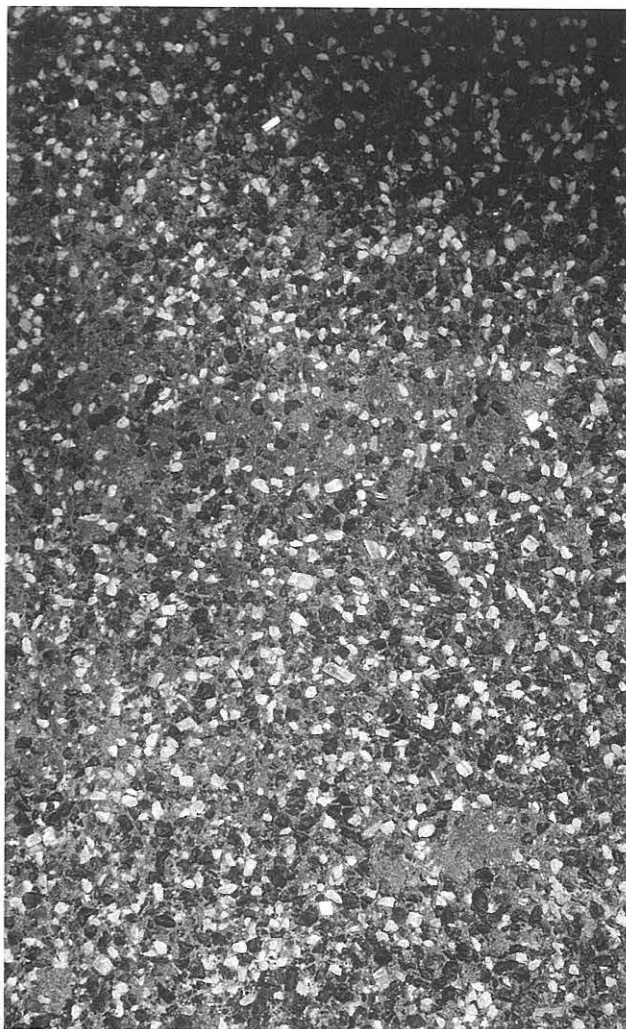
Let me introduce this seminar's theme by a few quotes from the Dutch architect J.B. Van Loghem, one of the main spokesmen of the avant-garde in The Netherlands. Van Loghem felt a particular responsibility regarding the development of a new building technology, appropriate to the spirit of modern architecture.

'It is no coincidence that for the new structures, if not constructed as transparent masses, solid materials are chosen that are pristine white. This goes along with a seamless appearance. (...) The white plaster, enamel or tile work of nearly every new building are no disguise for constructional or technical imperfections. They are an interpretation of a desire for clarity and purity of expression, whereas the tension and rigidity are expressed best by a smooth finish. (...) The whiteness is also explained as a means of reducing - at least for the eye and feeling - the remaining heaviness which is still preserved by the structural form, to the utmost.'

But also his vision on future developments may be regarded as prophetic: 'Probably a more pure technology will allow for an even more lucid and sophisticated appearance of buildings, so that the still strongly pronounced white can be partly done away with.' These remarks are taken from Van Loghem's book *'Bouwen Bauen Bâtir Building'* of 1932, that

dates back to the heroic period of the Modern Movement in The Netherlands. His observations underscore, that colour - or the absence thereof - can not be seen as separate from architectural concepts, nor from the choice of materials and surface qualities. Our perception of texture and colour is ruled by light. This can be appreciated when observing the effects of Nordic Light on the rough plaster of Reykjavik's modern architectural heritage, that is mixed with black volcanic aggregates. Modern Movement architecture in Iceland must therefore be referred to as 'black boxes' rather than white ones, abandoning a persistent misunderstanding of Modern Movement architecture as 'white architecture'. Also, it assists to conclude a longstanding - but meanwhile outdated - academic debate about this limited understanding of the use of colour by the architects of the Modern Movement.

Looking back into the history of modern architecture, we see that Frank Lloyd Wright eventually showed a somewhat traditional and decorative use of colour in his earlier works - such as the 1904-06 Unity Temple in Oak Park near Chicago. Later, also influenced by



Detail of the rough plaster with black volcanic aggregate that is characteristic of modern heritage in Reykjavik.

Photo: Wessel de Jonge.

local conditions, he attached more value to daylight and its interplay with various textures - as can be perceived in his 1920s Hollywood houses for instance, that are almost without any applied colouring.

A key to understand colour in relation to the Modern Movement is the exchange between artist and architects. It is one of the great contributions of Le Corbusier - architect and artist at the same time - to have acted as a catalyst in this respect. In The Netherlands, the recently comprehensively exhibited works of Van Doesburg, Rietveld and Oud demonstrate a shift from an artistic interpretation towards a use of colour that was just as well *functional*, to define space, to guide the movement of users, or to reflect daylight. Colour became increasingly linked to social issues and questions of health and hygiene.

This move towards a new architecture is inspiringly demonstrated in the Technical School in Groningen, arguably the first modern building in The Netherlands, designed by Wiebenga and Van der Vlugt in 1922-23 and recently restored and extended. This building represents the threshold between modernity - by its rational lay out and flexible floor plans, a concrete frame and semi-ribbon windows - and a still traditional interpretation - mainly by the decorative use of textures and colours,

and traditional tile work patterns. The basic green colour of the exterior, enhanced by touches of warm yellow, is also used for the staircases and corridors, so as to emphasise the functional relation between the street and the internal 'traffic' zones. By contrast, the classrooms are brightly coloured, with very dark blue woodwork and a touch of bright red.

The 1927 Weissenhofsiedlung in Stuttgart has been a canonical demonstration of modernity in architecture. Although nicknamed as a white Arab-town, over the last decades many of the original colours were rediscovered and again applied to the buildings. For many it must have been a shock to see not only Le Corbusier's blocks to be rather colourful - as could probably be expected from an architect-painter - but even the terraced houses by purist Mart Stam to reappear with a saturated ultramarine blue north facade, breaking up the volumetric effect of their cubic masses.

Mission

Since our Founding Conference in 1990, DOCOMOMO has grown into a network of some 1,400 professionals, policy-makers, and researchers. Working parties in 40 countries and regions organise symposia and exhibitions, they make films and educational documentaries, publish books, and throw an occasional big party.



The interior of Frank Lloyd Wright's Unity Temple (1904-06) in Oak Park still shows a rather traditional and decorative use of colour.
Photo: Wessel de Jonge.

As an interdisciplinary network - involving architects, art historians, urban planners, conservationists, consultants, teachers, and students - DOCOMOMO has stimulated the debate on the meaning of modern conservation right from the start. The DOCOMOMO Technology Seminars, the fifth edition of which we celebrate today here in Louvain, have been instrumental in developing this discourse both within and outside the academic world.

Apart from the activities of the ISC/Technology, there are other international committees for Education & Theory, for Publications, for Urbanism & Landscape, and for Registers. Modernity in culture, turned to material in modern architecture, has many faces. However different, it is equally obvious that all these interpretations have a lot in common at the same time. One of the activities undertaken by the national and regional branches of DOCOMOMO is therefore to record these various interpretations in standardised National Registers of the most important buildings, urban areas and cultural landscapes of the Modern Movement.

Studying the Modern Movement reveals, that the valuation of this heritage must be based on much more than just their appearance or physical authenticity. In view of a limited functional lifespan - that applies to many modern buildings - building materials applied in modern structures are often

of machine-produced components, one could successfully argue that indeed the very materials are not essential, but rather the authenticity of appearance, form, colour, detail, and space. The core of modernity in architecture, however, remains the idea - the conceptual starting points of the original architect. Understanding the original design approach is therefore critical to any conservation or restoration project. The present seminar will greatly assist in this process, and in understanding that the use of colour in the Modern Movement in more than skin deep.



Wright's Ennis House of 1924 is almost without applied colouring. The architectural expression depends largely on the play of daylight on its textured surfaces.

Photo: Wessel de Jonge.

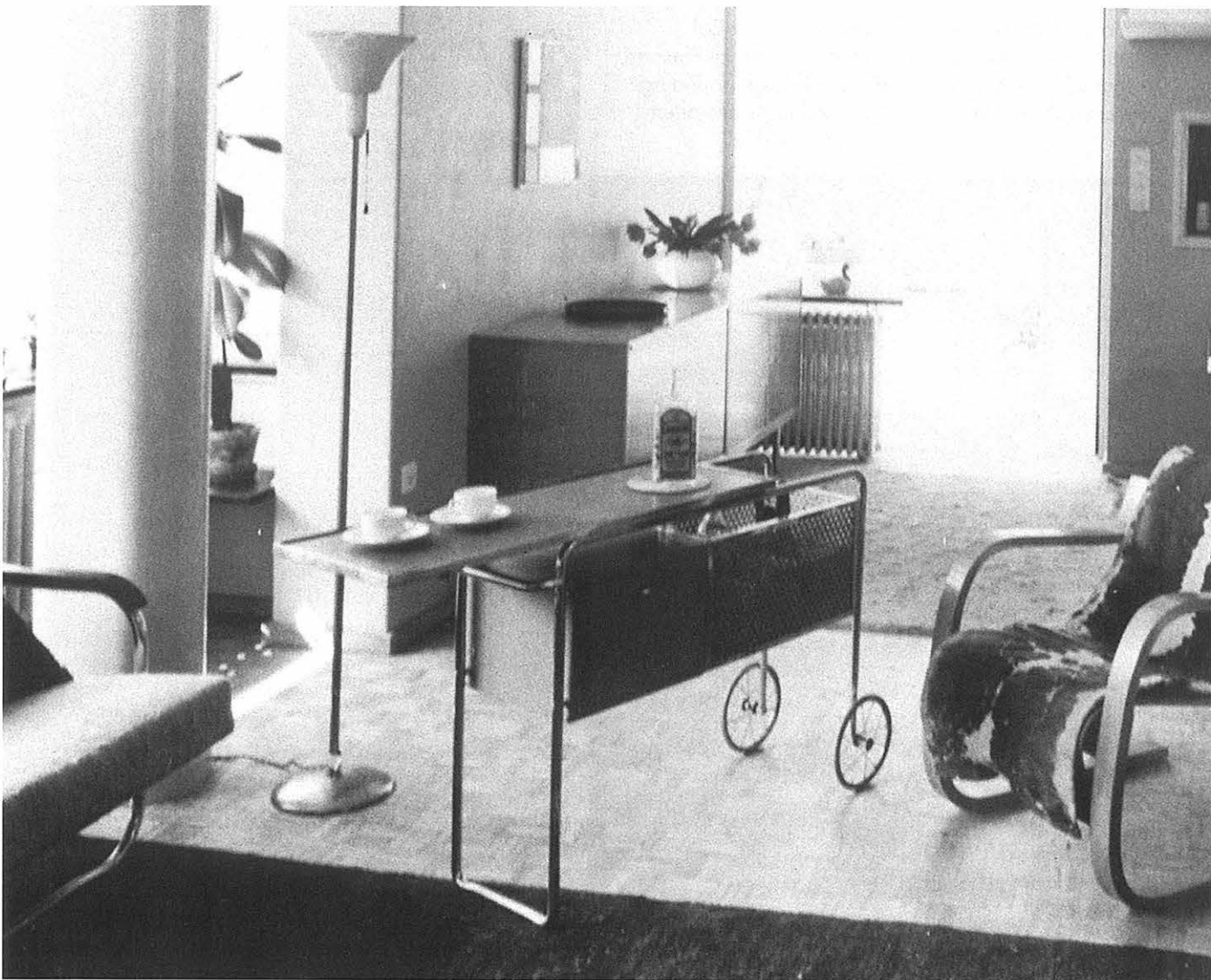
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*Quotes from '*Bouwen Bauen Bâtir Building*', J.B. van Loghem, Rotterdam 1932, with summaries in German, French and English, reprinted Nijmegen 1980. The quoted texts have been translated by the author from the original Dutch text.

Colour concepts and colour scales in modern architecture

Many students of my generation believed that modernist buildings were all white. For me, the discovery of their true polychromatic nature was all the more fascinating because I also discovered the unknown history of my thesis advisor at ETH, *Alfred Roth*. A disciple of *Le Corbusier* in 1927/28, he had built a close relationship with *Piet Mondrian* shortly thereafter, thus placing himself in a field of tension between quite different artistic positions. As early as 1933, after a short time spent with the Swiss team of *Neubühl-Siedlung*, Roth had been one of the very first to elaborate a classification of the different colour concepts of the Modern Movement - within his own architectural world though. However, as a student, I had heard nothing about this. Even in his 1985 monograph, Alfred Roth described his Doldertal Apartment Blocks of 1932-36 as all white and pale grey - we will see that this was in fact not true at all.

by *Arthur Rüegg*



Interior of the Doldertal demonstration flat. Photo: H. Finsler, coll. A. Roth, Institut gta, ETHZ.

Alfred Roth prepared his first paper on 'Architektur und Malerei. Analyse der farbigen Oberflächengestaltung von Raum und Volumen' for the 3rd CIAM Congress held in 1933, on board the *Patris II* en voyage from Marseilles to Athens. His point of departure was the various effects of 'colour', 'colour hue' and 'hue'. The architects of '*Neue Sachlichkeit*', he stipulated, used neutral 'hues' for their modestly elegant buildings and housing estates, created during the height of Modernism in the early Thirties. These were, for example, furnished with subdued coloured Bauhaus wallpaper, or they brought the rediscovered colourfulness of their natural materials into play. 'Colour hues', the second category, was typical for the subtle polychromy of *Purist* buildings, which rarely showed a specific colour hue on more than one wall, in order to underline dramatically the openness of the modern plan. Composition with plain 'colour', on the other hand, referred to the eapproach of *De Stijl*, easily recognised by its strong accents of red, blue and yellow shaping a construction with a logic of its own.



One might summarise Alfred Roth's observations as follows: First, modern architecture is *polychrome*, and in three very specific ways. The rest doesn't count. It doesn't count because second, the three *colour scales* are offundamentally different nature and consequently have a specific and typical potential of expression. And third, the two strongest colour cenceptions are directly linked to two of the seminal *modern movements in painting*. Precisely because these two manifesto-like positions were primarily based on aesthetics, its advocates were no longer able to use colour in a merely ornamental or decorative sense - as had been the case in the 19th Century -, but employed it as a means of definitely overcoming the traditional orders in architecture and arriving at distinctly significant solutions in this context.

Doldertal: a Synthesis

And Alfred Roth himself? In 1993, I had the opportunity to examine closely the *Doldertal Flats* of Alfred and Emil Roth and Marcel Breuer before their restoration. Contrary to Roth's recollection, all the rooms proved to have been polychromatic in one of four very subtle 'colour hues': In a rose, light blue, green umber or French yellow ochre distemper. The woodwork was painted a light grey oil colour. At once, the black and white photographs taken by Hans Finsler in 1936 came to life and started to grow more meaningful. The walls of the living room, slightly darker than the ceiling in the photograph, were in reality a bright yellow ochre, a perfect background for the furniture, the paintings and the white bas relief by Hans Arp. This came as a surprise, yet given the true nature of the model apartment and comparing it to Alfred Roths thesis of 1933, one is disappointed. The painting by *Piet Mondrian* - owned by Roth himself - that occupies the center of the most famous photograph like a manifesto seems to indicate the artistic inclinations of the young architect. Accents of *De Stijl*, however, are nowhere to be found; they would perhaps have made a pleonastic effect. The 'colour hues' definitely appear to be Le Corbusier's. But they cover all the walls in the very *unspecific* way that Alfred Roth had noted as typical of the architects of '*Neue Sachlichkeit*'.

So we have to ask ourselves what might be the signigance of this arrangement, in a building that certainly belongs to the highlights of Modern residential architecture. Knowing that the finishes of the building had been mainly Alfred Roth's responsibility, we may suspect Roth being torn between his affinities with his Neubühl friends, his master Le Corbusier and his idol Piet Mondrian. This may be true, but does not quite add up to an explanation. I myself believe that Alfred Roth sincerely tried to blend all these influences into one universal solution, a sort of truly contemporary *synthesis* - containig the essence of the '*International Style*'. The same synthesis seems to determine not only the interiors, but also the exteriors

of the buildings, both in terms of form and colour, and - even more obviously - the choice of the furniture for the 1936 model apartment: one finds wood, but also aluminium and steel, Roth's own 'Kleinbar', but also Aalto, Breuer and Moser designs.

The elegant, but definitely nondescript Doldertal formula certainly proved to be very efficient in the future. Still, one has to ask why the strategies of both *Le Corbusier* and *De Stijl* were obviously inadequate in this context. Had they outlived themselves already? And if so, then why?

Purist Colour: 'apporteuse d'espace'

When Alfred Roth joined Le Corbusier in January 1927, the debate surrounding the Purist 'polychromie architecturale' had reached its peak. The first polychromatic masterwork, the *villa La Roche-Jeanneret*, was barely two years old, and the colourful 'promenade d'urbanisme' in Pessac had just been completed. Roth himself was soon sent to *Stuttgart*, in order to supervise the construction of the two Le Corbusier and Pierre Jeanneret blocks, including the painting of the interiors and exteriors as well as the furnishing of the rooms. Le Corbusier sent just a few - but very precise - indications concerning the choice and use of the different colours to *Stuttgart*; but the perspectives and the colour samples proved to be sufficient and can serve perfectly to illustrate the master's philosophy.

His 'colour hues' were a strict, very reductive selection of traditional colour pigments that all belong to a strictly limited 'family': the '*Grande Gamme*', which had been defined for Purist painting in 1921 by Ozenfant and Jeanneret and later became the point of departure for the first '*Salubra Le Corbusier*'

Collection: Ochre and earth colours, ultramarine blue and English green, in addition to white, black and the lighter colour hues derived from them; Le Corbusier anxiously avoided the glittering or reflective qualities that are so much in fashion today. This sequence, Le Corbusier believed, had always been used by 'people who wanted to paint volumes and therefore need static colour elements'; it was 'architectural'. So as not to destroy the plastic statement of architecture, the walls as entities had to become vehicles of colour, while *physiological effects of colour* functioned to alter space. Consequently, light blue walls would recede, brown elements stabilise space, etc - an idea, by the way, that was quite common after the turn of the century.

Le Corbusier's smooth, plastered buildings of that period do not display any of the materials used in them, except perhaps in the floor coverings. The buildings had the abstract quality of white cardboard or gypsum models. Thus the colours retain natural meaning; they were necessary in his eyes to evoke associations with specific things. Colour has, in other words, a *psychological effect* as well. In dematerialised

puristic structures, the lack in values of materials was made up for by colour 'atmospheres'. In addition to the spatial effect, there is the *association*, for example of 'brick' with burnt sienna, of 'sky' with light blue or light grey - an effect that is at the base of the 12 'atmospheres' of the first *Salubra Le Corbusier Wallpaper Collection* of 1931.

The effort to uniformly define colours and their effects was supported by the fact that Le Corbusier used exclusively the more common, for the most part, natural colour pigments which were available everywhere in powdered form, and which could be bound with either glue-water or oil. By doing so, he succeeded in a primitive form of *colour standardisation* which was able to do without taking roundabout scientific routes and was completely independent of the colour cards of the different manufacturers. Using the common pigments, Le Corbusier established a link to both everyday human experience and tradition in painting and architecture. But he also appears as a man who trusted the technologies of the 19th Century, very soon to be overrun by the new technologies of colour manufacturing. When he selected his 'archetypal colours', his 'couleurs-types', which are characterised by the constant effect they have had on people over the ages, he conceived them as counterparts to the 'objets-types' used in Purist paintings, as vehicles of the form system. But when architecture lost much of its abstract quality after 1930, the psychological and physiological qualities of colours practically *lost their meaning*.

In this context, Le Corbusier still tried to control the interiors of his Geneva *Immeuble Clarté* of 1932 with the help of the *Salubra* colour-hues, leaving the choice of wall hangings to each individual tenant. In a similar way, architects usually picked out some of the colour-hues from Le Corbusier's scales and used them in a very personal way - as Alfred Roth did in *Doldertal* or *Alberto Sartoris*, who admittedly used to choose some of Le Corbusier's colours and then added some others of his own definition (the 'Sartoris blue' for instance). Sartoris' *Maison Morand-Pasteur* of 1935 shows a polychromatic scheme that is extremely far removed from Le Corbusier's initial Purist conceptions; it is based on the complementarity of colours used and the establishing of a spatial hierarchy by adding grey tones in the less important rooms.

De Stijl: Contrasts 'brought into floating relationship' If Le Corbusier modified his volumes by colouring certain parts of a building as a whole, then *De Stijl* thought of colour as a more independent entity. As early as 1918, Theo van Doesburg contrasted architecture, which produced 'a constructional, closed plastic', with its natural counterpart, modern painting, which according to his own logic, was able to create an 'open plastic' of colour planes. 'Architecture joins together and unites, painting dissolves and disunites. And precisely because the two fulfill different functions

by their very nature, they can be linked harmoniously. This harmonious linkage does not arise through their characteristic similarity, but through their characteristic *difference*. We don't have to repeat here the effects of *De Stijl*'s 'logical collaboration of form and colour', such as it is illustrated in Doesburg's 'Maison particulière' or Huszar's 'Berlin Exhibition Space' of 1923, where colour was used by the artist - according to a logic of its own - in the form of two-dimensional accents, which collided with each other on edges and corners in such a way that the voluminous effect of the structural body was *destroyed*, or even covered structural elements across corners. The coloured planes themselves are 'brought into floating relationship to one another', as Sigfried Giedion noted; the result was 'purely visual artwork', or, in the words of Alfred Roth, 'ein gestaltetes Gleichgewicht aller Elemente' - in his eyes 'die extremste und anspruchsvollste Art der Raummalerei'. With the *Schroeder House* of 1924, *Gerrit Rietveld* finally broke every convention, dissolving the body of the traditional house into a construction of floating colour planes and bars, departing this work so far from the traditional perception of a house that it must have had the effect of an 'abstract' colour plastic, independent from any local context.

The strict reduction of plastic means to planes and bars used in the *Schroeder House* correlates with the reduction of the *colour scale* to yellow, red and blue, supplemented with white, grey and black. This was a restriction which the painter *Piet Mondrian* - himself a key figure of *De Stijl* - had demanded from the start. Not only do these colours occupy a special position with regard to the laws of colour mixture, but above all they function symbolically as 'archetypal' colours - and this is where our specific interest lies today. Their special position was already acknowledged in *Goethe's* diagram of six main colours, an attempt to supplant *Newton's* circular arrangement of seven spectral colours. In the Bauhaus book, 'Grundbegriffe der gestaltenden Kunst', van Doesburg himself defined a 'negative' sequence of primary colours (white, gray, black) which he placed opposite the 'positive' sequence (red, blue, yellow) as being an 'elementary means of expression in painting'. This somewhat romantic search for 'archetypal colours' reminds us of Le Corbusier's 'Couleurs types'. But the context is quite different: *Theosophy and science in lieu of tradition*. *Albrecht Pohlmann*, who studies the theories of *Wilhelm Ostwald*, recently pointed out that this eminent scientist in the field of colour standardisation was for some time a cult figure within *De Stijl*, especially for Huszar, who wrote a long article on Ostwald's 'Farbenfibel' in *De Stijl*, stressing the point that colour phenomena had become scientifically controllable. We'll pick up on this later. Nonetheless, it is surprising how undogmatically this 'elementary means' was used in practice. Yellow, red and blue were by no means restricted to the values of

'yellow', 'magenta' and 'cyan', which would have been preferable in terms of mixing laws. The sequence was often supplemented with green - a 'psychological basic colour' perhaps added as a consequence of Ostwald's four pole-colour system -, and broken colours or the addition of white occurred (compare the contribution on Café Aubette).

As in the case of Le Corbusier, the strategies of *De Stijl* did not have much of a direct following at first - perhaps an impossible thing after 1930 -, but the general impact of the *De Stijl* aesthetic continued to have a powerful influence on architects until the present day. While many architects used it in a rather decorative way - we find many such examples in *Belgium* - others used colour accents to enhance certain *functional elements* of a house. Swiss architects *Artaria* and *Schmidt* for instance did not at all try to 'dynamite' their spaces by the use of primary colours. The strong accents in the woodwork of their 1927/28 *Schaeffer House* help to activate the space, but they are subordinated to the structure and the functional rhythm of the building. Each colour typically identifies a specific element: on the upper floor, all doors are red, the closets blue, the frames black.

An other house constructed in 1929 for Hans Schmidt's brother *Georg* shows an even better conceptual use of positive and negative primary colours: The outside is grey, with green doors; the inside, inversely, is yellow, with grey doors and window frames.

The so called 'primary colours' used by Artaria and Schmidt were not based on the products of the modern colour industry, but on traditional pigments. The result was a soft tone that integrated well with the architectural body. It is interesting to note that we found exactly the same colour scale in the *Budge-Heim* in Frankfurt, indicating the common roots of *Mart Stam*, *Werner Moser* and Hans Schmidt in the Holland of the 1920's.

Additional colour conceptions and the need of colour systematisation

The colours of *De Stijl* could be interpreted as *scientifically precise* choices, as well as products of a romantic search for the essential. The scientific investigation of colour phenomena, as well as the comprehensive 'classification and standardisation' of colours were points of departure by the Deutscher Werkbund in 1914. At its major congress in Cologne, the Nobel prizewinner for chemistry, *Wilhelm Ostwald*, agreed to develop a systematically structured colour atlas. Influenced by Albert Munsell and Ewald Hering (as has recently been pointed out by *William W. Braham*), he consequently represented colour in the shape of a double-cone colour solid; at the point of its largest circumference, 100 (later 24) pure, 'saturated' colour hues were organised following Hering's idea of four 'psychological' primaries. Between a white and a black tip mediated a grey graduated scale, arranged according to a psycho-physical regularity. Between the

individual colour hues, mathematically definable relations existed, which were subsequently investigated by Ostwald with the aim of formulating a 'theory of harmony'. As underlying principle he recognised the fact that only those colours appear 'harmonious or to belong together' whose 'features are in certain simple relations to one another'. The identical colour hue of two, three or four tones could thus be determined with the aid of a strange but simple instrument called 'colour harmony finder'. A more extensive analysis of the classification system was made possible by a 'colour organ', a paint box containing 680 tempera colours in drawers of 24 samples of identical colour hues.

Ostwald fanatically believed in *order*; and order, to him, meant *harmony*. The systematic structure of the colour would enable the manufactureres to propose useful colour cards and to name the different hues with precision. The 'colour harmony finders' would make it possible to make harmonious choices, and harmoniously coloured German products would dominate the World Market. All of this seems very plausible, but is not sufficient for success. First of all, the 'Deutscher Werkbund' broke with Wilhelm Ostwald in 1919, just when he intended to celebrate the 'Geburtsstunde der Farbenkunst', the domination of men over a million colours, after 6 years of studies. Second, Ostwald's principles were not at all easy to apply in practice. The Ostwald Farbatlas does not obviate the need of an *individual strategy* for the application of colours in architecture.

Years ago, Matthias Schirren published *Hans Luckhardt's* competition entry for the *Dresden Hygiene-Museum* of 1920, but he did not interpret it. If we look closer, the five tower-scheme of the project can be explained by its position near the baroque Zwinger buildings and the monumental Dresden Hofkirche. Hans Luckhardt tried to enhance the expressionist forms and the importance of his towers with shades of either yellow or blue and grey, taken directly from Ostwald colour cards. The central section, a response to the main Zwinger tower, was to be slightly brighter than the side towers, thus underlining their hierarchy and heightening the effect of the ensemble on the site. This specific example seems to make sense, and the interpretation of gilded baroque forms in a yellow variant is quite fascinating. Yet the reaction of the contemporary press was devastating: 'Hans Luckhardt hat mal von Farbplastik gehört, ohne bisher die kraftvolle Sinnlichkeit des Könnens zu haben.' In spite of all the adversities, through the development of new colour cards by the industry, oswaldian standardisation indirectly influenced architectonic colour schemes. The Swiss manufacturer *Landolt*, for instance, always strictly adhered to Ostwald's ideas, down to the systematic presentation of his colour range in a voluminous black box, as late as 1961. In practice, painters and architects often applied the related *Baumann-Prase* colour system, which takes the

inherent specific brightness of pure colours into consideration. The hues which *Bruno Taut* attached to his book *Ein Wohnhaus* for example, were from the colour hue cards produced by the firm of Paul Baumann. In such a way, Taut was able to select 'the brightest of reds attainable in distemper' for his living room ceiling, which was in the shade and harmonised with the green of the surrounding meadow, and to chose a corresponding but more impure hue for the sunlit walls. Alfred Roth would certainly have labeled his collisions of colours without mediating greys and whites as 'Farbenkitsch'. However, Bruno Taut certainly started from fundamentally different premises than Hans Luckhardt did; we will hear more about his motivations today from Winfried Brenne.

In fact, there were a great many more examples of polychromatic architecture in the 20's and 30's, some of them closely related to the ornamental traditions of the 19th Century, others influenced by complex but diffuse *Bauhaus* tendencies - as the polychromatic treatment of the Dessau buildings themselves shows. Alfred Roth - as well as Sartoris - wouldn't even mention them; they were - in their eyes - not of a conceptual nature. In most cases, the many new bright colours offered by the industry were used, but without the specific rules necessary for any stringent colour concept.

Salubra II - a new synthesis

In 1959, *Le Corbusier* published a *second wallpaper series* and also a *second colour keyboard*. As we noted before, artistic and technical foundations of Modern architecture had very much evolved since Purism. Material textures, which had already begun to play a role in 1930, became even more important, the *Béton brut* became the trademark of the transformed architectural language.

In this way, the coloured walls of the Loggias in Marseille's *Unité d'habitation* were given a new role as components of the facade: their strong colours overplay - or structure - the cell-like concrete construction of the 'Brise-soleil'. In no way can this be considered pure 'decoration': instead, it makes the individual structures within a given order visible. In other cases, *Le Corbusier* even abandoned the dogma of the wall as coloured unit: in the *pilgrim's house at Ronchamp*, the facade's geometric structure (the *tracé régulateur*) was redrawn in colour. *Le Corbusier* now used industrial colours prepared by the Anglo-French firm Berger for his strong colour accents; those colours again belonged to a strictly defined 'Gamme le Corbusier'.

In the *second Salubra Collection*, we first find different 'patterns', derived from 'Marbre' and 'Mur' structures, which were supposed to cover entire walls. Here *Le Corbusier* obviously opened the door to the 'garden of temptations' that was off limits to any modernist, approaching ideas of Adolf Loos on 'the principle of clothing' as well as the classical decorative wall

coverings of the 18th and 19th centuries. Then we find 20 *unitones*, allowing two rows of smaller patterns of the same colours to remain visible on the back cover (top and bottom). When flipping through these large patterns, each of the 20 single-colours can be directly confronted with each other. Most of them are strong enough to be set against any rough wood or concrete surfaces.

The combinations of colourful and non-colourful and of different values of lightness points to the experience in architecture and painting which forms *the foundation* of Le Corbusier's Purist colour grammar, while the use of contrast draws the attention to *the transformation* of the understanding of colour since the time of Purism. However, this contrast aims at a 'designed equilibrium of all elements', noted by Alfred Roth, which characterised *De Stijl*. So at a ripe old age, Le Corbusier manages to formulate a personal answer to *De Stijl*'s early challenge, and at the same time to find his own *synthesis of the earlier colour discussions* - a synthesis that is much stronger than the one proposed by Alfred Roth in the mid-thirties. Not only that, but he also includes the age-old theme of covering and decorating bare walls in one strict, simple and useful instrument. No wonder, that this work of wisdom seems to survive the ravages of time; the 20 Salubra colours have just recently been re-edited in Switzerland.

See also:

- Arthur Rüegg, *Die Doldertalhäuser 1932-1936. Ein Hauptwerk des Neuen Bauens in Zürich*, Zürich 1996.
- Arthur Rüegg, 'Colour Concepts and Colour Scales in Modernism', in: *Daidalos* 51, 15.3.1994.
- Arthur Rüegg (ed.), *Le Corbusier. Polychromie architecturale*, Basel.Boston.Berlin, 1997.

Restoring and colouring in the architecture of Loos

Adolf Loos (1870-1933) was a European architect, who, at the turn of the century, came to modern architecture without the detour of Art Nouveau. He is well known for his plain cubistic forms and the space-designed inner development of his houses. But until the early eighties he was perceived mainly as a 'black and white' architect.

It was not until then that colour photographs of his works were published. Also, his remarks on the use of colour in modern architecture were rare and only known to a small group of specialists, as were his authentic descriptions of his already destroyed interiors.

by Burkhardt Rukschcio

So, research on his use of colours was never the major interest of study, although his ideas in this respect also anticipated those of his colleagues by many years, if not decades. During his lifetime, only a few interiors he designed were published - in black and white, of course - and shortly after his death the majority of his buildings were destroyed or completely changed because they were still regarded as being too modern by those who bought them from their original owners. Nearly all of the shops and cafés he designed closed

down during The Second World War. Those projects that survived the wars became victims of postwar ignorance, for example the Steiner House and the Goldman & Salatsch Store, both built in 1910. Understanding his use of colour was also hindered by the fact that most publications show only facades that provide little information on colouring. (The abbreviated history of architecture is still, more or less, a history of facades. The third dimension is not open to everyone.) Adolf Loos himself made a clear distinction



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H. Gessner, 1903 Arbeiterheim Favoriten Vienna: Reconstruction of the colourscheme of the facade following different sources.

between the public outside of a house and the inside sphere of complete privacy. All the interiors of his houses are designed for several stages of intimacy.

All the exteriors of his private houses were white, the natural white of quartz sand. The only contrast is represented by the window frames, dark-red or yellow, and curtains, usually yellow. But from the outside, these windows kept the secret of the inner organisation: the irregularity of their size and of their placement in the facades hide more than they tell.

Let us look, then, a little behind the hiding curtains, where his colours greatly helped to create a specific atmosphere. We can do this by considering the process of restoration, which has taught us much about Loos' use of colour for interiors. Because of his use of natural materials, the colours of the exteriors as well as the interiors of all of his shops, unlike his houses, were intense, demanding the attention of the public and, often, producing a kind of third dimension in a two dimensional facade. Most of the colours he wanted could be found in the Greek marbles that he knew exactly where to find and that he had often assembled to show most astonishing graphics. Once, he even wanted to cover a whole room with precious lapis lazuli. To cut the budget down, he invented a special method of laminating very thin slices of stone to a cheaper material. His vision of a blue salon was not realized, but surely would have been painted over since. The man-made colours he used were mostly bright and unmixed. In his lectures, he promoted the 'natural' colours of Provençal pottery and the beauty of unmixed basic colours nature produces and juxtaposes without painful contrast. Of course, it is necessary to make some distinctions in his sense of colouring after 1924, when he moved to Paris, where he met and exchanged ideas with many other artists, especially with Piet Mondrian, whose colour philosophy is clearly evident in Loos' work.

In his architecture, Loos always aimed at generating emotions, sensations, and feelings - creating unexpected views and special atmospheres. Certainly, his 'Raumplan', the spiritual side of his design work, helped him deal with volume, and his use of colour helped him realize his concepts concretely. For example, he would widen restricted spaces with mirrors or paint a ceiling in a deep sky-blue, and, in the middle of it, a shining sun in the form of a lamp.

Colour is surface and surface forms volume. The very visible volume of his houses from the outside only needs white walls. The inside is sculpted by means of carefully chosen colours. These two particular aspects of his work reflect the influence of Arab architecture, which he had studied and knew perfectly. He especially understood the Arab sense of contrast between the outside and the inside, and even the contrasting degrees of intimacy within. There is not one

single house or apartment he designed where hand-made oriental rugs did not play an essential role. Just as he used contrasting volumes to increase the appearance of the size of an already large room, for example by making its access narrow, he used contrasting colours. Thus, his colours not only shaped and defined volumes but also produced a new harmony by contrasting conventionally unharmonious shades, just as his friend Arnold Schönberg had done in his twelve tone music. For example, Loos explained the harmony of blue and green by the fact that this special contrast produces the beautiful feather coat of a peacock.

All this information would not have been possible without the many restorations which made the study of Loos' colour philosophy possible. Every one of these restorations was based on the original state furnished by plans, photographs, descriptions, or traces, which had to be correctly interpreted. On the other hand, restoring lost colours can only be achieved by first finding traces of the original or samples in unfaded condition. Only these traces can prove the authenticity of the material, technique, surface, and, finally, colour. Often even natural materials can only be defined by examining the colours in original samples, because stone will change over time as the quarry is mined; metals, with their mixture of prime materials; and



A. Loos, Villa Müller, Prague 1928. Restoration of the original colours found under recent layers of paint. Photo: B. Rukschcio.

wood, with its age and environment. Of course, this does not apply to galvanized surfaces because they do not change.

To get hold of all of this valuable information concerning materials and their colours for an ongoing restoration, one should be first on the sight, before anyone else can destroy anything. The search has to uncover the original samples of surface, and they should be protected to allow comparison with the reproduction. The choice of places where one should look for original traces will be of vital importance because surfaces will be rubbed off on parts of intensive use but preserved on hidden places of difficult access. Often enough parts of the original installation are to be found in a new and different use, for instance, a spacer or a wedge for a later panelling, just to name one of many possibilities. A little discovery like that can prove to be great luck, informing us of otherwise lost details, especially of the original materials and surfaces.

Every quality restoration needs to satisfy three basic criteria: being true to the originality of 1. the materials, 2. the method of joining and fixing them, and 3. the surfaces. Although the daily work of restoration for an architect consists in establishing original materials and joining them, the correct reconstruction of a lost

surface is the most important evidence of a successful restoration. Where all the information of a surface has been lost, reconstruction will prove painful, and sometimes can only be done by comparing this special case with other known ones. Every architect, including Loos, sticks to his favourite methods and also colours. Unfortunately, documents such as statements by Loos himself, his collaborators or other witnesses of his work are too rare to give us indications about lost elements, but other witnesses of his work are too rare to give us indications about lost elements, but sometimes they are the only source for the restoration. The upholstery of the seats of the famous American Bar in Vienna is one such example. Heinrich Kulka, one of the chief architects in his office, reports in 1930 that Loos, in 1908, intended to use green automobile leather. Not being available in hides of the size needed, he switched to a fabric designed by William Morris, as seen in one of the photographs of 1908.

This was a colourful upholstery and fitted well into the general scheme of bright colours applied in this project. It was the restoration of 1990, which brought back these colours, including the green of the leather he had originally intended, available nowadays. The Morris-fabric, replaced in 1927 at the occasion of a major renovation of the tiny establishment, was now unavailable. The outside of the same project made



A. Loos, Goldman & Salatsch, Vienna 1910, Reconstruction of the colours following the use of original natural materials, traces found on the site and interpretation. Photo: B. Rukschcio.

major use of red (marble and glass), blue (glass), white (glass) and yellow (brass door-and window frames), with a white ivory ball as a door handle to define the off-centered entrance. The Goldman & Salatsch facade also made use of some bright basic colours: green is the marble; yellow, the brass work and curtains. These shiny surfaces contrast sharply with the nearly white mat plaster of the upper stories.

In these early projects, dating before the First World War, Loos had already realized his very personal understanding of the use of colours in his architecture. Of course, neither the architects of the nineteenth century nor the Art Nouveau artists disliked colour. But Loos' own intensive use of bright basic colours became to them a more common feature only after the First World War. This was when Loos was already combining daring colours to go even a step further. Just let us think of the table he designed for a Moravian flat in Pilsen. He painted the round surface of the tabletop in two different colours - one side of the diagonal green, the other black.

Of his later houses, the restoration of the Müller House in Prague is an important witness to Loos' well-pronounced sense of colours because, here, once again, the original colours were reproduced which, for the most part, still existed as the authentic materials.

The yellow window frames with their stores set in a white facade gave us no more than a hint of the lively colouring inside, where even the radiators appear in orange-red of a minium primer. Loos had this paint put on again after it had already been hidden by a conventional radiator paint, which the architect had found to dull. As the Villa Müller is now open to the public as a museum, it serves perfectly as an exhibit not only of his space-designed architecture, his interiors personalised for the owner and his family, and his very practical details - but also of his very unique sense of colouring. This house shows better than anything else that Adolf Loos was never a 'black and white' architect, but that he used colours as a way to optimize his architecture.



Goldman & Salatsch, colours reconstructed after authentic samples. Photo: B. Rukschcio.

Creating a cosmos of colours

Bruno Taut's housing estates in Berlin

Still, the modern architecture of the early 20th Century is mistakenly called 'White Modernism', but not all Berlin housing estates of the '20s do reflect this wide-spread cliché. This is especially valid for the polychrome buildings of Bruno Taut, as I discovered about twenty years ago when I became involved with the restoring of the modern housing estates and residential buildings in Berlin.

by Winfried Brenne*

'Who is afraid of red, yellow, blue' - this was the heading of a review in Berlin's newspaper *Der Tagesspiegel*, dated 3rd of January, 1995, dealing with an exhibition of paintings by Piet Mondrian in the Municipal Museum at The Hague with the subtitle *Colour-Space-Mystique*. Like many other works of this Dutch painter the exhibited paintings from the year 1918 touched the viewer's emotions intensively and directly. Even eighty years later the colours have not lost any of their power.

The same provocative title could be applied to the four-storied blocks at the Trierer Street in Berlin, built in 1926-27 by Bruno Taut (1880-1938) and from the very beginning exposed to public critics. Untypically for his time, Taut used the facade like a big canvas for a conspicuous use of colours as an equivalent means of design, comparable with Mondrian. Already in 1926, the Berlin newspaper *Nord-Ost-Zeitung* published a critical article under the heading 'The colourful colours': 'The newly constructed buildings at Buschallee, Garten-, Trierer and Caseler Street as well as the one-family-houses close to Schönhausener Mühle do not really offer an elevating sight. Although the use of colour is more and more increasing in temporary architecture, one has to admit that houses painted red, yellow and blue might vitalise the landscape, they don't necessarily beautify it. Especially in the streetscape of a large city those houses painted in such a manner appear disturbing. Therefore it would have been much more helpful and native to equip these buildings with the common grey facades.'

Colouring with light and nature

Many examples show Taut's creativity and flexibility. Looking for the 'joy of life in architecture', he permanently experimented with new forms and new architectural details, not only in social housing estates but also in private houses.

With his own house, built in 1926-27 and located in the village of Dahlewitz near Berlin, Bruno Taut created in a very compressed manner a 'cosmos of colour'. This fascinating house with two levels has a radical shape based on a quarter of a circle and a cube, but its functional ground-plan is strikingly integrated into the rigorous geometry of the building. The whole

expresses Taut's philosophy on architecture and colour. In his book *Ein Wohnhaus* ('A House', 1927), which commented architectural as well as functional aspects in detail, Taut wrote: 'The shape of the building is the crystallisation-point of its conditions of atmosphere. That is enhanced by the colour!'

The corpus of the house - with pointed balcony and roof at the garden side (W) and a curved wall at the street side (E) - refers to a prismatic shape, which seems to reproduce young Isaac Newton's observation long ago when he directed a sun-ray on a prism and learned that the tight bundled light and the simple colourlessness changed into a wide colourful spectrum. With his arrangement Newton changed the single ray into a whole spectrum of light that reached from red, yellow and green to blue and finally violet. Nowadays everybody is acquainted with the colours of the rainbow as the spectrum of sunlight. Looking at the house, we find a comparable variety. Apparently, Taut intended to open the monotonous landscape with this colour-wedge, using the colours as a symbol of liberation. The house is set into the landscape like a bow, creating the most achievable contrast between the surrounding nature and the rooms inside. Taut has applied intensive colours here, merging the changing light and colour of daytime and seasons directly with the landscape. During summertime the white rendering of the pointed west facades repel the heat whereas the curved black facade at the east 'seems to suck the warming light of the morning sun' as Bruno Taut mentions in his book with a remarkable sense of energy saving.² The black plaster does not lose itself in the blue-violet coloured clinker frame, but it is separated by a deep blue joint between plaster and brick. This elegant detail - which is only perceptible when looking very closely - forms on the one hand the visual division of the different surfaces and on the other hand it enhances the whole span of the curved wall. Such a dosed arrangement and such a holistic facade-design determined to an overall impression are typical characteristics of Bruno Taut's architecture. While the black and white facades renounce the colour outside, a sensual link to the open meadow land is created by the colours of the six-sided living room with its large square windows and axial French doors in the bevelled west wall. This room is now restored in its

original colour scheme. The inner walls are painted in a sand colour, which create a clear contrast with the green garden area, while the bright red ceiling - as complementary colour to the green of the grass - make the heat of the sun in the west visually perceivable in the evening. According to Taut, the principle of making a coloured atmosphere perceivable could be achieved by using flashy colours exclusively in areas with diffuse light or shadow.

He also applied this principle to technical equipments - for instance, the radiator - to express warmth and coolness by means of different colours. The heating pipes leading to the radiators are painted red, while the radiator ribs are painted alternately red, blue, red and the back leading pipes - transporting the cooled down water - are all blue. Even the smallest subordinated parts have an individual colour. The blue pipe is fixed to the wall with a red clamp and the red one with a blue clamp.

In comparison, the study-/bedroom upstairs is deliberately styled in a complete different way. This partly restored room has an 'irrational room-shape' as Taut himself described it, because it ignores the common conventions and spatial concepts concerning the 'normal' demands of function. The primary colours stress the abstract shape of the room and its many functions. Niches, recesses and walls have each an individual colour (blue, yellow or red), while the geometric pattern and the colour axis of the floor give the room a kind of visual stability.

The other rooms also have anew individual colour variations, but at this point I would like to close my explanations concerning Bruno Taut's 'private colour cosmos' and turn to the beginnings of this development.

'Paint Box Colony'

In 1913-14 Taut realised his first suburban colony, the garden city *Falkenberg* in Berlin-Grünau (today part of Treptow). Here Taut was able to demonstrate for the first time his specific view on the contextual meaning of colour in architecture. Besides proportion, choice of materials and their combination, he applied colour as an integrated component of the architectural concept. This design principle was continued and permanently refined in all following projects by Taut. Already in Falkenberg we find the basis for his future use of colour in the outdoor space.

After the completion of the houses Taut remarked: 'At the beginning, the colourful sight caused a lot of astonishment because the formerly everywhere existing tradition of coloured houses got lost completely.

Especially the Berlin resident used to the grey tenement-houses continued to complain and voted for arresting the architect. Meanwhile the anger faded away and one started to see that it is possible and even necessary to use the colour for constructing.¹³ However, the residents of Falkenberg got used to the colourful appearance very quickly. Proudly they enjoyed the nickname for their neighbourhood,

Kolonie Tuschkasten (Paint Box Colony), given by a reporter in the *Berliner Tageblatt* of July, 11, 1915.

And appreciatively they compared the buildings with their children's toy-houses.

The attached houses at *Gartenstadtweg* (Garden cityway) had essentially a traditional shape, while the profiling of the roof, windows and doors showed reminiscences of basic baroque architecture. But in an abstract way Taut separated all housing-units visually by using different colours - yellow, blue and red-brown - without destroying the total appearance of each row. Of the various types the angular more-family-house at nrs. 29-33 deserves special attention because it has at both sides in the centre a striking colour composition which reminds extremely of a painting and shows the painter in the architect's heart. At the garden side the continuous eave is extended by using a risalit with a small gable. Underneath, the surface of the rectangular elevation is subdivided into unequal fields, which are painted alternately light yellow and ultramarine blue, divided by horizontal and vertical plaster-strips in red and ochre. At the other side a turquoise frame over the three levels forms a big portal by enclosing the small upper windows and the front door. The central field around the red door is painted with a rhombic pattern consisting of alternating light yellow and white triangles like shimmering reptile scales.

By using different finishing materials - the plaster slightly structured by brush strokes and a glossy enamel paint on the shutters and window frames - Taut demonstrated a distinguished perception of the colours and the architectural elements of the facades. The mineral colour of Keim of the plaster seems to be almost transparent, making the volume looking light while the smooth surfaces of the wooden elements produce a compact and powerful impression of colours. With these distinct techniques Taut tried continuously to meet the spectator's sensual and artistic perceptivity. Here colour has become an undetachable element of the building.

Similarly, he used colour as a means of design in a very brave way at the row of attached houses at *Gartenstadtweg* nrs. 52-68. They are painted alternately red and black with a yellow building at the closing end, making colour thus strikingly perceptible. The most impressive building is the Black House at the end of the slightly uphill road at nr. 84-86. The eye-catching contrast of the black facade with the flame-coloured window borders and the geometric white-and-red pattern of the inner corner of the building let perhaps the spectator understand why a conflict arose after the completion of the Falkenberg colony.

Brick, Britz and Carl Legien

With the colony *Reform* in Magdeburg Taut continued his pre-war practice in designing garden cities. After the First World War Taut started with multi-storied urban housing, first in Magdeburg where he worked as the responsible in the town-planning department of the town council from 1921 to 1924 and afterwards in

Berlin, where he returned in 1924.

Restarting in Berlin with the housing estate *Am Schillerpark* (1924 -1928), Taut made an exception in the finishing of the walls because the three-storied houses were erected in clean brickwork. Only horizontally divided white surfaces of plaster are placed between the windows as a contrast with the red brick.

For the GEHAG company Taut designed, together with Martin Wagner, in 1925-27 a remarkable settlement consisting of 2100 units in Berlin-Britz.⁴ The centre of the ensemble consists of a curved building of 350 meters long and it is shaped like a horseshoe around a natural pool. Because of this powerful shape the settlement became worldfamous as the 'Horseshoe colony'. Here Taut realised for the first time his new concepts of space and application of colours in town planning. Thanks to the homogeneity of the horseshoe's shape there is no extra need to bind the elements visually by means of colour. All facades are plastered white, while the walls of the loggias are painted with a heavy blue symbolising the gleaming horizon. The radiating rows of attached houses branching off the horseshoe have individual characteristics at each street by different elements as colours and variations in the alignment. Each street contains changing colour rhythms of red, yellow and blue applied on entire rows, paired or individual houses, which helps to accentuate and structure the urban area (see plan).

While the colony Britz demonstrated Bruno Taut's interpretation of modern town planning, the housing estate *Carl Legien* in the Berlin district Prenzlauer Berg, built for the GEHAG in 1929-30, became his most urban housing project. Taut considered this estate, consisting of 1148 dwellings, as one of his most important works.

The Carl Legien housing estate demonstrates clearly how a special layout can improve the quality of living considerably. Just like in all his settlements and housing projects he made a close junction between living room and patio or garden, which he defined as 'outdoor living room' and emphasised by colours.

Instead of dissolving the existing pattern of closed blocks into parallel rows, Taut designed U-shaped blocks open to one side. The particular court yards are connected by green axes. The effect of alternating open and closed spaces is supported by the plastering of the courtyard with intense red, blue and green tones that fade away because of the exposed light yellow loggias. The powerfully toned wall behind it appears like a horizon and widens the court space.

The front facades continue the 'cheerful yellow' (Taut) of the loggias and enliven the streets. The aesthetic refinement of the buildings is achieved by the sum of delicate coloured elements like windows and entrance doors. Because of the close arrangement of buildings, the spectator's view is directed to the ultramarine blue

framed windows which structure the facade by the simple means of a rhythmical repetition.

Urban colours in a forest: Onkel Tom Colony

The *Waldsiedlung Onkel Tom* (Forest Colony Uncle Tom) in Berlin-Zehlendorf is probably Bruno Taut's most important settlement in Berlin. The colony, which he built partly together with Rudolf Otto Salvisberg and Hugo Häring, was realised for the GEHAG company during the years 1926-1932 in seven phases and it consisted of approximately 1920 dwellings in total. The colony is laid out in the Zehlendorf forest at both sides of the then extended underground line, of which the station was named Onkel Toms Hütte after a popular café nearby in the forest.

The first phase contained one-family row houses and apartment blocks, immediately south of the station. The most striking ensemble - because of both spatial and urbanistic qualities - is undoubtedly Taut's *Kiefernhof* (pine yard), resulting from his efforts to integrate the existing trees in the housing schemes. The multi-storied flat-roofed blocks with projecting and set back elements are placed around a court-yard with big pines, which still let recognise the forest. The facades of the two lower levels at the garden side are painted white, while the blue painted recessed roof storey closes the yard like a horizon line. The walls in the background of the loggias have the same blue. The white facades are subdivided by the windows as rhythmic and individually coloured elements, which produce a fine distinguished colour match with the facade.

At the street side the facade has a calm, smooth and monochrome yellow painted surface. This cheerful mediterranean colour had been replaced during the sixties by a rough plaster in order to reduce the severe damages at the buildings caused by synthetic and dense paints. The restoration was based on the original application of a plaster with a mineral paint of Keim, which has not lost any of its technical quality and the still available colours possess the same powerful expressiveness as the original kinds.

In 1930, a uniform complex of three stories high and 480 metres long was built at Argentinische Allee. This building - which Taut had characterised as a 'crack of a whip' - should be understood as a deliberate answer to a nearby settlement, which was built by renowned, but more conservative architects. Despite the enormous length of the building, Taut had managed skillfully to liberate the building from the monotony of an endless row. The long facade is subdivided at each house by small recesses with individual surfaces. While the main building has a general yellow tone, the set back elements vary according to a continuous double rhythm of green, red, white and blue pairs.

The complex of one-family row houses in the north section of the Argentinische Allee has a special meaning because Taut used it to explain his philosophy. The complex consists of two-storied buildings with attics under flat roofs. For the particular

application of colours the municipal administration had requested Taut for the first time to explain his choices. When searching for the original colours we were lucky to find a colour map with detailed information referring to the paint manufacturer: *Keimische Mineralfarben*. In the explanatory text Taut discussed the closing and opening effect of 'active' and 'passive' colours as well as the orientation of cooler tones towards the morning sun and the warmer tones towards the evening sun. The way in which Taut described the extending and contracting effects of certain colours recalls Goethe's theory of colours.

West of these one-family row houses, the last construction phase of Onkel Tom Colony was realised on a triangular plot in 1932. This complex contains generously designed inner areas which are visually connected by the use of the 'active' colour yellow around the triangular court yard while the fronts at Argentinische Allee are defined by 'passive' dark tones, which produce an enlarging effect. The building along the Riemeister Street has a blue facade at the garden side and meets the green facade at the street side at the head of the building. At first glance the divergent colours do not seem to match, but in the negative corner both surfaces are linked up with white painted parapets of the balconies.

Recent colour restorations

Finally I would like to present two of Taut's smaller housing projects built for the GEHAG in 1926-27 in the eastern part of Berlin. These tenement blocks at Trierer Street and Paul Heyse Street, respectively, have been recently restored after the unification. They have both a special position among Taut's oeuvre because they demonstrate the full variety of his cosmos of colours in a typical urban area.

The block at Trierer Street 8-18 in Berlin-Weißensee is 90 metres long and has a lively front with differences in depth and colours in correspondence with the functions of the spaces inside. The broad projecting sections lining up with the street reveal the larger housing types, while the set back sections aside the central risalit of the stairwell and entrance belong to the smaller types. The broad fronts of the five levels are horizontally differentiated by the alternating colours of each level (blue-yellow-red-yellow), accentuated by slightly projecting ribbons of brick as visual separations between the stories and the white attic which are unified by a wide overhanging roof. By contrast, the smaller set back fronts are all rendered white, except for the unplastered entrance and plinth.

At the garden side all elevations are set in line. Here Taut continued his experimental play to create a differentiated architecture by similar elements as used at the street side. The sections of the larger units are yellow-toned, the sections with the smaller dwelling types are red-brown-toned. The individuality of each particular section is underlined by the alternating colours of the balconies by means of blue-white and red-white combinations.

In the same period (1926-27) Taut designed a half-open complex of 120 tenement houses on an unbuilt plot in Berlin-Prenzlauer Berg between already existing housing blocks dating from about 1900. In spite of these disadvantageous conditions he managed to find a convincing solution to 'open' the housing blocks in a way which satisfied not only the reformers' housing demands of high hygienic and organisational standards, but also his own aesthetics with regard to a new architecture. Surrounded by the Paul Heyse Street, the Heinz Bartsch Street and the former Schönlanke Street, a H-shaped complex is erected allowing a generous layout of gardenlike court yards. By this layout Taut realised his idea of an 'outdoor living room', which he had developed especially for settlement plans, in its most urban form.

The facades at Paul Heyse Street show an expressive use of colours and materials by the combination of red brick plinths, white plastered surfaces and deep blue strips flanking the red-brown stairwell fronts and following the horizontal attic fronts, while the entrance doors are painted in bright red, ochre and white.

Taut's idea of a colourful architecture and the related grammar imply a comprehensive concept, which repeatedly refers to three elements: lifestyle, aesthetics and function. Even when applied differently to different objects and at different places, these elements characterise Taut's projects through all his creative periods. Accordingly, he achieved a special position in modern architecture by his permanent experimental use of colour as well as by its continuity. In my opinion the qualities of Taut's colourful architecture are of physical, psychological, emotional, aesthetic and socio-political value - or to speak with Taut: 'For colour is the joy of life'.

* edited by Marieke Kuipers

Notes:

1. Taut, B., *Ein Wohnhaus*, Stuttgart 1927, p. 19 (Reprint with an afterword by R. Jaeger, Berlin 1995).
2. Idem, p. 19-20.
3. Taut, B., 'Drei Siedlungen', *Wasmuths Monatshefte für Baukunst*, (4), 1919, p. 193.
4. GEHAG is the German abbreviation of *Gemeinnützige Heimstätten Spar- und Bau Aktien Gesellschaft* which means more or less 'General Savings and Building Corporation for Housing'.

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- Novy, K. Neumann-Cosel, B. von (eds.), *Zwischen Tradition und Innovation, 100 Jahre Berliner Bau- und Wohnungsgenossenschaft von 1892*, Berlin 1992.
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Colour in Russian modern architecture during the interwar period

The application of colours in Russian modern architecture of the 20s and early 30s was not so dully reduced to the only one dominating grey colour as is often presumed. From the very beginning the appearance of this architecture was much brighter, more complicated and unusual.

*by Ekaterina Shorban**



'The House of the VCIK' – view of the cinema. (1928-33, B. and D. Iofan) Photo: E. Shorban, 2000.

Actual knowledge

Starting to prepare this paper I collected useful information on colours from my colleagues Vigdaria Hazanova, Anatoly Strigalev, Selim Khan-Magomedov, Elena Borisova, who all belong to another generation. Then, I was surprised that grey was the first and nearly only colour they mentioned. This answer of experts who had undertaken serious studies on the epoch is not a casual one, because, firstly, grey was considered to be the most 'correct' and official colour of the interwar architecture. And, secondly, because from the 60s, when the studies of the modern architecture of the 20s became allowed, up till now the main task of our architectural historians and restorers was to save the

basic authentic features of modern architecture. The volumes and spaces of the buildings are still endangered by demolition, decay or radical changes, even the most famous ones. But today there is no doubt that also in Russia time has come to study the problem of colours and to use the discoveries in recent restoration practice. That is why it is very important that DOCOMOMO has raised this subject and I am sure that the results of this seminar will enlarge the knowledge and improve the restoration practice also in Russia.

Artistic experiments

The birth of modern architecture in Russia took place in the early 1910s, not among architects but among painters. While during the prerevolutionary years the majority of the leading architects like the Vesnin brothers designed in historical styles, two avant-garde painters started to experiment with new techniques and three-dimensional forms in relation to colour expression in order to create a fundamentally new formal language of plastic arts. In 1913-14 Vladimir Tatlin, at that time a young talented cubist painter, began to 'tear' his abstract compositions off the canvas surface. In his 'counter-reliefs' the elements of cubist paintings were transformed into three-dimensional objects, constructed of pieces of metal, timber, glass, ropes etc. At the same period another painter, Kazimir Malevich, invented the theory of Suprematism – the vision of the whole world divided into colourful geometrical elements.¹ By the late 10s and early 20s, both Tatlin and Malevich turned to spatial compositions which, as they thought, could show the way for a new modern architecture. Malevich was making then his *architectons* in the form of vertical and horizontal right-angled crystals.² The architecton called 'City', with its mixture of vertical geometric bodies, reminded to some extent the skyscraper townscape of New York. In his experiments Malevich was rather more interested in variations of volumes and spaces than in the diversity of colours. That is why his architectons were monochrome: white (if they were made of clay) or white and black, or sometimes red (when they were drawn on paper). In 1919 Tatlin designed his famous *Monument to the Third International* (intended in red) and in 1920 he built an unpainted model of it. He criticised the solid untransparent crystals by Malevich for their closeness to the outer world and so he made an opposite transparent composition of a spiral tower. He opened the structural framework to the facade and put inside the glass volumes of a cube, a pyramid, and a cylinder, which each had to turn around their vertical axes. Tatlin's tower embodied a new ground-breaking architectural language – even today it looks so that the best 'monument' for a new millennium could be this tower built in all its intended gigantic height of 400 metres.

Both Tatlin and Malevich did not have any architectural education and did not continue their architectural experiments in real building practice. Nevertheless



their influence on future architecture was tremendous. In 1919-20 Malevich tried to implement his theory of Suprematism in architecture when he started to paint the facades of houses in Vitebsk (today in the east of Belo-Russia), where he came to teach at the Academy of Arts for two years. During those revolutionary years the formerly quiet provincial town turned into a lively center of artistic activities and creative renewal. There, as in Moscow and Petrograd, appeared a special culture of mass public festivals and city decorations carried out by artists. In the memories of the famous film maker Sergei Eisenstein we find this rare description of a revolutionary festival in Vitebsk, with decorations by Malevich: 'Strange provincial town. As many towns in the western districts it is made of red brick, dusty and boring (...). But this town is very strange. Here the main streets are covered with white. And on the white there are put green circles, orange quadrates, blue rectangles (...). This is Vitebsk in 1920. The painting brush of Kazimir Malevich covered the brick walls (...) with colourful suprematistic confetti'.³ Probably this experiment of using colourful geometric ornaments in a decorative way was Malevich's last attempt to apply colours on real buildings. In December of the same year 1920, when Suprematism turned from flat compositions into spatial ones, Malevich concluded: 'Suprematism is divided into a (...) black period, a colourful and a white (...). All periods went under the signs of surfaces (...) but at this moment Suprematism grows into the space of architectural compositions (...). There is no occasion for the painting in Suprematism. The painting has passed long ago'.⁴

However, the suprematistic multicoloured approach to architecture was continued, though inspired by another painter: El Lissitzky. His symbolic graphic compositions with bright red, blue, black and yellow geometric forms influenced the modern but fragile architecture of temporary pavillions for festivals, exhibitions and markets in the early 20s. Most of these structures were made of wood and painted in bright colours, which we can see today on the architectural drawings. One of the well-known designs was made for the Pavillion of the Far East by Ilya Golosov for the 1st All-Soviet Agricultural Exhibition held in Moscow in 1923 and painted with a mixture of bright colours, such as green, yellow and red. For the pavillions of the Sukharevsky Market in Moscow in 1924-26 Konstantin Melnikov proposed the exact colour for every row of pavillions and for every type of goods: white, red, blue, green, orange, gray, black. His famous Pavillion of the USSR for the World Exhibition of 1925 in Paris was painted in red, grey and white.⁵

The only remaining example of that architectural type is the commercial house of *Mosel'prom* which was built in 1923-24 by D. Kogan. This house, built in the centre of Moscow, was originally covered with colourful advertising, painted directly on the wall's plaster. The designs for advertising were made by the talented artist and photographer Alexander

Rodchenko, while the texts were written by the revolutionary poet Vladimir Mayakovsky. To some extent the building played a 'pioneer' role of a new colourful architecture. It was very popular among the Moscovites (and it became popular again in 2000, a year after the restoration had been completed). Nevertheless, already in the beginning of the 20s, this colourful kind of architecture was condemned as too decorative in manifestoes by the defenders of another kind of renewal in architecture based on the ideas of Constructivism, which from the mid-20s became the official one.

One of the first negative manifestoes toward colours was written by the Constructivist sculptors Naum Gabo and Antoine Pevsner in 1920 as a positive response to the plain structure of Tatlin's tower: 'We reject colour as a decorative element in a three-dimensional construction. We demand that the concrete material shall be employed as a painterly element'.⁶

Grey as the official building colour

Because of the revolutionary wars, hunger and economical crisis, the construction of new buildings in Soviet Russia took off as late as in the mid-20s, apart from a very small number of earlier structures mainly in historical styles. For truly modern architecture the constructivists proclaimed the use of concrete as the most universal and organic building material. But in reality there was hardly no concrete available in the Soviet Union. In a country dominated by traditional structures of wood and brick concrete was a very rare material and from the very beginning the architects started to imitate concrete surfaces by putting grey plaster on brick walls. For the most important governmental buildings this imitation was obligatory (if they were not constructed of real concrete) and many of them still have preserved their grey colour. As typical examples in Moscow we can mention famous constructivist grey *kremlevka* like the hospital for privileged communists and their families (1929, O. Hofmann) and 'the House of VCIK' better known as 'the House on the Embankment', an enormous housing complex with a number of public buildings for the same people, situated on the island opposite the Kremlin (1928-33, B. and D. Iofan).⁷

'The rule of the grey colour' did not always apply to the most privileged buildings or architects. The most famous object among these is Lenin's mausoleum on the Red Square built in the late 20s by Alexei Shchusev in cubist forms and covered by colourful plates of precious stones – dark red granite and black labrador with white sparkles. Another example of rare colours is the Planetarium in Moscow (1927-29, M. Barsh, M. Siniavsky) with its high egg-shaped dome painted in a silver colour.

Apart from the official administrative or governmental buildings the rules and practice of grey concrete-imitation were not so obligatory for housing architecture or public buildings. It seems that from the very beginning most housing facades were finished

with coloured plaster in warmish light ochre tones according to the Russian building tradition. For public buildings – such as worker's clubs, schools and hospitals – bright white or very pale grey were frequently used. This preference was very reasonable, keeping in mind that in central and northern Russia the weather is often bad and the winters are long and dark.

Another cheap variant to create coloured facades, used very broadly in large housing complexes mainly in provincial cities of the Soviet Union, was to leave the facades in red brick unplastered. Often this was done due to a continuous lack of money and good plaster. Moreover, in many industrial centres plain red bricks had been in use already since the 19th Century and it was natural to return to the traditional red colour of facades with window frames painted white. For instance, in Ivanovo-Voznesensk, the capital of an enormous textile region north-east from Moscow, there appeared a local 'red brick branch' of modern architecture, which was strongly influenced not only by the Modern Movement, but also by the traditional red brick industrial architecture. Very often uncovered dark red brick surfaces in the lower zones of the facades were combined with light plastered parts. Besides structural finishing, several non-architectural additions made facades less dull and elementary in colour. From time to time the majority of the newly

constructed buildings received the colourful accents of slogans, banners, even wall paintings with complicated figurative compositions. In the 20s these colourful elements were added because of their ideological message. At the same time, they were the last surviving marks of the fragile culture of the public festivals, decorated in the first years after the Revolution by Marc Chagall or Kazimir Malevich, both active in Vitebsk.

Constructivist and rationalist architecture

When we speak about the obligatory use of grey colour for the official buildings, it concerns mainly the works of constructivist architects. That was the largest group of Soviet architects who used the compositional principles of modern architecture and were organised around their leaders, the Vesnin brothers and Moisei Ginzburg in the mid-20s. The tough 'rules' of constructivism, which at those years was proclaimed to be the most correct architectural style for the expression of 'revolutionary ideas', led to the wide spread of a large number of quite ordinary right-angled buildings with ordinary grey or pale yellow coloured facades throughout all the country. El Lissitzky, summing up the way of official Soviet modern architecture, wrote in 1929 that 'its ideology has turned to the primary utilitarian, the nakedly functional' and underlined that architecture, as every



'The House of the Collective' in Ivanovo-Voznesensk (1929-32, I. Golosov). Photo: E. Shorban, 2000.

art, needs 'emotional energy'.⁸

We not can say that constructivists did not pay any attention to colours at all. In 1929 they had devoted the whole issue of their magazine 'Modern Architecture' to the problems of light and colour. But the well-known articles by Moisei Ginburg and others were mainly based on theoretical studies and experiments with colours in the Vhutemas (the Higher Artistic and Technical Studios in Moscow) and the German Bauhaus; they were not supported by realised buildings.

The real 'emotional energy' and a quite different attitude toward colours we find among the so called independent architects, known under the name of 'rationalists': Konstantin Melnikov, Ilya Golosov, Nikolai Ladovsky. Unlike the constructivists, they did not agree with the imitation of concrete facades covering the brick walls.⁹ In their workshop in the Vhutemas they were looking in general for various compositional principles of modern architecture. Their main credo was creative freedom and fantasy, not cut by formal restrictions but enriched by the challenges of difficult construction sites, small budgets and other aspects. So, the experiments and real architecture by Melnikov and Golosov were connected with the laws of human perception of different types of spaces, volumes, colours, rhythms etc. Instead of the beloved right angles of the constructivist's works, they preferred sharp or wide angles, curves and circles, unexpected combinations of static and rhythmic compositions. Although their philosophy of creative work sometimes was very similar, Melnikov and Golosov were very different in their projects, even in the style of drawings. For instance, Ilya Golosov preferred impressive dynamic graphic compositions drawn in bright colours – red, blue, yellow. There is no doubt that these graphic compositions by Golosov and some other architects of that time were influenced by the late Suprematism, especially by the works of El Lissitzky. As a matter of fact, the bright colours of these designs were only shown on paper and not on an executed building. One of the unique and extravagant exceptions is the 'Ship house' ('Dom-korabl') in Ivanovo-Voznesensk by Daniil Friedman. Originally, its facades were painted in a bright blue colour with white lines of balconies.

Melnikov, in contrast to Golosov, did not like 'the artificially impressive' style of drawings, while all his works were, and are, the masterpieces of unexpected spatial compositions. Unfortunately, we can not acclaim today scientific restorations of the majority of Melnikov's buildings, not even of their facades. The only relatively good example is the recent restoration of the facades of the Rusakov Club in Moscow (1927-29) with their subtle tone differences. This building has two absolutely different facades. The main facade, with its three dynamically turned enormous consoles, is painted in grey. But here Melnikov had used the grey colour in three tones: very pale grey (almost white), middle pale grey and the third in a slightly darker

tone. The three tones of grey were not applied to imitate concrete, but to underline the protruding forms of the volume. It is extremely interesting that Konstantin Melnikov, who had started his creative life as a painter and continued to paint in an expressionist manner during all his life, in the Rusakov Club used different tones of a grey colour as a real expressionist painter. The second facade, facing the backyard, is much more simple and calm. Here Melnikov had adopted an even more 'truthful' not imitative approach to colours. He wanted to show the red brick of the main construction openly, but in order to enliven the dull dark red facade the parts of the walls were painted grey and white, as decorative elements.

Interiors and colours

The most talented masters of Russian modern architecture of the 20s, such as Golosov, Melnikov and the Vesnin brothers, could not agree with any artistic limitations in their buildings and probably the interiors were the main areas where they could use the colours in variety. Today, we have still not enough knowledge about the original colours of the interiors, not even of the famous modern buildings. During the Stalinist period most interiors were changed; not only they have been overpainted many times, but often they were totally redecorated in the neoclassical style of the 30s-50s and filled with columns and pilasters. We can only guess about the main rules of colour application in interiors according to the nature of the modern architecture of the 20s, partly having in mind the fragmentary knowledge of the designs. In many interiors light or pale tones have been used to underline and to show truthfully the spatial qualities of the architectural compositions. According to V. Bykov, Melnikov's pupil, Melnikov 'never used the principles of deformation' when using different means of making geometrical compositions.¹⁰

The story of Melnikov's private house is different from other buildings of the epoch, because from the time of its construction in 1927-29, it always has belonged to the Melnikov family. In April 2000, I came to Melnikov's house and was very warmly received by the painter Viktor Melnikov, aged 86, the son and very true friend of his father. The house was recently repaired cosmetically with the help of western foundations. The colours of the rooms are not very 'correct' in comparison to the originals, but Viktor Melnikov knows how they should be and he gave comments which are really precious for the art historian.

This house, constructed of two cylinders, is perhaps the most modern building of Russian modern architecture. As I have mentioned before, Melnikov never followed any rules or restrictions but his own creative ideas. These were reflected by the unique and wise philosophy of the house and of the life which he had invented for himself. The interiors of Melnikov's house show the stunning combination of old furniture, paintings on the walls, traditional Russian icons in the

'red corner' of every room, and absolutely modern, unusual even today, spaces which are mainly round in plan.¹¹ The dining room on the ground floor is the most traditional in style. It brings the atmosphere of stability and warmth. The oval table stands in the centre under the low hanging lantern, the buffet is put near the wall. The mildly curving middle corridor at the ground floor with white plastered walls is still the exhibition room for the designs by Konstantin Melnikov. In two very small triangular 'working rooms' for daughter and son one sees suddenly on the white ceiling 'the marks' of the rooms' inhabitants: a yellow triangle and a blue triangle. The spiral staircase of the house is painted light green, the symbol of movement and of growth, of a green plant. At the middle level the staircase leads to the 'bedrooms', subdivided by two small parapets into three sleeping zones. The whole space of the room should express the atmosphere of 'happiness' - originally by means of a very light and bright 'golden' yellow colour, but this is today very different. At the same level there is a high living room with a large and high window, looking to the main facade. Here one sees the unusual 'complicated' colouring of the walls, which is, perhaps, more typical of Art Nouveau. It is warm pale violet with a mixture of white, cherry and blue. On the floor lays a very large square carpet, pale violet with white curving lines of French work in Art Nouveau style. Viktor Melnikov says that the colour of the room was influenced by the reflection from the former red brick facade of the opposite building. The upper level of the house is occupied by the famous atelier of the artist. The walls of the cylindrical space are pierced by dozens of 'ornamental' vertical hexagonal windows, allowing very mild light from outside. For the workshop the only possible colour was white. But to add more warmth to this north facing space the low curving wall which protects the first steps of the staircase, is painted bright sunny yellow.

Concluding remarks

As a short conclusion it is possible to point out some statements.

Colours were not the main means of making modern Russian architecture of the 1920s.

At the same time it is not right to say that colours were not important. They served as a supportive visual instrument to expose better the basic features of modern architecture: the free compositions of geometrical volumes and spaces. (This was formulated by representatives of both of the most important groups of architects - the 'constructivists' (M. Ginsburg, the Vesnin brothers) and the 'rationalists' (K. Melnikov, N. Ladovsky, I. Golosov).

Colours never worked for the visual 'destruction' of form, that is why, as a rule, colours were light and small in number. The colours most widely used for facades were white, grey and light ochreous tones. The red colour was used in two variants: as the main colour of a whole building in uncovered red brick walls (and in this case the perception of architectural

forms was more difficult than with light colours) or as an alternating colour when the red brick walls were partly decorated with light plastered surfaces.

Since the most widely used colours were very few in number, it is very important to obtain the correct combinations of colours and their tones. And here we come to the question of colour technology which is not very well studied in our country today.

To illustrate the importance and actuality of this question for the understanding of modern Russian architecture of the 20s, I would like to quote a very rare surviving document. This regards the instructions for the colours of the Duliovo Club by Konstantin Melnikov, which may be considered as the typical instruction for nearly all designs of his clubs, because all their facades were carried out as a combination of plain brick and plastered parts:

'Of the facades the uncovered brick should be cleaned and washed with acid. All decorative plastered surfaces of the facade, together with the cornice, should be painted in a white colour with addition of a little lemon chrome.

The socle - in deep grey (white + graphite and a small amount of lemon chrome). This colour should have no bluish or greenish tint and should be prepared without addition of a black paint.

In the hall the columns should be painted with the same colour as of the socle, the cornice - as said before.

The cylindrical surface [of the club - E.S.] should be bright white.

The roofs are of grey colour (white + graphite).

All the window frames and doors should be painted with burnt umber. In the interiors - all window frames should be white'.¹²

Although this document gives us a lot of information, it does not give the precise 'recipies' for preparing the colours of the paints. To find them is the next task for the historians and restorers.

* edited by Marieke Kuipers

Notes:

1. Malevich wrote in his letter to the magazine 'Modern Architecture' in 1928: 'Suprematism appeared in 1913 (the plane image of static or dynamic character), painted in the colours - mainly black, red, later - white, and the white suprematism was shown for the first time on exhibition in 1919 (while the works were made in 1917).' (cit. from: S.O. Khan-Magomedov, *The Architecture of Russian Avantgarde*, Moscow, Stroyizdat, 1996, p. 94 [in Russian, translated by E.S.].
2. Malevich continued in the same text: 'The beginning of spatial suprematism was started in 1918, while its elements had appeared in 1915 (...). In 1923 there were executed the volumes' (Khan-Magomedov, op. cit.).
3. Cit. from: V.V. Mayakovsky in the *memories of the contemporaries*, Moscow, 1963. p. 279 [in Russian, translated by E.S.].

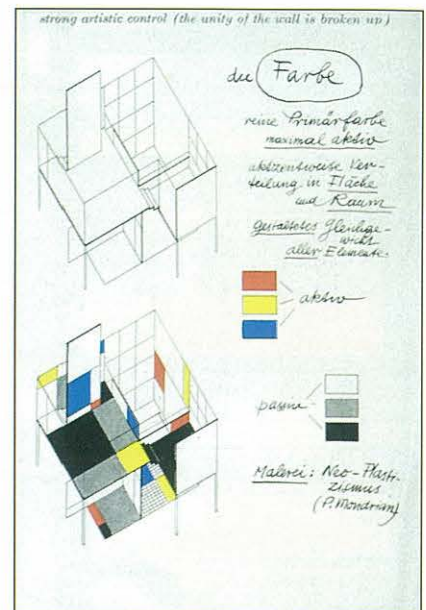
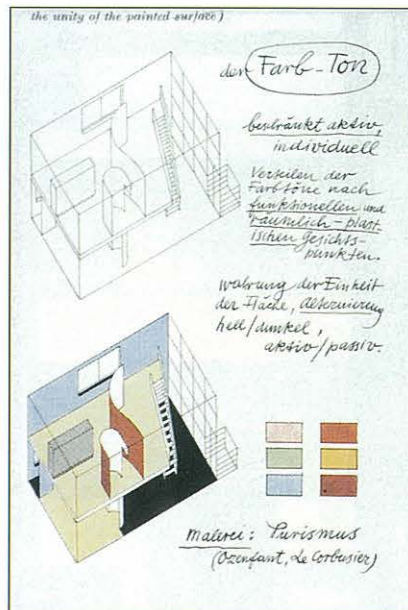
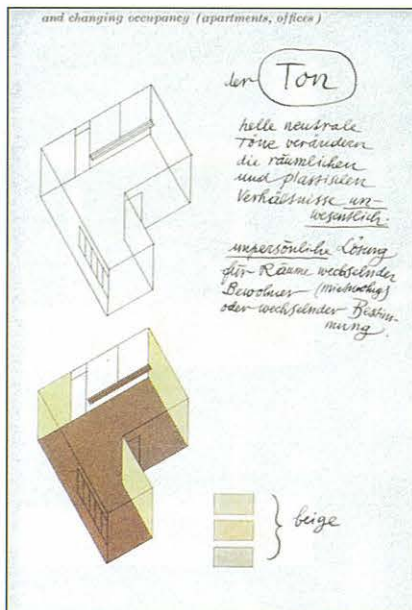
4. Khan-Magomedov, op. cit. p. 95.
5. Melnikov wrote in his letter on the April 17th, 1925, from Paris during the construction of the Soviet pavillion: 'The pavillion has been painted, as I painted the design – in red, grey and white...' (cit. from Konstantin Stepanovitch Melnikov, *Architecture of My Life, Creative Conception, Creative Practice*, ed. by A. Strigalev and I. Kokkinaki, Moscow, Iskustvo, 1985. p. 162).
According to the memories of that time the most interesting and unusual part of the pavillion was the roof which consisted of two lines of surfaces diagonally bending in two opposite directions. The roof surfaces were painted in bright open red colour, which caused the reflection of red into the inner space of the building.
6. Naum Gabo/ Antoine Pevsner: 'Basic principles of Constructivism', cit. from: *Programs and manifestoes on the 20th-Century architecture*, ed. by Ulrich Conrads, Cambridge, Mass., The MIT Press, 1994., p. 56.
7. The House of VCIK has preserved the original appearance of differentiated 'horizontal belts' – from very dark grey in the bottom zone to more and more lighter grey in the upper zones.
8. El Lissitzky: 'Ideological superstructure', cit. from: *Programs and manifestoes on the 20th-century*, op.cit., p.121-122.
9. There is no space in this paper for to comment on the serious differences between 'constructivism' and other sorts of Russian modern architecture of the 20s, of which 'rationalism' was a strong second line. Here it is important to underline that very often the use of the term 'constructivism' for all Russian avant-garde architecture of the 20s (both by some Russian and western authors) is unfortunately incorrect. It leads to simplification and vulgarisation of the specific developments in Russian arts during this period. Among the latest examples is the article by Grigory Revzin, 'Trade deficit: Architecture for export' in *Project Russia* (2000/2), where the author, speaking mainly about the works by Melnikov (and exposing as illustrations only his designs), names this architecture 'Constructivism'.
10. Melnikov, op.cit. p. 242.
11. The 'red corner' or the 'beautiful corner' refers to the corner with icons in a Russian traditional house.
12. Cit. from: Melnikov, op.cit. p. 190-191.



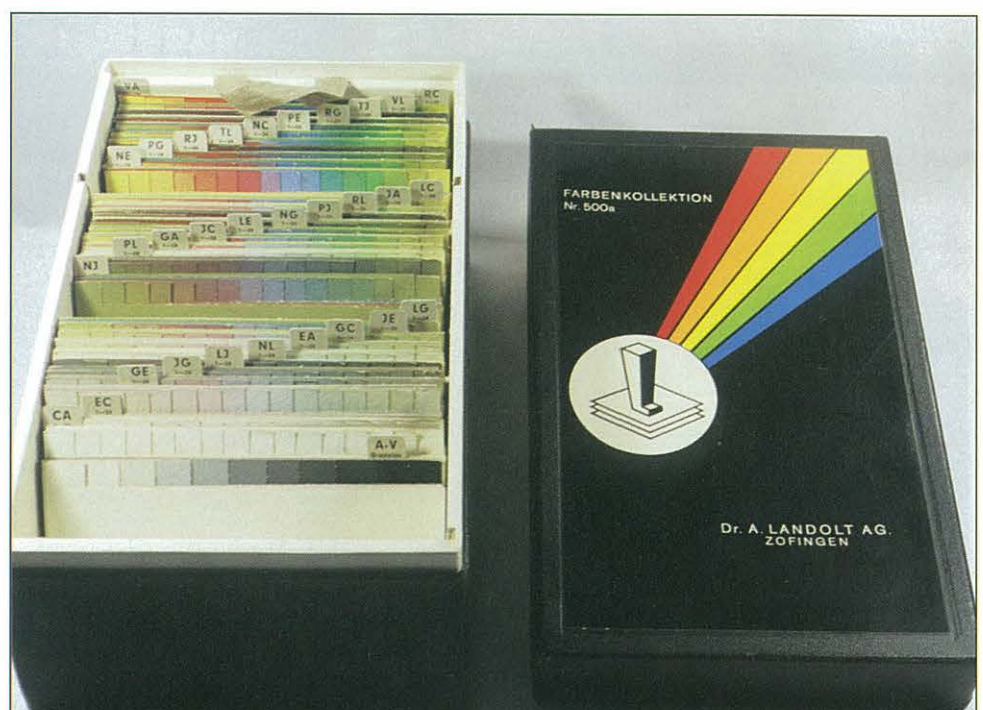
The 1922-23 Technical School in Groningen represent a threshold between traditional and modern architecture: from a decorative to a functional use of colour. Photo: W. de Jonge. (*Colour and Modern Movement architecture, by Wessel de Jonge p. 8 - p. 11*)



Mart Stam's 1927 terraced houses in Stuttgart reappeared after restoration with a strongly coloured north facade. Photo: W. de Jonge. (*Colour and Modern Movement architecture, by Wessel de Jonge p. 8 - p. 11*)



A. Roth, Illustrationen zum
Wirkungsgrad der Farbe.
From: Das Werk, 1949.
**(Colour concepts and colour
scales in modern architecture,
by Arthur Rüegg,
p. 12 - p. 17)**



Colour samples of the Landolt
firm, Zofingen, Switzerland, ca.
1960 after Ostwalds colour
harmony. Photo: A. Rüegg,
coll. A. Rüegg.
**(Colour concepts and colour
scales in modern architecture,
by Arthur Rüegg,
p. 12 - p. 17)**



Le Corbusier, polychromy of the kitchen in the Unité d'habitation, Marseille, 1945-1952.

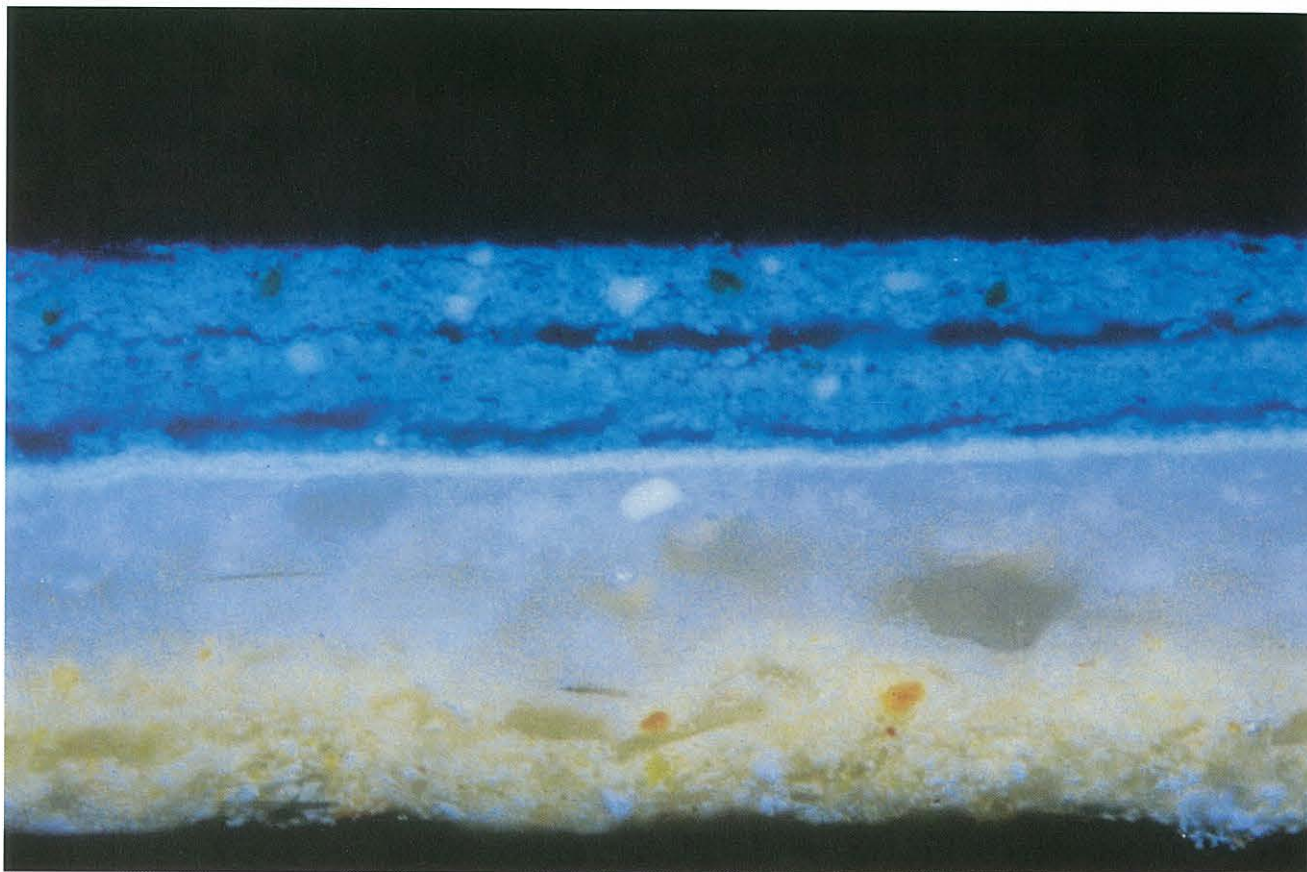
Photo: A. Rüegg.

(Colour concepts and colour scales in modern architecture, by Arthur Rüegg, p. 12 - p. 17)



Le Corbusier, polychromy of the balconies and loggias in the Unité d'habitation, Marseille, 1945-1952.

(Colour concepts and colour scales in modern architecture, by Arthur Rüegg, p. 12 - p. 17)



Villa Müller, microscopic analysis of the layers to identify the original colour.

Photo: B. Rukschcio. (*Restoring and colouring in the architecture of Loos, by Burkhardt Rukschcio, p. 18 - p. 21*)



A. Loos, American Bar, Vienna 1908. The interior shows the original light colours lost completely by the continuous use of more than 80 years as a bar. Several layers of later colours had to be taken off as well as smoke and dust residues.

Photo: B. Rukschcio. (*Restoring and colouring in the architecture of Loos, by Burkhardt Rukschcio, p. 18 - p. 21*)



Living room of Bruno Taut's house at Dahlewitz near Berlin. Photo: W. Brenne, 1997.
(Creating a cosmos of colours, by Winfried Brenne, p. 22 - p. 25)



Attached row houses at Gartenstadtweg 62-66 in garden city Falkenberg, Berlin. Photo: W. Brenne, 1997.
(Creating a cosmos of colours, by Winfried Brenne, p. 22 - p. 25)





The restored colours of the 20s on the facades of the Mosselprom in Moscow. Photo: E. Shorban, 2000.
(*Colour in Russian modern architecture during the interwar period, by Ekaterina Shorban, p. 26 - p. 32*)



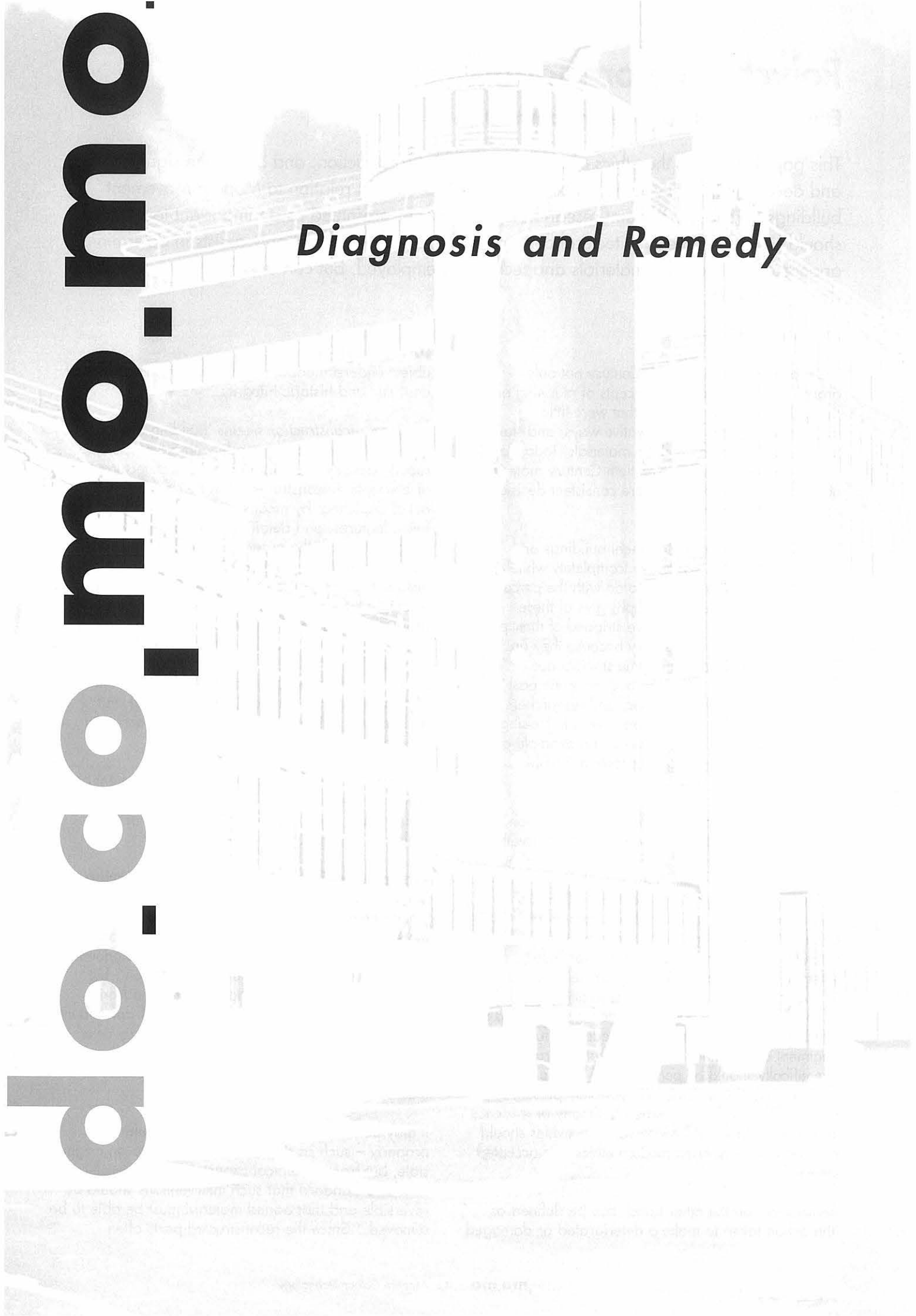
The 'golden sleeping room' of Konstantin Melnikov's house in the 1930s. (*Colour in Russian modern architecture during the interwar period, by Ekaterina Shorban, p. 26 - p. 32*)



The main façade of the Rusakov Club in Moscow. (1927-29, K. Melnikov). Photo: E. Shorban, 2000.
(*Colour in Russian modern architecture during the interwar period, by Ekaterina Shorban, p. 26 - p. 32*)

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Diagnosis and Remedy



Polychrome or monochrome?

Ethics of authenticity and reconstruction

This paper discusses the ethics of authenticity and reconstruction, and briefly the significance and development of twentieth century paints and colours in relation to Modern Movement buildings. Architectural paint research, is in this paper presented as an important tool that should be used in the architectural conservation process, which not only assists in determining appearance of colours, materials and techniques employed, but can also function as a dating device for additions.

by *Ulrika Hübinette*

The pioneers of the twentieth Century not only grappled with new design concepts of planning and aesthetics, but used materials that were little understood, in new and innovative ways, and started to discover the potential of the materials. Today, a greater understanding of twentieth Century materials is needed, so that better and more consistent decisions can be made in conservation.

To begin with, Modern Movement buildings are commonly thought of as being 'completely white', which might have something to do with the perception that black and white photographs give of these buildings. If these buildings are stripped of their paint in a restoration process, simply because they are not yet considered to be of the same significance as 'historic buildings', valuable traces from the past will become lost for future beholders and researchers. The rebuilding in 1999 of the H55-pavilion in Helsingborg, Sweden, will in this paper serve as an example of a reconstruction, illustrating the problems involved.

Terminology

The terminology used in the field of preservation, and perhaps, in particular, the concepts of 'conservation' and 'restoration', often vary in meaning from country to country, and author to author.¹ However, most countries have adopted the view of Sir Bernard Feilden, who in the 1970s defined *conservation* as 'the dynamic management of change in order to reduce the rate of decay'. 'The aim of conservation is to safeguard the material substance of the resource, and to ensure its integrity for future generations'.² In conservation, any necessary intervention should be strictly limited and ideally not impede any future treatment or examination.³ Conservation practised scientifically should be performed to 'such a standard that the practitioner could appropriately present any aspect of the work as an expert testimony or evidence in a court of law'.⁴ 'All conservation activities should be based on recognised modern ethics and accepted theory'.⁵

Restoration, on the other hand, can be defined as 'the action taken to make a deteriorated or damaged

object understandable with the minimum sacrifice of aesthetic and historic integrity'.⁶

The term *reconstruction* means 'building anew'. A reconstruction can be made with the purpose to rebuild destroyed or dismembered architectural parts or elements. Reconstruction can be defined as '...the act of depicting, by means of new construction, the form, features, and detailing of a non-surviving building (...) for the purpose of replicating its appearance at a specific period of time and at its historic location'.⁷ The aim of a reconstruction is to re-create the appearance of the non-surviving historic property in design, materials, colours and textures, accurately based on documentation and physical evidence.

A reconstruction always should be made on the bases of accurate documentation, archaeological and architectural evidence, but never on conjecture or arbitrariness.

Reconstruction, restoration and the replacement of materials are to be considered inferior to conservation with a minimal intervention of the authentic material.⁸

Ethical Considerations of Reconstruction

It may be appropriate to make a reconstruction, when dealing with natural disasters and wars, but more questionable when used in order to improve the presentation of a site. The relocation of a monument generally is considered as a 'reconstruction', but might be justified in order to protect a site from environmental hazards, or if the site is of paramount importance. In order to keep the authenticity of a building, it should, after a restoration or reconstruction process have the original use or at least something similar to it.⁹

It may be tempting to restore part of a cultural property – such as decorative finishes – to an original state, but from an ethical aspect, it is a generally accepted standard that such interventions should be reversible and that added material must be able to be removed.¹⁰ Since the reconstructed parts often

become parts of the cultural property, reconstruction is considered one of the most radical levels of interventions. Also, there is a high potential risk of historical errors as a result of the absence of evidence. Any attempts to reconstruct the past, no matter which scientific resources are available for the preservationist, reconstruction always involves subjective hypothesis.¹¹

Despite these considerations, one might be more motivated to make a reconstruction of a pavilion that was made for an exhibition rather than many other buildings. Much would depend on its special function and symbolism.¹² The idea of reconstruction may consequently be rooted in a desire to restore, e.g. a pavilion's historical and aesthetic importance.¹³

Recreation of a building's original appearance, such as reconstruction of interiors, can be at the expense of the original fabric. That creates the philosophical dilemma of whether the integrity of the building's original aesthetic appearance should take precedence over the integrity of the original physical fabric.¹⁴

If the presentation and the philosophy behind a reconstruction work – whether it is a whole building or a decorative finish – are not explained to the visitor, the visitor might get the impression that what he sees is authentic. For this reason, decisions and choices made on materials and techniques during a reconstruction as well as during any conservation process always should be displayed to the visitor, in addition to the historical presentation of the building. This approach should make it clear that the building should be identified as a contemporary replica.

The H55 Exhibition

The 1950's were a great period of expansion of the Swedish Welfare State. In 1955, an exhibition was held in the city of Helsingborg, Sweden. The exhibition, H55, was not only an impressive manifestation of high quality design of everyday artefacts, planning and housing schemes, but also a powerful demonstration of how demands for everyday use could be met by a Welfare State and a democratic society.¹⁵

New sociological methods were tools for investigating the reality. In the exhibition pavilion 'Färger' ('Colour'), a large section was specially devoted to paints and colours. New products like 'ready-made' paints were launched under the slogan of 'Do it yourself'. Based on the latest research findings, special parts of the section were intended to highlight people's psychological reactions to colour. Since research results indicated that people become more alert and happy when in presence of stronger colours, many of the interiors were heavily coloured. 'We all have different tastes and different demands on our surrounding' was one of the signs at the

entrance to 'Färger'. Where the colour scheme of the 1930 Stockholm exhibition was composed primarily with shades of white, grey, red, blue, yellow, and black, the colour scheme of H55 was far more intense. Contrasting colours against white and grey details of the buildings were orange, cerise, violet, and turquoise. These sharply vibrating shades of colours can be seen as a symbol of the rapid and hectic tempo of the times.¹⁶

Three Pavilions become One

Carl-Axel Acking was one of H55's main architects, and was, among other things, responsible for the three nearly identical exhibition pavilions 'Ombord', 'Bar 55' and 'Strömmen'. The pavilions originally were intended to be used as temporary structures and demolished after the exhibition, but they remained on the exhibition grounds until 1957 when they were dismantled and sold to a scrap-merchant in Åstorp, a couple of kilometres outside Helsingborg. There the buildings were rebuilt and used for storage.

Around 1997 a refuse and reclamation company, located in Helsingborg, bought the three pavilions, with the intention to use them either for recycling of building materials, or as the basis for a reconstruction of one of Acking's pavilions for the new upcoming exhibition H99. While awaiting a decision from the municipality of Helsingborg, the dismantled parts were placed outside on the reclamation grounds in heaps of beams, windows, and even a staircase. Eventually the decision was made to reconstruct one of Acking's pavilions for the 1999 exhibition H99¹⁷, in Helsingborg. The pavilion, now referred to as the 'H55 pavilion', was reconstructed using recycled materials from the original pavilions, and materials from other recycled buildings.

By visual observation of the remains of the pavilions at the reclamation grounds, it was possible to determine, that the steel beams first had been primed by what might have been an aluminium primer, and then painted, usually by what seemed to be one, sometimes two layers of paint. The aluminium primer may explain two things; why buildings from H55 in some sources have been referred to as 'aluminium structures', and that the steel beams despite their poor maintenance were in relatively good condition. It can only be assumed that the building probably had not been regularly maintained since H55. The steel beams were heavily coloured in green, turquoise and blue – sometimes black. It would, however, have been difficult identifying from which pavilion the steel beams originally came. This was in part because most of them lacked any type of marking. Secondly most of the steel beams had been cut off, and even in comparison to drawings, it would have been difficult to identify their original location.

The H55 pavilion is intended to be used for



Carl-Axel Acking's three pavilions located traverse on the pier of Parapeten during H55 in 1955.
Photo: Helsingborgs Museum's Photo Archive.

permanent purposes. Given the limited lifespan of the original pavilions and their materials, and depending on today's building standards, it was decided that the reconstruction of the H55 pavilion would not strictly follow the original drawings and materials chosen by Acking. The polychrome steel beams from the original pavilions were joined together to conform to the measurements of the new drawings. Thereafter, the beams were sent to Denmark where they were blasted, removing paint and corrosion, and finally galvanised and spray-painted black. The now black and white H55 pavilion has been lowered from the original height, and been given a new location where it will mainly serve as an addition to the building Parapeten, which now houses a culinary school.

The H55 pavilion case illustrates many of the ethical issues regarding reconstruction, which according to a majority of established conservation guidelines and charters are 'wrong-doings'; such as for example 'relocation', 'conjecture', and 'absence of evidence'. If an architectural paint researcher or conservator would have been employed early in the process, already before the pavilions were dismantled in

Åstorp, the outcome might have been different. However, this paper has not been written to criticise past efforts in conservation, restoration or reconstruction, but as an attempt to promote discussion, and to make preservationists aware of the values that cultural heritage presents.

Aspects of Authenticity

Authenticity forms a crucial aspect of cultural heritage characteristics. In general terms, authenticity of a cultural property can be described as material 'originality', indicating how the objects were once constructed and their changes over time. The authenticity of an historic property may be reduced by destruction of historic strata, through the additions of modern replacements, and other changes. Cultural heritage that has been preserved as it once was created, or as it has evolved through history can be said to have maintained its integrity.¹⁸

An important issue to consider is whether the term authenticity may be used in describing only artefacts which are positively valued by their surroundings, or are the negatively valued artefacts also included? If

so, is the concept of authenticity free of values? Might it be that the value of authenticity of an artefact is something that grows with time and consequently may not manifest itself at any one time, once and for all? If so, authenticity is likely to be, both a flexible and a dynamic concept and therefore close to an intangible dilemma. Should reconstruction ever be seen as authentic, as it never can be seen as 'completely true'? Is the relationship between reconstruction and authenticity to be seen in opposition to each other? Will future generations see replications as copies or as falsifications? Has the concept of authenticity therefore a direct connection to time?

It is impossible to use fixed criteria to judge authenticity and value, as they vary from culture to culture, and even within the same culture. Depending on the cultural context and development, the judgement of authenticity may be linked to a great variety of sources of information including all written, oral, figurative and scientific documentation. Such sources permit a thorough examination of the specific historic, artistic, social, and scientific dimensions¹⁹ of the cultural heritage which are essential in order to assess all aspects of authenticity.

Authenticity of a modern building is manifested through design intent, form, space and appearance, construction and detail, and finally, materials, all of which assist an evaluation of the structure. Since conservation of many modern structures poses many problems, the concept of authenticity constitutes one of the most seemingly difficult issues. 'Modern' architects have often spoken about buildings as effective tools and machines. It is, however, arguable that they have deliberately made their buildings unable to endure the effects of time and decay. An important question is whether the twentieth Century machine-made materials are an unacceptable alternative to the patina of a cultural property, or do they have 'age-value'? ²⁰ The patina, which often is seen as an important part of a traditional building, is not quite given the same weight when it occurs in a modern building. Some of the most fundamental conservation principles, like minimal intervention and maximum retention are involved in this issue.

Architectural Paint Research

Since the industrial revolution, broadly speaking, two generations of materials have been introduced on the market. To the first generation belongs e.g. cast iron, steel and reinforced concrete and to the second, e.g. aluminium and synthetic polymer materials. After WW II, with the rapid growth of the petrochemical industry, a broad range of synthetic resins and coatings became available, replacing the majority of traditional binder systems. Twentieth Century materials usually have derived from now obsolete large-scale and technically sophisticated processes.

For an architectural preservationist, it is an essential research tool to know what was produced. When a material is in continuous mass-production, a decision from a technical and construction perspective, it may be easy to replace a deteriorated, damaged and patinated material, but be difficult in terms of preservation philosophy.

The use of a particular material or system may contribute to a building's overall significance. Therefore, the historical perspective first must be established in order to be able to value a material's or a system's relationship with a building. Early examples of materials and systems that are still in use may be of particular interest, since they reflect the development of a product that may be of an outstanding or innovative character, and therefore, of historical significance. The evaluation for listing system-built structures raises a problem since they are generally mass-produced and of equivalent quality. This problem can be overcome by taking into account historical factors by selecting the prototypes of key development.²¹ Since materials and systems developed in the recent past are exponentially much greater in quantity than materials and systems from earlier periods, it is important that preservation professionals share information when research processes and projects are undertaken.

Paint can be seen as a simple and direct expression of its time, taste, value and mood. The painted schemes of the twentieth Century reflect ideas, which have evolved during that Century, and play a fundamental role in the expression of the original architectural design.

Architectural paint research has to be considered as a critical step in the understanding of a building's change over time, and plays a fundamental role in the interpretation and authentication of the historical aspects of the building. It should therefore be considered as an integral part of any archaeological survey of an architectural monument, whether for restoration, replacement, repair or reconstruction. The analyses of a structure's surviving paint, not only identifies its historic colour scheme and decoration, but also enable clarification of its decay, structural development, craftsmanship, use and function.

In architectural paint research usually three distinct operations are involved: research, documentation, and the recreation of a specific paint scheme. The purpose of paint analysis is to obtain architectural data that may be of assistance, whether it involves recording alterations, determining visual appearance of the structure, or to accomplish an 'accurate' restoration. The redecoration schemes in today's context for authenticity, of those that were made in the past, may appear more fashionable than accurate. Even if an 'architectural paint research' has

been conducted in the past, there is no guarantee that it is sound and correct. As relevant research data usually never was recorded in the past, interventions made regarding restoration and reconstruction of painted surfaces may be questionable. This approach has, however, begun to change with greater access to archival information, academic research, paint technology and the availability of various analytical techniques.

Historical research cannot stand alone in order to develop appropriate conservation treatments, although valuable information on paints and particular pigments can be obtained from patents and trade literature. It is essential that the people responsible for a restoration project already in the planning stage, acquire the guidance necessary from conservators and architectural paint researchers, who can execute relevant analyses. Any shortcut approach to architectural paint analyses, not following a well-established scholarly-scientific approach is generally not worth the expense. A system should be established for recording analytical data and storing samples, in order for future paint researchers to retrace the decisions made and to make it possible to re-analyse the filed material.²² It is important to create an international location that can provide such information, which can be easily accessed through an on-line system or CD-ROM.

A usual method of reproducing a colour of a historic building is to scrape surface and match its colour visually, on the spot in natural light. However, many of these carefully found and matched colours have led restorers to believe incorrectly how interiors originally were painted, partly due to that the paints have e.g. faded or discoloured. It is important to have in mind that two different pigments may match each other under one and the same light, but can differ noticeably under different light circumstances, i.e. metamerism.

The same accuracy that is expected in the restoration of a building fabric itself, must be expected in the same way in the assessment and recreation of applied architectural finishes. Measures against paint removal should be taken, since a building itself is the only place where the absolute answers exist and can be found. It is of the utmost importance and significance to make a thorough technical architectural paint investigation of a building in order to establish relevant authentic data characteristics. Where replications are to be made, every effort must be made in duplicating the original quality of pigment, vehicle and technique, and because of the metameric qualities within a colour, it has to be understood that colour matching is an uncertain task.

Future Considerations

Maybe the recent past still is too close to the present for us to be able to have a full appreciation of the values that Modern Movement buildings represent,

technically as well as socially. However, if the development of paint materials that arose in the twentieth Century are not carefully recorded and taken for granted, because of their vast variety and multiplicity, and if colour schemes are not properly investigated, future preservationists, scholars and scientists might find a vacuum of information that could be of critical importance.

'A wish for a better future' cannot escape history as being a 'cultural expression of its own period', and as such, it deserves acknowledgement that the Modern Movement buildings must be safeguarded. The cultural, scientific and natural heritage and patrimony must be considered as authentic documents, valuable components and an irreplaceable resource, and should be preserved for the benefit for future generations.

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Surprising colours of a transparent factory: the Van Nelle complex in Rotterdam

The Van Nelle complex in Rotterdam was the first 'daylight factory' in the Netherlands. Most publications highlight the social, technical and aesthetical qualities of this masterpiece - especially the transparency - for which both patron and architects were responsible. But the qualities of the applied colours and finishing have been almost overlooked so far, although they were as essential for the architectural concept as was the use of reinforced concrete, steel and glass.

At present, the buildings are being converted into a 'Design Factory' in order to accommodate offices and workshops of architects, industrial and graphic designers and alike. The current interventions gave the opportunity to do extensive colour research and to deal with the basics of the 'finishing touch' of this famous model of modernity, of both past and future.

*by Mariël Polman**



The factory street, office building and tobacco factory with tearoom on top. Photo: S. Zoetmulder, Van Nelle Archive.

Brief description of the complex

The complex of 'glass palaces', built in 1925-31, was designed by the architects Jan Brinkman (1902-1949) and Leen Van der Vlugt (1894-1936) in co-operation with structural consultant Jan Gerko Wiebenga (1894-1974) and others. The patron was Kees Van der Leeuw (1890-1973) of the old firm *Wed. J.J. van Nelle* and he was directly involved in the design- and building process. Being a prominent member of the theosophical community in the Netherlands, his enlightened spirit of enterprise reflected on the complex. Besides, he also used the principles of American efficiency and the modern architecture of the *Bauhaus* in Dessau, which he had investigated personally during special study trips. Still an eye-catching landmark in north west Rotterdam, the Van Nelle complex is full of surprising colours and finishing.

The general complex, consisting of several buildings of different shapes and heights, is situated in the industrial zone of *Spaanse polder* along the *Delfshavense Schie* canal and near the railroad from Rotterdam to The Hague. Axe of the complex is the 'factory street' with concrete pavement, parallel to the canal and accessible from the public road over a clinker branch to the main entrance with the porter's lodge. Next to the lodge (replaced in the eighties) lies the curved office building facing the canal. The huge factory buildings were designed in accordance with the vertically organised production processes, taking into account a high degree of hygiene, efficiency and transparency. Originally they were meant for the refinement and packing of tobacco, coffee and tea and they are eight, six and three stories high, respectively.

Next to the office raises the former tobacco factory with on top of the elevator shaft the circular tearoom (nicknamed the *bonbonnière*), flanked by the lower buildings of the former coffee and tea factories. The office and the tobacco factory are linked by a glazed pedestrian bridge. On the other side of the factory street, closer to the canal, are the boiler house with chimney and the former central store and dispatch department, which is connected by four diagonal conveyor bridges to the factories. Next to the storehouse are the L-shaped workshops and at the short west side lies the - rebuilt - canteen while behind the factory buildings sporting grounds had been laid out as a facility for all workers.¹ In 1942 a series of nine storage halls had been added along the canal, as a compensation for the bombed warehouses in the city, followed by three halls in the sixties.

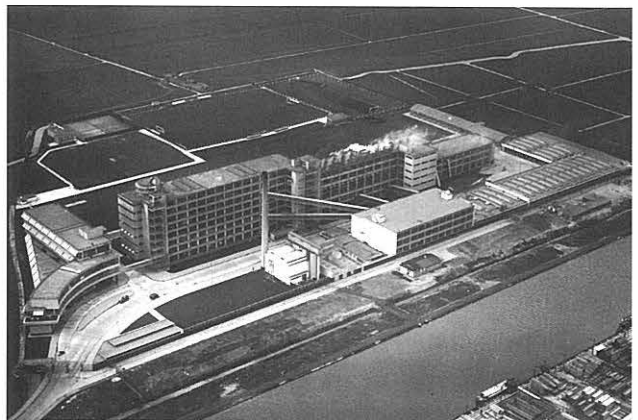
The elongated factories are constructed with so-called mushroom columns and integrated floors of reinforced concrete. The facades are curtain walls of glass and steel, the side-walls are plastered. The three-storied office building has also a skeleton of reinforced concrete, though with square columns. The lower parts of the front block and the

rectangular side wall have plastered parapets and steel framed windows, while the higher office block had, originally, similar curtain walls of glass and fine steel frames as those of the factories, painted aluminium. All buildings have black tiled plinths. At first glance, the office building and the proper factories seem to have had similar details. Yet, if one looks more precisely, some remarkable distinctions can be observed, which are directly related to the original functions and the then existing ideas about social hierarchy and workers' behaviour. So, the work force of the factories had to enter the machine halls via separated wash and cloakrooms for male and female workers and the directly linked staircases and entrances were alternately meant for women and men. In contrast, there was no separation of sexes of the personnel in the office building, but a clear distinction between higher and lower levels: the mezzanine at the curved front contained the direction rooms, while the semi-public central hall of double height was meant for the administrative and consulting personnel.

Since its inauguration, the complex has more or less belonged to the same company and served the same purposes till recently. Also the same architect's firm has been continuously involved in all later extensions and rebuildings. Being in full swing, the buildings of the Van Nelle complex have been frequently adapted, renewed and maintained over the years, always based on the original plans. However, it is obvious that not always the same materials and the same finishes have been used, especially not during the post-war period.

After a period of more than sixty years, the buildings have lost their original function and now they are being partly restored and partly adapted to a new use. Taking the advantage of a totally new start, one of the major questions for the restoration was what original colours and finishes had been applied. To find the answer a mixed type of detailed research was needed.

The materials have been studied by stratigraphic research *in situ* and by laboratory research. Also,



The Van Nelle-complex, KLM aerocarto, 1931.

Photo: Van Nelle Archive.



The transparent curtain walls. Photo: Van Nelle Archive.

extensive archival research could take place because the company had always kept the historical documents, which is rather unusual. The archives appeared to contain lots of drawings, photographs, specifications, bills, correspondence, publications and even promotion films of the factory. Moreover, interviews have been held with former employees to enlarge the historical picture.

Finishing of the factories

The heart of the complex is formed by the elongated factory buildings and their transparent curtain walls at both long sides. If any colour catches the eye, it will be the aluminium of the repeated window frames and parapets. A closer look at the facades learns that their *present* colour scheme contains:

- a yellowish white painted plaster,
- smooth, aluminium painted doors and door- and window frames of steel,
- a continuous black tiled plinth at all sides, except for the rear side which could be enlarged,
- egg-yellow tiled wall parts at both short sides,
- and all sorts of glass.

Due to later maintenance and repairs, the colours and materials have slightly changed over time, although they are still related to the original finishes in a way.

Originally, the outer walls were just roughly plastered and not painted. The *Rauputz* was applied by qualified German stucco-workers. Later on, the plaster has been painted, showing a less 'rough' effect than the first finishing coat. Aluminium paint was a very new material in the twenties and by then it had a coarse texture. Another ultramodern element in those days was the neon light on top of the coffee factory, which letters VAN NELLE were almost colourless during daytime but appeared intense red when they were switched on.

Generally, the textures of the original finishing were not as smooth as they look nowadays. For instance, the wall tiles had different glazes. Specially selected glass had been adapted in the canal facing fronts besides ordinary glass in other walls.

In spite of the well intended efforts to maintain the architectural detailing in a good shape, the colour palette has been changed and has lost a lot of its original balance and subtle expression of materials. Also the interiors underwent several changes as a result of an intensive use as industrial production spaces. Only the switchboards controls with marble plates, prominent evidence of the faith in technique, are proudly displayed behind glass in spaces next to the second and third entrances, seem to have survived in original state - though they are now out of order. When inspecting the inside of the emptied factories in 1999, a mixed pattern of original and later added colours and materials could be analysed in detail. In general, the spaces were determined by red, yellow, orange, white and grey colours, but the most dominating colour was aluminium paint,

besides chromium. Originally, the floors had been coated with a special mixture of a wood fibre magnesium silicate and cast cement, called Dermas. These floors were particularly meant for chemical industrial environments and therefore chosen. The large amounts of correspondence, including laboratory tests, indicate that it was possible to colour the Dermas by adding pigments to the binding. By tradition we knew already that Van der Leeuw had wanted not only chemical resistant floor coatings, but also a pleasant and good working climate for the employees. So, the Dermas floors were coloured with yellow ochre and the steps of the main stairs with red iron oxide.

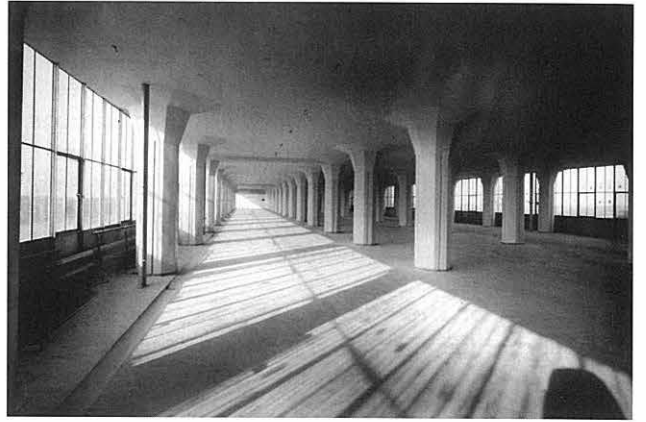
The steel elements were painted aluminium: the external and internal frames, doors and windows, the tubes of the central heating, the doors of the elevator, et cetera (only the pipes had special colours). The door handles were chromium.

The ceilings and columns were painted white, which revealed not only the effects of the daylight on the sculptural mushroom capitals and eight-sided shafts (thus emphasising the structural elements of the building), but were also useful to reflect the artificial light. On the outer capitals red number codes and (upright) red letter codes had been painted to indicate the co-ordinate of the grid, while doors had blue letter codes. In the soberly finished interiors these coloured additions had the effect of decorations, just like the differently coloured pipes - green for wash water, black for effluent water, red for condense water, blue for air and aluminium for steam - even when the use of colours was primarily functional.

In the circulation spaces, the lower parts of the walls were tiled with light yellow tiles. The red-stepped stairs had black painted railings and a chromium handrail. The sanitary rooms had off-white wall (Silezian) tiles and white floors with red or black tiled borders, while bright red painted doors gave entrance to the toilets.

Later on, the ochre-yellow Dermas floors were damaged when heavy carts came into use instead of the original conveyor belt. Yet, many repaired floors maintained a yellow coating. The shafts of the mushroom columns were later painted grey while the capitals remained white, and the codes red and blue. The light yellow tiles in the main staircases were replaced by new ones of different kinds. Also the stairs lost their authentic texture, though the red colour remained. The Dermas was coated with red paint or covered with red tiles. The railings were painted red, copying the colour of the railing in the office. The contrast between the colours of stairs and railing got lost, and one of the characteristic differences between the colours of the factory and the office was turned into a similarity.

When the Van Nelle complex was still in use as a series of production halls, every factory unit had its



The interior of the factory with yellow Dermal floors, white painted columns and ceilings and aluminium painted facades.
Photo: Van Nelle Archive.



Office, central hall, the mezzanine gives a view of the main floor. Photo: Van Nelle Archive.

own character, appealing not only to eyes and hands but also to ears and nose. The noise of the packing machines and the suspended chain conveyor belt invaded the lighted and coloured spaces just as intensively as the smell of tobacco, coffee and tea. The different uses led to different smells and special adaptations of spaces, but the similar finishing and colours gave the factories a visual unity. This does not mean that the empty factory was a monotonous plan of similar floors. Some floors had a very specific character. A series of north-facing sheds was placed on the top floor of the coffee factory, allowing neutral natural daylight to inspect the coffee samples. Also a series of sheds had been used in the extension of the tobacco factory, but these have been covered at the inside. Another specific feature is the double height at the north side of the second floor of the coffee factory, which was required for the installation of high roasting machines. Within the constructive principle of the plans, upwards, a more subtle difference was obtained by the gradual slendering of the columns to reduce weight and material costs. This was a common principle in warehouses and factories since the 1850's, nevertheless this slightly varying play between the void and the verticals gives every floor its own three-dimensional identity.

Apart from the overall present aluminium paint, two other colours had been used to link visually the tobacco factory with the office building (which was also physically connected by the glazed pedestrian bridge at the mezzanine, linked to a semi-underground 'inspection corridor'): the egg-yellow tiles at both short facades under the pedestrian bridge and, inside, the sea-green of wall tiles and wall paint in the first stairwell and in the office's corridor on the first floor, leading to the pedestrian bridge. The sea-green tiles were also adapted in the entrance of the tearoom on top of the stairwell of the factory. In fact, the tearoom was the highest representative room of the complex, meant for exclusive meetings. Unfortunately, the Dutch climate and the exposed position caused serious problems of corrosion, which have been solved by an integral reconstruction of both the windows (replaced by double glass) and the interior in the eighties. A surviving piece of a corroded rod, exhibited like an archaeological piece, serves as a justification of this great intervention. Only the circular, padded, aluminium painted radiator around the spiral stair in the centre is still the original one. Not only the renovation, but also the representative use of the space implied the loss of authentic material. According to several historical building documents the transparent tearoom must have been as colourful as the board's rooms. In the eighties, the architect made a careful design, inspired by the historic photos and colours of the tiles. The present tenant, who runs the space for exclusive dinner-parties, wants to have the tearoom reconstructed in its

historical colours and finishes. Texts describe the 'Sun parlor for directors, where the inner wall is deep blue stippled with silver' and 'a practical blue glazed buffet with rubber top.' The archive photos show a roughly plastered wall, just like the outside wall, which was dark and dotted with paint, which could well be aluminium-paint. Besides that the rubber floor with a pattern of circles and lines, of which the drawings are kept. Based on the results of the colour research in the office, an attempt is made to restore the magnificence of the olden days: the stars in the ultramarine blue sky.

Office exterior

The elegant office building has a rather complicated shape, due to the combination of a concave front and rectangular volumes expressing clearly the original functions of the inner spaces. The curving front contains at the left side the garages for the directors' cars and at the elevated right side, above the basement, the main entrance to the hall. The vulnerability of the subtle aesthetics of the original materials and finishing is most strikingly shown by the later interventions both in the exterior and the interior of the office building. By chance, more details have survived than a rough survey would suppose. Originally, the office had similar finishes as those of the factory buildings, except for the elevated entrance which is provided with a stately stairway of broad steps clad with natural stone, syenite. In the plinth of the entrance the black and egg-yellow tiles are replaced, partly in a new design because the entrance is made accessible for disabled with a lift and sliding doors instead of the original revolving door.

The outer walls are now finished with a smooth, modern plaster painted yellowish white (in stead of a Rauputz in natural colour). Originally, there were no texts on the building.²

Only the original doors of the basement and the renewed doors of the garages have kept the aluminium paint. In order to fulfil new requirements of energy saving and upgrading of comfort, the curtain walls of the office have been replaced in the eighties by an aluminium double-glass system, which is coated in a light grey, and twice as thick as the original steel frames. Ironically, the material of the frames is now really consisting of aluminium, while the original thin frames of steel were *painted* aluminium. The massive double-glazed windows reduce not only the original transparency and cross-views from outside but also the visual contact with the green surroundings and other buildings from out the interiors.

Office interior

Fortunately, the representative areas at the mezzanine and the central hall have kept their original volumes, though not all finishes. Inside, the double high space at the main floor was provided



Office, situation central hall. Photo: M. Polman, 2000.

with glass cubicles and counters for clients in the centre, while the surrounding space was foremost meant for the administration. The main floor was in sight (both openness and control) of the broad gallery and the adjoining board's rooms at the front on the mezzanine. At the higher levels, more office rooms could be found, besides a canteen and a library, which could be reached by the main stairs. The almost hidden basement accommodated among other spaces, the entrance of the personnel with cycle shed, cloakrooms and sanitary, the mailing service, the save and the switchboard controls on marble, this time out of sight. This area is related to the factories in colours and finishing: red Dermas stairs to the main floor, red, grey and white floor-tiles besides white ceilings and walls, light-yellow wall-tiles and aluminium doors and windows with chromium handles.

The main entrance, the central hall, the main stairs (going up to the mezzanine in spiral form) and the mezzanine were the representative rooms, together with the board room, the library and the canteen in the administrative block.

The recent research revealed that the floors had been covered with rubber - either white, grey or off-white with black flecks - with a bright ultramarine blue border. The rubber was carefully detailed in the angle between floor and wall and the same material -blue rubber- was used for the doorsteps. The blue borders had clearly a directing meaning in the open spaces. In the central hall, for example, the cubicles of the consulting rooms are placed on the blue border around the central area of grey rubber where curved benches are placed. The benches, placed alongside aluminium coloured radiators, were originally covered with grey rubber, finished with chromium strips, with ultramarine blue painted frames, linked in pairs with chromium shelves above the radiators. The effect of this ordering is - or rather was - a harmonious space. Later on the rubber has been replaced by grey coloured carpet tiles. The benches have been covered with brown imitation leather and the radiators are painted in a dark camouflage colour. This creates a weak abstract of the sophisticated design. Fortunately, the counters have their original ultramarine blue opaque sills and one of the engraved texts in the glass has survived. In the entrance hall, on the main stairs, in the gallery and in the corridors the rubber has been replaced by linoleum, of the contemporary type 'marmoleum' in white and grey with a blue border. Because these replacing elements suggest to be more or less original, they affect the original architecture in a complicated manner. While linoleum is related to rubber, this seems a proper solution for maintenance, but it misleads an inattentive observer, because the borders are not exactly reconstructed and the colours are not exactly the same.

The office stairs had red railings in combination with blue steps: blue rubber borders (with oatmeal and black fleck rubber: the main stairs, blue Dermas at internal stairs from the mezzanine to the first floor to and blue painted private spiral stairs of van der Leeuw. The handrails were chromium, as were the handrails of the aluminium-painted railing on the balcony of the mezzanine.

Originally, the main administration hall had white columns and white ceilings, just like the factory; also the electric lighting had been the same, but since the eighties the strip lights substitute the original spherical lamps.³

Especially the representative rooms were conceived as a total design, where colours of the finishing and the furnishment were integrated in one architectural concept of the office interior. The chromium furniture was made by the firm of Gispén.

The radiators were covered when the windows were replaced. Originally, the radiators were painted aluminium, with window-seals of blue polished glass. They are replaced by black natural stone, while natural stone and marble were exclusively used for the entrance of the office and for the switchboard controls, clearly displayed in the factories and the boiler house.

The most exclusive area was the private office of Van der Leeuw, at the head of the building. He could use a spiral stair starting in his private garage, going up to his private office and further on to the sampling and tasting rooms at the second floor. This office contained a consulting room, corridor, cloakroom, toilets, direction room and conference room. The corridor had a blue rubber floor. Skylights lightened the toilets. On the left hand was the conference room, with white rubber floor and blue borders and blue rubber doorsteps. The wooden doors were painted blue metallic, the doorframes finished with chromium strips. The walls were painted light grey and the columns silver-grey. The window seals consisted of blue opaque glass, the radiators were painted aluminium. The ceiling was covered with white acoustic plates. In the centre stood a large, rectangular table with eight chromium chairs by Gispén. Opposite the windows were two glass and chromium console tables fixed to the wall. On the rubber floor lied a specially woven carpet by the Deventer carpet factory, probably in greys and blue.

The direction room of Kees van der Leeuw has been refurbished so radically, later on, that only old photographs and original design drawings can give an impression of the clear and sunny interior, which had probably been coloured with finishes, identical to the conference room. The Deventer carpets were specially designed for the room and they created a more intimate atmosphere, tuned to the architecture

and the furniture. The beautiful round table with black table top and chromium support was placed on a round carpet with semi-circles, in four different grey colours ending in a blue centre. The chairs contained probably the same range of colours. Technique was elegantly integrated into the furnish: the round table had a revolving blade in the centre to enable telephoning from out any seat. The side table of glass and chromium was contra-shaped to the round table. One leg supports a revolving bookshelf of glass plates, set with ultramarine blue rubber.

The direction room was subdivided into five small consulting rooms of glass, including one for Van der Leeuw himself. His room was situated adjoining the terrace, which he used as much as possible. Also the doors of the central part of the private office could open widely to the terrace, thus creating a continuous space between inside and outside.

The light coloured curtains could be drawn back along the wall, so the light could enter the room in full.

The other rooms at the mezzanine were offices for the deputy managers. Here, the walls had sea-green painted dados and white columns. The secretary room had blue dados. The partition walls were similar as in the factory: 2/3 part of glass, the 1/3 steel parapet and frame painted aluminium. The

cloakroom had silver-grey tiles on the wall with a chromium hat rack by Gispen and the toilet (which still exists) had sea-green tiles and a white, American lavatory. Also the dados in the corridor to the glazed pedestrian bridge were painted sea-green (thus giving a visual connection with the opposite staircase of the tobacco factory and the tearoom on top).

The conference room at the second floor had originally blue walls and grey rubber on the floor, with blue borders, which is partly still there. At the other floors, hardly any authentic layer is left, due to later refurbishments. Yet, one can imagine how these labour spaces would have looked like, by examining contemporary photographs and films - though these are only in black and white.

To summarise the results of the research, the original colour palette of the office building's interior showed:

- ultramarine blue (opaque glass, rubber, paint and Dermas),
- sea-green (tiles and paint),
- silver-grey (tiles and paint),
- light-grey (rubber and paint),
- blue-metallic (paint),
- off-white (rubber and textile),



The four diagonal conveyerbridges connect the central store and dispatch department to the factories. Photo: Van Nelle Archive.

- white (paint),
- black (flecks in rubber),
- red (paint),
- pale yellow (tiles),
- aluminium (paint),
- chromium (handrails and handles),
- and different sorts of glass.

Though most actual colours come close to the originals, the palette is changed in its fine-tuning, like happened to the exterior and in the factories as well. The originally adapted colours were physically related to each other. For example, the blue is consequently made with the pigment synthetic ultramarine blue, for paint, rubber and probably glass. The colours in the office were different from those in the factory, and although the colours of the palette were used in the office building, only the private office of Van der Leeuw seems to have had an exclusive combination of (silver)grey, (off)white, aluminium, chromium and blue. They reflected the undisputed hierarchy within the firm of an enlightened patron, who could create his own working environment separated from all others but close to the sun. Moreover, the board could keep control of all employees but could keep its own privacy thanks to the use of partly opaque glass panels.

Transparency

Because the Van Nelle complex was set up as a 'daylight factory', the office and the factory buildings had huge curtain walls of large vertical - partly revolving - windows in fine steel frames. Each unit was subdivided by a steel plate as a 1/3 high parapet and a 2/3 infill of single glass, based on the then most current size as used in greenhouses. When at work, all labourers could have visual contact with the open scenery outside while the incoming daylight from above had to bring joy and good labour conditions. Also the projecting stairwells, placed outside the factory tract in order to obtain an unbroken production space, enabled every user a thrilling view along the facades towards the meadows in the far while passing the landing. This principle is also used in the office.

The transparency was of great importance, as a manifesto of enlightened entrepreneurship. Van der Leeuw, who himself loved sunshine and gave light a spiritual meaning, had ordered a special type of glass with the intention to have both the perfect reflections of the Dutch skies and the optimal cross-views.⁴ This glass, though, was only put in the front and one side wall opposite the office. The other outer walls and the partitions were filled with cheaper glazing. Although a light and warm atmosphere was promoted by all means, the widely allowed sunshine could cause a too hot temperature, especially in summer. Therefore blinds were needed

which would not disturb the carefully detailed architecture. Archival photos show textile sun blinds at the exterior of the office. In contrast, the factory contained Venetian blinds, an American product, made of aluminium painted wooden strips. These were placed inside, in between the columns. This principle is used again in the Design Factory (with modern Venetian blinds).

The ideal of transparency was neither merely linked with light and sunshine, nor was it adopted in an equal manner for all employees, just like the colours stresses subtly the hierarchical differences. It is said that the location of the mezzanine, directly linked to the central hall was based on openness and control. But transparency did not automatically involve a lack of privacy. Sophisticated solutions had been found, allowing several stages of transparency and opaqueness. The private office of Van der Leeuw had smaller compartments with double-glazing. In the mezzanine, there are still some partitions walls left with - for the 1/3 glass at eye level - special mat glazing, decorated with semi-mat borders. The archival photos show the use of glass curtains in the office-compartments on the first and second floors. Later on, the authentic partition walls (the same type as in the factories) were blinded 2/3 with wallpaper. This turned the former representative rooms into stuffy, dense spaces.

Conclusions

The Van Nelle complex proves to have been much more enriched by colours and textures than the sticking image of an almost blank transparent building had always suggested. Initially, the first intention of the colour research was to examine only the layers of *paint* in order to give an appropriate advice for restoration and maintenance, but the examination indicated that the paint layers were just one part of the colour scheme. Other finishing played also an important role in the total appearance and they were an essential part of the well-balanced ideas of modern architecture and modern working conditions of their time. They reflected a holistic concept of a modern production complex where light, air and openness were the main issues, as well as functionality and hygiene. Every paint, each type of plaster, glass, tile or rubber had its typical texture, giving the surfaces - and spaces - a deliberate distinct expression. Originally, much effort had been made to use special (often new) materials, such as Dermas, rubber and opaque glass.

The proper factories and the office building were visually and technically clearly related to each other, but their colours and finishing were not identical because the original functions of the buildings were different. The applied colours stressed, on the one hand, the similarity in architectural principles - such as the curtain wall - and they expressed, on the

other hand, the hierarchical and practical differences between the higher and the lower levels of the organisation.

It took time and attention to discover the used principles of connection and distinction. For a quick observer, the means may not seem spectacular but the in-depth study learns that the finishing and colours are an integral part of the architectural concept and the spatial experience, reflecting a very subtle approach of the complex as a whole. While the factories were extremely well finished and had a high architectural quality in relation to their function, the office had a very industrial character compared to other office buildings of the interwar period, but compared to the production spaces the representative office rooms were more luxurious by the use of special paints and materials. Yet, the finishing were different and they distinguished in a subtle way the meaning and location of each space by different colours.

While expressive colours have been used like white and black, besides ultramarine blue, red, sea green, egg yellow and aluminium, they are combined with natural colours like English red, yellow ochre, light yellow and light grey. The colours support the architectural uniformity of the complex and emphasise the individuality of certain spaces, while by allowing the various buildings to express their own character. Besides the coloured surfaces the almost all-over presence of single glazed curtain walls of thin steel-framed windows gives the buildings an unprecedented transparency, which originally was enforced by the reflection of the sky and the water of the canal. Moreover, a constant play with light, either natural during the day or artificial during the evening, provide an unexpected richness of material expression. In a double sense the Van Nelle complex has a surprising colourful history and it is up to the current patrons and architects to keep these qualities alive.

* edited by Marieke Kuipers

Notes

1. A part of the workshops have been removed for the erection of a new coffee refinement tower in the eighties. See for more details of the later alterations: Kuipers, M.C., *Cultuurhistorische Verkenning Van Nelle-complex Rotterdam*.
2. At the head of the building the memorial text is placed, given by the personnel after the move of the firm to the new location in 1930. This text is another example of the decorative use of modern typography. Originally, these chromed letters were placed on the headwall of the bicycle shed on the other side of the factory street, but this building was pulled down. The neonlights on the roof may look almost authentic - and certainly they fit fairly into the architecture and function very well to draw attention -, but in fact they are later added copies of the original sky signs on top of the coffee factory.
3. Moreover, the office spaces on the upper floors were refurbished in the same dull manner as most offices of those days with partition walls and system-ceilings with integrated TL lighting.
4. Gout, pp 77-78.

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The challenge of reproduction of historical colours with modern paints

The house of the architect Renaat Braem in Antwerp

The paint industry can contribute to the conservation of colour schemes in Modern Movement architecture by the determination of the colours with actual measurement techniques, the use of the company's available historical data and the reproduction of historical colours with modern paint technology.

By Marc Deviaene

The investigation of the original colours used for the decoration of a building has different aspects:

Historical aspects

The main task of the historian involved in the project is to collect as much documents as possible. For example the archives of the architect who has built the construction with drawings, site reports and pictures; the documents, left by the initial owner like invoices and family pictures and the information of the people who assisted the architect in the construction and relatives of the owner.

When this information is collected, it is important to classify it in order of issue. After dating a decision has to be made if the renovation will be conducted based on the original situation or at a later stage or even the latest situation. This depends on the fact at what time the aspect of the building was the most representative or even characteristic of the expression of the architect. The decision has to be taken in a session with all parties involved. In the case of the house of Renaat Braem there was a development of his use of colours going from more minimalist grey and white to more expressive use of basic colours, as did Rietveld.

This evolution of the use of colours could be verified by stratigraphy on the exterior window frames and doors and on the deep colour wall decoration inside the house. For example: the niche in the entrance hall was originally grey and covered later on by a deep red colour.

The collection of visible indications

A total view of the building was made by photography. Pictures were taken from different angles to give detailed information about the actual status of the exterior and from all the interior places. Meanwhile an extensive listing was made of all painted building surfaces with description of colour and brilliance.

Already at this stage, some important indicators could be collected. For example: the texture of the substrate like the cement rendering on the total surface of the wall by the stair case and the texture

decoration in the living room in front of the open fire and in the office.

More examples are the structured application of paint in the sleeping room, the original colour hidden by a radiator.

The sampling of wall and wood coatings

This step has two targets: first the determination of the cohesion and second the adhesion of the total paint layer. This information is of basic importance for the elaboration of the paint system advice for the restoration.

Based on the historical information and the visual aspects of the coating a decision has to be taken to locate the places where the sampling will be done. The locations will therefore not be chosen by random, but will follow vertical lines in order to assure that the right samples are taken. To confirm this, the coating will be peeled of, layer by layer, to give the first indications which will be used as directive information for the laboratory. This information is for example the number of layers, the consistency of each one and the interlayer adhesion.

If possible, a screening will be done to give information about the composition of the coating.

By use of MEC it can be determined if the coating is of a physical drying type.

By heating a thin sample with a lighter, the smell and the way of burning also gives (also) relevant information.

The samples will be carefully registered and pictures will confirm the locations.

This is of course a destructive method but in the actual stage of investigation and available non-destructive methods, this cannot be avoided.

Technical aspects

Investigation on site is important to determine the factors of deterioration of the paint systems.

In order to avoid the repetition in a short period of time of the same defects, it is necessary to prevent the deterioration by curing all deterioration factors.

Examples are the penetration of exterior humidity by drainage, insuring a correct heating and ventilation

and disinfecting of biological contaminated surfaces. From the existing paint systems a survey of the characteristics 'type of paint system and its condition' has to be made.

One could question if we have to use the same type of paint as the original one. The logic answer is no, if the colour, texture and brilliance are the same as the original paintlayer.

In some cases, it actually becomes very difficult to make the same type of paint. For ecological and toxic reasons different constituents formerly used in the manufacturing of paint have been forbidden, such as lead, chrome and cadmium and their derivatives.

For health and safety reasons, recently in Holland, all use of solvent-based paints has been forbidden for interior painting. (except historical interiors of listed buildings, M.P.)

On the other hand, in almost every case this is not a disadvantage because of the evolution of the paint technology. The latest developments in water-based paints results in even higher quality and better performance than the old solvent-based paint formulations. If looking to the characteristics, water-based paints offer good water vapour permeability, a higher flexibility and good colour stability even absolutely non-yellowing. This means that the renovated paintings will remain with their initial look. In some cases an exception has to be made for special decoration techniques but this is not the case in the modernism.

Special attention has to be paid to the use of deep colours where organic pigments don't offer the same opacity as the ones based on heavy metal pigments, but in combination with carefully chosen undercoat colours this problem can be solved.

The use of water-based paints present a not undeniable advantage during application, such as quick drying time and reduction of odour development.

Spectro-photometric colour measurement on site

If on site the investigation leaves no doubts about the originality of a visible topcoat, it is possible to measure the colour with a portable spectro-photometer.

If the equipment is connected to a laptop PC, immediately the measurement can be analysed.

In the actual stage of the technique, the 'L,a,b' figures are compared with database figures.

In this database a number of colours are stored with their 'L,a,b' figures.

By comparison, three proximate values are collected and displayed on the screen of the PC.

One can easily understand that the success of this procedure, namely getting the figures of the original colour, is totally dependent on the volume of data from different colour collections. Each colour collection is only a selection of colours in a particular

system. The handicap of this method is the use of figures of recent colour collections in the database.

Another way of using the measured figures is to calculate the tinting paste recipe for the mixing equipment. With this formulation, a colour sample will be produced on a colour mixing system and after comparison of samples on site or in the laboratory the exactitude will be controlled.

If necessary the formulation can be manually adapted in the laboratory to increase the accuracy of the colour matching.

Another fact is that some pigments, which were used in the past for the manufacturing of paint, are not available any more, e.g. lead and cadmium pigments, because of their toxicity. This has as consequence that for standard paints, the organic pigments that are used do not allow to reproduce exactly the old fashion colours. Especially the deep colours.

During the whole procedure something else can be disturbing: in case of oil based paints the yellowing of the binder by oxidation in time could have a major influence on the latest aspect of the revealed colour.

In this case the chemist and the historian have to compare their investigations and a decision has to be taken to choose the colour that will be applied during the restoration.

During this discussion both aesthetic and old fashion aspects may influence the decision.

The evaluation of the spectro-photometric measurement on site

In the case of the house of Renaat Braem we had the opportunity to make a very accurate evaluation of the colour measurement with a portable X-Rite spectrophotometer.

The fact that we could find the original cans of different paints, allowed to compare the measurements on site with on one hand the spectro-photometric measurement in the laboratory on the dry sampling material and on the other hand to compare it with measurements after application of the original paint. In both cases, on site and in the laboratory the L, a, b, figures were used to calculate the ACC colour. The calculation performed with figures of measurements on site, on applications of old paint sample, on samples taken on site and measured with the laboratory equipment didn't show any significant deviation.

By using the calculation of the ACC colour code it was reasonably easy to determine exactly the colour with his mathematic reference. By this procedure it was possible to avoid the gaps of standard colour databases or time consuming comparison with the actual used colour fans.

The ACC colourmetric system

The ACC System is internationally accepted as one of the most accurate and comprehensive colour

codification systems available. It is based on a scientifically devised framework that allows every conceivable shade and hue of colour to be accurately defined and codified in a logical sequence. It arranges colours by their three characteristics of Hue, Saturation and Lightness.

The system is best explained by a 3-dimensional cylindrical model that accords with our objective interpretations of colour. Based on its place in the system, every colour variation is assigned its own code to create an accurate, totally unambiguous reference that leaves no room for error.

Laboratory analyse of the sampling material

On site, sampling material for the laboratory analyses is carefully collected.

Microscopic visual examination:

By the sample preparation, the sample is fixed with glue on a dark substrate. Methanol is used for the cleaning and gradually, layer by layer the paint is removed with a scalpel.

Examination: e.g. hair in a plaster or putty, the determination of the build-up of the different layers of the paint system.

This is important for the present situation, less important concerning the analytical examination. The advantage is the vision in depth. The target is to make the decision how further analysis will be oriented.

It gives additional information of the consistency, eventually cohesion, and degree of contamination. Regarding colour determination it is a rough approach due to the contamination and/or oxidation. If possible a colour comparison can be made with well-known colour collections: RAL, British standard, ACC, and NCS.

A cross-section examination can be performed if the sample is prepared as follows:

A particle of the sample is imbedded in two component polyester and polished. The enlargement, when a stereomicroscope is used, is limited. The photographic printing is performed with a 75 times zoom but it gives relatively poor resolution. The advantage is the conservation of the pictures without alteration. The analytical information remains available, as it is stored in the database of the mainframe. The layer thickness is determined per layer and measured by computer.

If the paint film of the paint system is free of substrate, a total film thickness can be measured. Another possibility is to measure the film thickness by electromagnetic film thickness measurement equipment on the sample positioned on a polished steel plate.

Chemical analysis

Identification by I R spectroscopy

What can be analysed is the type of binder, the identification of pigments and fillers, with the

limitation that the differentiation of crystalline structures with the same chemical composition is impossible: e.g. lime and calcite. Colour pigments cannot be identified.

Special surface analyse techniques

There are two techniques available:

1. A.T.R. Attenuated Total Reflectance.

1 to 2 μm layer thickness. Only top layer examination.

The advantage is that the contamination on the top layer can be measured. On an aged surface the determination of high concentration of pollution and degradation products of the paint can be performed. The analysis is executed on a very small surface with the size of a spell head. Even for very small samples an IR-spectrum can be performed with the restriction that the surface has to be flat. Picture 7.

2. D.R.I.F.T. Diffuse Reflectance Infra -

Red Fourier Transform

With a specific sampler a quantity of material is rubbed off, the removed paint flake is mixed in a mortar with potassium bromide (KBr); the mixture is compressed in a small cup and flattened. On this preparation a spectrum is performed. The calibration is performed automatically by the equipment and the determination is qualitative.

The obtained spectrum from the components is identified by use of software comparing the results with the figures from chemical components stored in a database.

The collection of the analytical results allows to identify the type of paint system that was used and directs the technician in the choice of paint system that has to be selected for the renovation.

Conclusion

In the actual stage of the available techniques it is only by close collaboration of the representatives of different disciplines that a successful work can be done to achieve a conservation that satisfies all expectations. In the case of the renovation of the house of Renaat Braem, we had the unique opportunity, because of the available information and original material, to evaluate accurately the actual investigation techniques of colour measurement.

Modernism and colour, a problem with source materials

Modern architecture in the 1920's and 1930's received a lot of attention and support through the organization of architectural competitions. The *Van de Ven award* was an architectural competition in Belgium, which took place yearly from 1928 until 1968. Each year the five most innovative buildings constructed in Belgium the year before were awarded. The contest succeeded in rewarding almost every important Belgian architect for this period. Jury evaluations discuss aspects like form, composition, but never colour... - why could this be?

by Veerle De Houwer*

First of all there was a technical reason. Participants had to send in plans and photographs of buildings they designed and they thought would meet the modernist standards of the Van de Ven competition. Photographs in the 1920's and 1930's were mostly black and white, as was the publication of the *Van de Ven award* results in contemporary magazines. Colour photography did exist of course, however the process was complex, time consuming and thus expensive: the development of one colour photograph took five hours on the average. So the jury of the *Van de Ven* prize had actually no other possibility than to form an opinion by looking at black and white photographs thus overlooking the aspect colour. The *Van de Ven* jury consisted of representatives of Belgian architectural societies and often featured leading contemporary and modernist architects. So the jury's overlooking of colour, even if it was due to technical limitations, still has its importance. Was colour of no importance to the Belgian Modern Movement architects or for Belgian modernist architecture? After all, why not ask more documents giving specifications about use of materials or use of colour?

The *Van de Ven award* was organised by the *Etablissements Van de Ven*, a Brussels firm producing modern building components. Could more information about the attitude of Belgian modernists towards colour be found here? Emile Jean Van de Ven, founder of the firm and the contest, was a charismatic figure with strong views on architecture. According to Van de Ven, houses should be replaced every fifty years, by the most modern and efficient constructions.

One of the firm's first products was the WOCO door. WOCO doors, manufactured after an American original, were designed with standardised measures and had a kind of triplex structure, allowing them to withstand deformation by humidity or heating. Van de Ven also produced the CUBEX kitchen, designed by Louis-Herman De Koninck (1896-1984)². This rationalised, modern kitchen was composed of standardised elements of equipment (*'éléments standardisés pour l'équipement rationnel et*

économique de vos cuisines'), individual cube or beam shaped closets of related dimensions, that could be combined at will. Other products included EVEA standardised windows, BRUCE parquet floors and SALUBRA and TEKKA wallpaper.

Advertisements for these Van de Ven products do mention the use of colour. Doors, windows and parquet floors advertisements mention the kind of wood or veneer used or indicate that the products can be painted. Photographs in these ads were mostly black and white, except for the most luxurious models like the LAMINEX door in mahogany from the Philippines. SALUBRA and TEKKA wallpaper was promoted in a special way: by incorporating full-page samples of actual wallpaper in leading architectural magazines. Wallpaper advertisements stress that *'le soleil et l'eau sont nos amis'* (sun and water are our friends), praising the innovative qualities of being colourfast and water resistant. Colour in Belgian Modern architecture is very often found in small details. An article in a 1937 issue of the architectural magazine *Bâtir*, *'Couleur et lyrisme des Flamands'* (Colour and Flemish lyricism) praises the Flemish taste for colour, expressed in the use of tinted brick and wallpaper. Window frames, wall renderings and finishings, wall and floor tiles and even tinted joints are obvious sources of colour, even if often not regarded as such.

As to understanding colours in Modern architecture, even coloured drawings, added to black and white photographs do not always bring solutions, for colour on paper often differs from colour in reality.

A 'colour standardisation workgroup' was established in Amsterdam in 1926 that was to solve precisely that problem³. Starting from the colour theories of Wilhelm Ostwald, standard colours would be chosen, to be used for building materials, decorative textiles, paints and even corresponding colour pencils for architects. Until then architects would often design buildings and interiors only to find out later that the desired building materials or furnishings were not available in the pencil colours they used for the design drawings.

Most of the buildings awarded with the *Van de Ven*

prize used colour on smaller or larger scales. As said, these colour aspects could not really influence the judges, due to the exclusive use of black and white photographs, even if these could affect their appreciation indirectly. To take away colour can unify, simplify and create more tension or it can make dull and uninteresting.

As part of the research project 'Study and revaluation of Architecture and Atelier Archives', which runs at the KU Leuven University Archives from 2000 till 2002, an inventory was made of the archives of the Belgian modernist architect Huib Hoste (1881-1957), which allowed for this particular *Van de Ven* award winner to be studied even more closely⁴.

Huib Hoste was awarded a Van de Ven third price in 1936 for the Lens house in Mechelen (built in 1935). As a member of a Roman Catholic bourgeois family from Bruges, Hoste's initial work was very much true to the 19th Century Gothic Revival tradition. From 1910 onwards he directed his attention to the Netherlands, where he became acquainted with the work of H.P. Berlage and finally met Theo Van Doesburg during the first world war. Hoste's work of the early 1920's clearly shows influences of the *De Stijl* architecture. After attending the CIAM foundation meeting in La Sarraz in 1928, Hoste eventually undergoes influences of Le Corbusier and finally develops a very personal kind of interpretation of the International Style.

Hoste has been active both as an architect and as an interior and furniture designer. Throughout his work, colour is ever present in a very prominent way. Huib Hoste's documentation files in the KU Leuven University Archives contain information on a wide range of art history and architecture subjects, by him subdivided in 'Interior decoration, general and kitchen', 'Colour and light', 'Modern furniture', 'Modern interior',... . The material is hard to use for the researcher. Hoste keeps for example articles on the beautifully decorated studio-house (Brussels, 1902) of the symbolist painter Ferdinand Khnopff (1858-1921), and articles by Rietveld, Van Doesburg, Le Corbusier e.a. But what really was his own opinion about colour? The documentation files also contain material for Hoste's many articles, books and lectures. He widely expressed his views on architecture. However, references to colour are relatively scarce and not really elaborated. In one lecture he states: 'We modern architects ... use unnatural colours, or natural colours in unnatural harmonies.' In another lecture he literally quotes his friend, the abstract painter Jozef Peeters (1895-1960): 'This new art needs to cooperate with architecture, that defines the spaces in which this new form of painting can accommodate its urge to express harmonious colour surfaces'⁵. In the 1925 '*De Driehoek-Manifest over Bouwkunst*' (The Triangle Manifesto on Architecture) Hoste writes: 'Colour will underline the plastic value of planes'⁶. And in his 1930 book '*Van Wonen en Bouwen*' (On dwelling and building): 'There is nothing to be said

against the colourful treatment of a wall, but in doing so this wall must remain pure, that is to say: flat (...) Colour is indeed an essential part of architecture; the value of the materials can be enhanced by colour, colour can accentuate, colour actually comes into being partly automatically by the effects of light and shadow.'⁷

Looking at project drawings by Huib Hoste raised even more questions. There are beautiful coloured drawings in which Hoste indicates the use of e.g. coloured woodwork. Did he use particular colour composition schemes like Van Doesburg or Peeters did to create 'painted spaces' or was he just using colour in a purely 'decorative' way? In 1931 Hoste sets up a furniture factory. He moves from furniture that is part of the overall interior design, to movable tubular steel furniture produced in series. Some of this furniture still exists, such as the brightly coloured furniture for the 1927 Geeraardijn residence in Brugge and the black furniture of 1926, placed in the 1935 Lens house in Mechelen. Most of it is known from black and white photographs. The same is true for most of his interior designs using coloured planes. Contemporary black and white photographs show a myriad of shades of grey - but teach nothing about colour. Where rare examples survive, like in the 1923 Noordzeehotel in Knokke or in the 1928 Billiet residence in Brugge or in the recently restored *Zwarthuis* [the Black House] in Knokke (1924), the striking and bold colours Hoste chose are all the more surprising⁸.

We tried to give an overview of some more down to earth aspects of 'Modern Colour', like the use of colour in commercial building products, the presence of colour in small but important architectural details and more particularly the varying ways in which architects' archives can feature information about colour. It is not yet the result of an elaborate study but should offer a starting point for the study of two of many subjects concerning Modern Movement architecture in Belgium that definitely deserve further attention: the Van de Ven products and Huib Hoste's furniture and interior designs. The 1930's Modern Movement is a richly documented period. The interpretation however has its limitations, due to the specific nature of the documents, black and white photographs, coloured drawings, architects' incomplete and ambiguous writings,... . Of course, these problems should be of relative importance. Centuries of architecture exist of which there are no contemporary photographs at all and of which architects remain unknown. This makes Modern Movement colour documentation all the more intriguing and tantalising, because knowledge is presented just beyond our reach.

**edited by Luc Verpoest*

***Ann Verdonck is currently working on a Ph D about the use of colour in the work of Huib Hoste, Vrije Universiteit Brussel, Kunstwetenschappen.*

Notes

1. 1937. *Kritische beschouwing van de eerste tien jaar van een architectuurwedstrijd* [The Van de Ven award for architecture. Critical analysis of an architectural competition] (unpublished dissertation), Universiteit Gent, 1995-1996. See also: V. de Houwer, 'De prijs Van de Ven 1928-1937. De eerste tien jaren van een Belgische architectuurprijs' [The Van de Ven award. The first ten years of a Belgian architectural competition], in: *M&L (Monumenten en Landschappen)*, XVII (1998), nr. 2 (March-April), pp. 6-32.
2. See: A. RUEGG, 'De Koninck' s contribution to the new dwelling', in: C. MIEROP, A. VAN LOO (eds.), *Louis Herman De Koninck. Architecte des années modernes. Architect of modern times*, Archives d'architecture Moderne, Bruxelles, 1998 (pp. 187-215).
3. KU Leuven, University Archives, P64 Huib Hoste, subject file 'Bouwmethoden - normalisatie' [Building methods and normalisation].
4. The University Archives at the KU Leuven only keep part of the Huib Hoste' s archives (including some 150 drawings and his personal documentation). Most of the Hoste drawings are preserved in the *Sint-Lucasarchief*, Brussels. The KU Leuven research project is financed by FWO-Vlaanderen / Fonds Max Wildiers [the Flemish Scientific Research Fund / Max Wildiers Fund]. As to Huib Hoste, see: M. SMETS, *Huib Hoste, voorvechter van een vernieuwde architectuur* [Huib Hoste, advocate of an innovative architecture], Brussel, 1972.
5. KU Leuven, University Archives, P64 Huib Hoste, subject file 'Lezingen' [Lectures]. See , as to the exceptional restoration of the Jozef Peeters apartment and studio in Antwerp: M. Buyle, M. Manderdyck, 'Wonen in een schilderij. De conservering en restauratie van Jozef Peeters' atelierflat (1926) in Antwerpen' [Living in a painting. Conservation and restoration of Jozef Peeters' studio flat in Antwerp], in: *M&L (Monumenten en Landschappen)*, XVII (1998), nr. 6 (November-December), pp. 4-22. See also, M. Buyle' s contribution in this publication.
6. Cit. in: J. van der Perren, *Huib Hoste, architect en meubeldesigner. Architectuur en meubels van Huib Hoste (1881-1957)* [Huib Hoste, architect and furniture designer. Architecture and furnishings by Huib Hoste] Gent, 1980. The 'De Driehoek-Manifest' has been published in 1925 in the Flemish avantgarde magazine *De Driehoek* (published in Antwerp, 1925-1926), founded by Peeters and with Hoste as collaborator.
7. H. Hoste, *Van wonen en bouwen*, Brugge, 1930 (p. 40).
8. See, as to the restoration of Hoste's 1924 *Zwart Huis in Knokke*: V. Meul, 'Woning De Beir (1924-1925) te Knokke: de wedergeboorte van een 'Zwart huis' [The De Beir house in Knokke: the rebirth of a 'Black House'], in: *M&L (Monumenten en Landschappen)*, XX (2001), nr. 1 (January-February), pp. 54-71.

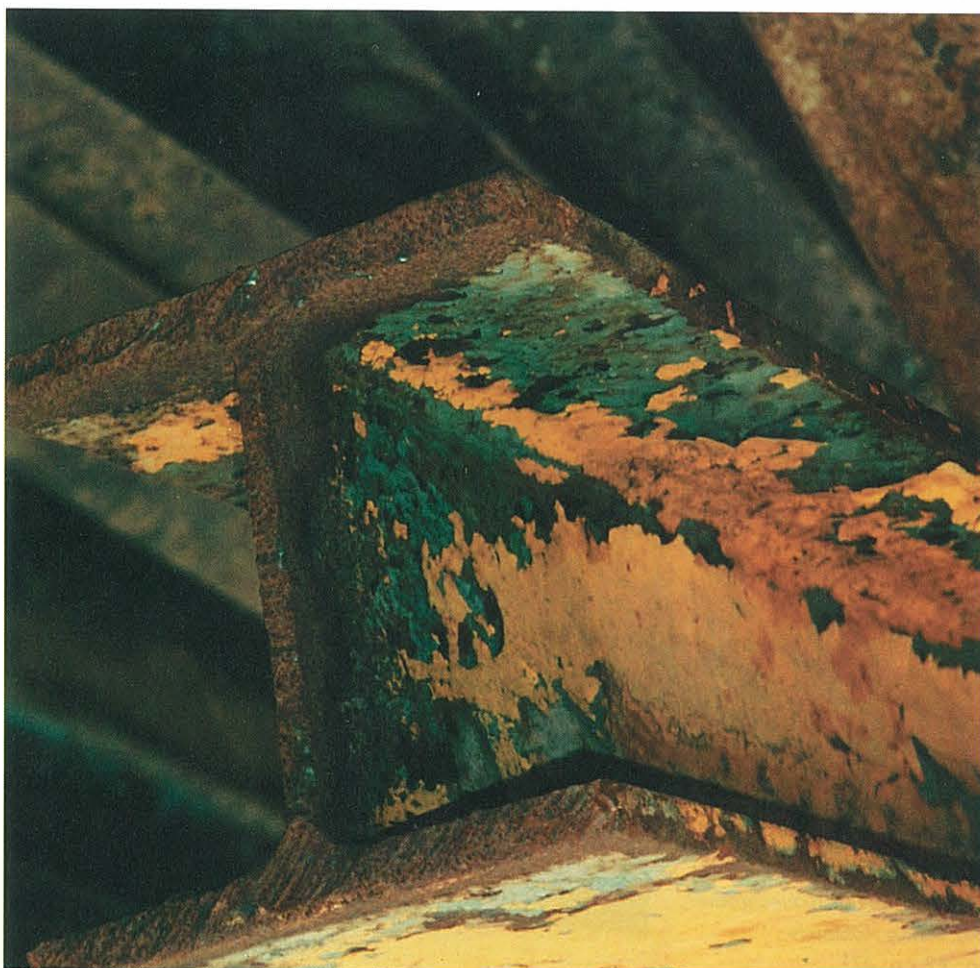
While awaiting a decision about the reconstruction of the so called H55 pavilion for the H99 exhibition, the dismantled parts were placed on the reclamation ground in heaps of beams, windows, and even a staircase. Photo: Bojan Kos.

***(Polychrome or monochrome?,
by Ulrika Hübinette,
p. 42 - p. 47)***



A heavily cloured steel beam from Acking's pavilions at the reclamation ground before the steel beams were sent to be blasted, removing paint and corrosion, and finally galvanized and spray-painted black. Photo: Bojan Kos.

***(Polychrome or monochrome?,
by Ulrika Hübinette,
p. 42 - p. 47)***





The H55 pavilion during the H99 exhibition in Helsingborg, Sweden, 1999.

Photo: Bojan Kos.

***(Polychrome or monochrome?,
by Ulrika Hübinette,
p. 42 - p. 47)***



The H55 pavilion during the H99 exhibition in Helsingborg, Sweden, 1999.

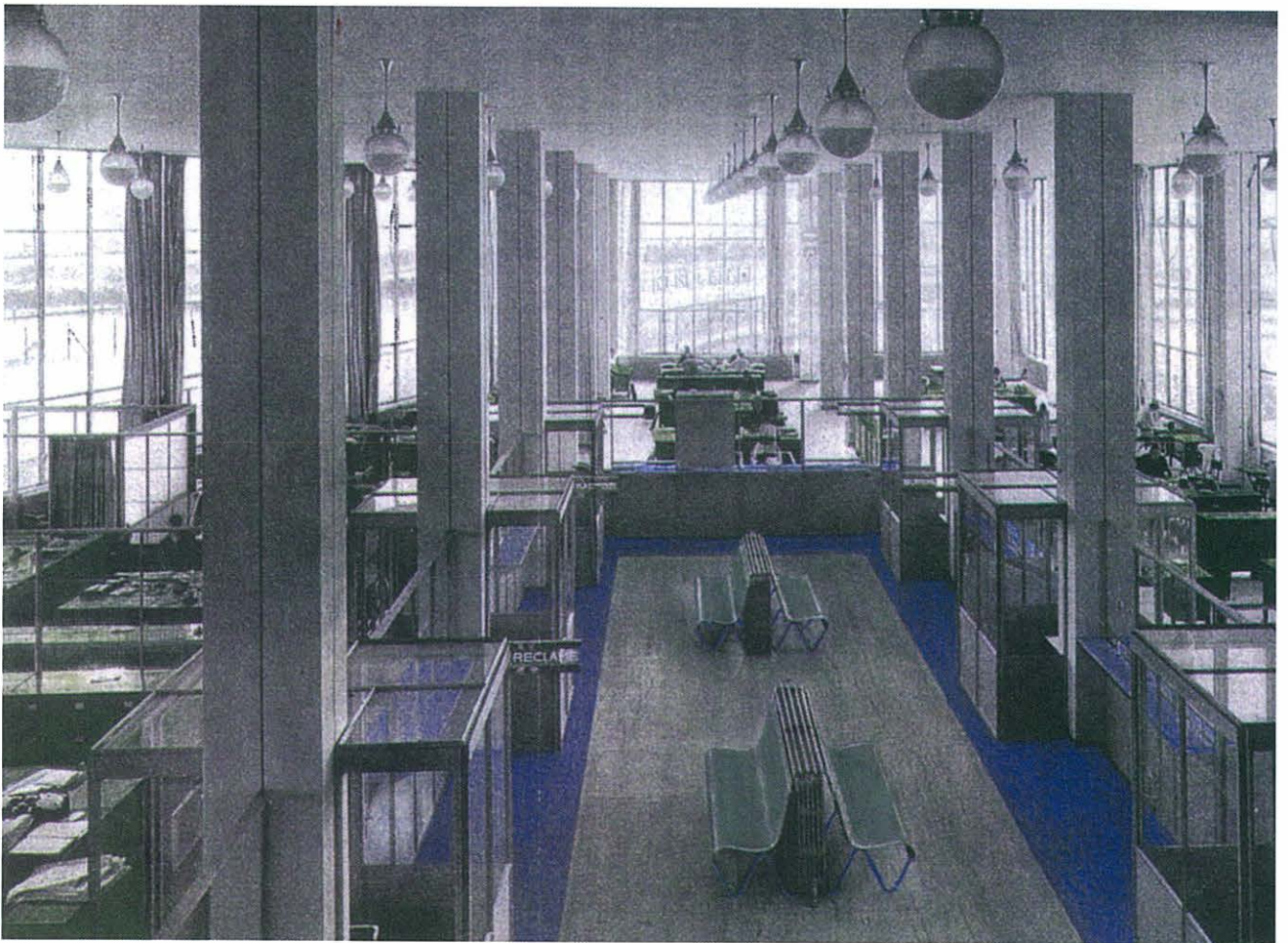
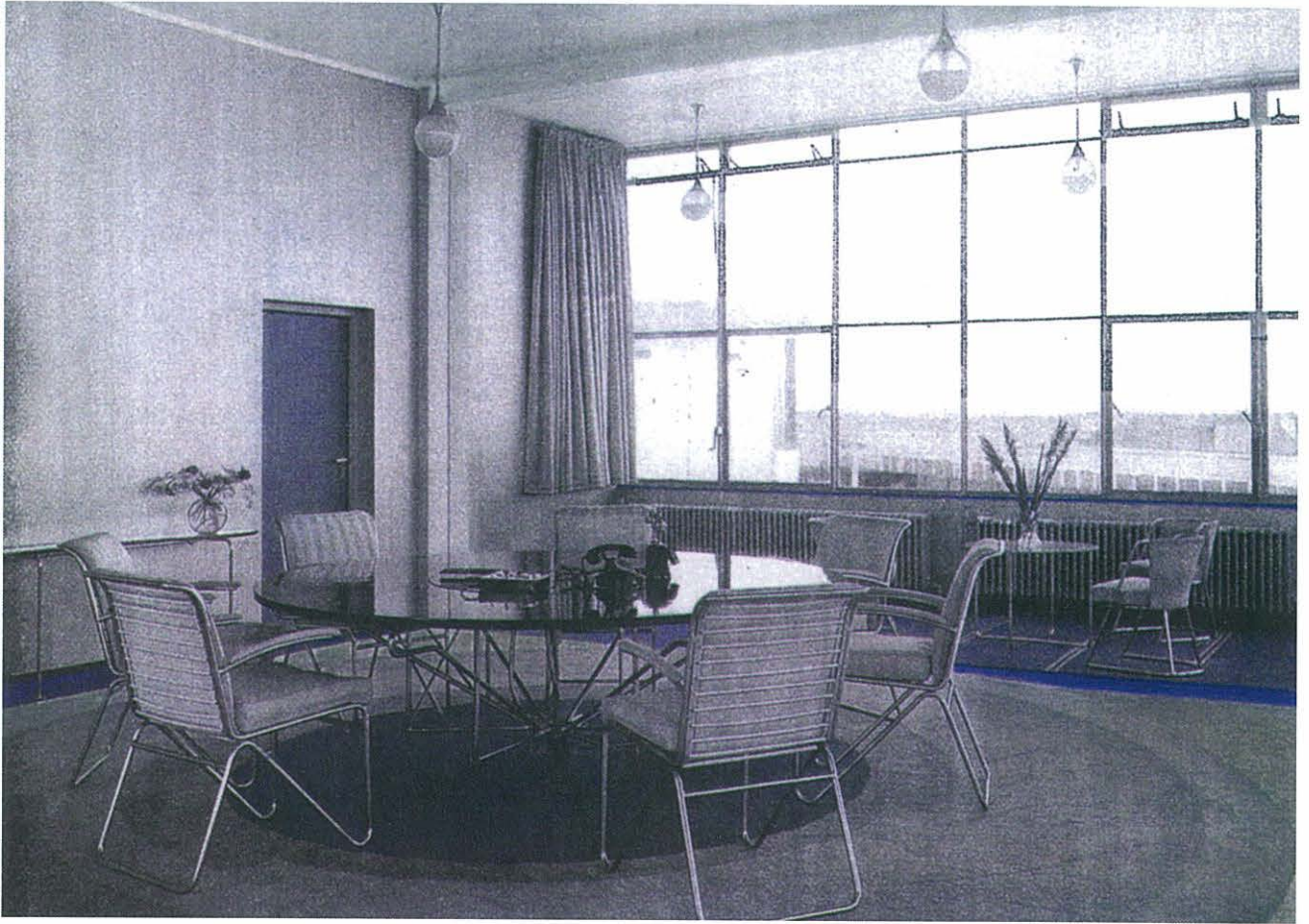
Photo: Bojan Kos.

***(Polychrome or monochrome?,
by Ulrika Hübinette,
p. 42 - p. 47)***



Collage of two pictures from 1955 respectively 1999: On the left, one of Carl-Axel Acking's pavilions during H55 exhibition. On the right, the H55 pavilion during the H99 exhibition.

Photo: Georg van der Weyden.
*(Polychrome or monochrome?,
 by Ulrika Hübinette,
 p. 42 - p. 47)*



Top Left:

Office, reconstruction of the colour scheme of the private office of Van der Leeuw.

(Surprising colours of a transparent factory: the Van Nelle complex in Rotterdam, by Mariël Polman, p. 48 - p. 58)

Left bottom:

Office, reconstruction of the colourscheme of the central hall.

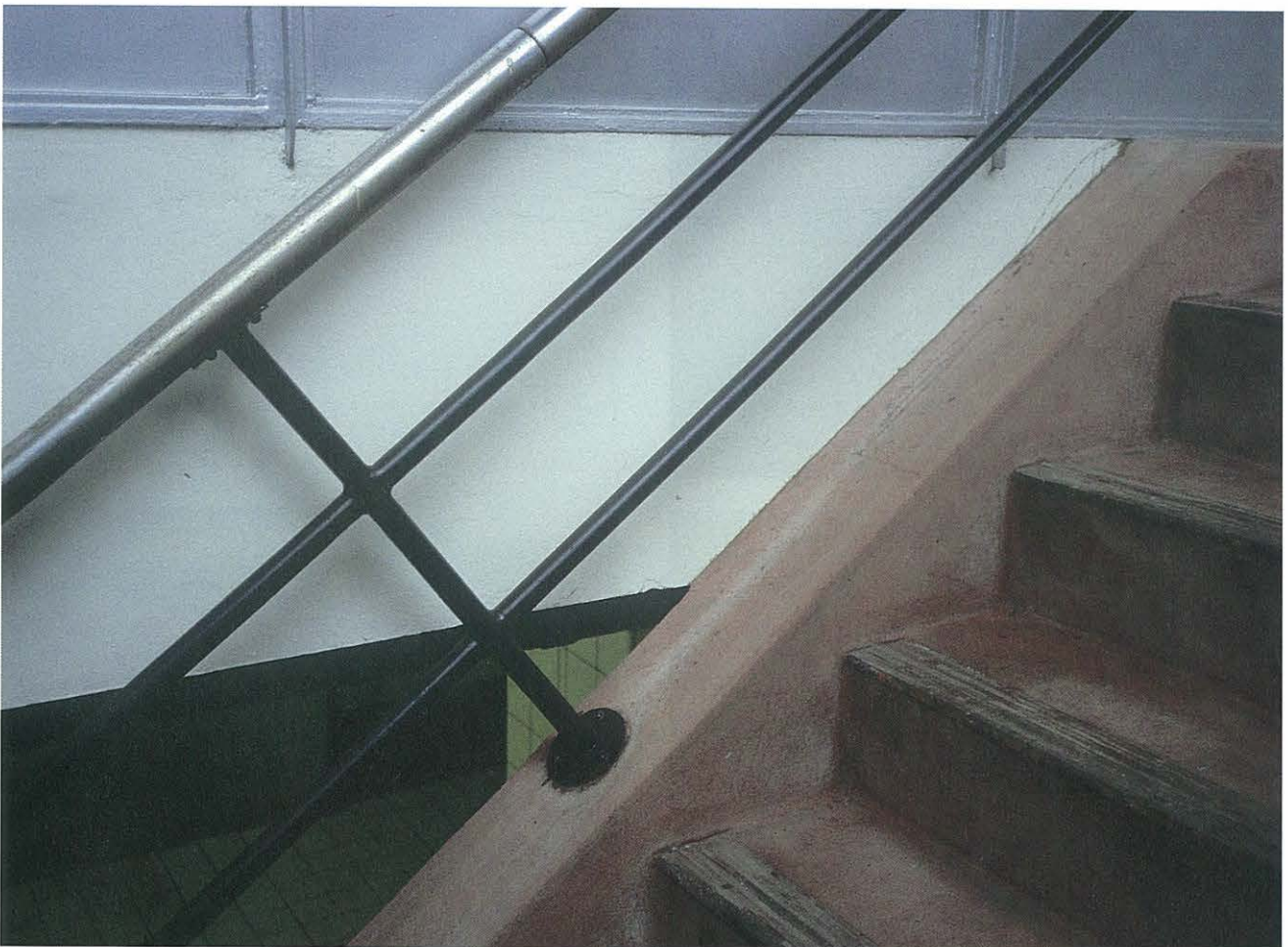
(Surprising colours of a transparent factory: the Van Nelle complex in Rotterdam, by Mariël Polman, p. 48 - p. 58)

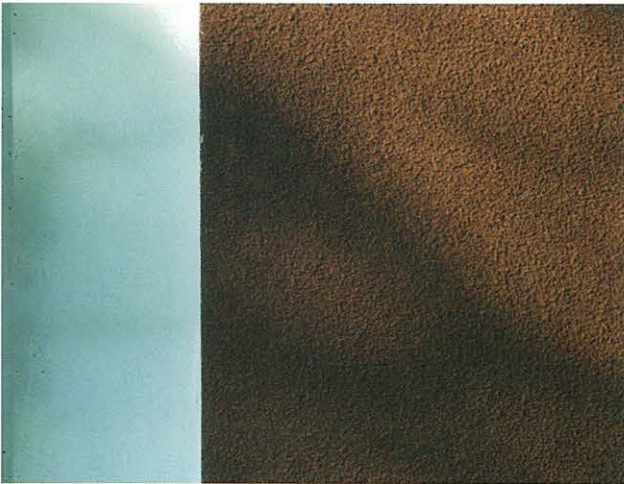
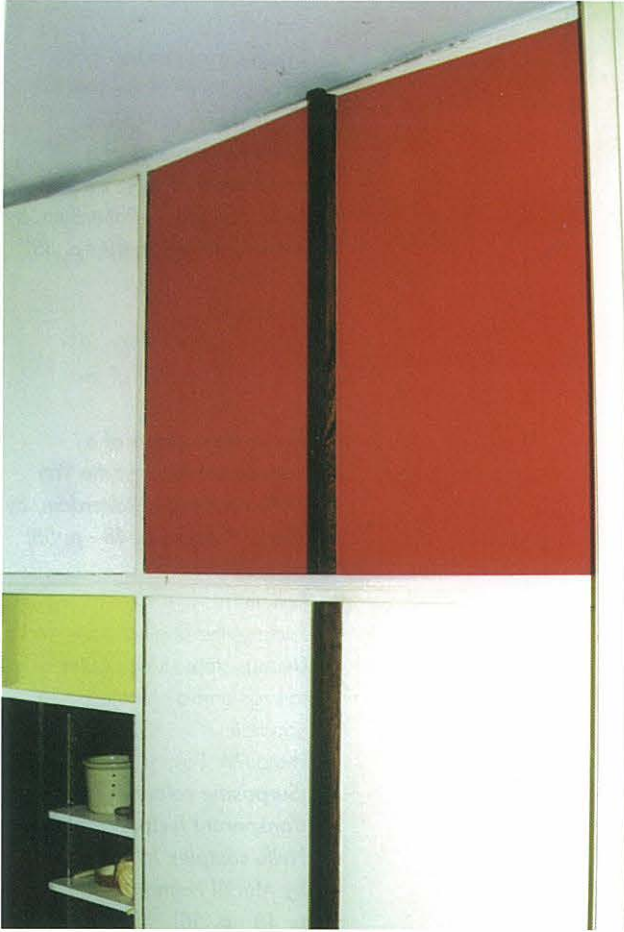
Bottom:

Factory, the original stairs: red Dermas steps, black painted railings and a chromium handrail.

Photo: M. Polman, 2000.

(Surprising colours of a transparent factory: the Van Nelle complex in Rotterdam, by Mariël Polman, p. 48 - p. 58)





Top left, left:

In the case of the house of Renaat Braem there was a development of his use of colours going from more minimalist grey and white to more expressive use of basic colours, as did Rietveld.

(The challenge of reproduction of historical colours with modern paints, by Marc Deviaene, p. 59 - p. 61)

Top left, right:

The niche in the entrance hall was originally grey and covered later on by a deep red colour.

(The challenge of reproduction of historical colours with modern paints, by Marc Deviaene, p. 59 - p. 61)

Left, middle:

The texture decoration in the living room in front of the open fire.

(The challenge of reproduction of historical colours with modern paints, by Marc Deviaene, p. 59 - p. 61)

Left bottom, left:

Investigation on site is important to determine the factors of deterioration of the paint systems.

(The challenge of reproduction of historical colours with modern paints, by Marc Deviaene, p. 59 - p. 61)

Left bottom, right:

Only top layer examination. Even for very small samples an IR-spectrum can be performed with the restriction that the surface has to be flat.

(The challenge of reproduction of historical colours with modern paints, by Marc Deviaene, p. 59 - p. 61)

Top:

Designs for wall paintings by Huib Hoste, for 'Café Hulstcamp' in Antwerp (1931). The design was never executed.

Copyright: K.U. Leuven University Archives.

(Modernism and colour, a problem with source materials, by Veerle De Houwer, p. 62 - p. 64)

Middle:

Black and white photograph of a non-identified Huib Hoste interior design (date unknown). The photograph shows an abstract colour scheme for the walls.

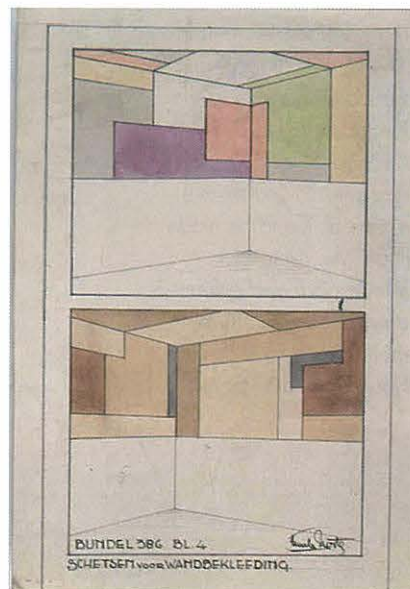
Copyright: K.U. Leuven University Archives

(Modernism and colour, a problem with source materials, by Veerle De Houwer, p. 62 - p. 64)

Bottom:

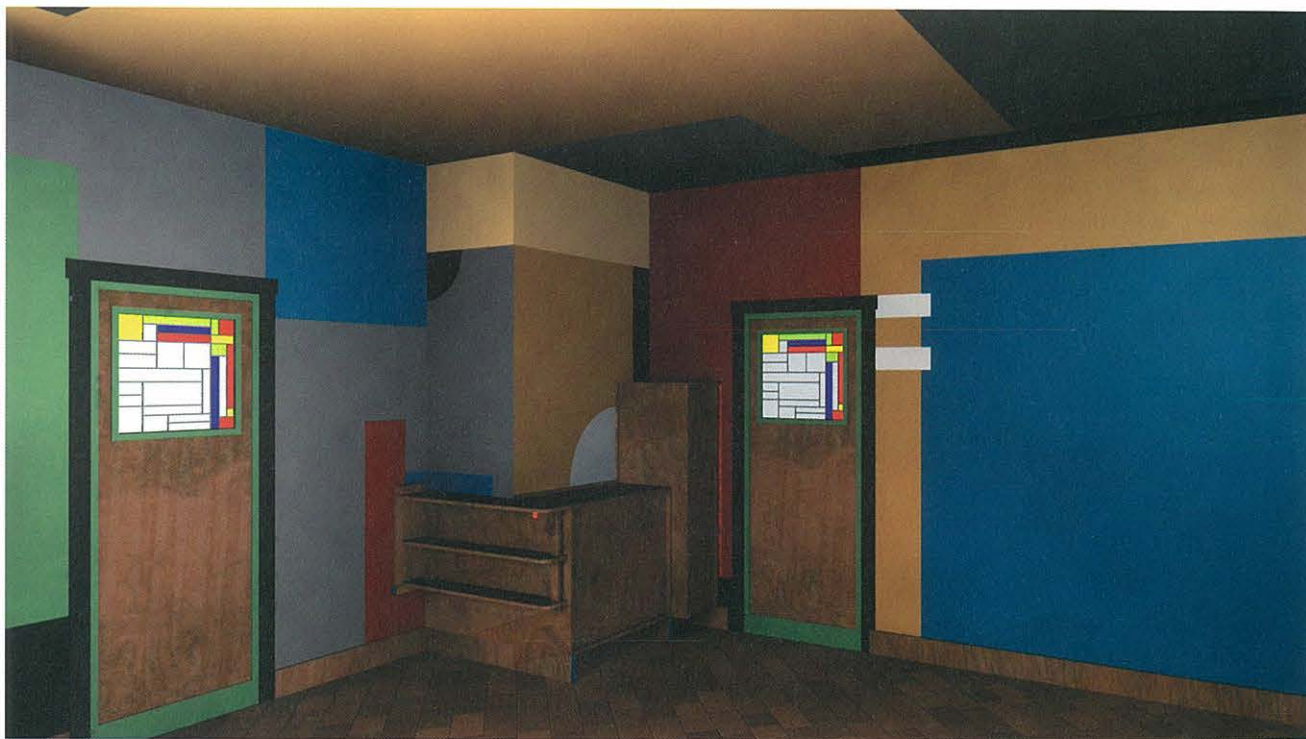
The Billiet residence in Bruges (1927). Under three layers of modern white paint, the original colour scheme of Huib Hoste is still present.

(Modernism and colour, a problem with source materials, by Veerle De Houwer, p. 62 - p. 64)



The Billiet residence in Bruges
(1927). Virtual reconstruction of
the surviving Hoste interior.
The colour research by Ann
Verdonck** and Veerle De
Houwer allowed for this
reconstruction to be made.
Photo: Ann Verdonck.

***(Modernism and colour,
a problem with source
materials, by Veerle De
Houwer, p. 62 - p. 64)***



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Case Studies



Colours of the Copenhagen airport 1939

'The outside of the facade is covered with 8 mm white asbestos cement which is attached with aluminium screws against strips of bitumen under the joints and against a supporting of boards. The white asbestos cement has in the past year, where it has been exposed to the weather, not changed colour or in any other way changed its surface. The air in Kastrup is very strong, the rain and wind there has a character and strength not found in other building sites. But it is, on the other hand, clean. In the city the material would probably become dirty quickly. The inside of the walls are covered by beech wood parquet boards. The originally intended covering with plywood, which would have given a more tight wall, was dropped for economical reasons. The beech wood parquets, which are painted on the back and lacquered on the front, is still not stable, but is still working so much that some of the joints are rather wide. The roof is isolated with cork and covered with 'Icopal' and a 2 cm thick layer of bitumen. Drains, drip caps, covering of overhangs are made of copper. The floors in all offices are made of bitumen (Dafoleum), which is a cheap and strong floor, but which is rather difficult to maintain from the time it is laid until the last works in the building is finished due to its sensitivity to mortar, paint, petrol and the like. The floor in the Hall is made of rubber tills. To avoid resound, which would make it difficult to converse in different languages, and in order to make the loudspeaker system as efficient as possible the ceiling (the waves) is covered with 'acousti-celotex B'. All windows are double

'The doors towards the Hall are covered with plywood made of teak, the other doors are smooth and painted. Teak is used for both the counter and the other furnishings in the hall. The traffic control office, the archives and the glass partitions are built of 15 'iron pipes with glass mouldings made of chromium-plated brass. The walls around the main entrance are covered with marble from Greenland.'

by Søren Møller & Ola Wedebrunn

These are the words of architect Vilhelm Lauritzen describing his intentions for the Copenhagen Airport 1939. Vilhelm Lauritzen was educated at the School of Architecture of the Royal Danish Academy of Fine Arts. His interest was for natural science, new technology, as well as for the modern arts, and he probably saw no need to make diversion between these disciplines. Just like Poul Henningsen the Danish light designer made designs calculated for best electric illuminations, Lauritzen calculated buildings as rational organisms to perform best flow for functions, light and acoustics. This is not at least reflected in two of Lauritzen major construction in the thirties: the air terminal and the new Danish broadcasting house.

At both projects Lauritzen worked close together with artists as well as engineers. While the broadcast building was a free compositions of volumes and structures, the layout for the terminal was a two story high column and slab construction, that rationally would allow for future alterations. Though as the central space of the column and slab grid was a double high

space 12x50 meter covered with an undulated concrete roof. Thus Lauritzens architecture for the terminal could be considered a free interpretation of functional necessities as well as an organic sensitiveness for material composition of different colours of wood, stone, metal, tactility with a coherence of detail and overall shape. This kind of sensitivity of material poetry could be traced to the work of other Scandinavian architect like E.G. Asplunds and Alvar Aalto. In this aspect the air terminal of 1939 rather might be held as an expression of modern experiences, taking a critical position towards a geometrical vision of international modernism.

There could be no doubt that Lauritzen architecture was a very original, not at least when it came to the use and composition of materials.

Interest of biological typologies, a seldom ability to combine scientific studies with a great sensitivity for modern art, makes Lauritzens architecture to a personal interpretation of modern movement. An example of this is the way light penetrates the narrow entrance in a fan

shape opening to a wide vision, curtain window across the rectangular transit hall, supporting both the visual impression leading the view to the skies and the practical flow through the terminal. The hall has a light yellow rubber tile floor and cream white walls with matt structure on the vertical surfaces and glossy on the horizontal supporting the penetration of reflective light under the balconies and across the hall. Even the columns where painted with a glossy colour maybe to give an impression of easing their load. Thus reflective and absorbing structure of the paint is deliberately used to underline architecture. Finally the light passing through the curtain wall opening towards the blue skies could be said to be neutralised by the cream tuned absorbing colour of the hall.

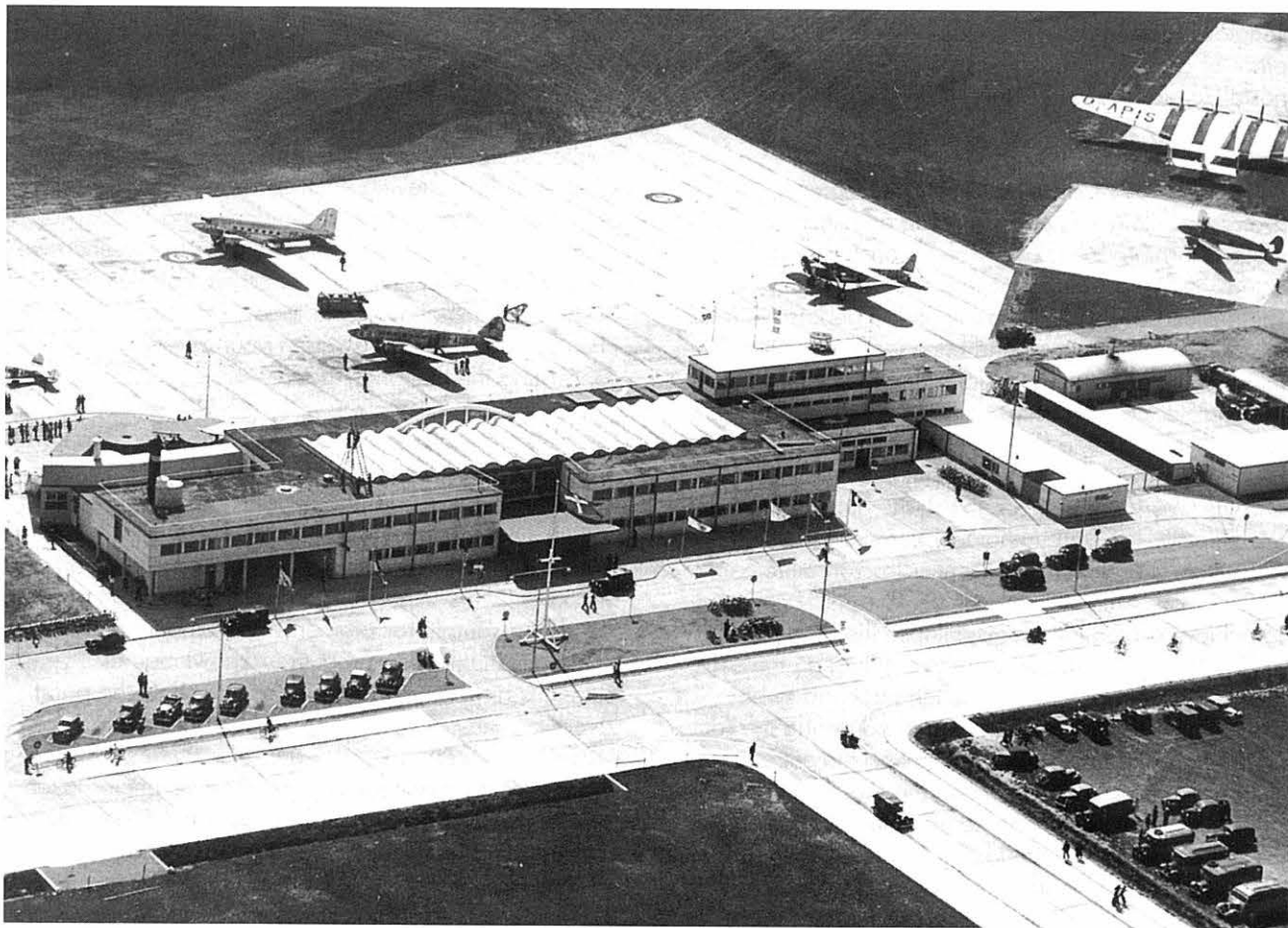
Perhaps it is a coincidence that the wave shape of the ceiling resembles to the surface of the most popular plane of the time the Junker airplane, anyway just like in the Junker plane the construction, by engineer Chr. Nøkkentved, made it possible to minimise the dimension of the reinforced concrete roof to 12cm. To reduce the sound reflection the wave shaped ceiling was covered with small modules of an acoustic absorbent called phonotex. This material is produced of cellulose material and has a dark yellowish colour, thus it is the darkest surface of the hall. The railings of the two stairs and of the balcony gives hues to the room with shiny reflections from brass tubes and wires. Originally furniture for check in, custom clearance as

well as a bar, a kiosk, and a bank with sign shaped as symbols and designed by Lauritzen and the sculpture Otto Staehr Nielsen gave accents of colours to the transit hall. Finally the room was animated of colours of passing people in fancy travel dresses, pilot and stewardesses uniforms.

In the book 'Vilhelm Lauritzen A Modern Architect', architectural historian Lisbet Balslev Jørgensen writes that it was the colours of the 19th Century colour tradition architect M.G. Bindesbøll was preferred also by Modern Movement architects such as the yellow ochre, the green earth, iron oxide red, and totenkopf violet iron oxide. These colours were found in Pompeii and Herculaneum and generally discovered by 19th Century architects studying in Italy.

Though these relations of colour history is uncertain, it is obvious that the dark green dark blue and dark red colours with resemblance to the classical tradition is used in some of the office rooms in the building. According to architect Charlotte Iversen this might be motivated by the functional cause to use absorbing dark colours on the back wall of rooms for map reading and meteorology, not to get disturbed by reflections. In fact it is only these offices that have the dark back wall of green or blue, other offices have a light yellow colour.

According to Lisbet Balslev there was also another



Aerial view of Copenhagen Airport shortly before the Second World War.

source for Vilhelm Lauritzen inspiration. He was an enthusiastic collector of butterflies, and probably he saw relation between function and colours of the butterfly and the context of the environment as an expression of the ability of the biotop to adopt to the environment. With great certainty it could be recognised how Lauritzen used the pattern of butterfly wings for carpets and other textiles. Generally it might be said that Lauritzen in nature's way of uniting aesthetics and function, found an inspiration for architecture.

Moving and turning - changing light changing colours?

The terminal of 1939 was built at a site, which not only is in the centre of the airport of Copenhagen but more or less a spot that intersects planes and cars and trains close to the Danish bridgehead of the Øresundbridge. Since July 2000 this bridge constitutes the 16 km connection between Sweden and Denmark. And the site of the terminal is more or less the central spot of the region.

Already in the seventies it had been decided that Copenhagen airport should be developed at its current site, this left very small possibilities to consider a preservation of the 1939 terminal. Several propositions to list the buildings were made during the eighties, but they were turned down. Indeed it was difficult both to see the possibilities of the conglomerated structures of what used to be a beautiful piece of architecture. All that seemed to be left was nostalgic old black and white photo images as the terminal only survived with squatter like additions in deterioration singing on its swansong. A project of 1991 developed by civic engineer, professor Erik Reitzel and Lauritzen architects seemed to make a turning point. This project concluded that it actually was possible to move the terminal. The project seemed to have initiated a debate, with many whoes and whys. And after some years the ministry of environment decided that the building was to be protected. But there was a hook with the listing. The protection would first take place when the building had been moved. Thus in the night between the 18th and the 19th of september 1999, the building was moved app. 1,6 km by engineer company Cowi Consult A/S and the Dutch contractor van Seumeren.

To achieve a situation plan similar to the original, making it possible to position the building on the edge between land- and airside, the terminal had to be turned more than 180 degrees around during the route. Thus what used to be morning light on the entrance turned to be the evening light of the sun set. This even raised a discussion among conservators, architects and the authorities of the listed buildings if the new situation actually changed the idea of the colour scheme of the building.

The airport is now restored. Vilhelm Lauritzen AS Architects with architect maa Charlotte Iversen has been in charge of the conservation, of what has been turned into an elegant reconstruction of the terminal used as an administration building. The aim is though to be able to use the building as a VIP terminal and maybe open the restaurant for public access when the official security control can permit so.

Moving and turning the building around has according to Charlotte Iversen not caused any problem of the colour scheme. Since the building is turned app. 180 degrees the relation to the axis of morning and evening light remain as original, only turned around. In fact this has had a positive effect, according to documented original problems with overheating from sunlight of the main curtain wall, this was reduced and even disappeared when the building was turned around having the main window and the control tower of glass facing the north.

The sources to the colour history of the building

The three most important sources for discovering the colour history of a building is to analyse the relevant paint layers, to study colour depictions (even black-white photos can give valuable information) and to study written and oral sources. Each of these sources has been used in my investigation of the old airport terminal.

The traditional way of starting a colour research is to separate the paint layers in a small area and thereby produce a 'ladder' of colour layers on all the various painted surfaces inside and outside the building. By systematically removing each of the separate covering paint layers in a specified area, leaving a 'ladder' of the different paint layers, you will get a comprehensive view of how the original colour scheme of the room has been and the changes up to today. This method will often be sufficient in answering your questions concerning the building's past.

In order to get more precise information you can carry out a microscopic study of a colour sample taken close to where you have done your 'uncovering', thereby getting an excellent opportunity to check up on the 'colour ladder'. You can see if you have missed any of the paint layers. And at the same time you can analyse the colour sample for pigments and binders in the different paint layers. From your knowledge of pigments history, it is often possible to date the paint layers.

There were a great number of black-white photos taken by Vilhelm Lauritzen himself in 1939, but not a single drawing or photo with colours. The black-white photos have been used to give an indication of the value - that is, the lightness and darkness of the various elements and at the same time to see if the surface was matt or glossy.

The search for written or oral sources was not a success. Only the architect's written introduction to the building in the '*Månedshæfte for arkitekter*' was found, but the colour scheme of the building was not mentioned at all. A local painting firm, which decorated the building in 1939, still had the old pay roll in the darkest corner of their archive, but nothing about which materials and colours they used in 1939.

'*Gonepteryx rhamni*' a Brimstone, confirmed the precise colour. Thus colour archeology as well as thorough knowledge of the context of the buildings history becomes an important source of conservation.

But the knowledge of other buildings of Vilhelm Lauritzen and the knowledge of his person has also been an important source to understand the building. Thus the pinned butterfly collection of Lauritzen was of such an importance that it now is a part of the zoological museum in Copenhagen. It was even by consulting this collection that the light yellow colour of the office rooms could be decided, finally a living



The central hall shortly after the construction in 1939.

E 1027 maison en bord de mer

Questions of polychrome

E 1027 House on the seashore, built between 1926 and 1929 by Eileen Gray and Jean Badovici, was bought by the French Government and the City of Roquebrune Cap Martin at the end of 1999. It was in a very poor state. This study will be about the intended meticulous restoration. E 1027 will become, together with the whole modern Cap Martin site, a research Centre for Modern and Contemporary Architecture.

by Renaud Barrès

The restoration, or more correctly the 'restitution', of the initial polychromy applied by Eileen Gray, creates not only historical and technical problems common to many restorations of Modern architecture, but also ethical problems.

The historical modifications

Unfortunately, there is no longer much left of the initial polychrome work at E 1027.

First there was the Le Corbusier episode. In the summers of 1938 and 1939 he painted eight murals on strategic walls in Gray's house, which he admired and of which he was secretly jealous. His paintings, out of scale and very bright, framed the principal

entrances of the house in order, at eye level, to impose above all the identity of their author: Le Corbusier.

In addition to this, according to letters in the Foundation archives, he also modified the colouring of certain walls to match his paintings. The reading of the polychromy, to the despair of Eileen Gray, had been modified for the first time.

The second big modification was made in 1961-62. Mrs Schelbert, whom Le Corbusier had contacted through the editor Boesiger, had just bought E 1027 after the death of Jean Badovici. At that moment, the house needed some work done on it. During the war,



West façade. (with the small gate, seems to be strong black) From: *L'Architecture vivante*, 1929.

the house was occupied and damaged by Italian and German soldiers. Badovici had done some minor repairs, and then the house had been unoccupied for five years. Mrs Schelbert delegated the work to her nephew, who did not know the history of the house. At that time, much of the existing polychromy disappeared under immaculate white.

Finally, though this does not directly concern Eileen Gray's work, in 1977 Mrs Schelbert commissioned a local painter to renovate those of Le Corbusier's murals that were still in place and to reconstruct the big black and white painting under the house, the 'Les femmes d'Alger', which had disappeared a few years before. He did not do a good job: he did not respect Le Corbusier's colours and his technique was different from the original.

Sources and aids

It must be said that the restitution of the initial polychrome at E 1027 is extremely difficult, because it is based on contradictory historic events which altered it considerably.

The first element on which we have to base our work is the documentary sources. They are unfortunately very meagre. The archives found in the V & A Museum in London, as well as those of Peter Adam, do not contain studies of the colouring of E 1027. Of course, the famous special series of *Architecture Vivante* published by Jean Badovici in 1929 contains sixty-four photographs taken by Eileen Gray herself, of which three were in colour, and two plans in colour (even the Villa Savoye was not so privileged in its day). These pictures, even though they are an extraordinary source of details and of insight into E 1027, show the contrasts existing in 1929, without enabling us to attribute any values to the colours. The polychromy still in existence today tells us that we have to be careful with what the photographs show. For example, the small gate onto the large terrace seems to be very dark in the black and white pictures of 1929, which would make us think of a strong black, but under the successive coats of white appears a reality very different than the supposed black: a sienna brown.

The three coloured pictures, one of the big room and two of the guest-room, give some more details, but we must remain aware that Eileen Gray herself was so disappointed by the publication that she made it clear that the colours did not correspond to reality. The same applies to the colouring of the main bedroom: if we simply compare the blue shown as the floor of the bedroom with the black tiled floor still in place today, we realise that this presentation shows aesthetic values linked more to the reproduction than to the intention of showing us an objective reality. The doubt persists. Nor do we have any colour chart, as Le Corbusier took the time to make them himself.

What is left? First of all, traces of the original colours still remain. Before the restoration, a complete study by

soundings and laboratory analysis of all the walls will be carried out. This study will help us to reconstruct a large part of Eileen Gray's composition.

Then there will be a comparative study. Luckily, Eileen Gray built two houses during her lifetime (*Lou Pérou* is to be considered as a rehabilitation). The second, *Tempe a Pailla*, which is based on the same architectural process as E 1027, is well preserved and is situated only four kilometres from Cap Martin. The actual owners of *Tempe a Pailla*, aware of the value of Eileen Gray's work, accepted us with enthusiasm and helped get in all the quotes and the comparative studies necessary for the proper restoration of E 1027. Thus we have a direct source of study of all the colours used by Eileen Gray for her conceptions of space in the thirties.

Finally, though they still remain marginal, there are the testimonies. The polychromy had been slightly altered just before the Second World War, the house had changed hands three times and accounts of the polychrome period, which were very few at the time, have now become very rare. Nor is it so evident to rely on seventy-year-old memories. We have been able to find only one actual witness, apart from André Roattino, Eileen Gray's private cabinetmaker, whom we have met but who only started working with Gray in 1932, on *Tempe a Pailla*. This witness informed us of the colours of the outdoor paint of a Pergola and guardrail, but her memories of the interior remained confused. Taking account of the function and composition of the house, they could not have been white, and by comparison with the colours used for the exterior solar protection elements at *Tempe a Pailla*, and situating the house in the marine style of the end of the twenties, we agreed on very light blue. Our precious witness confirmed, once on the site, her memory of it being 'blue like the sea'.

Intervention method

The intervention method should proceed in this way:

- The sources obtained by soundings and laboratory analysis of existing material will form the basis of our work. A specimen of each coat will be left in place.
- We will compare the results with the apparent contrasts in the 1929 pictures, so that we can examine the coherence of our researches.
- We will make a tonality report on *Tempe a Pailla*.
- When there is no trace of colour, which may unfortunately occur because parts of certain walls have been completely redone, it should be reasonable to form a hypothesis from the contrasts we can see in the original pictures, and from the logic of Eileen Gray's application of colours as we can see them at *Tempe a Pailla*.
- Concerning Le Corbusier's murals: in spite of the proposition and the possibility of exhibiting in a future museum of the site, which would restore the architectural idea of E 1027 as a whole, the French State considers the work of Le Corbusier, even if it has been rejected by Eileen Gray, to be part of the

house, and the murals will be restored on site, after removal of the retouching work of 1977-78.

We are then left with two essential questions: do we classify E 1027 as an Historical Monument just because it reflects an historical architectural event, or, and most especially, for the generous architectural lessons it teaches us? We also have to ask ourselves what would have happened if the positions had been reversed: if Eileen Gray, without warning Le Corbusier, had painted eight murals at places in the Villa Savoye that are essential to the comprehension of the house. Would we leave the paintings in place?

A remaining point is that if the work to unstick the murals was to risk damaging them, it would then be important to leave them in place. But in that case we would have a new problem: how can we integrate the modifications made by Le Corbusier to the colour of certain walls to ensure they matched his paintings?



Le Corbusier working on a mural painting of an outside wall of E 1027. Photo: Fondation Le Corbusier, 1938.

Lay out of the Aubette in Strasbourg by Theo Van Doesburg and its restoration

'My ideal was to compose large spaces by means of colour, to create large spaces of colour which endow life with depth and ennoblement.'

'Elementarism is not confined solely to art, architecture or objects but also focuses on the human being and on society as a whole. It will kindle and strengthen in future generations the spirit of heroism so as to create the conditions for a fundamental revolution of contemporary mentality. This movement, which rather than being of a plastic nature is more psychological, calls for a disinterested attitude and heroic spontaneity: it was on this basis that I endeavoured to produce something on a more substantial scale in the Strasbourg Aubette so as to impart a plastic expression to Elementarism.'

by Daniel Gaymard

These are two quotations from Theo van Doesburg, the principal author of the lay-out of the decor of the Aubette in Strasbourg. The first is taken from a letter to a friend; the second is a sort of profession of faith concerning his theory of Elementarism.

As can be seen, it was a highly ambitious programme testifying to the author's sincere commitment. It is difficult to judge, even a posteriori, the philosophical and moral impact of the work. On the other hand, as regards the plastic expression and the construction of the space with colour dominant and the most 'elementary' geometrical components, the object was fully obtained.

In contemplating the realisation, the viewer, whoever he or she may be, cannot remain insensitive to the awesome efficiency of the - primarily visual - impact. For the first time, the colour in the various spaces is no longer in conventional form, as identification of a material or as polychromy conforming to a decor or a moulding: here colour has its own *raison d'être* and comes into its own.

It is this feature which constitutes the novelty and outstanding originality of the lay-out of the Aubette without detracting from the charm and the indefinable aesthetic quality which is so often neglected.

Let us now consider the genesis of the project and its history up to our time.

It was through the agency of the painter and sculptor Hans Arp and his wife Sophie Taeuber that in 1926 Theo van Doesburg was commissioned to direct the lay-out of a complex of recreational facilities in Strasbourg, in an 18th-Century building called the 'Aubette'. The promoters of the project, two brothers who were devotees of modern art, turned to Hans Arp for the decor. The latter, doubtless feeling that the architectural part of the commission was beyond him, called on his friend Theo van Doesburg, who at once assumed the

direction of the works. He seized the opportunity thus offered with enthusiasm.

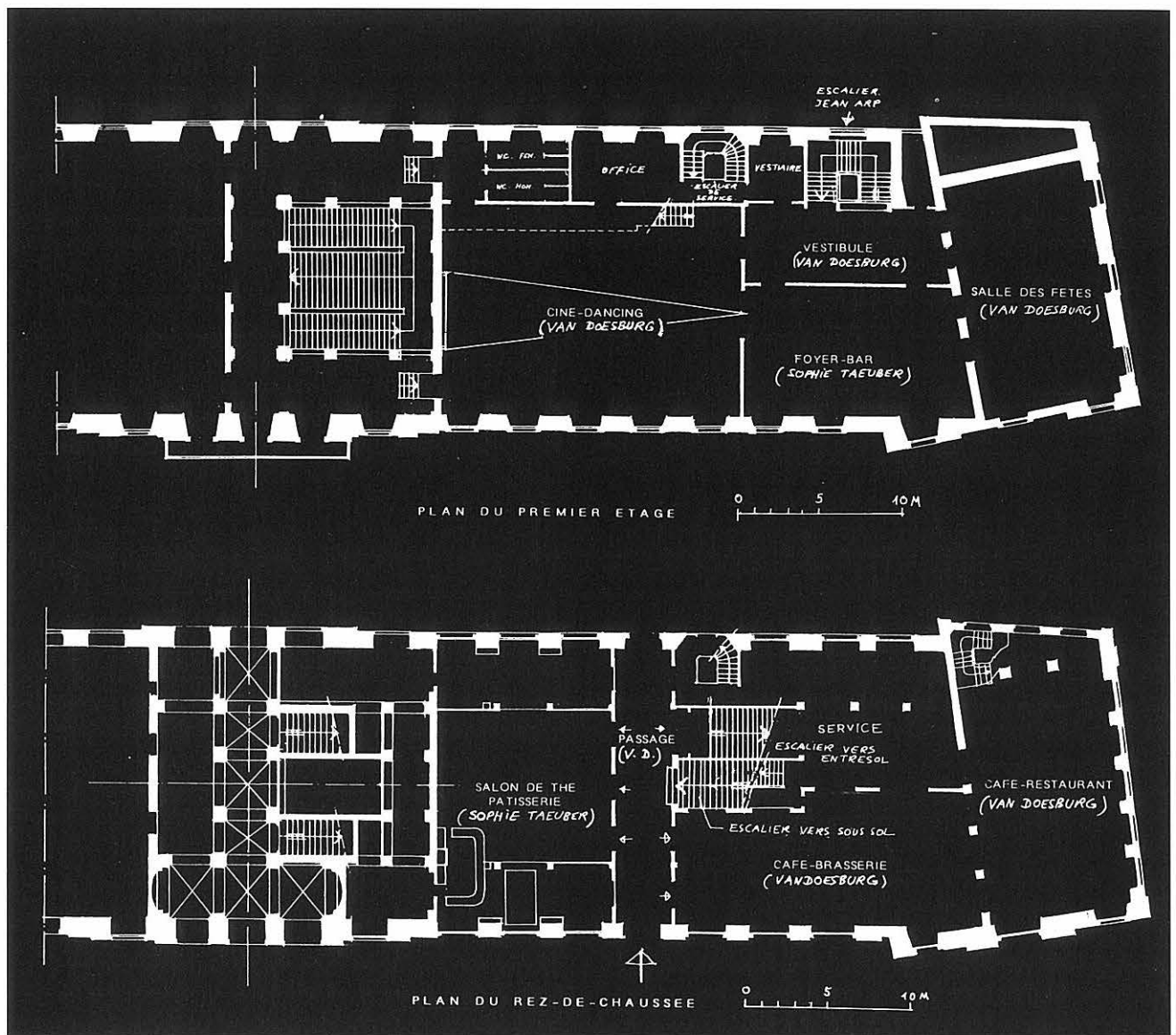
Without calling into question the general organisation, Van Doesburg was able to carry out adaptations designed to give the spaces more transparency, so that the public could move quite freely from room to room. This concept was highly innovative, as can be seen from the plan.

Theo van Doesburg, Sophie Taeuber and Hans Arp apportioned the chromatic decoration of the various rooms among themselves and it was Van Doesburg who directed and coordinated the decor and assumed the greater part of this process.

The adaptations and decor of the basement and the ground floor have completely disappeared and all that remains today is the first floor, namely:

- two large rooms, the cinema/dance hall and the function room, which are by Theo van Doesburg,
- the foyer bar, located between the two aforementioned rooms, which is due to Sophie Taeuber,
- the staircase leading from the mezzanine floor to the first floor, due to Hans Arp.

Van Doesburg set out to create the Elementarist architecture of which he had dreamed since 1921-1922. Apart from the importance accorded to a clear and functional basic plan, freedom of movement from one room to another, one is struck by the preponderant role allotted to colour. The impression is that Van Doesburg felt relieved at having to work on an existing structure; this enabled him to concentrate his efforts on the creation of an environment and an atmosphere calculated to elevate the viewer to a spiritual level divorced from material reality. Colour, in his opinion, was the royal road to the attainment of his goal.



The lay out of the Aubette in its original configuration - 1928.

Let us review the various components of the project, beginning with those which have disappeared.

Ground floor

On the ground floor, the brasserie and the restaurant, which are contiguous, contain major compositions with a base of rectangles and squares which extend continuously over the walls, ceilings and floor. The colour range consists of the three primary colours together with 'non-colours' (whites and greys) designed to highlight the former.

The floor is of linoleum, the walls and ceilings are painted in oil paint of the Ripolin type. The lighting is provided by horizontal and vertical tubular lamps on aluminium plates on either side of mirrors.

On the ceiling are oblong luminaries which diffuse indirect lighting perpendicular to the white surfaces in the composition of the ceiling.

The tearoom had been decorated by Sophie Taeuber. This is a monochrome composition or, more precisely, a composition with a base of grey, white and silver, which extends over the walls and ceilings and into which are fitted square or rectangular panels which are themselves so many variations on a coloured geometrical composition made up of small grey, black, red and blue rectangles on a white background.

First floor

On the first floor, the rooms are of a different character.

In the function room there is a composition with a base of horizontals and verticals determining square and rectangular coloured surfaces.

This is a modular composition based on a 1.20 m-sided square. Each surface equals or is a multiple of this unit. They are separated by relief strips of a neutral tint. The composition is based on dissonances (two red, two yellow, two blue) grouped around 'non-colours'.

The lighting consists of enamelled plates bearing bulbs, in the ceiling or on the walls. They are integrated into the module and form part of the composition.

The second large room on this floor is the cinema/dance hall: the composition stands out straight away as being quite different, with a geometry also based on rectangulars and squares but positioned obliquely. The coloured surfaces are separated by recessed 30 cm strips, of neutral colouring so as to prevent diffraction between the colours.

Van Doesburg used the same primary tints as those in the function room, with the addition of green.

The oblique lay-out is designed, according to Van Doesburg, to act as a counterweight to the tautness of the architecture.

In point of fact, we have here, to make a musical comparison, a composition in counterpoint between the verticals and horizontals of the functional rationality and the oblique which constitutes the dynamic component.

Everything is completely under control:

- The composition is based on a calculated proportioning of the harmony and the tension,
- At ground level, the composition is orthogonal and parallel to the walls from functional necessity: it integrates the dance floor and various coloured linoleum surfaces,
- Two rows of small banquettes form part of the space structuring,
- A gallery closes off the longitudinal wall and forms part of the dynamic of the whole work,
- The lighting comprises reflector lamps mounted on two nickel-plated bars suspended from the ceiling.

The foyer bar, a less conspicuous room, is the work of Sophie Taeuber. It is located between the cinema/dance hall and the function room, with which it communicates by means of glazed doors.

Jean Arp's staircase

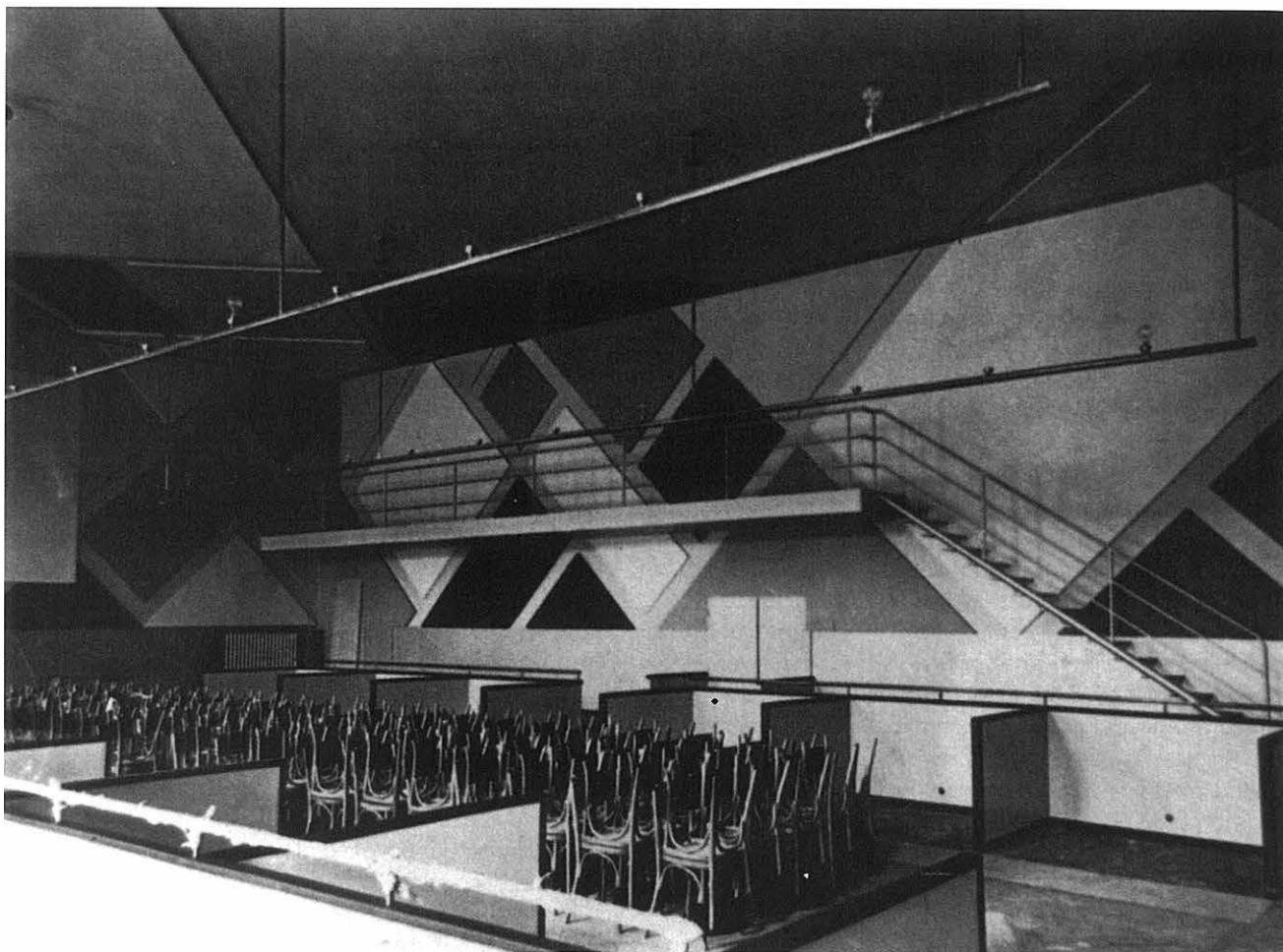
Those who visited the Aubette in its glory days described it as a place of extraordinary concourse, a communicative atmosphere. They recall the decor not as an object of aesthetic contemplation but as one of the number of exhilarating features, with dancing, good cheer and conversation. But after ten years, routine and fear of anything innovative prevailed - as was often the case! The decor gradually disappeared in a climate of indifference, either as a result of demolition or through being obscured by further adaptations and decors.

During the subsequent decades, the rooms continued to fulfil similar functions but the 1928 decors had been consigned to oblivion, except for a small number of specialists and art historians who were in possession of some rare photographs. By contrast, all the plans from the period, the drawings, sketches, colouring scale-models, together with a description by Van Doesburg in an issue of the review *De Stijl* devoted to the Aubette which was published in 1928, the date of completion of the works - all these survived.

It was only in 1977 and 1983 that, under the impulse of these specialists, who included the Curator of the Strasbourg Museum of Modern Art, drillings were carried out.

It was at this time that it was realised that the decors of the three rooms on the first floor and the staircase were still in existence, whereas on the ground floor everything had vanished irremediably. The remains, which were considered to have been satisfactorily preserved and to be significant, were classified as a historic monument by the Ministry of Culture, which spared them the fate of the rest of the work, the destruction of which had been due to mischance and ignorance.

It was the cinema/dance hall which was chosen as the first room to be restored.



Ciné, dancing, lateral wall in its original state.

Development of the restoration methodology was not something that could be accomplished in a trice and for a long time remained undecided, the final result being a compromise.

The requirements usually set for restoration and reconstruction, and in particular those laid down in the Charter of Venice, were found in the case of this decor to be singularly contradictory.

The state of affairs then was as follows. The first step had been to remove all the additions that had been made subsequently to the situation in 1928 - various surfacings, papers, paintings, fabrics and false ceilings. The original pictorial coating was seen to be in place as to 90% but, as could be foreseen, extremely soiled, mutilated by nicks, sealings and degradations of various kinds.

The chemical and micrographic analyses confirmed the nature and texture of the original materials, i.e. oil paint of the Ripolin type, applied with a brush on a pre-coated plaster substrate.

It very soon emerged that giving priority to authenticity, that it so say leaving the original surface intact, performing minor integrated restorations and rendering the defects visible or perceptible, was a very precarious business from a technical standpoint. This option had a drawback: namely, it engendered many

visual disruptions which would have polluted the purity of the smooth large chromatic surfaces which are the personalisation of the work. It was this determination to present to the viewer a work in all its integrity which finally secured the nearly unanimous vote of the committee of experts appointed to monitor the project. Policy was accordingly directed to restoring the decor but without in any way destroying the archaeological proof and completely reversible.

To attain this objective, a conformal copy was made and applied to the original facing itself. The latter was protected by a film of vegetable paper set with a soft glue. On this was applied a second, vinyl paper to take the pictorial coating so that it would not damage the original painting. This pictorial coating was effected with a paint strictly identical in both composition and texture. Care was taken to reproduce the tints in the form in which they had reached us after cleaning, i.e. more or less with their original lustre, without trying to offset the effects of ageing. This question had been raised concerning the whites which had palpably yellowed with time. Recapturing the exact value of the white was briefly considered but this approach was abandoned as being too hypothetical.

To sum up, then: for the contemporary viewer the cinema/dance hall is found to be strictly such as it was



Salle des fêtes, 1928. Photo: Musées de la ville de Strasbourg.

before its disappearance after its ten years' existence. As things are at present, only the cinema/dance hall has been restored. The other rooms are, it is hoped, to follow in the near future.

In the Aubette Van Doesburg had created a masterpiece and was fully aware of the fact. The Aubette is probably the sole example of architectural space in which colour comes into its own and rids itself of its support volume while achieving synthesis and attaining a sort of immateriality.

It is perhaps because of the force of its message that it really has no descendants.

It may nevertheless be thought that one of the aims that the *De Stijl* movement had set itself, 'to sensitise the public to pure art', had been achieved. In the Aubette, the purity of form and the elementary colours stand out as a reality divested of any ornamentation and any emphasis.

Like any human work, it has not escaped the fate of being forgotten or even rejected.

Artistic trends have evolved but have only their past to sustain them. History cannot be remade, but in a visual context one can only attempt to secure its revival and survival, especially in the case of such a scintillating chapter. That is what we have tried to do at the Aubette.

Focus on original finish and colour during restoration of Le Corbusier's Maison Guiette (1926) in Antwerp

This article deals with the first restoration of MoMo-architecture, be it 13 years ago, which I had to deal with on behalf of the Belgian subsidizing authorities. It concerns the restoration of Le Corbusier's only project in Belgium, the house of the painter René Guiette (1893-1976) built in 1926. The restoration was headed by the Antwerp architect Georges Baines, who planned this operation very carefully. The house was restored as a private home.

The use of paint and colour was essential in this early work of Le Corbusier's. We were well aware of the fact that the careful use of colour and paint during this work would be crucial to the success of the restoration. This first experience ensured that the colour element would always be in mind when handling other MoMo-restorations.

by Anne Malliet

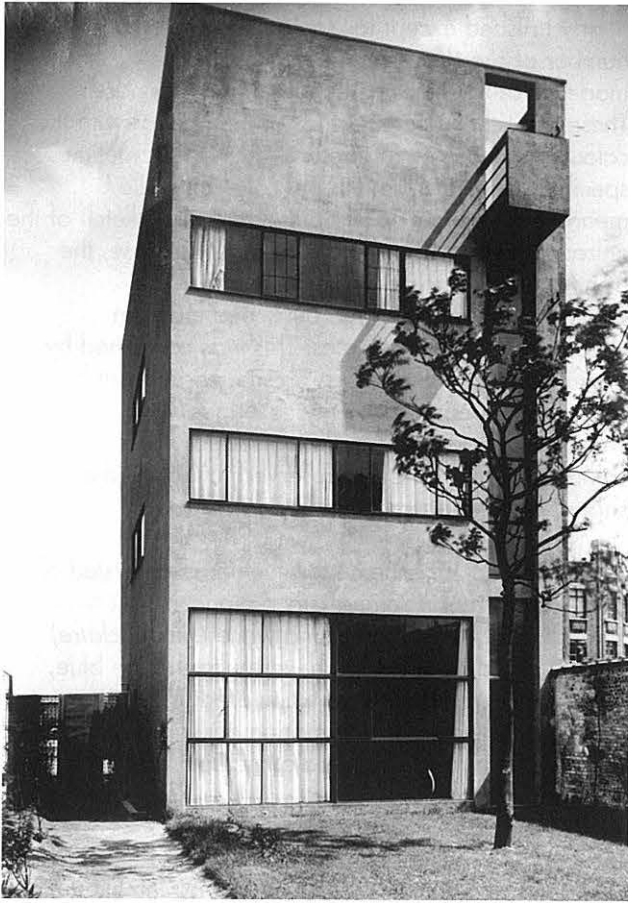
As a reader of the *Esprit Nouveau* magazine, in 1925 Guiette visited the pavilion of the same name at the *Exposition Internationale des Arts Décoratifs et Industriels Modernes* in Paris. Once at home, he wrote to Le Corbusier about his plans to build a house with a painter's studio: 'I would like to know whether you could agree to the idea of having one of your projects here (I am convinced it would lead to other commissions).' Le Corbusier agreed to his request and designed a house based on his 'Maison Citrohan' house type. It is basically a house between two parallel, supporting walls with two successive flights of stairs. For reasons of economy the house was built without the concrete structure Le Corbusier had designed. Even the floor slabs were not made of concrete, but of some prefabricated terracotta elements, which were much more convenient at that time and which Le Corbusier agreed to. Only a year later Le Corbusier carried out a more experimental version of the design of his 'Maison Citrohan' in the Weissenhofsiedlung in Stuttgart (Germany). The Antwerp house is different from the Stuttgart house in several other respects. It is not built on pillars, since Guiette had asked for the living rooms on the ground floor to be connected with the garden. The height of the levels as in Le Corbusier's modular system of 2.20 m and 4.60 m was only applied in the painter's studio. The other floors were made according to the Antwerp building regulations, 3.50 m (ground floor) and 3.00 m (first floor). It gives the house a classic and bourgeois grandeur compared to the Stuttgart house. The entrance hall with the staircase is of a particularly overwhelming height. The creation of this house is especially well-documented. There was in the first place a lively

correspondence between Le Corbusier in Paris and Guiette himself, but also with the Antwerp architect, Paul Smekens, whom he had appointed to supervise the work. From the number of letters one can only conclude that it was Guiette's wish to carry out Le Corbusier's design in Antwerp completely in conformity with his principles. The complete correspondence with the city authorities has also been preserved. The city needed to approve the design from an aesthetic point of view before Guiette even dared to acquire the building lot.

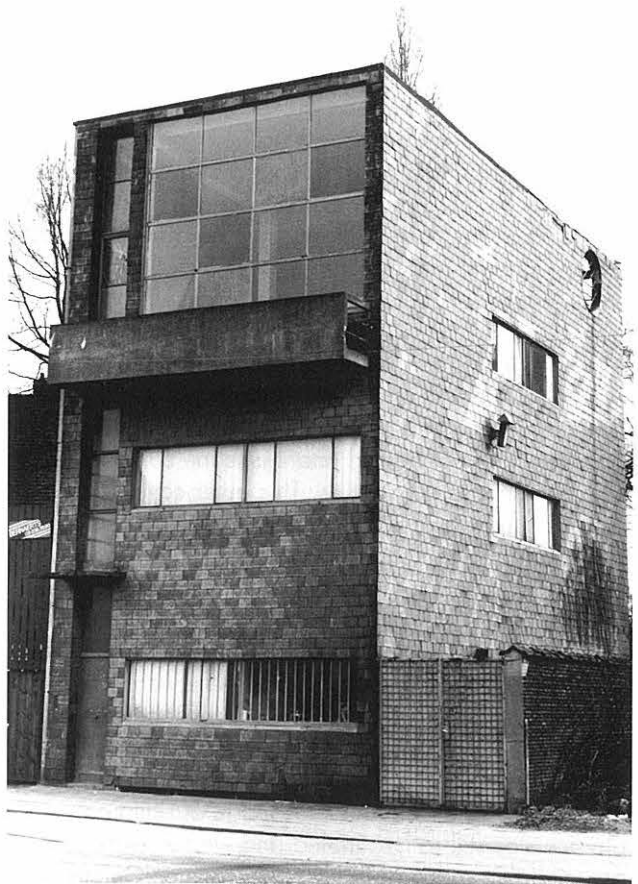
In terms of appearance and finish, this project is very similar to the *Pavillon Esprit Nouveau*. In his early work Le Corbusier used no bare, unpainted materials, exposed steel, wood or concrete, as only the shape, the pure volume mattered to him. This was achieved by colour and paint. In the *Pavillon Esprit Nouveau* even the bent wood of the Thonet chairs was painted over in grey, as pointed out Arthur Rüegg. The use of bare, unfinished materials, where the colour and texture of the materials themselves determine the aspect, only turns up in Le Corbusier's work after 1930. It was then that he first used a traditionally-built rough stone wall, although it was still distempered in white limewash. The stone wall became then a recurrent theme in his work. As to decorative wall-painting, they are also only present in his later work. In the *Pavillon Esprit Nouveau* paintings were only allowed in a frame on a wall.

Exterior

This is not only of importance to the interior of the Guiette house, but also to the exterior. As for the outer walls, Le Corbusier had already made a colour study on his first drawings, intending to paint the house in oil



The rear façade shortly after completion, 1927.



The front and side façade before restoration, 1987.
Photo: Afdeling Monumenten en Landschappen.

paint, in burnt sienna. He did so despite the fact that Guiette had already said in his second letter: 'No paintwork on the façade'. The city had imposed specific building regulations for this new neighbourhood. It was obligatory to build outer walls 'entirely in visible materials,' which came down to a ban on so-called 'imitation materials'. Bricks or natural stone were recommended for façades. A plastered and painted façade was considered as 'imitation material' and was not acceptable under these building regulations. Le Corbusier did the colour study for the house anyway and wrote: 'We have a colour model for the façades following very conclusive experiments in Boulogne. Paint the façades as much as possible with oil paint. And if so, the stronger shades produce the best effect. We can of course still use pale shades; this is to be decided upon later.'

The fact that Le Corbusier preferred a dark shade also appears from later correspondence on the colour of the 'Granilis', the product that has been used to render the outer walls and which is very similar to granito. It was Paul Smekens, the architect conducting the works for Guiette, who proposed the use of this conglomerate-plaster, as he hoped to obtain a building permit for this rather than for paintwork. It appears from the advice of the city's master builder Van Averbeké that the product 'has been used successfully for several years in The Netherlands, a country with a

less favourable climate than ours'. Van Averbeké was an important person with regard to the modern movement in Antwerp. He had also visited the Paris exhibition and in his position as the city's chief architect was able to convince the reluctant city authorities of the project's merits. He also wrote: 'The façade in Granilis, a sample of which is enclosed with the design, is of an exceptionally warm colour and I can assure you that the same with the steel window-frames and the mirror glass will, despite its simplicity, lend the whole a distinguished appearance. (...) I am convinced that this façade, although in imitation building materials, will make a considerably better impression than many other neighbouring façades made of natural stone.'

This 'warm colour' probably refers to the first sample of pink granulated marble which Guiette had originally chosen. According to the correspondence these samples were too heavy to send to Paris. But when Guiette wrote to Le Corbusier about his choice, the latter's reaction was: 'We have decided to do the street and side façade in stone imitation, meaning stone colour and not red ochre.' Finally, the work was carried out in 'elephant grey,' as Guiette describes it, 'very much like the blue stone of which it is made,' he writes. Le Corbusier was quite satisfied with the result. We know this from a second intervention by Van

Averbeke which proved necessary when a city official had found that the work was not carried out according to the 'pink' sample enclosed with the building application. Van Averbeke wrote: 'Moreover, the master builder Le Corbusier, who had come over to Antwerp specially for this matter, must have been very pleased with the grey tone of the outer walls; his satisfaction was 'luckily' shared by the owner.' His advice is not to insist anymore on this matter of the colour of the façade.

Although no longer visible, this grey 'Granilis' plaster was still preserved until the restoration. After the war Guiette had the house covered in slate, to which Corbusier did not object, and this is the condition in which the house came to us. This outer covering in slate, the many desperate letters from Guiette, and also the numerous interior wall coverings we found, are proof of the fact that moisture problems were a constant worry from the beginning. Underneath the slate the Granilis was damaged, but not in a way that could explain all these problems. There were some serious cracks, one along the flue where the chimney had been worked into the outer masonry, and others where the masonry butted up to the concrete elements. It should be clear that the knowledge of building physics was still rather limited and we therefore assumed that many of the problems which Guiette thought came from moisture infiltration, were actually due to condensation on the uninsulated walls and ceilings.

The research for the exterior restoration was preceded by a study of the building physics by Professor Hens of Louvain's Catholic University (KUL). This revealed that only an insulating plastering system could simultaneously solve the problems of internal condensation, cracking and dilatation problems between masonry and concrete. With a view to not deviating too much from the original thickness of the finish, with all the consequent problems of detailing, the granilis needed to be removed. A new finish using Granilis plasterwork was one of the options, but then it had to include obtrusive expansion joints. We therefore opted for a thin layer of plasterwork finished with a white mineral paint, in accordance with Le Corbusier's recommendation 'we can of course still use pale shades' and in conformity with the only other 'Maison Citrohan' in the Weissenhofsiedlung in Stuttgart.

Interior

Regarding the interior, the archives revealed that Le Corbusier attached the highest importance to the interior colour setting. He announced that he would determine the colours, not by correspondence, but on site in the almost finished house. The personal experience of the space and incidence of light were indispensable. Guiette therefore invited him at the right moment. This was presumably Le Corbusier's only visit to the house, which in May 1927 must have been

nearly finished except for some minor details. A number of sketches have been preserved, sketches made by Le Corbusier on Guiette's writing paper. These are schematic drawings of the interior with the colours written on the different walls and sometimes specified whether it should be 'colle' or 'huile,' meaning distemper or oil paint. This is the sketch of the entrance hall, where you can see the staircase, the front door and the cellar steps.

The paintwork was carried out scrupulously in accordance with these notes. This was confirmed by preliminary colour research on site, carried out by the conservation team led by my colleague, Marjan Buyle. The interior had been repainted several times but the colour concept had been observed, although the shades of colour sometimes varied.

The limited colour scheme for this house consisted of burnt umber, burnt sienna (*sienne foncé*), pink composed of burnt sienna and white (*sienne claire*) and ochre; in addition there were ultramarine blue, pale blue (ultramarine and white used in the linen room), cerulean blue (ultramarine and green) and English green, and finally pale, medium and dark grey and of course white.

The visit and recommendations by Arthur Rüegg during the restoration were also very useful. He made it clear that the matt appearance of the distemper was an absolute necessity if we wanted the dark brown of the burnt umber in its original hue: dark and velvety and not glossy like a slab of chocolate. In his view the exact shades of colour would cause no problems if we were to use natural pigments for the composition of the paint. In this way, we could simply make the pink colour by mixing burnt sienna with white. For the sake of durability we were forced not to use distemper, but instead a modern acrylate paint with a matting product. In the stairwell the white walls were repainted following the original technique of stippled oil paint.

Colour was used by Le Corbusier because of its spatial and psychological qualities. Walls were painted in colours which either confirmed them optically or, conversely, made them fade away. Spaces are dispersed, the seclusion breached, by giving each wall a different colour. He uses colour in order to make an end of the architecture of isolated spaces and rooms: he wants clear, expanding spaces. On this subject we found an article by René Guiette that was published in 1955 in a painters' journal and was called 'Colour in architecture' (*Kleur in de bouwkunst*). Guiette explains the colours which have been used in his house as Le Corbusier had explained them to him during his visit. In the living room the light enters through the large window on the dividing wall, which had to be white so as to reflect the varying light incidence from 10 o'clock to sunset. Le Corbusier thought it very natural to keep this surface purely white, thus creating a pleasant reflection of the ever-changing incidence of light. In

order to keep the opposite wall unchanged under the influence of shadow and light, Le Corbusier used shades of red; in this case pink or 'sienne clair'. The wall on the window side is cerulean blue, the colour Le Corbusier used to make the walls recede, almost making them fade away. The walls opposite the window were painted in a light-absorbing colour, dark brown (burnt umber) because the eye, according to Guiette, should not be attracted to it, since it served merely as partition.

A similar concept was applied in the hallway with the white partition wall on the one side and the burnt



Detail of the 'granilis' plasterwork with starting joint and crack.
Photo: Patrick Robyn.



The dismantling of the children's room revealed the original ochre colour. Photo: Patrick Robyn.

sienna opposite. On the façade the cerulean blue was used again. This concept continues in the stairwell on the first floor - next to the bathroom, which is entirely in white oil paint - and on the second floor, where the curved wall which leads you to the studio is again in 'sienne clair,' as an echo of the wall in the living room. The studio, which had recently been repainted, this time using real distemper, is rather neutral in white and grey except for this colourful detail of the window sill. The steps lead to the mezzanine and from there one can go to the roof terrace. Their two opposite walls are painted in 'sienne clair,' the other in English green, and the partition wall again in white.

A major surprise during the preliminary dismantling was the children's room on the first floor. After the removal of all the wall covering, it appeared that the entire room, walls as well as ceiling, had been painted in ochre.

In fact all the main principles of Le Corbusier's polychromy, as he was to express them later, are already present in this house: 'Let us take the simplest example of a small, square room,' he says. 'Every wall has been painted the same shade, leaving the room intact; even more so in shades which keep the walls in their place (for example the reds), conversely, less so if these tints dissolve the walls (for example the blues). The shape of the room will be entirely preserved and will allow a clear view if the ceiling is painted white. Should the ceiling be the same tone as the walls, then the impression changes completely, as it is the transition from something clearly defined to something very subdued, calm and seductive: it is like standing under a dome. I have closed off this space.' This effect of a dome was there in this children's room, where the four walls as well as the ceiling were repainted in ochre.

'But,' he continues, 'I can just as well break through the enclosing four walls by dissolving the ceiling. I can put two opposing walls in a warm tone and the two others in a cold (or warm) tone. The ceiling can be connected with the three or with the only other wall left, and so on.' This is what we see in the bedroom on the first floor, where two walls - the front façade wall and the one opposite - are painted in ultramarine blue next to the side façade wall, which is painted in burnt umber and the partition wall opposite again in white, all connected with the ceiling in pale gray.

'In one word,' Le Corbusier concludes, 'I can either stress or change the features of a square room as I wish: these are the real sources of polychromy'.

Living in a painting

Conservation of Jozef Peeters' painted flat (Antwerp, 1926)

Tu vis comme dans un tableau was what Michel Seuphor told his friend Jozef Peeters while visiting his apartment at the Statiekaai 7 (now Gerlachekaai 8) in Antwerp. In 1924 Peeters moved with his family into a small flat on the third floor of this block of flats (1921) designed by Emiel Van Averbek, at that time the city architect. The painted flat was listed as a protected monument in 1995. The entire building has been thoroughly renovated with white synthetic boards and modern windows according to the actual regulations for social housing, leaving very little of the original exterior aspect.

by Marjan Buyle

Two years after Jozef Peeters had moved into the flat, he started designing and planning the interior decoration: painting of walls and ceilings and the design of furniture. There are four rooms, connected by a narrow hallway. The corner room with a view on the river was to be his workplace, the room at the end of the hall the kitchen (or living room) and the rooms in between children's and master bedroom. Everything is carefully designed and planned, uniting architecture, visual art and furniture. In the summer of 1921 he had visited Piet Mondriaan's flat in Paris and had since then conceived the idea of decorating his own house according to the principles of *De Stijl*: a constant proportion of the horizontal and vertical is the essential, yet hidden structure of reality.

Every room has its own specific colour scheme, each creating a completely different ambience. He designs the interior decoration in detailed aquarelles, including the painting and furniture and carries out himself the painting in oil paint in several layers. The finishing touch to the final layer was added with a stencil brush, creating a slightly uneven structure. The dimensions, shape, material and colour of the furniture are meticulously determined. The main materials for these sober and very functional pieces of furniture are Finnish birch, maple and oak, in combination with patined brass. The limited space forced him to make use of every inch available and everything is put to use, even the extendible skirtings of all cupboards.

The bright study is painted in neutral shades of grey and white. The doors are in harmony with the different rooms and the hall. Next to it lies the children's room in pastel grey and pink, '*suikerbonen*' (sugared almonds) colours as Peeters would call it. The lighting with three glass circles was designed by himself. Against the wall is a measuring staff for the children.

The master bedroom is quite unique: painted in startling shades of grey, vivid blue and yellow, with bright touches from the furniture in Finnish birch. A coloured design can still be found in the house.

The design for the living room is being preserved in the Royal Museum for Arts in Brussels, but only the painting was done accordingly, not the furniture. Here the colour scheme is an unusual combination of greens and yellows. The hallway is perspectivistic with large blocks of white and pale grey.

Principles and options for restoration

It is a rare stroke of luck to come across an apartment of a 'certain' age like this one from the twenties, where walls and ceilings have not yet been repainted, papered or plastered. The main starting-point for the treatment was imposed on us by the site itself: this paintwork, even with the minor and major damage, is in itself so unique and authentic that we should do everything possible to preserve it as such. We were confirmed in our views by the fact that these colours on walls and ceilings transcended the mere paintwork but raised them to a different level: the quality of a work of art. In combination with the furniture designed by Jozef Peeters this clearly is a *Gesamtkunstwerk*.

Instead of unifying this interior, each room has been individualised with its own colour scheme, personal ambience, an individual composition. They all have one thing in common though: the two-dimensional aspect is the main principle of the designs. Jozef Peeters always worked with surface areas, he never wants to break through the wall's surface, respects it. When one colour area overlaps another, a new tint is created almost automatically. People in this house live within and under the compositions, they really are living in a painting.

State of conservation

At the beginning of the works it almost immediately appeared there would be a whole scale of problems. The main advantage of this ensemble however, was that the maker completely mastered the skills of a painter, used high-quality paint and carefully applied the oil paint layer after layer. The snag is that the base is not of the same quality: the layer of mortar is

thin, little adherent in places where there is humidity or water seepage and very lean (high percentage of sand). On the outside walls and especially in the exposed corner of the building, where the study had been installed for the abundance of light, the plasterwork was practically decayed. The condition of the workplace was so bad that the plasterwork had already been replaced in earlier years with a new, unpainted layer. In the other rooms large parts of the plasterwork came off, were mouldy and decayed and had to be replaced locally during this restoration. In other places the paintwork had come loose and was pushed up by local humidity problems and seeping water.

Another problem were the older retouches and discolourations. In places where the plasterwork was cracked, earlier and darkened retouches could be seen as well as in the lower, most vulnerable parts of the walls. Most of these date from the sixties. Obviously there are differences in colour where the paint had been screened off, in other words where there had been furniture or paintings on the wall. These were not so problematic as most of the objects would return to their original place after the restoration. The same goes for the numerous nails and points of suspension, which we have left untouched. We have considered the other discolourations as part of the painting's patina.

The painting of walls and ceilings was extremely polluted, of course varying with the use of the rooms and the colour scheme. The hallway had suffered the least, but the pollution was by far the worst in the living room, during the war the only room that had been heated and where they burnt everything they could lay their hands on in those harsh times.

Conservation and restoration treatment

Although only a conservation treatment had been planned, it almost imperceptibly turned into a restoration, be it a very cautious one.

To start with, the decayed pieces of plasterwork were carved out and replaced with mortar of somewhat better quality: a fine lime mortar with 1 part of lime for every 3 parts of river sand. Cracks wider than 2 mm, were filled with water-based filler whereas haircracks and crazes were left untouched.

Pushed up layers of paint were fixed with polyvinyl acetate dissolved in water.

As for the cleaning, the dry methods were tested first (*wisch-ab-sponges*), giving very little or no result. The most efficient cleanser proved to be the most basic solvent: water! In some extremely polluted places, among others the living room and more specifically near the stove, a small percentage of ammonia had to be added to the water. The cleaning was done with cotton wool (at first wet, then dry) and this was

repeated until the plugs of cotton wool no longer took up dirt.

After this cleaning the different problems became clear: the beautiful deep blue of the master bedroom had been painted over. This layer could be removed with water, bringing out the clear blue shades again. The harmonious colour scheme of the living room was somewhat disrupted after the cleaning. The yellow tints came out very bright and clear making the green appear too heavy. A quick study of a possible colour underneath indeed showed a brighter, lighter shade of green. These areas were retouched in a brighter version, restoring the original balance and proportions between the different hues.

The two outer walls of the studio which form the building's corner had already been replastered. The original paintwork had disappeared. Luckily Godelieve Peeters had carefully marked the original colour scheme in white and grey tones on the new plasterwork. With the help of old pictures and the uncompromising support and memory of the painter's daughter, the original design could be repainted.

Since Jozef Peeters had painted the apartment in different layers of oil paint, finishing it off by stippling with a large badger's brush (still preserved) in order to create a slight relief, it had been decided to follow the same method of working: three layers of *Winsor & Newton* oil paint. The top layer was done with a small paint roller, imitating the structure of the stippling. Smaller retouches on the original layers were done with acrylate paint from *Schminke*. This was also used for skirting-boards, window frames and doors.

Because the cleaning, especially where ammonia was necessary, had created differences in gloss and matt, a method had to be found to create the same, uniform matt gloss on the one hand, and create some kind of protection for the painted surface on the other hand. Preliminary tests with linseed oil and with damar varnish in linseed oil proved inadequate as it influenced the colour shades too much, darkened, and gave a rather sticky result. Nicole Goetghebeur from the Royal Institute for Art Heritage (IRPA-KIK) advised to use a mixture of three kinds of wax: washed beeswax (90 %), carnauba wax (7 %) and ozoquerite (3 %), dissolved in large quantities of white spirit (3 liters or more for 250 g wax mixture) in order to be able to apply the layer as thinly as possible. One kilogramme of wax was sufficient for four rooms and the hallway. It was applied with cotton wool and slightly polished once dry, also with dry plugs of cotton wool.

The Renaat Braem house (1958)

The architecture of the Braem house is principally sustained by the colours the architect himself used. In fact, Braem's interest for modern architecture was aroused in the twenties, a period which was bathed in light, and where there is light, there is colour. During that period, Braem discovered the foregoing architectural movement: the geometric compositions of Frank Lloyd Wright and the clearly structuring use of colour by Dudok, the emerging modern creations in Belgium at the time, and the innovatory concepts spread by periodicals such as *La Cité*, *7 Arts* or *De Bouwgids*.

by Jo Braeken & Tom Lenaerts

In his native region, Braem became acquainted with the more restrained romantic modernism of Eduard Van Steenberghe's, with its taut lines and clearly defined building volumes, combined with fanciful decorations and art deco patterns. As has been pointed out already in previous lectures, colour is equally representative of his architecture. Braem takes it even further and also discovers Hoste, Bourgeois, De Koninck, Le Corbusier and Gropius. Braem struggled with the ideological differences expressed during the CIAM conventions. The architectural materialisation of the CIAM principles, however, appeared to be fairly homogenous as to functionalism, light and space. In the line of these principles, most participants to the conventions had well-defined ideas about colour. As the only Belgian ever to do so, Braem was in 1936 apprenticed to Le Corbusier for a period of one year. The following year, Le Corbusier recommended him for CIAM membership. Braem did not only develop his own architectural ideology, he also worked out, and integrated, certain philosophical theories: on the human existence, on social structures worldwide and on the mechanisms of nature. In nature, Braem observed an inseparable bond between shape and function. This belief is not only reflected by his architectural creations, but also by the decoration of his own house.

The following quotation is an extract from the architect's work *Het schoonste land ter wereld* (The most beautiful country in the world):

'The entire house is a poetic piece of music with different rhythms entwined. So, as the noises from the streets fade out, a sheer kind of music resounds through the house and it is blissful, just like the fundamental geometric structures governing all shapes, relations which also apply in nature, a.o. the golden section. The general lay-out is designed for a rational way of living. There are no dark corners, everything is bathed in light, all day long, one can follow the scudding clouds or watch the moonlight shine on clouds from the bed at night and feel at one with the course of the hours and the seasons. This oneness with nature is the one true guideline of my life. My house is the epitomisation thereof and not in the least was I

surprised when a catholic youth movement walked by and called out with one voice : 'What an ugly house !' The smart ladies tripping by with their lap dogs disapprove of this house and the writer Godfried Bomans declared that it is an ill-mannered individual in distinguished company. All these things are a great source of satisfaction to me.' (Renaat Braem *Het schoonste land ter wereld* [The most beautiful country in the world], p. 113)

In 1993, the 'Afdeling Monumenten en Landschappen' (the Monuments and Sites Division) of the Flemish government received a letter from Renaat Braem. Having noticed that his house had been included in the inventory of the architectural heritage (*Bouwen door de eeuwen heen* [Buildings of Flanders throughout the centuries]), he wondered whether this implied that the building was now protected as a monument. The house had actually been included as the 'youngest' monument in a decree listing 39 examples of 'young architecture' in the province of Antwerp (Ministerial Decree of April 3, 1995). In the meantime, Renaat Braem had showed himself willing to donate his house to the Flemish Community and had confirmed this in his will. In 1997, he moved to a nursing home for medical reasons. His house was left to the care of a third party, resulting in the gradual decline of the condition the house and garden found themselves in. The house was left vacant and unattended, without any heating or ventilation, nor the slightest supervision or maintenance, a threatening situation for this delicate architectural piece. In August 1997 already, Flanders' Monument Watch observed major damage to the windows and masonry. This bad condition of the house only grew worse over the following years. Early 1999, a leak in the roof terrace, probably resulting from a clogged drain-hole, caused major water damage in the living room. In order to protect the house against further decay, the testamentary dispositions were ultimately changed in order to regulate a donation during the architect's lifetime. Through this donation, authenticated on April 29, 1999, Renaat Braem did not only hand over his house to the Flemish Community, but also his moveable architectural property 'to be preserved in its entirety for architecture

in Flanders'. The donation was welcomed by the Flemish Community as a building of cultural interest due to its exemplary value of the architect's oeuvre, and it was left to the care of the Monuments and Sites Division.

The history of Renaat Braem's own house is rooted in 1955, when he drew a whole series of sketches. Construction was started in March 1957, and in January 1958, the architect and his wife moved into the house. The study was partly underground and accommodated five co-workers, who, at the height of their drawing tables, could see blackbirds hopping around in the grass. The Braem House is beyond doubt one of the finest examples of post-war architecture in Belgium. After having earned international reputation with the social housing complex Kiel for the housing company *S.M. Huisvesting* in Antwerp, Renaat Braem began drawing plans for similar large-scale projects such as the *Administrative Centre* in Antwerp, the *Cité Modèle* near the Heizel in Brussels and the housing complex *Sint-Maartensdal* in Leuven. His own house with study is a simple and austere designed building volume in a semi-open space development, which façade is refiningly arranged. Its spatial composition is a combination of concave and convex beamshapes. There is a narrow, high-ceilinged space on the northside with a dark-coloured parquet floor. It has an introvert character due to the rough, brownish red plastering and the broad fireplace. The latter forms a transparent partition between this room and the large, flat space 4 steps up directed towards the south, exposed to the sun, the clouds and the trees. The top floor accommodates the bedroom and bathroom and gives access to a semi-patio, which is designed as a roof garden. The double-high L-shaped study, at 1,25 m below garden level, is glazed on three sides and is divided by a split-level with an office and library. Thanks to a window in the stairwell, the whole house is bathed in daylight.

Braem made use of a most particular colour setting in his house, completely in line with shape and function. For a number of elements, an explanation can be found in the architect's own description of the house. Deep, warm earth tones, dark brick and different types of wood are predominant on the northern side or in rooms where the sun does not play a major role, such as the sitting area or the small guest-room. Light, bright colours and linoleum prevail in rooms with a lot of glass, where the exterior almost merges with the interior. Within this pattern, Braem introduces small variations on the main colour by applying slightly differing colours where walls shift. Elsewhere, he adds small vivid flashes of colour to stress certain interior elements. In the white-and-grey entrance hall to the west, a brownish red colour accentuates a niche. In the bedroom, pale shades are predominant, be it combined with a light wooden panelwork and cupboards. The bathroom is oriented to the south and is lit by a streak of light cast through the long narrow

horizontal window. Nevertheless, the intimate character of this room has been preserved by the use of black granito for both the floor and the walls, including the shower walls. The central stairwell is lit by a skylight with a light shaft and by the top floor window. It is painted in light shades of yellow and whiteish grey, combined with the dark wenge of the stairs and landings. The pipes and drains in a cut-away space of this room, on the other hand, are highlighted by the use of various primary and secondary colours, each responding to a particular function. The doors of the garage as well as the storage room in the basement are painted in primary colours to emphasise their purely functional character. As was the case with several creations of Le Corbusier, the different spaces of the Braem house are also marked out by different floor coverings: light-coloured linoleum for the sunny parts, wood for the darker, more intimate spaces. Stone and concrete are predominant in the functional areas and the entrance hall, and black linoleum is used in the office area. The office is conceived as an in-between storey in the high-ceilinged study and can, as a result, not be reached by the zenithal sun. It is covered with wooden panelwork which functions as an exhibition wall for utensils and curiosities in organic materials. These objects, as well as the petrified or dried fauna and flora displayed everywhere in the house, are an integral part of the interior. Just like the colours of paint and the materials used, they play a symbolic and in fact functional role in the house.

Unlike many architects, whose houses were a foreboding to early successful careers, only to be used afterwards as a test plot for ideas and a graduator of wealth, Renaat Braem designed his house in his forties, at the peak of his capacities. This is how we found the Braem house: intact and unchanged, furnished as in its first days, though complemented with the memory of forty years of life and work.

Renaat Braem's donation does not only include this house, but also the complete interior decoration: furniture of Italian and Danish design, office furniture and drawing tables in steel. It contains many exotic decorative objects - witnesses to Braem's wanderlust: a metres-long composition of wooden objects clenched together in a lexicon of archetypes; earthenware; '*natures mortes*' made of stones; shells and branches; '*objets trouvés*', provided by mother earth.

Furthermore, we also hold the plastic works of Renaat Braem, which have been following his architectural design from a distance throughout his whole career: sculptures in wood and Ytong, ranging from colourful assemblages to monumental sculptures, which were displayed in the house and garden; figurative and abstract compositions on paper or panel; numerous travel sketches.

Finally, the donation also comprises the remaining architectural archives, which, after previous donations to the *Archives d'Architecture Moderne* (Archives of

Modern Architecture) still consist for the greater part of some two hundred sketchbooks and several thousands of architectural drawings. Most of these are studies and sketches covering an entire career. The archives also include manuscripts and publications, business and private correspondence, photographs and negatives, awards and medals, seven scale-models and a well-filled library holding a collection of journals.

With the house of Braem project, the Monuments and Sites Division wants to make the most of this donation's many assets. By giving the building a new function, it will be preserved for the future, fulfilling, at the same time, Renaat Braem's will. In October 2000, a round-table conference on this issue was held with all the parties involved in architecture and heritage conservation. Their preference goes to a function as an 'open monument' or a 'house museum', allowing public access within the limits of the building's capacity. Proper attention will be given to the architecture of the house and the exceptional character of the interior, which is more than just the portrait of an era. This way, the visitor will be granted a privileged look into the life of one of the greater post-war Belgian architects, a look behind the scenes of architecture.

This project is not intended to freeze the interior in its accidental state after 40 years of occupation. The goal is to restore the lines of force of Braem's architecture in their most genuine state and to give new value the countless many objects and works of art which, each with its own history, make the Braem house to what it is today. By applying museal techniques and didactic presentations which are discretely interwoven with the interior, we will try to draw an image of the life and works of Renaat Braem. The existing garage will be turned into a modest polyvalent space with a permanent audio-visual presentation and several display cases for small exhibitions. The architectural archives may serve as a useful source, next to lent and exchanged items. It is a way of placing Braem's oeuvre in its time and in its national and international context. The artistic works and the architectural archives will be given a place in the interior in an archivistically sound way, and made available for research. Visits will be allowed in small, guided groups, following the rules laid down by the National Trust with regard to this type of houses. Chances are that the Braem house will be taken up in an architectural walking tour around the *Boekenberg* quarter, which is very rich in interbellum architecture, or in a wider architectural tour around Renaat Braem's buildings in Antwerp. In the near future, the Monuments and Sites Division intends to pay more attention to Braem's work, which has been extremely important for post-war times, by protecting his greatest projects and by bringing them under the attention of a national and international public. Finally, the study and inventory of Braem's built oeuvre and his works on paper, could eventually be

rounded off with a comprehensive catalogue of his works.

First of all, the overall restoration of the building is very urgent. The far-reaching erosion of the external wooden framework, the moisture problems and the insufficient waterproofness of the roof terraces deserve special attention. Luckily, the entire construction file, including sketches, drawings and detailed plans, has been preserved. In addition, the house was measured anew and the interior systematically photographed. In a second phase, a number of urgent preservational measures were taken: the windows in the study room and the roof edge of the bathroom's extension were protected, the concrete beam and roof construction of the terrace was submitted to thorough investigation, the drainage system was both inspected and cleaned. For reasons of safety, it was considered most wise to clear the building before the restoration was started. In mid 1999, an inventory of all the furnishings was begun. During this whole process, priority was given to the most vulnerable and unique part of Braem's remarkable heritage, i.e. the architectural archives and his plastic oeuvre on paper, which were found in the house. The poor conditions of conservation, especially the extreme humidity, asked for the constant supply of absorbent material and a number of emergency interventions. This operation has been a great success; the collection was packed acid-free and safely stored. The classification, selection and packing of the library was finished in mid 2000. The various scale-models and sculptures were cleaned, disinfected, glued and - if necessary - retouched and, finally, packed. The numerous objects decorating the walls and niches in the living room, the entrance hall and stairwell, were measured on their exact location, disassembled and then treated for preservation before they are stored away.

The restoration works on the Braem were finally started in early 2001, and are due to be finished in the summer of 2002.

Colour on plaster and framework

The Unitas quarter in Deurne (1924-1999)

The Unitas quarter in Deurne is a complex of 199 one-family houses designed by Eduard Van Steenberghe in 1923. In 1982 the site was legally declared a 'protected urban view'.

Unfortunately, this measure could not guarantee the preservation of the original outlook and unity of the housing complex; each house being in private ownership.

A research on the original colours of the 32 groupings of houses was carried out in 1997.

Following the results of this colour research, the state department Monuments and Landscapes pointed out guidelines for renovation and maintenance.*

by Mimi Debruyne

This garden city is located 5 km east of Antwerp's city centre, to the east of the old Boekenberg park. It was built on a long stretch of marshland, closed in by two access roads to Antwerp. This building project had to fill the housing need of 200 young families with children. The building period was spread over 8 years: 107 owner-occupied houses were built in 1924, 36 houses in 1928 and 56 in 1930, 40 of which were rented houses.

Eduard Van Steenberghe (1889-1952)

The general architectural plan and outlook of the site were dictated by the rules of the '*Nationale Maatschappij voor Goedkope Woningen*', following the international development of post-war social housing programmes. The 35 year old Van Steenberghe had built by then several modern houses with flat roofs and horizontal windows, amongst others the private house of the chairman of the Unitas society.

Since social housing in Antwerp was very romantically and traditionally inspired, Van Steenberghe could afford himself any experimental concept, except in minor details as in window framework and brick patterns. On the contrary, all houses were covered by a big gable roof, be it in a combination of a mansard roof with a pyramid roof, or a saddle roof. Furthermore, there were minor differences in the dormer windows, the position of bays, entrance and windows, the brick patterns, the colours of plasterwork and framework. All of these parameters varied the one along and through the other so that eventually not two houses were alike. Precisely these minor differences within ever varying living groups (each between 2 and 14 houses big), created a rhythmic unity in this neighbourhood.

Plasterwork

According to the building specifications: '*the facades (front and back) from the parapet up to the roof-gutter should be coated with sand or cement mortar to be finished as 'rock-work' and should be applied with a brush. Subsequently all facades are to be*

plastered with 2 layers of coloured plaster from Namur, the first layer before the coating is entirely set. The colour of the plaster shall be specified by the master builder for each group. Samples of rock-work and plaster will be set and displayed. Drained plaster from Namur to be used.'

The composition of the recommended sand mortar is not included in the building specifications, for cement mortar it is: '*Cement mortar: 1 part of artificial Portland cement and 2 parts of sharp sand. The cement to set slowly*' (8/7/1925), which is identical to the building specifications of similar plasterwork in the Marstboom villa in Hove four months later: '*Cement mortar: 1 part of artificial Portland cement with 2 parts of sharp sand*' (7/11/1925). The facades of this villa as well had to '*be carried out in fine 'Tyrolean' rock-work with coloured cement and lime mortar. Two different shades are to be used.*' And in this case the exact composition of the lime mortar is added: '*Lime mortar: 2 parts of slack lime from Tournai, 3 parts of lean loam.*'

Moreover, the specifications of the second and third building phase of the Unitas quarter are identical, leading to the conclusion that they are also the same as the first specifications. Despite these similarities the constitution of the plasterwork of these three building phases is very different. A plaster sample would immediately show that hair and fine bits of straw have been added to the plasterwork of the first and second building phase. The building specifications nevertheless only recommended hair for interior plastering. There are also differences in thickness: during the first and the third building phase there are two layers of roughcasting, in the second building phase there was only one such layer.

The difference in colour and composition can be observed with the naked eye and it is clear that there is also a difference in quality. That is why 31 % of the houses from the first phase still have the original plasterwork, 36% from the second and 86 % from the final building phase.



Deurne, Unitas Quarter 1928: north side of Adelbert Kenis Square. Photo: Nels.



Deurne, Unitas Quarter 1998: north side of Adelbert Kenis Square. Photo: Debruyne.

Rock-work

Not all the plastering was 'rocked' in the same way: In the first phase it was a slightly undulating structure, a more dripping aspect in the second and a rather grainy effect in the third phase. These differences not only resulted from the different professionals but also from the quantities of water added to the mortar and last but not least, from the way it was applied and finished.

The rock effect was created by the specific finishing of the second rough coat. While the first layer was applied with a trowel on a moist wall and evened out with a lath, the second layer was equally applied wet on wet, but immediately touched up with a rough brush like in our case, or with a shrub of heather. According to one of the occupants, the plastering of the second building phase was indeed thrown on in one layer and immediately touched up with a wire brush. Later on, a small splashing mill was used which could spray the mortar directly on the walls, a so called 'Tyrolienne'. The extremely fine layers and the granularity of the plaster of the third building phase suggest that this plastering was done with such a tool instead of having been thrown on. These techniques seem to stem from traditional plastering methods in Austria, Southern Germany and Northern Italy, where every house was covered with a thick coat of plaster containing large grains of quartz in order to make the mortar stick better. These grains were lacking in the Unitas plasterwork, thus not fulfilling one of the essential conditions for good adhesion.

Colour of the plasterwork

Originally three more or less similar colours were used: white, mainly during the first building phase, but also cream and, to a lesser extent, ochre. It looks as if during the second phase only cream was used and in the third phase cream and white.

The colour was grouped in large parts of the neighbourhood, in some cases exceeding the size of the living group. There were nevertheless no major colour transitions: white never bordered on ochre but

cream. It is quite peculiar that already with the first finishing, the front was sometimes plastered in cream and the back in white; the cost of ochre could explain this. More ochre was used during the first phase than in the two subsequent phases. Later on, the occupants solved this financial problem by adding tea to the lime mortar along with the pigment.

Shortly before the Second World War pastel shades sporadically appeared, soft pink and pastel green among others. White began to prevail after the War, in the sixties also pastel blue.

When in 1971 the Unitas society was dissolved, little was left of the original harmony of colours. Furthermore, the occupants no longer whitewashed their facade but painted them, often with impermeable kinds of paint. The result was that the original rock plastering started to come off.

Colour of the framework

According to the building specifications the *'final layer should be painted in three full colours of the master builder's choice.'* Unfortunately, there was no detailed colour description either. Furthermore, it is not entirely clear whether three different colours per house were meant or three main colours for the entire site. It is nevertheless possible that Van Steenberghe meant three colours per house when he drafted the building specifications. Van Steenberghe also used three colours for the Marstboom villa in Hove like Dudok, Van Steenberghe's leading example, had done in Hilversum. Nevertheless, in Hove as well as in Hilversum, the glass bars are placed horizontally upon the window frame, which may have caused that the three levels, mastic, window frame and glass bars, had to be painted in a different shade. Since the frames of the Unitas quarter do not have lying glass bars on top, architecturally there was no reason to use a third colour. So, a combination of only two colours was obvious.

The material research was made difficult, if not impossible, since only 11 of the 199 houses still had

their entirely original frames in 1998. Therefore, additional photographic research and interviews with the oldest inhabitants were all the more important. It is striking that when comparing black and white pictures from 1926 and 1928, the same houses from the first building phase, which originally had dark green and cream framework, showed other colour combinations, most probably black with primary red or green, colours typical for the houses of the second building phase. It looks as if this colour scheme became fashionable in the entire neighbourhood from then onwards. Much later, cream was also combined with burgundy or brownish red instead of dark green. Only in the very beginning a few inhabitants had been applying three colours, primary blue, clear blue and orange or white, but on the whole most frameworks were painted in dark green and cream, the traditional colours of 19th Century Antwerp.

Architecture in relation to colour

Whereas some contemporary garden cities were finished off with rough gray cement plastering, like in 'Le Logis Floréal' in Watermaal-Bosvoorde (near Brussels), the white-cream-ochre colour setting of the facades of the Unitas quarter should be seen against the background of a more traditional, romantic vision, as it was promoted by Unwin and adapted by the Belgian social housing companies.

The colour setting of the framework resulted from a compromise between the occupants and the architect: dark green and cream were part of the traditional palette and were probably preferred by the occupants, whilst black and primary red or green were specific colours of modernism and seem to have been preferred by Van Steenberghe, as may be derived from the colour setting of the Grauls' house in Berchem (1921), for which Van Steenberghe had sought the advice of his friend, painter and decorating artist, Jan Cockx (1891-1976) - not to be confused with the painter Jan Cox (1919-1980). For the exterior framework a combination of primary red and blue was suggested, a combination which Van Steenberghe probably later applied on the framework of his own house in Berchem in combination with white (1925).

Renovation

Unwin wrote: *'It is coming to be more and more widely realised that a new order and relationship in society are required to take the place of the old, that the mere setting free of the individual is only the commencement of the work of reconstruction, and not the end.'* (in: *Town Planning in Practice. An Introduction to the Art of designing Cities and Suburbs*, London, 1913: 3rd edit., 383).

With some reservation one could say that at least some of this consciousness and responsibility are growing in the neighbourhood: quite a few younger occupants move along with the renovation, all the

more because the costs are tax-deductible, since it concerns a protected city view. The combination of modern technological conveniences inside a romantically traditional house, seems quite a success. It is a pity, though, that many of the original occupants - most of them retired - cannot easily afford such a renovation. A consistent arrangement in this sense would constitute a major complement to the aesthetic aspect of this renovation.

Notes:

- * Debruyne, Mimi, 'Kleuren in de Unitaswijk (1923/1932-1998)', in *M&L Monumenten en Landschappen*, juli-augustus, 1998, pp. 37-67.

Modern Colours Reviewed – Evaluation and Recommendations

The most obvious conclusion of this seminar is that the architecture of the Modern Movement was much more colourful than we used to acknowledge. Also we learned that a much richer and a more delicate use of the palette was made than was supposed until recently. The discussions focused, once more, on the ethics of restoration as well as the need to exchange our growing knowledge on the application of colours – not only between architects and historians and colour experts, but also between designers and building and paint industries. Colour is no side issue, but as essential as construction.

by Marieke Kuipers and Mariël Polman

Misconception of history

In comparison with the main constructional materials - especially concrete and steel - less attention has been paid to the application of the finishing materials in the exhaustive literature on modern architecture. However, the nature, the texture and the colours of all used materials play a vital role in the total experience of a building. The perception of spaces and volumes is not only defined by the dimensions of floors, walls and roofs (and their related proportions), but also by the visual interaction between the coloured surfaces, whether their colours are man-made or natural and their finishings are smooth or rough, shiny or mat.

How was it possible that such basic architectural elements as colours are, have been almost overlooked in the pile of publications on the Modern Movement over such a long period? The answer can be found in different directions. One reason might be that the most prolific Bauhaus architects used to stress the spatial qualities rather than the visual qualities of their creations while striving for 'dematerialisation'. As a result, the materials did not matter for their own sake, although they were structural components and their application was well considered. It was the total composition that counted, the interaction of spaces inside and outside, the image of lightness in the double meaning of light weight and lighted architecture.

Besides, there was a confusing, if not contradictory, attitude of most modernists towards the meaning of colours in their architectural concepts and their publications. On the long run, their attitude did change several times. Even architects who started to polychrome their buildings in a very conspicuous manner, seem to have changed their mind later on, like Alfred Roth demonstrated in his writings. Also Gerrit Rietveld, who became famous as the first architect using colours in a modern, abstract manner in his Schröder House (1924), reduced the importance of colours in his article 'Insight', published in *i 10* four years later: 'The only reality which the architecture can create is the space. (...) Shape, colour or other sensual considerations are all on their own equally important as the spatial (considerations),

but they stay better when on their own territory. Necessary other factors (for instance the colour of materials, shape by construction, etc.) however seductive these inessentials are, better be unconsidered, because if they start to influence the spatial, this always leads to weakening and deviations'.¹

Moreover, Walter Gropius and Hannes Meyer had reacted very critically on Bruno Taut's bright polychrome housing estates in Berlin. This condemnation of abundant use of colour - eagerly paraphrased by Tom Wolfe in his hilarious *From Bauhaus to Our House* - contributed to the wide-spread cliché of the Modern Movement as merely white architecture or 'White Modernism', which was further strengthened by the famous slogan 'White, all white' from J.E. Hamman in the magazine *Die Form* (1930).²

Another reason might be that the first publications on modern architecture were nearly all illustrated by black-and-white pictures, from the *De Stijl* magazine to the *International Style* exhibition catalogue and Giedion's *Space, Time and Architecture*.³ The illustrations showed, often in a very appealing way, the spatial intentions of the modern architects: their play with light and shadow, with closeness and transparency, with lines and volumes. These photographs defined for decades the reception of the architectural masterpieces. In fact, they made the icons of the Modern Movement.

Just because of their attractiveness these images have been published over and over again. But in the mean time, the buildings themselves underwent several changes, due to technical problems or to new needs of use, comfort or fashion. It seems that after a building's inauguration the influence of the architect faded out and that especially the application of colours has become a personal affair of the occupant and therefore easily will deviate from the original colour scheme. Apart from the exposure to radical interventions for reasons of personal taste, the original finishings are extremely vulnerable of damages by the influence of daylight, humidity, corrosion and foremost by bumping and scratching in the daily use of the buildings.

So, whether intentionally or not, many finishings have

been replaced over time, some almost similar to the originals, others totally different. Sometimes the original appearance became completely forgotten and hardly any scholar seemed to care until about 1980, when slowly a 're-discovery' of colour in Modern Movement architecture began.⁴ While colour has had a permanent interest in psychology and visual arts, the meaning of colour in architecture was treated in a step-motherly way in the practice of restoration. This seminar has learned that not only the colours of paint but also the colours of all applied materials are important to obtain a proper image of the intentions of the modern architects.

Architects, painters and traditions

Especially in modern architecture the application of colours is of great importance because it was often the only means of decoration, though in a very abstract way and intended to support the architectural language. In spite of his heavy criticism on the expensive use of ornaments, Adolf Loos did not hesitate to adapt a great variety of colours and luxurious finishings in his buildings when required by his commissioners (e.g. the Müller house in Prague). To his opinion a new architecture was needed which could speak by its forms and spaces as such, not by superfluous stylistic elements referring to the past or to nature.

As we have seen, the interest to create an abstract *Gesamtkunstwerk* in three, if possible four dimensions (space-time), came from both painters and architects. As several papers have underlined, the first attempts to develop a theory and a radical new artistic language with regard to colours and spaces came from Russian painters like Tatlin, Malevitch and El Lissitzky or from Dutch members of the *De Stijl* group like Van Doesburg and Mondriaan. Especially Van Doesburg had realised various 'mass dissolving' colour schemes in several projects of different architects, from 'De Vonk' to L'Aubette, and had had great influence with his 'Stijl' courses at the Bauhaus in Weimar, where he had hoped in vain for a permanent position. In practice it was not easy to collaborate on a basis of equality, because strong personalities were involved with strong ideas about their input. Walter Gropius, for instance, had invited Hinnerk Scheper to design a colour scheme for the new Bauhaus in Dessau.⁵ Still, he wanted to keep the direction over the final result for he meant that architects were responsible of the total design, in which not only the colours of floors, walls and ceilings, but also those of furniture and carpets could play a role, like music instruments in a symphony.

We have also seen that in some cases painters and architects changed roles: Van Doesburg had built his own house in Meudon, while Le Corbusier painted murals in Eileen Grey's house E 1027 at Roquebrunne, to her discontent. In fact, it was much easier if the same master choose the colours for his own living and working environment, as Bruno Taut, Konstantin Melnikov and Jozef Peeters could bring into practice, or if the commissioner was not an architect.

Apart from a direct interaction between artists and architects, some modern architects sought inspiration for the use of colour in folk art. Other determinant factors were, indirectly, the daily practice and the supply of paint products, which were in those days seldom pre-fabricated. The original mixtures could contain minor differences and this makes it difficult to find - so many decades later - the right tone. Anyhow, it would be useful to do further research on the technical aspects of these exchanges for the paints and the painting techniques as well as the developed restoration techniques.

Dilemmas about authenticity

The question how to deal with the 'historic' colours of the moderns has become just recently an issue of its own when restoration or re-use are considered. Especially the famous icons of the Modern Movement confront us with fundamental dilemmas with regard to reconstruction and use. Uptil today the icons are an important source of inspiration for many architects because of their architectural concept. Therefore we want these masterpieces preserved and restored, preferably in their immaculate state of inauguration as we know from pictures and drawings while ignoring both the history of later use and the practical needs of today. Any reconstruction to the 'original state' would destroy later phases of the building which could be also worth to be kept, like the later changes by Truus Schröder in her famous house, or the even more problematic, if not polemic murals by Le Corbusier in Eileen Gray's house. Besides, we cannot always deny the impact of history or the wishes of current users, even if it has brought alterations which we do not appreciate from an aesthetic or ideological point of view, as is demonstrated by the Master's Houses and the houses of the Törten Siedlung in Dessau, which were restyled in the DDR period.

What kind of authenticity do we want to preserve - the almost immaterial 'idea' or also the material resources? The dilemmas have some similarities with those of the musicians who want to play the 'Urfassung' and seek the authentic sound by using reconstructed instruments of the period. We will never be sure that we have a perfect reconstruction of the beloved composition.

But the difference is that music can easily be repeated and that a building is intended to stay and to serve, even if short-term needs and experimental, short-lived materials are adapted.

With regard to the restoration of paints, one is confronted each time with radical choices between layers and construction, material and history, but compromises will be inevitable. In the architecture of the Modern Movement the first finishing was often relatively poor. To regain this effect, one gets easily lost in the dilemma not to remove all later added layers (as an 'archaeological' source) and to obtain a sound supportive base at the same time. If an 'integral' conservation of layers is considered, this will restrict the choice of the final finishing, which needs to be

fixed in a non-destructive way. In that case, it might be impossible to use the same type of paint as adapted originally. Besides, there might be other obstacles to re-adapt the original paint type, such as toxicity, insustainability and unobtainability. Conversely, it could be necessary to remove all paint layers in order to save and conserve the original support (e.g. corroded steel frames). In all these cases it requires great craftsmanship to make the right choice and to respect the outcome of the colour research. Often the required restoration does not apply to the common paint practice of today and it demands a mental shift to bring back the richness of the modern architecture by the 'poorness' of the paints.

Current needs and recommendations

Although several theories of colour were never forgotten, the knowledge of the original practice of painting and finishing has not been kept up in equal pace. On the contrary, due to the continuous modernisation it has become more and more difficult to find instructive and reliable sources about the practice of just a few decades ago. These regard not only printed matters (like material specifications, paint recipes, technical catalogues, written instructions, bills and other archival data), photos and colour cards of that time, but also the historic techniques (only known by a few traditionally trained craftsmen of old age) and the scarce authentic layers of paint and plaster and alike as well as the original drawings (if they contain any colour schemes). The circulation speed of materials goes faster than ever, while the related archives tend to be removed quickly and unnoted. So, our knowledge needs to be refreshed and improved before all material and human sources will have disappeared definitely.

First, we need both an archaeology and an anthology on the application of materials in modern architecture with regard to colours. The 'colour archaeology' can be seen as a special type of *Bauforschung* which researches all layers of the finishing materials from a technical and historical point of view. The 'colour anthology' should confront the technical archival material with the main contemporary writings on colours and finishings in modern architecture: often the ideals did not correspond with the actual application of materials.

Second, we need to build up a *technical database* and a *uniform terminology* on colours, paints and other finishings, based on the historic sources, in order to allow comparable results of research.

Ideally, the methodology of the colour research should become more suitable for the exchange of knowledge as well and be embedded in an early stage of each restoration process. Colour research inspects not only paints but all sorts of finishing materials and their spectrum. For an expert judgement of the state of the finishings and the meaning of the applied colours a keen but unprejudiced eye is needed, supported by archival and technical research. Therefore, *teamwork* and *precise documentation* are required.

Third, we need to enlarge the receptiveness of both

(restoration) architects and occupants with regard to the historic use of colours and materials because only here an appropriate maintenance can start.

Last but not least, it is necessary to acquire first the knowledge and to decide afterwards upon a strategy what to do with the applied colours and finishings - cover, clean, restore, reconstruct or replace? The decision is not a matter of personal taste or budget, but has ethical implications for the interveners. The finishing painting layers are most vulnerable compared with their bases. If no colour research takes place before any alteration of paints, there will never be an occasion again to reconstruct - at least on paper - the historic situation and to pass the knowledge to future generations.

So, we need to improve our restoration practice and continue to spread our growing knowledge about the 'historic' application of colours and materials. Only then, the legend of the Modern Movement as a 'white purism' will pass and instead, we will do justice to the real legacy with its wide range of tones. Maybe, in the near future the iconic images in black and white will then finally turn into full-colour.

Notes:

1. *I 10*, 1929 nr. 17-18, p. 90. Later on, Rietveld wrote and lectured frequently on colour in architecture, and then he expressed a more differentiated view (cf. Polman, M.G., 'The colours', in: Slothouber, E. (ed.), *The art schools of Gerrit Rietveld*, Amsterdam, 1997, pp. 117-120).
2. Cf. E. Herrel, 'Farbe in der Architektur der Moderne', in: V.M. Lampugnani (ed.), *Expressionismus und Neue Sachlichkeit, Moderne Architektur in Deutschland 1900 bis 1950*, Stuttgart 1994, pp. 99-116; J.E. Hamman, 'Weiss, alles weiss. Von der darstellung der Farbe 'Weiss' in unserer Zeit', *Die Form* 1930 nr. 5, pp. 121 and following.
3. One exception is the publication of the designs for the model of the *Maison Particulière* by Theo van Doesburg and Cornelis van Eesteren in *L'Architecture Vivante* 1925 nr. 9, p. 5 in colour, for which Van Doesburg had made ten lithographies in colour. Some of these had also been reproduced in colour in the series *Der Sieg der Farbe, Die entscheidende Zeit unserer Malerei in 40 farbigen Lichtdrucken*, edited by Adolf Behne (Berlin 1920-25).
4. Cf. Wolff, A. 'Selected bibliography' in Taverne, E. & Wagenaar, C. (eds.), *The Colour of the City*, Laren 1992, pp. 164-182.
5. Schöbe, L. 'Black and white or colour?', *Spatial design in the Bauhaus building*, in: Kenntgens-Craig, M. (ed.), *The Dessau Bauhaus building 1926-1999*, Basel/Berlin/Boston 1998, pp. 42-65.

Henry van de Velde: a welcome home...

The Technical School in Leuven, 1936-1942

The 2000 DOCOMOMO Colour Seminar found a suitable venue in one of these fascinating buildings of the Modern Movement, designed by one of its captivating masters: the former municipal *Technische School* by Henry van de Velde (1863-1957), then nearing eighty, built in 1936-1942 right in the middle of the historic city centre of Leuven. Even if Modern Architecture in the 1930's already left its avantgarde position of the 1920's and was now fairly accepted as the Style of the Epoch, at least in non-authoritarian societies, this building must have been some sort of a cultural shock at the time it was built. And it still has a kind of refreshing aura today, after a difficult and long-lasting combat for its preservation in the 1980's and its final 'restoration' in the 1990's. Since 2000, Henry Van de Velde's Technical School is housing the municipal library and archives of the city of Leuven and very quickly succeeded in becoming a splendid space for cultural activities of all sorts perfectly in accordance with the fundamental characteristics of Van de Velde's original architectural intentions to build a space of obvious modernity, constructional order and clarity, spatial openness and brightness, formal simplicity and sincerity. The organisation of this international DOCOMOMO Colour Seminar in this building – the restoration was not quite completely finished at the moment of the meeting – was definitely intended to draw attention to what was coming into being here and a rightly deserved tribute to a great building.

by Luc Verpoest

Henry Van de Velde's Technical School was listed as historic monument and site on 14 December 1990, after six years of devastating vacancy and continuous threat with as destructive projects for careless transformation or simply demolition, and thanks to, among others, an international petition which definitely set in motion local and government authorities. The lengthy saga of Henry van de Velde's recognition as a pioneer of Modern Architecture – as Le Corbusier wrote in 1933 in a dedication in a copy of *La ville radieuse*... – thereby reached its denouement, almost half a century after the completion of the building. His complete oeuvre, not only his Art Nouveau before 1914 but also the late, modern work of the 1920's and 1930's, has now been fully incorporated into architectural history: the *Maison Nouvelle* in Tervuren (1927-28), the 'temporary' *Kröller-Müller Museum* in Otterlo in the Netherlands (1925-38), the *Heinemann Stiftung* in Hannover (Germany) (1929-31), the *University Library* in Ghent (1932-36), and the Belgian pavilions at the world exhibitions in Paris (1937) and New York (1939). In this later work, Van de Velde at last fully translated the modern concepts of form, function, construction and space, which he had previously elaborated on in many writings and in his early work, into idiosyncratic, 20th Century modern buildings. This also applies to the last building he completed in Belgium, the *Technische School* in Leuven. It is undoubtedly a modest work, though it has undeniable formal, constructional and spatial qualities,

not to forget its urban qualities: an architecture of clean rationalism, of downright *Sachlichkeit*, a meticulous and cautious insert into the historic fabric of the city. Its inherent qualities and its specific temporal and spatial context make it a monument of Modern Architecture, as finally confirmed by its ultimate listing as historic monument and site.

In Diestsestraat, both the height and width of the facade do not exceed those of a terraced house in a narrow medieval street. Here is the first main entrance: a broad glazed steel gate in a deep red colour, set back from the building line between oblique and rounded side walls clad in diagonally grooved blue stone extending up to a broad concrete canopy. The first and only upper storey has an almost blind facade with three narrow adjoining windows framed in a stone panel with the inscription 'Technische School' and the coat of arms of the city of Leuven: this is definitely the official, representative facade of the school building.

A remarkable feature is the facing of the upper part of the facade with large terracotta tiles (40x60 cm), made by the *Comptoir Tuilier de Courtrai* (in Kortrijk, Belgium), the so-called 'Parysche platen' which Van de Velde also used for the pavilions in Paris and New York, although of another, larger size (60x80 cm). The colour and texture of the building materials – terracotta and stone – make the facade finally very inconspicuous amidst the traditional brick and sandstone 1920's



Technische School before reconversion.

Photo: Eric Min.

reconstruction architecture of the Diestsestraat. In fact to Van de Velde it was quite evident to use both traditional, regional materials and new materials and techniques in Modern Architecture because of their common rationality.

The second street facade on the parallel and broader Rijschoolstraat is almost 40 meters long and three storeys high. This front is volumetrically and spatially more complex than that in the Diestsestraat, a complexity somewhat restrained through a strict but comforting symmetry, avoiding any cheap monumentalism. In fact what we see here is two parallel facades, one behind the other. The first is standing on the building line: its middle section is low (two storeys with a roof terrace), with higher volumes to the left and right (with a blind first floor) which link up to the adjoining buildings. The entrance gate is set back from the building line between rounded side walls and windows, covered by a concrete canopy. Some meters behind this first facade stands a second, parallel one, two storeys high on top of the ground floor. The concrete skeleton of the building is left visible. It forms two regular superimposed rows of five and seven entirely glazed areas with slender steel frames. The dominant materials on this street facade are - as on Diestsestraat - the steel door and window frames, painted deep red, blue stone on the lower part and terracotta tiles whose format modulate the proportions of the facades, as Pierre Puttemans wrote concerning the Paris pavilion. The top of the facade

walls is covered with a slightly projecting cornice in concrete.

The Rijschoolstraat facade is clearly three-dimensional, not a series of planes but volumes. In seeking the 'absolute volume', Henry van de Velde developed an architecture whose form was characterised by a further simplification of the language and by the accentuation of the volumes, an architecture reduced to an almost elementary but dynamic stacking of masses in search of 'pure plasticity'.

Between the building wings in Rijschoolstraat and Diestsestraat, the Technical School extends around a large courtyard, three storeys upward, following a strict orthogonal grid of wide corridors between classrooms and workshops located around two rectangular patios. The clear skeleton structure of concrete pillars and beams organised the space and provided it with rhythm. Natural light was able to flood unhindered deep into the building throughout the day. All piping was hung in view from the ceiling. The classrooms and workshops were separated from the corridors and each other by large movable steel and glass panels. Outside walls originally had steel window frames on the courtyard side and concrete window frames elsewhere, being a common and rather cheap industrial application.

The skeleton structure and partition walls gave the interior a layered but at the same time clear transparency and orderliness. This created a



Technische School after reconversion to the municipal library and archives of the the city of Leuven.

Photo: Luc Verpoest.

fascinating system, a living organism of large open spaces and indoor streets, a continuous space on three levels round the large courtyard of the complex. Colour was adding very much to the bright spatial character of the interior : light yellowish colours for the steel and glass partition panels and for wall and ceiling paintings and for floor tiles, and waterish blue-green ceramic tiles on the lower parts of walls and columns. The regularity and rhythm of the internal skeleton structure were also visible from outside. Inside and outside are one. This could best be seen when one enters the building from Diestsestraat and looks from inside across the courtyard clear through all the building. This image of transparency was present throughout the whole building, nearly resulting in sheer immateriality, pure space ... As Henry van de Velde wrote in 1928: 'All matter evolves to its most immaterial expression. The most essential and indispensable beauty of a work of art is life which manifests itself in its materials'.

The Technical School is a perfect example of a 'rational conception' of architectural form and space which Henry van de Velde continued to employ throughout his work, as a means of creating Beauty. Because it produces necessary perfection, rational conception is a basic precondition for beauty... but not a sufficient condition. 'Beauty consists of two different elements of which one adresses reason, the other sensibility', Van de Velde explains. Sensibility finally transforms rational building into meaningful

architecture. Reasonableness and sensibility: Henry van de Velde's Technical School as a well performing functional organism inside a perfectly conceived construction... but in the end a meaningful space because of colour and light, form and rhythm creating a place of plain poetry that goes without saying... This is why this building had to be preserved and what one has to keep in mind constantly whatever is done with it.

In 1994 a group of architects - with Georges Baines as architect in charge - was asked to design reconversion plans for the former Technical School, to be transformed into a municipal library and archives. Henry van de Velde's building should be given a new functional purpose while preserving or reassessing its essential characteristics and qualities, keeping with its status as listed monument and site. The original entrances from both streets were kept unchanged, as was the auditorium on the first floor above the Diestsestraat entrance, the actual venue of the DOCOMOMO Colour Seminar. Secondary functions with rather limited constructional requirements - administration offices, small technical workshops, a gallery for exhibitions... - were centralised in the Rijschoolstraat wing. Building volumes immediately behind the main street facades could thus be maximally conserved: these parts of the Van de Velde building have been strictly restored into there original perfection.

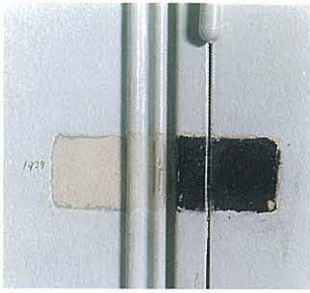
Situation was different as to central core of the building, around the interior courtyard. This is where the functional heart of the actual library and archives building is situated, comprising the book and archive stores (on the ground floor) and the reading rooms (with open bookshelves) on first and second floors. It is here that the use and stability requirements are most stringent and forcefully determine the way to deal with the existing structure and available space. In spatial terms, the new function is perfectly feasible within Vande Velde's skeleton structure, the steel and glass partition walls between the former classes, workshops and corridors originally designed to be removed or replaced according to changing functional needs (what regularly happened during the building's former life as a school building...). The structural concept has been preserved as such, although reconstructed with a better quality reinforced concrete in order to comply with particularly demanding requirements of stability and (future) flexibility. The steel and glass partition walls were radically removed. The skeleton structure of pillars and beams with its clear and regular rhythm of bays divides the now fully open spaces of the library floors, in a kind of virtual way, into an open landscape of rooms and corridors, and also provides the orientation for the placement of library furnishings. The original patios have been retained, though in a slightly modified form. They have been shifted to the first floor, forming an outdoor space for the children's library and a new stairwell, topped by a raised flat roof with sidelight entering all around, as a link between the two floors of the library. The light yellow colouring still emphatically marks the geometry and rhythm of pillars, beams, walls and floors : it varies from almost white to a distinct and warm yellow, depending on the orientation of the surface and on changing daylight from outside. New piping (for ventilation, etc.) is hanging again in view from the ceiling. New steel and glass partition walls create new divisions and are in a different colour - grey - as are the new steel window frames in the outer walls, originally planned by Van de Velde (and to be painted red) but then replaced by cheaper concrete frames.

Constructional clarity and spatial transparency have been preserved in this central part of the building, although somewhat less layered than originally was the case. On the other hand they have been even reinforced at certain crucial points in the building where one should have a global view of the library building, inside and outside at once, namely where one enters the building from both streets. A rearrangement of existing spaces (the creation of a three storeys high exhibition room by covering a patio in the Rijschoolstraat wing) and the construction of new spaces (the double height café 'Van de Velde' as an extension of the Diestsestraat entrance) are not only enabling the old building to fulfill its new purpose in a comfortable way... the old building has simply been given more space to be itself. Form, construction and

function of the new additions are unmistakably new. There is no possibility of confusion with the old building, and more than this, the new architecture - along with the restoration of the streetside wings - in all their modesty makes all the characteristics and qualities visible once more. They even strengthen the visibility of Van de Velde's original concept. A building by Henry van de Velde has been finished again...

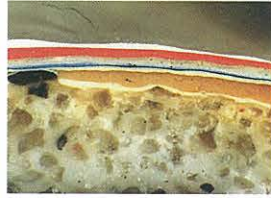
Notes:

- * This article is based on the author's contribution in a book published with the inauguration of the library and archives building : Steven Jacobs, Yves Schoonjans, Jan Van Vaerenbergh, Luc Verpoest, Paul Laes, Steven Massart en Annemie Vandermotte, *Tweebronnen. De reconversie van de Technische School van Henry van de Velde tot Openbare Bibliotheek en Archief van Leuven*, Leuven, 2000. We wish to thank the City of Leuven and the Municipal Library staff for their kind hospitality.
- ** The restoration of the Henry van de Velde building was designed by RITO Architecten, a temporary partnership of *Architectenbureau Georges Baines*, Antwerpen (Georges Baines, Marc Macken and Patrick De Sterck) and *Formanova c.v.*, Leuven (Jan Ketelaer, Elizabeth Iglesias and René Feyfer).



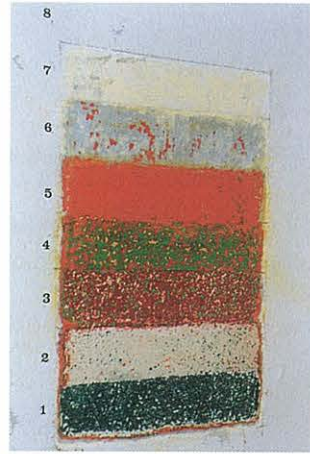
Detail from one of the offices. The over painting has been removed from the wall, door and frame, and thereby exposing the colour scheme from 1939. The white colour of the wall is a standard colour used all over the building. To the white is added a little black and ochre.

(Colours of Copenhagen airport, 1939 by Søren Møller & Ola Wedeburn, p. 74 - p. 77)



A cross section of the colour layer taken from winding stairs in the main hall.

Colours of Copenhagen airport, 1939 by Søren Møller & Ola Wedeburn, p. 74 - p. 77)



The different colour layers have been separated – n°1 is the first colour layer – a bluish green colour, the 'ladder' has been produced on the walls in one of the smaller offices in the section for weather forecast.

(Colours of Copenhagen airport, 1939 by Søren Møller & Ola Wedeburn, p. 74 - p. 77)



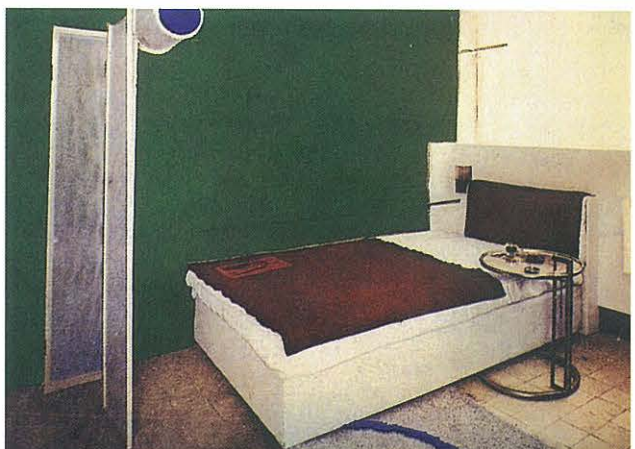
Brimstone butterfly. During the restoration work the yellow colour of office rooms at the airport was matched with the yellow of the brimstone butterfly.

(Colours of Copenhagen airport, 1939 by Søren Møller & Ola Wedeburn, p. 74 - p. 77)



Coloured picture of the big room. Photo: L'Architecture vivante, 1929.

(E 1027 maison en bord de mer, by Renaud Barrès, p. 78 - p. 80)



Coloured picture of the guest room. Photo: L'Architecture vivante, 1929.

(E 1027 maison en bord de mer, by Renaud Barrès, p. 78 - p. 80)



Ciné, dancing, lateral wall after restoration. Photo: D. Gaymard.

(Lay out of the Aubette in Strasbourg by Theo Van Doesburg and its restoration, by Daniel Gaymard, p. 81- p. 85)

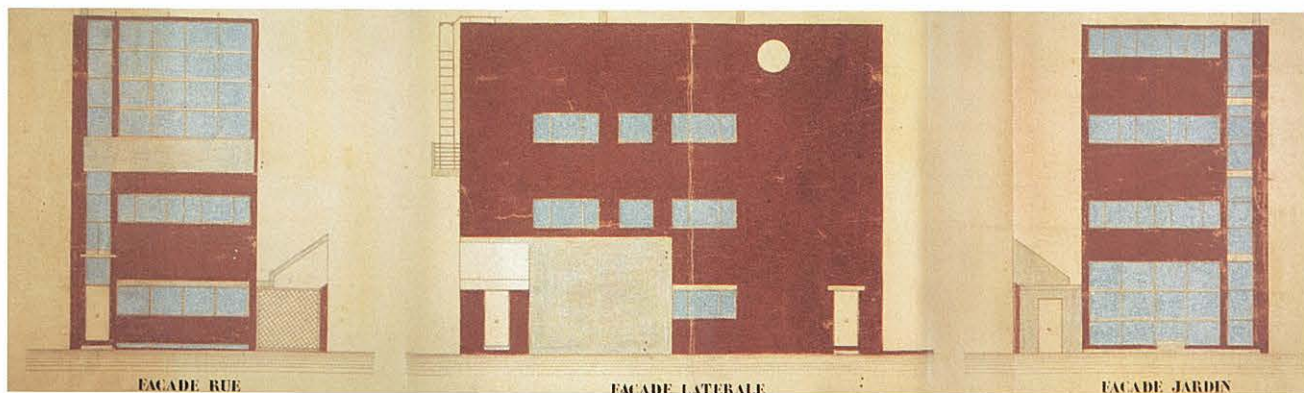


Ciné, dancing, lateral wall after dismantlement of the covering and before restoration. Photo: D. Gaymard.

(Lay out of the Aubette in Strasbourg by Theo Van Doesburg and its restoration, by Daniel Gaymard, p. 81- p. 85)



The hall after restoration - 1987. Photo: Afdeling Monumenten en Landschappen. *(Focus on original finish and colour during restoration of Le Corbusier's Maison Guiette (1926) in Antwerp, by Anne Malliet, p. 86 - p. 89)*



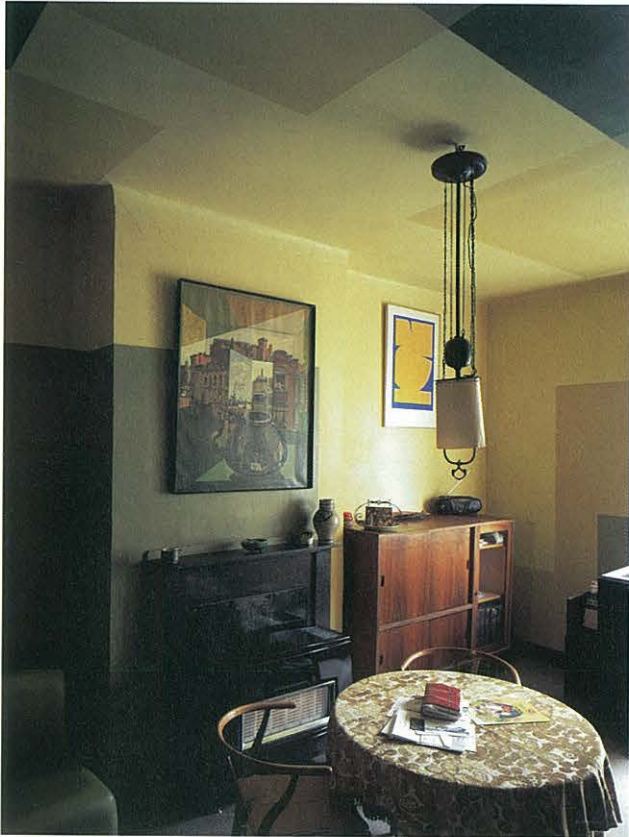
Preliminary colour study by Le Corbusier. Photo: Marc Hotermans. *(Focus on original finish and colour during restoration of Le Corbusier's Maison Guiette (1926) in Antwerp, by Anne Malliet, p. 86 - p. 89)*



The interior while inhabited by the Guiette family. Photo: coll. Georges Baines.
(Focus on original finish and colour during resto-ration of Le Corbusier's Maison Guiette (1926) in Antwerp, by Anne Malliet, p. 86 - p. 89)



The living room before restoration. Photo Marjan Buyle, Monumenten & Landschappen.
(Living in a painting, by Marjan Buyle, p. 90 - p. 91)



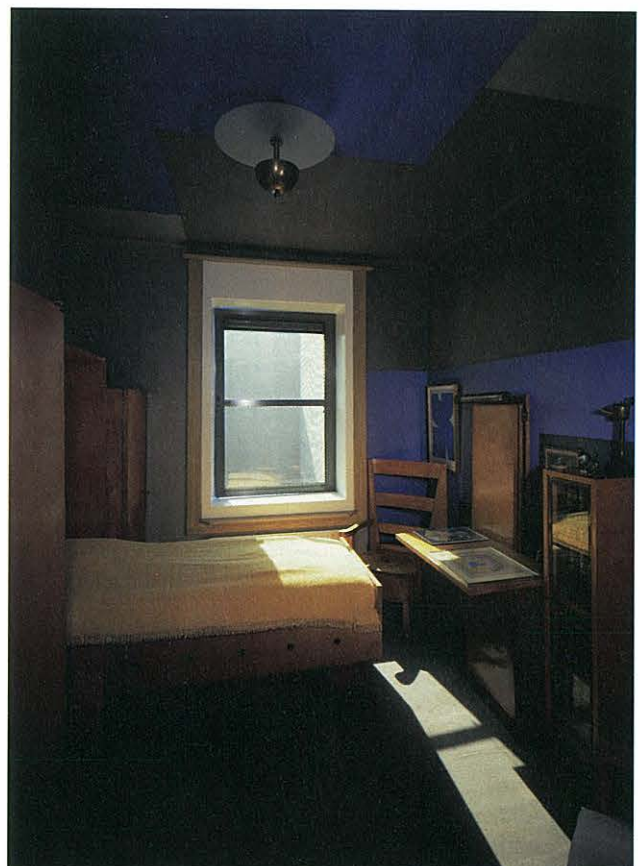
The living room with a painting by Stemming above the chimney breast. Photo Oswald Pauwels, Monumenten & Landschappen.
(Living in a painting, by Marjan Buyle, p. 90 - p. 91)



The studio in the corner room with two lino-cuts above the cupboard and a portrait (1914) of Peeters' wife above the chimney breast. At the right a pen drawing of his good friend Michel Seuphor. Photo Oswald Pauwels, Monumenten & Landschappen.
(Living in a painting, by Marjan Buyle, p. 90 - p. 91)



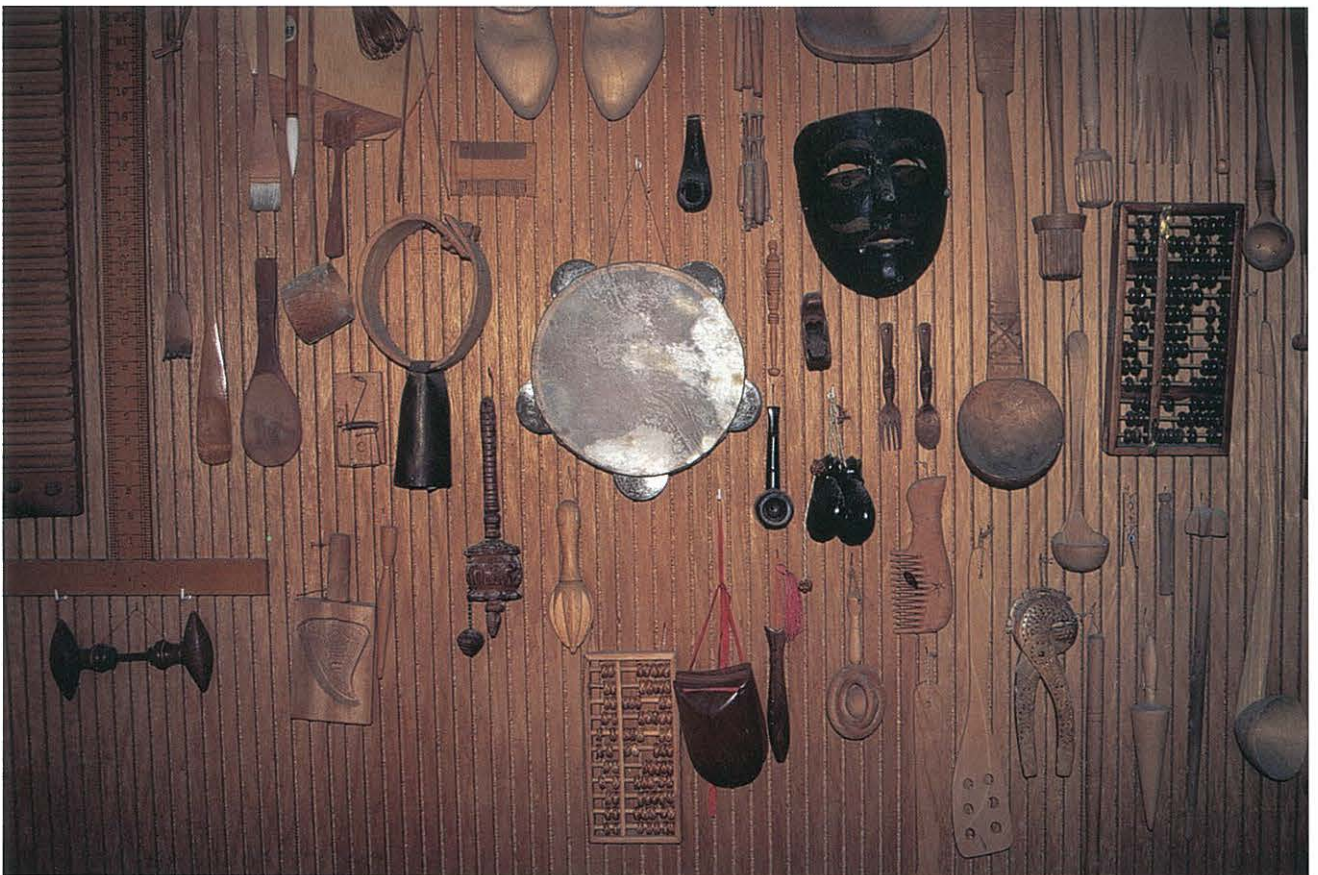
The bedroom before restoration. Photo Marjan Buyle, Monumenten & Landschappen.
(Living in a painting, by Marjan Buyle, p. 90 - p. 91)



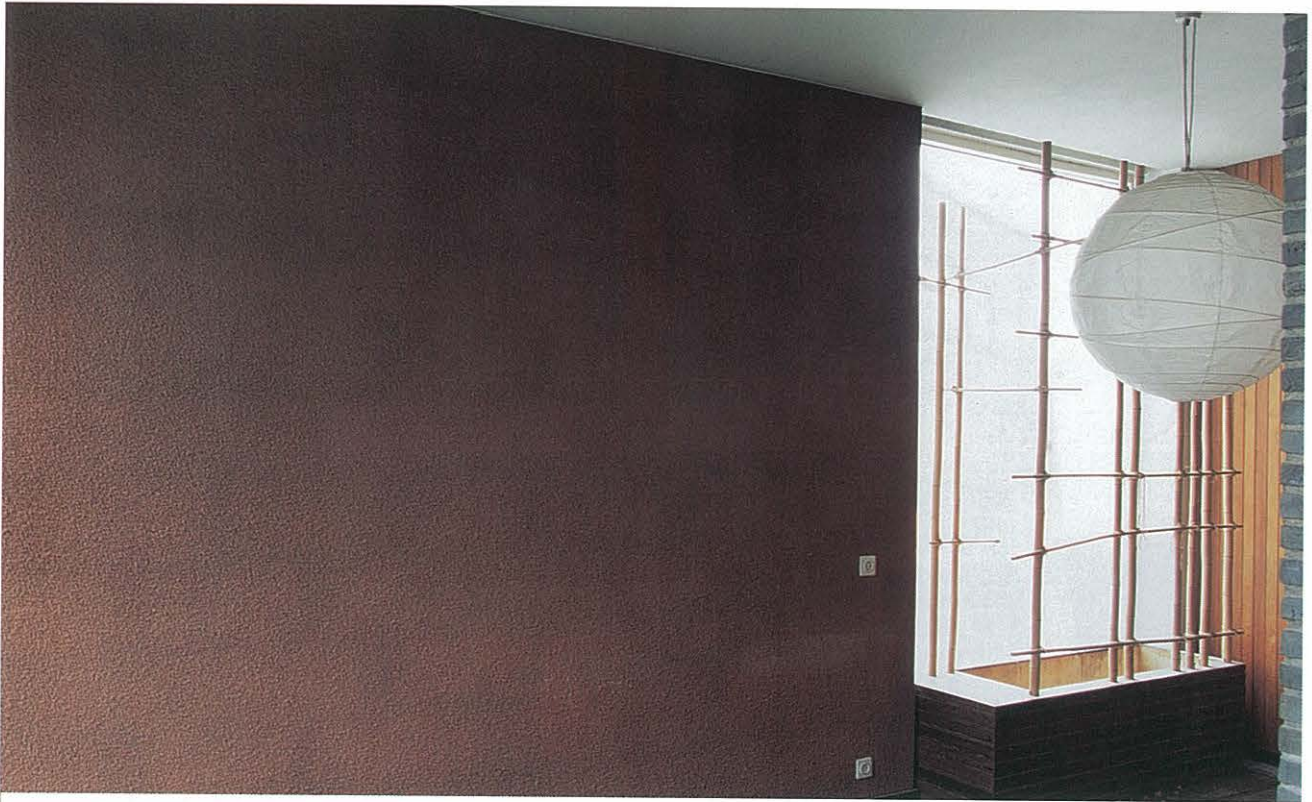
The bedroom after restoration. Photo Oswald Pauwels, Monumenten & Landschappen.
(Living in a painting, by Marjan Buyle, p. 90 - p. 91)



Living room, view on the south side: a large window section is combined with light, bright colours. In the corner the mustard-coloured 'Poltrona P40' by Osvaldo Borsani. (*The Renaat Braem house (1958)*, by Jo Braeken & Tom Lenaerts, p. 92 - p. 94)



The study is equipped with wooden panels which serve as an exhibition wall for utensils and curiosities in organic materials. Just like the colours of paint and the materials used, these objects have a symbolic and in fact functional role in the architecture of the house. (*The Renaat Braem house (1958)*, by Jo Braeken & Tom Lenaerts, p. 92 - p. 94)



Functional spaces such as the kitchen, garage or storeroom were painted in primary colours.
(The Renaat Braem house (1958), by Jo Braeken & Tom Lenaerts, p. 92 - p. 94)



The staircase is equipped with a shaft for utilities. Every colour corresponds with a certain function.
(The Renaat Braem house (1958), by Jo Braeken & Tom Lenaerts, p. 92 - p. 94)



Living room on the north side: deep, warm earth tones, dark brick and different types of wood predominate, contributing, together with the fireplace, to the intimate atmosphere of this room.
(The Renaat Braem house (1958), by Jo Braeken & Tom Lenaerts, p. 92 - p. 94)



Hove, Villa Marstboom of 1925, 1998. Photo: M. Debruyne. **(Colour on plaster and framework, by Mimi Debruyne, p. 95 - p. 97)**



a. new standard plasterwork executed in an ordinary mechanical spray technique; right: original plasterwork (1st. phase). Photo: M. Debruyne.

b. sample of new plasterwork, mainly based on chalk and sand and executed in an appropriate mechanical spray technique; right: original plasterwork (1st. phase) Photo: M. Debruyne.

(Colour on plaster and framework, by Mimi Debruyne, p. 95 - p. 97)

Deurne, Unitas Quarter 2001: Adelbert Kenis Square 10, after renovation of the façade in one of the prescribed colour sets on newly executed plasterwork and framework.

Photo: M. Debruyne.

(Colour on plaster and framework, by Mimi Debruyne, p. 95 - p. 97)



1924/25: 1st. phase. Photo: M. Debruyne.



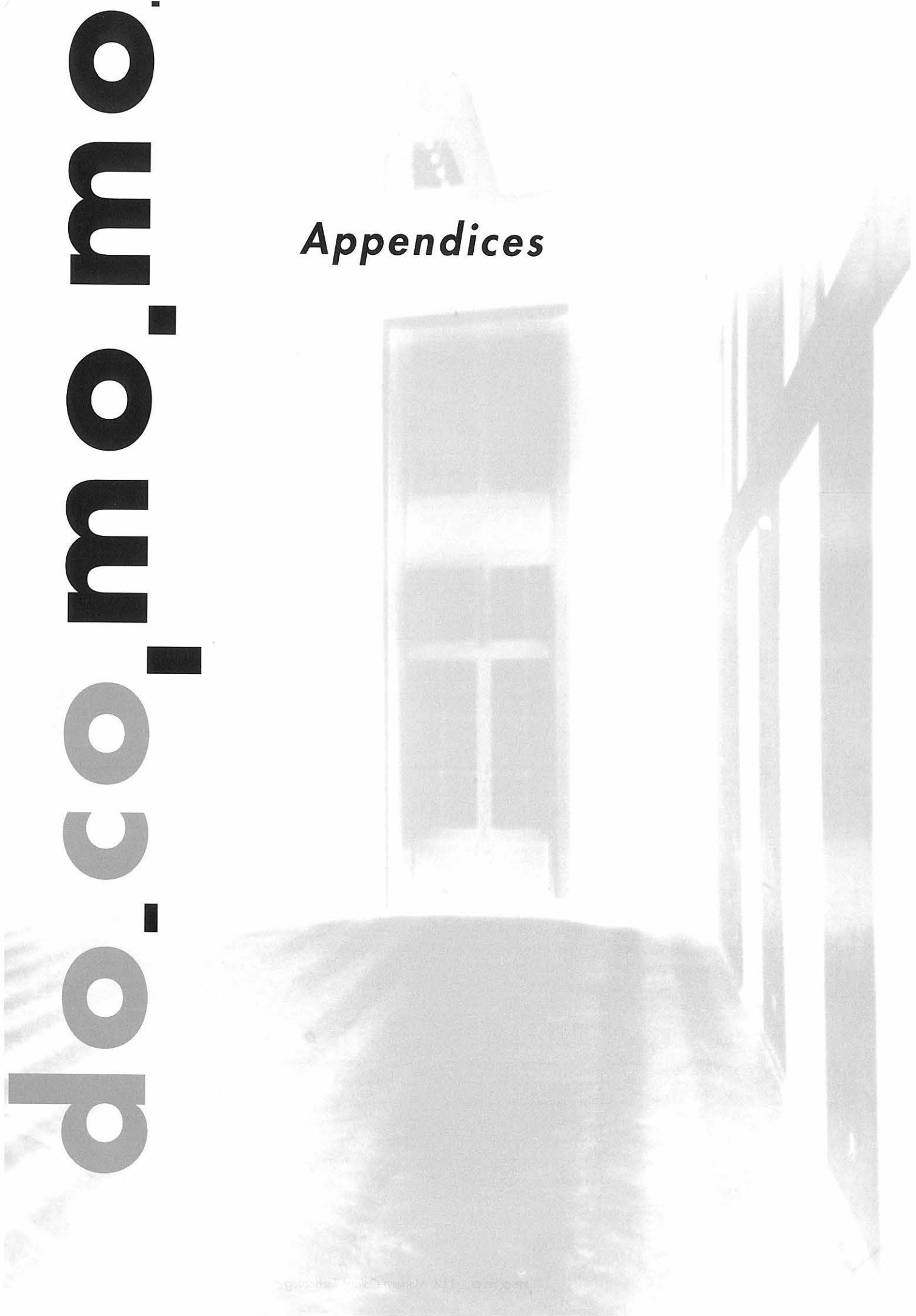
1926/27: 2nd. phase. Photo: M. Debruyne.



1929/30: 3rd. phase. Photo: M. Debruyne.

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Appendices



Program

INTERNATIONAL SEMINAR DAY May 12, 2000, Leuven, Belgium

- | | |
|--|--|
| 8.30 Reception | 12.30 Lunch |
| 9.00 Opening
<i>Wessel de Jonge, Luc Verpoest</i> | 14.00 Colour conservation technology
- Vilhelm Lauritzen's terminal at Kastrup Airport, Copenhagen
<i>Søren Møller</i> |
| 9.20 Colour concepts and colour scales in Modernism
<i>Arthur Ruëgg</i> | 14.20 The reproduction of historical colours with modern paints
<i>Marc Deviaene</i> |
| 9.50 Colouring the architecture of Adolf Loos
<i>Burkhardt Rukschcio</i> | 14.40 Coffee |
| 10.10 Die Farbe als gleichwertiges Gestaltungs-mittel im Siedlungsbau der 20er Jahre - Bruno Taut in Berlin & Maagdenburg
<i>Winfried Brenne</i> | 15.10 E 1027 maison en bord de mer - Eileen Gray's colour applications
<i>Renaud Barrès</i> |
| 10.30 Coffee | 15.30 L'Aubette à Strasbourg - Les décors intérieurs de Theo Van Doesburg, Sophie Taeuber-Arp, Jean Arp
<i>Daniel Gaymard</i> |
| 11.00 Colours in Russian Modern Movement architecture
<i>Ekaterina Shorban</i> | 15.50 Approaching the Hinnerk Scheper's Bauhaus-Dessau colour schemes
<i>Ruggero Tropeano</i> |
| 11.20 Polychrome or monochrome? - Ethics of authenticity and reconstruction
<i>Ulrika Hübinette</i> | 16.10 Discussion |
| 11.40 The colours of the Van Nelle Factory - Patron and architects
<i>Mariël Polman</i> | 17.00 Drink |
| 12.00 Discussion | |

BELGIAN CASE STUDY DAY

May 13, 2000, Deurne, Belgium

- | | |
|---|--|
| <p>9.30 Reception and coffee</p> <p>10.00 Opening morning session
<i>Marcel Celis Art historian, Afdeling Monumenten en Landschappen</i></p> <p>10.15 Modernism and colour, a problem with source material
<i>Veerle De Houwer Art historian, KUL</i></p> <p>10.40 Restorations: Huis Guiette (1926), Le Corbusier; Residentie Elsdonck (1933), Léon Stynen
<i>Anne Malliet Architect, Afdeling Monumenten en Landschappen, Antwerp Office</i></p> <p>11.10 Painted apartment of Jozef Peeters (1924)
<i>Marjan Buyle Art historian, conservator-restorer, Afdeling Monumenten en Landschappen, Conservation Team</i></p> <p>11.40 Guided tour in the Koninklijk Atheneum Deurne, secondary school (1936), Eduard Van Steenberghe</p> <p>12.30 Lunch</p> | <p>14.15 Opening afternoon session
<i>Jo Braeken Art historian, Afdeling Monumenten en Landschappen, Documentation Centre</i></p> <p>14.20 Woning De Beir in Knokke (1924), Huib Hoste
<i>Veerle Meul Art historian, Afdeling Monumenten en Landschappen, Brugge Office</i></p> <p>14.40 Form, colour and leaded light
<i>Emmanuelle Groenen Art historian</i></p> <p>15.00 Woning Léon Stynen (1933) in Antwerpen
<i>Willem Van Zadelhoff publicist, occupant of the woning Léon Stynen</i></p> <p>15.30 Coffee</p> <p>16.00 Unitas tuinwijk, garden city in Deurne, (1923-1932), Eduard Van Steenberghe
<i>Mimi De Bruyn Art historian, building history</i></p> <p>16.30 Introduction to the excursion day - Woning Braem (1958)
<i>Jo Braeken - Tom Lenaerts Art historians, Afdeling Monumenten en Landschappen, Documentation Centre</i></p> |
|---|--|

EXCURSION DAY

May 14, 2000, Antwerpen, Belgium

- | | |
|---|---|
| <p>9.30 Starting point: Main entrance Berchem station (Antwerpen)</p> <p>Unitas tuinwijk (1923-1932), Eduard Van Steenberghe
<i>Mimi De Bruyn</i></p> <p>Woning Renaat Braem (1958)
<i>Jo Braeken</i></p> <p>Apartment Jozef Peeters (1924)
<i>Conservation Team, Afdeling Monumenten en Landschappen: Marjan Buyle, Els Jacobs, Philippe Schurmans</i></p> <p>Woning Léon Stynen (1933)
<i>Willem Van Zadelhoff</i></p> <p>Woning Eduard Van Steenberghe (1932)
<i>Anne Malliet</i></p> | <p>12.00 Lunch</p> <p>14.00 Continuation of the excursion</p> <p>17.00 End of the programme:
Berchem (Antwerpen) station</p> |
|---|---|

Resume of authors

Renaud Barrès is architect and the author of the book *E 1027, essai d'une théorie de restauration active du patrimoine Moderne et contemporain*. In collaboration with M. Gatier, he is in charge of the safe-keeping of E 1027 for the City of Roquebrune Cap Martin. He is currently making a study on the work of Bernard Zehruss.

Marjan Buyle studied history of art at the *Katholieke Universiteit Leuven* and learned how to restore wall paintings at the *Università Internazionale dell'Arte in Florence* (Italy) and at the *Koninklijk Instituut voor het Kunstpatrimonium (KIK-IRPA)* in Brussels. Since 1975 she is attached to the heritage department of the *Ministerie van de Vlaamse Gemeenschap* as interiors and art treasures inspector and as chairwoman of the conservation team.

Jo Braeken studied history of art and archaeology at the *Rijksuniversiteit Gent*. Since 1980 he is attached to the heritage department of the *Ministerie van de Vlaamse Gemeenschap* as heritage consultant of the information centre.

Winfried Brenne studied architecture in Wuppertal and Berlin. He is a practising architect since 1978 focusing on *Siedlungsbau*, ecological building, preservation, conservation and reconversion projects. From 1990 till 1992 he taught at the TFH Berlin. He is a member of the *Landesdenkmalrat Berlin*, the German DOCOMOMO Working party and the *Stiftung Denkmalschutz Berlin*.

Els Claessens is architect and Master in the Conservation of historic towns and buildings. She is a practicing architect, partly in her own office in Brussels, partly in the Robbrecht en Daem office in Ghent. From 1997 till 2000 she was part-time researcher on the project *Monumentenzorg Moderne Architectuur* at the *Katholieke Universiteit Leuven*. She has been secretary of the DOCOMOMO International Specialist Committee on Technology since 1998.

Mimi Debruyn is an art historian with post graduates in Cultural Studies and in Cultural Heritage. As researcher she has a special interest in in depth studies of historic urban sites and buildings and their relation to their present day and future functioning. Her research deals with a wide spectrum of periods and styles. Main studies are the sites of the Royal Academy (forthcoming) and the former Royal Palace of Antwerp. She is a member of the Royal Commission of Monuments and Sites.

Veerle De Houwer studied art history at the *Rijksuniversiteit Gent* (1996). She also obtained a

specialist degree in the Conservation of historic towns and buildings. From 1998 till 2000 she has been working for a firm specialised in the conservation of church interiors. In 2000 she started working at the *Katholieke Universiteit Leuven* for the 'Study and Revaluation of Architecture and Atelier Archives' research project. The project was set up to investigate the specific problems of 'architects and artists' archives preservation, with the archives of Huib Hoste (1881-1957) and of the renowned conservation specialist Raymond Lemaire (1921-1997) as test cases.

Wessel de Jonge is an architect in Rotterdam, The Netherlands, and has been in charge of the restoration of several prominent modern buildings. He is a researcher at the Delft University of Technology, specialised in restoration technology for modern structures. He is the secretary and co-founder of DOCOMOMO International and the former chairman of their Specialist Committee on Technology.

Marc Deviaene is chemical engineer and public relations manager for Akzo Nobel Decorative Coatings in Belgium.

Daniel Gaymard is since 1974 *Architecte en Chef des Monuments Historiques* in France. In that capacity he is responsible for the restoration of the building and interiors of l'Aubette.

Ulrika Hübinette is visiting scholar at Columbia University in New York and at the Institute of Conservation in Göteborg. She attended several seminars and assisted in various projects dealing with the conservation and restoration of architectural paint.

Marieke Kuipers is an architectural historian with the *Rijksdienst voor de Monumentenzorg (RDMZ)* in Zeist since 1977, where she has been involved with the inventory, selection, protection and conservation of the 'younger heritage' (1850-1940); she has specialised in the heritage of the Modern Movement and the introduction of concrete in housing. At present, she works on the first overview of postwar heritage for the RDMZ, to be published November 2002. Since 2000 she is also professor in Cultural heritage at *Universiteit Maastricht*. Since 1994 she is the secretary of the DOCOMOMO International Specialist Committee on Registers.

Tom Lenaerts studied history of art and archaeology at the *Rijksuniversiteit Gent*. Since 1994 he is attached to the heritage department of the *Ministerie van de Vlaamse Gemeenschap* as heritage consultant of the information centre.

Anne Malliet is an architect and since 1983 has worked in Antwerp as an inspector for the preservation of monuments in the *Afdeling Monumenten en Landschappen*. She is on the editorial board of the journal 'Monumenten & Landschappen' and of the 'Flanders Architectural Yearbook'.

Søren Møller is conservator at the Danish National Museum, Department of Conservation and part-time lecturer at the Danish Royal Academy of Fine Arts, School of Conservation.

Mariël Polman is architect and specialist in architectural paint- and colour-research. Since 1995 she has her own office for architectural paint- and colour-research of monuments, specialised in Modern Movement buildings (e.g. by Duiker, Wiebenga, Dudok and Rietveld). She is a specialist for paint research with the *Rijksdienst voor de Monumentenzorg* (RDMZ) in Zeist and she has been member of the DOCOMOMO International Specialist Committee on Technology since 1998.

Arthur Rüegg studied under Bernhard Hoesli and Alfred Roth at the ETH Zürich. He is a practising architect in Zürich since 1971 and in that capacity responsible for residential and public buildings as well as restorations (Neubühl, Doldertal Flats) and additions. He has various teaching positions, such as professor at the ETH Zürich. He publishes extensively on recent Swiss architecture and on construction, colour and design in the Modern Movement, especially on Sigfried Giedion's *Wohnbedarf* and on Le Corbusier (*editor of Le Corbusier - Polychromie architecturale*).

Burkhardt Rukschcio is lecturing studies of architecture and history of art and archaeology in France. As an architect he is responsible for the restoration of the major part of Adolf Loos' oeuvre. From 1993 till 1996 he taught restoration of modern architecture in Prague.

Ekaterina Shorban is art historian and is working in the General Inventory of Architectural Monuments of Russia. In that capacity she is responsible for the late nineteenth and twentieth-century architecture. She made a dissertation on the criteria for listing twentieth-century buildings.

Luc Verpoest is civil engineer-architect (*Katholieke Universiteit Leuven*, 1968) and doctor in the applied sciences (*KU Leuven*, 1984). He is teaching 20th-century architectural history and history and theory of conservation at the *KU Leuven*, c.q. at the postgraduate program of the Raymond Lemaire International Centre for Conservation. As a researcher he is specialised in 19th century Gothic Revival architecture, 1930's Modern architecture in Belgium and the history of conservation. He is a member of the

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Ola Wedebrunn is an architect maa finishing his phd thesis on 'Character and Language of Materials'. He is working as an assisting professor, teaching and researching at the Royal Danish Academy of Fine Arts in Copenhagen. He has published several books and articles on Modern Movement architecture and he is the editor of the book 'DOCOMOMO Scandinavia. Vision and Reality'. Since 1998 he holds the chair of the DOCOMOMO International Specialist Committee on Technology.

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An obstinate misunderstanding exists that allows Modern Movement architecture to be known predominately as an architecture of white walls.

However, colour forms in many buildings an integral part of the design and plays a prominent role. Well-studied shades of colour and specially chosen surface textures refute a reductive or too limited conception of MoMo architecture.

The question how to deal with the 'historic' colours of the Moderns has become just recently an issue of its own when restoration or re-use are considered.

The 5th DOCOMOMO technology seminar was dedicated to the restoration of colour applications in the Modern Movement architecture.

As in previous DOCOMOMO seminars, the discussion focused on the ethics of restoration as well as on the need to exchange our growing knowledge on the application of colours. This exchange is necessary not only between architects, historians and colour experts, but also between designers and building and paint industries.

The DOCOMOMO International Specialist Committee on Technology (ISC/T) focuses on Modern Movement building technology, and aims at developing appropriate conservation and restoration techniques for Modern Movement architecture. The 'Modern Colour Technology' seminar in Leuven, of which this publication is the result, consisted of contributions by international experts; analysing the use of colour and colour theories in Modern Movement architecture, and presenting a series of case studies on the technical and scientific aspects of colour restoration.

The DOCOMOMO seminar was linked to the seminar of the heritage department of the *Ministerie van de Vlaamse Gemeenschap*, to draw international attention to recent Belgian research and restoration projects. A selection of the Belgian case-studies are included in this dossier.

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ISBN: 90-805702-2-2