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# COLOUR

Documents of Contemporary Art

## Josef Albers
## Interaction of Colour//1963

### Harmony

Colour systems usually lead to the conclusion that certain constellations within a system provide colour harmony. They indicate that this is mainly the aim and the end of colour combination, of colour juxtaposition.

As harmony and harmonizing is also a concern of music, so a parallelism of effect between tone combinations and colour combinations seems unavoidable and appropriate. Although a comparison of composed colours with composed tones is very challenging, it should be mentioned that, while it can be helpful, it is often misleading. This is because different basic conditions of these media result in different behaviour.

Tones appear placed and directed predominantly in time from *before* to *now* to *later*. Their juxtaposition in a musical composition is perceived within a prescribed sequence only. Vertically, so to say, one tone, or several simultaneously, sound for a varying but restricted length of time. Horizontally, the tones follow each other, perhaps not in a straight line, but of necessity in a prescribed order and only in one direction – forwards. Tones heard earlier fade, and those farther back disappear, vanish. We do not hear them backwards.

Colours appear connected predominantly in space. Therefore, as constellations they can be seen in any direction and at any speed. And as they remain, we can return to them repeatedly and in many ways.

This remaining and not remaining, or vanishing and not vanishing, shows only one essential difference between the fields of tone and colour.

The accuracy of perception in one field is matched by the durability of retention in the other, demonstrating a curious reversal in visual and auditory memory.

Tone juxtapositions can be defined by their acoustical relationship and thus measured precisely by wave length.

Consequently, a graphic registration of tones in musical composition has been developed.

Colour, also, can be measured, at least to some extent, and particularly so when it is presented as direct colour – as the physicist registers it, by optical wave length.

Reflected colour, however, coming from paint and pigment – our main medium – is much more difficult to define.



When analysed with an electrical spectrograph reflected colour shows that it contains all visible wave lengths. Therefore, any reflected colour – not just white – consists of all other colours. [...]

Colour, when practically applied, not only appears in uncountable shades and tints, but is additionally characterized by shape and size, by recurrence and placement, and so on, of which particularly shape and size are not directly applicable to tones.

All this may signify why any colour composition naturally defies such diagrammatic registration as notation in music and choreography in dance.

With regard to constellation, tone intervals, such as third, fifth, and octave, differentiate exact vertical distance. We say 'vertical' probably because tones are described as low and high. Slide deflections (aberrations), such as in flat and sharp, remain equally precise. Colour terms which could be considered parallel to tone intervals are complementaries, split complementaries, triads, tetrads and octads. Though these characterize distance and constellation within colour systems, their deflections, such as incomplete triads and incomplete tetrads, indicate that their measure is only arbitrary.

Significantly, complementaries, though they are the basic colour contrast or interval, are topographically quite vague.

In principle, a complementary is a colour accompanied by its after-image.

However, the complement of a specific colour, when placed in different systems, will look different.

Similarly, a triad or tetrad of one system will hardly fit into another system.

Usually, illustrations of harmonic colour constellations which derive from authoritative systems look pleasant, beautiful, and thus convincing. But it should not be overlooked that they are usually presented in a most theoretical and least practicable manner, because normally all harmony members appear in the same quantity and the same shape, as well as in the same number (just once) and sometimes even in similar light intensity. Such outer equalization may unify them, but at the expense of the more important inner relatedness – namely, as colour only.

When applied in practice, these harmony sets appear changed. In addition to quantity, form and recurrence, wider aspects exert still more changing influences. These are:

> Changed and changing light – and, even worse, several simultaneous lights; reflection of lights and of colours; direction and sequence of reading; presentation in varying materials; constant or altering juxtaposition of related and unrelated objects.

With these and other visual displacements, it should not be a surprise that the sympathetic effect of the original 'ideal' colour combination often appears changed, lost, and reversed.

Observe the interior and exterior, the furniture and textile decoration following such colour schemes, as well as commercialized colour 'suggestions' for innumerable do-it-yourselves.

Our conclusion: we may forget for a while those rules of thumb of complementaries, whether complete or 'split', and of triads and tetrads as well. They are worn out.

Second, no mechanical colour system is flexible enough to precalculate the manifold changing factors, as named before, in a single prescribed recipe.

Good painting, good colouring, is comparable to good cooking. Even a good cooking recipe demands tasting and repeated tasting while it is being followed. And the best tasting still depends on a cook with taste.

By giving up preference for harmony, we accept dissonance to be as desirable as consonance.

In searching for new colour organization – colour design – we have come to think that quantity, intensity or weight, as principles of study, can lead similarly to illusions, to new relationships, to different measurements, to other systems, as do transparence, space and intersection. Besides a balance through colour harmony, which is comparable to symmetry, there is equilibrium possible between colour tensions, related to a more dynamic asymmetry.

Again: knowledge and its application is not our aim; instead, it is flexible imagination, discovery, invention – taste.

With this study of colour effects, that is, of colour deception, a special interest in quantity – amount as well as recurrence – has developed.

Josef Albers, extract from *Interaction of Colour* (New Haven: Yale University Press, 1963) 39–43.



## Helen Frankenthaler
## Interview with Henry Geldzahler//1965

*Henry Geldzahler* Was there any postwar European painting you were interested in?

*Helen Frankenthaler* Miró. Matisse. But more Miró. As I've said I've been touched, in the work of Miró and Pollock, by a Surrealist – by Surrealist I mean 'associative' – quality. It's what comes through in association after your eye has experienced the surface as a great picture; it is incidental but can be enriching.

Gorky too has affected me this way, but in Gorky, though it fascinated me, it often got in my way. I was too much aware of, let's say, what read as sex organs arranged in a room.

I liked the big 1961 Miró *Blue II* in the Guggenheim show several years ago very much. He often has that thing I respond to in Pollock. It's the role that the image plays; in a sense it is totally irrelevant to the aesthetics of a work of art, but in another sense it adds a profound dimension, as certain webs of Pollock's became decipherable characters.

It isn't the image that makes it work for me, it is that they are great abstract pictures. I leave it out of my own pictures more and more as I become increasingly involved with colours and shapes. But it is still there.

*Geldzahler* How do you name your pictures?

*Frankenthaler* I'm very poor at naming them. I don't like numbers because I don't remember them. The only number I've ever remembered is Pollock's *No. 14*, which to me has a sort of 'fox in the woods' in it. I usually name them after an image that seems to come out of the pictures, like *Blue Territory*, or I look and see *Scattered Shapes*, or *Red Burden*. I don't like sentimental titles. A picture like *Small's Paradise* had a Persian shape in it; also I'd been to that night club recently. One names a picture in order to refer to it. In 1951 I did a picture called *Ed Winston's Tropical Gardens*. It was a juke box bar on 8th Street, filled with celluloid palm trees and five-and-ten-cent store Hawaiian décor. The painting is 18 feet long. I had the memory of the place and did a sunny green and yellow landscape. It's more difficult to title more abstract pictures.

*Geldzaher* Do you start your pictures with a plan or look in mind?

We have then a system of cultural units (lightness, darkness, wetness, dryness ) which are expressed by four fundamental colours; these colours are, in turn, four cultural units expressed by four linguistic terms. This double organization of the content depends, as does any such organization, on a system of disjunctions: it represents a structure. Just as a 'mouse', within a semantic space concerning rodents, is everything which is not a 'rat', and vice versa, so the pertinent content space of malatuy is determined by its northern borderline beyond which there is *marara*, and its southern borderline, below which there is *mabi:ru*.

Geopolitically speaking, Holland is a negative concept: it is the class of all points adjacent to, but not, Germany, Belgium or the North Sea. The same principle holds for all other geopolitical expressions such as Germany or Italy or the Soviet Union. In any system, whether geopolitical or chromatic or lexical, units are defined not in themselves but in terms of opposition and position in relation to other units. There can be no units without a system. The different ways in which cultures make the continuum of colours pertinent, thereby categorizing and identifying hues or chromatic units, correspond to different content systems. This semiotic phenomenon is not independent of perception and discrimination ability; it interacts with these phenomena and frequently overwhelms them. [...]

At this point we can probably tackle Aulus Gellius' puzzle. Rome, in the second century A.D., was a very crowded crossroads of many cultures. The Empire controlled Europe from Spain to the Rhine, from England to North Africa and the Middle East. All these cultures, with their own chromatic sensitivities, were present in the Roman crucible. Diachronically speaking, Aulus Gellius was trying to put together the codes of at least two centuries of Latin literature and, synchronically speaking, the codes of different non-Latin cultures. Gellius must have been considering diverse and possibly contrasting cultural segmentations of the chromatic field. This would explain the contradictions in his analysis and the chromatic uneasiness felt by the modern reader. His colour-show is not a coherent one: we seem to be watching a flickering TV screen, with something wrong in the electronic circuits, where tints mix up and the same face shifts, in the space of a few seconds, from yellow to orange or green. Determined by his cultural information, Gellius cannot trust to his personal perceptions, if any, and appears eager to see gold as red as fire, and saffron as yellow as the greenish shade of a blue horse. [...]

1 James Gibson, *The Senses Considered as Perceptual Systems* (London: Allen & Unwin, 1968).
2 Johannes Itten, *Kunst der Farbe* (Ravensburg: Otto Mair, 1961).
3 Arthur Linksz, *Physiology of the Eye* (New York: Grune & Stratton, 1952) vol. 2.
4 Marshal Sahlins, 'Colours and Their Cultures', *Semiotics*, vol. 15, no. 1 (1975) 1; 22.



5 [footnote 7 in source] A. Maerz and R. Paul, *A Dictionary of Colour* (New York: Crowell, 1953).
6 [8] E.L. Thorndike and I. Lorge, *The Teacher's Word Book of 30,000 Words* (New York: Columbia University Press, 1962).
7 [9] David and Rose Katz, *Handbuch der Psychologie* (Basel: Schwabe, 1960) vol. 2.
8 [10] Harold C. Conklin, 'Hanunóo Colour Categories', *Southwestern Journal of Anthropology*, vol. II (1955) 339–44.
9 [11] Ibid., 341–2.
10 [12] Ibid., 342.

Umberto Eco, extracts from 'How Culture Conditions the Colours We See' (1985) in *On Signs*, ed. Marshall Blonsky (London: Basil Blackwell, 1985) 157–60; 167–71.

## C.L. Hardin
## Colour for Philosophers//1988

[...] What is it about colours that seems to obstruct our understanding? They are given to visual experience along with shapes, yet we have no similar difficulties with shapes. A crucial difference seems to be that the essential character of shapes is amenable to mathematical representation, but the essential nature of colours resists it; the one appears quantitative, the other qualitative. Shapes are given to more than one sense, and we are much inclined to suppose that the only sort of characteristics that can be accessible to more than one sensory mode are those which bear a *structure*. The study of structures is, of course, the special province of that form of discursive thinking par excellence, mathematics. And, it goes without saying, everything mathematizable is a proper object of scientific study.

Colours, on the other hand, have a brute factuality about them. From Locke and Hume to Moore and Russell, they have been taken to be the paradigmatic instances of simple unanalysable qualities. But the supposed unanalysability of colours, obvious though it has seemed to many reflective people, does not coexist comfortably with the equally apparent 'internal relatedness' of colours, whereby they exclude – yet intimately involve – each other. There is no variation of magnitude, intensive or extensive, that connects every colour with every other colour. And yet colours are as systematically related to each other as are lengths or degrees of temperature. Red bears on its face no reference to the character of green. Yet red categorically excludes green while at the very same time resembling it in an incommensurably closer fashion than the resemblance

of either red or green to any shape or sound. Furthermore, we can always find a place among the hues for a Humean 'missing shade of blue'; but could there also be a place there for a quality that is neither bluish, nor reddish, nor greenish, nor yellowish, but resembles blue, red, green and yellow as much as they resemble one another? We may reply that there cannot, since the hue circle is closed; there is no 'logical space' for a radically novel hue. But how, given the simple unanalysable character of each of the determinate hues, can we proceed to justify such an answer?

One way of getting clearer about the nature of colours and the relations they bear to each other would be to show that colour, like heat, could be subsumed under some wider set of phenomena through which it might be explicated. Because we understand heat to be random kinetic energy, we can liberate it from conceptual bondage to our feelings of warmth and coolness, find new ways to measure it, explain the thermal behaviour of bodies by appealing to their micro-structure, and appreciate the role of heat in physical, chemical and biological processes far removed from the domain of human sensation. And so, if colour proves to be some complex set of physical properties that underlie the dispositions of bodies to reflect visible light in such and such a way, we shall be able to study colour independently of the idiosyncrasies of our visual systems. Our limited epistemic access to colours would not then betoken an ontological isolation of colours from the general order of physical processes. According to this view, once colours can be properly identified with, or nomically related to, some congeries of material properties, those properties should give us the clue to the nature of the relations colours bear to each other as well as provide us with additional means of making epistemic contact with them. We might suppose that the advocates of such a chromatic materialism would appeal to the best scientific work to spell out the locus of colours in the material world and how we perceive them and would then go on to explicate the network of chromatic 'internal relations' by means of an appropriate set of material relations. But this expectation has been largely disappointed. Materialists' writing about colours has been more often directed to polemic or programme or pronouncing oaths of fealty to a scientific world view than to delivering the actual scientific goods and putting them to philosophical work.

Those who are unpersuaded by chromatic materialism accept the conceptual insularity of the domain of colours. Colours, they say, are proprietary to sight alone; the quality of a colour is, by the nature of the case, inconceivable to even the most sensitive and intellectually gifted of the congenitally blind. So the only way to understand colours is to examine in detail how the members of the chromatic family relate to one another and to study the empirical conditions under which coloured objects appear to the senses. This mode of investigating



the problem is suitable to phenomenalists and epiphenomenalists alike, and one might have expected that at least some of them, along with those who label themselves phenomenologists, would have engaged in a thorough inquiry into the phenomenology of colour, or at least have attended to the writings of the scientists and artists who do. All the more surprising, then, to find that there seems to be so little concern in these quarters for patiently uncovering and spelling out the detailed phenomenal facts of chromatic structure. For instance, a recent writer (McGinn, 1980) finds objectivist accounts of colour wanting, insists that the explanation for some puzzling chromatic relationships is that they depend upon 'a rich system of phenomenal laws', and then neglects to tell us what those laws are.

So those who urge the phenomenal nature of colours don't do much of the phenomenology, and the 'scientific' materialists don't pay much attention to the science. Conceptual analysis and ingenious argument carry the freight, and the data base is pretty nearly that which was available to John Locke. The result is not only that the issue of the ontological status of colours is about where it was in the eighteenth century, but that questions about the resemblances and exclusions of colours are at a dead end. Beyond that, the general understanding of how colour experience relates to colour language is mired in confusion.

What does science have to say to philosophy about colours? In fact, a great deal. But philosophers have not supposed so, perhaps in part for reasons of simple cultural lag: the science they have looked at is twenty-five years out of date. In the eyes of the scientifically literate public, colour science has never had the panache of theoretical physics or molecular biology, and few scientists outside the field realize that it underwent a theoretical revolution more than a generation ago, when the opponent-process theory became established. Opponent-process theory is to the study of colour vision what the theory of continental drift is to geology. In both fields, a great deal of solid and lasting work was done before those theories became established, and, in both fields, disputes continue about the exact form and scope that the theory should have, and just what mechanisms underlie it. But, in each case, after the theory became established, research problems and methodology moved in fresh directions, novel phenomena were uncovered and old phenomena newly understood, and the entire discipline took on a unity and focus it had hitherto lacked. It is not unreasonable to expect that, when we turn a theoretically informed eye to the rag-bag collection of philosophical problems about colour, they too will prove to be connected in a manner that had previously eluded our gaze.

In the pages that follow [in *Colour for Philosophers*] we shall sketch some of the scientific facts about the colour-relevant properties of physical objects and processes which lie outside the organism. It will quickly become apparent that

the classification of objects by colour depends quite as much on the operating characteristics of visual systems as on the physical properties of objects; so we shall proceed to scrutinize those operating characteristics. In so doing, we shall find that visual science has delineated much of the phenomenology of colours and, with the assistance of neurophysiology, has explained a good deal of that phenomenology while showing real promise of explaining more. This will not only help us to ascertain the place of colour in the natural order, but will also open new avenues for understanding how and why colours both resemble and exclude each other, as well as how it is that they form a closed family and how it is that they need not do so. We will be able to suggest some conditions under which it would be reasonable to claim that the qualitative character of colour experience is reducible to neural processes, and what to say about colour sensing in other animals. Finally, we shall see how, contrary to what the Wittgensteinians seem to have supposed, the semantics of ordinary colour terms is powerfully constrained by the physiology of the human visual system. At every turn we shall discover that colour science is able to cast new light into corners that have long been in shadow. [...]

C.L. Hardin, extract from Introduction, *Colour for Philosophers: Unweaving the Rainbow* (Indianapolis: Hackett Publishing Co., 1988) xxxix–xlii.

## Jacqueline Lichtenstein
## The Eloquence of Colour//1989

### The Iconoclastic Gesture as Inauguration of Metaphysics

[...] Painting has always held a strange appeal for philosophers, such that the battle between attraction and rejection, between fascination and censure, has never ceased. This mixture of forms and materials, in which the subtlest contour joins the richest colours to produce the enigmatic unity of a representation, inevitably disturbs the harmony of thought based on the principles of pure reason. Since the time of Plato, painting has experienced the philosophical fluctuations surrounding the more general question of the image to which its destiny has been bound. Banished from the realm of metaphysics, deprived of any real position, the image ended up being reduced by the very act that made possible the constitution of philosophical discourse, to a simulacrum on the walls of a cavern, a mere shadow. Yet it was never effectively suppressed, for it has haunted philosophy ever since, as the dead man's figure haunts a criminal: just a shadow.

Philosophy could, under certain conditions, tolerate this image that was but a shadow of itself, the image of an image. As the shadow moved even farther from reality, the image became metaphor and spent itself in figures of speech. Destined to be heard rather than seen, poetic and rhetorical figures pose no threat to the primacy of language. On the contrary, they heighten its power by expanding it to reach new domains. The visible itself becomes an effect of discourse, perceptible only through the evocative power of the verb. Metaphor can inscribe the image within the ranks of theoretical legitimacy seemingly without endangering discourse. Such representation is the illusion of an image that becomes a figure only through words. Already we see the ambiguity of this recognition, which meets the demands of philosophy and respects its definitions: it sidesteps the domain of the visible, effaces the image in its own reality. And it thus pushes painting to the edge of a domain that painting then can only penetrate by means of metaphoric trespassing. But visual images have a diabolical propensity for exploiting this trespassing potential.

Plato lacked neither lucidity nor coherence. He knew that to grant the image anything meant that the image would sooner or later take hold of the whole in order to destroy it. He was one of the few truly to have taken images seriously, that is, to have believed in the force of their powers. Thus he would have liked to forbid all of them, whatever their nature and in whatever guise they might present themselves, entrance into his realm. And in this he was, from his perspective, undoubtedly right. For behind the figures of discourse came a long procession of real images – first those of the body in its visible presence, then representations painted on walls, and later on canvas – a whole universe of silent figures that gradually invaded this territory in which the sound of words most often took the place of a gaze.

What was originally a confrontation between discourse and image soon became an affront that forced painting to assume a strangely theoretical role to which it was not inherently destined. But the contest was unequal, for it took place on the territory of language; language invented the game, set the rules, and played according to its own stakes. This battle was internal to philosophical discourse, which not only demarcated the battlefield and distributed the roles but even assigned the places and furnished the combatants' arms. Did not the force of Platonic metaphysics lie in having itself produced all the oppositions that it deemed fatal, in having developed otherness within itself, so that this otherness would not linger dangerously outside, beside, and thus necessarily against it? By integrating conflicts as internal differences and defining their nature, roles and positions, it nullified their danger and kept control of the game.

– granite, travertine, marble – only beige or a purplish colour like brick were considered 'classy' and sufficiently mature. Entire cities changed their colour palette overnight. Miami's violent blues and pinks became white and yellowish, all in the name of good taste.

At the same time, we have increasingly been exposed to luminous colour, as the virtual rapidly invaded our conscious experience – colour on TV, video, computers, movies – all potentially 'enhanced' and therefore more intense, more fantastic, more glamorous than any real colour on real surfaces. Colour, paint, coatings, in comparison somehow became matt and dull.

With minimalism in the nineties it was at most the inherent colour of materials themselves that was allowed to register – a kind of colourless colour of subtle hints and refined contrasts. As if anything more intense was too much for our nervous systems. But maybe colour could make a comeback – not the exuberant intensity of the sixties or seventies, but with more impact than the sedated nineties – simply through the impact of new technologies and new effects. In a world where nothing is stable, the permanence of colour is slightly naïve; maybe it could change. In a world where nothing is what it seems, the directness of colour seems simplistic – maybe it can create more complex effects.

When all OMA [Office for Metropolitan Architecture] people were asked to propose 'their' colours, to imagine a paint or a coating, only ten people actually chose a simple single colour. Most imagined their colours as a treatment, a way to affect reality in a more subtle way than mere paint: not simply a layer of colouring but a more subtle conditioning, a layer that alters the state of the painted wall or object, a colour that would interfere with the status of the painted object.

It is only logical that, with the incredible sensorial onslaught that bombards us every day and the artificial intensities that we encounter in the virtual world, the nature of colour should change, no longer just a thin layer of change, but something that genuinely alters perception.

In this sense, the future of colours is looking bright.

Rem Koolhaas, 'The Future of Colours is Looking Bright', originally published as the preface to a colour manual produced by OMA in 1999. Entitled *New Colours for a New Century*, the publication proposed 30 new colours each put forward by an OMA member of staff. The manual was sold mainly in AKZO Nobel paint shops and was published by V+K publishers. ISBN 9066115726.



## David Batchelor
## Chromophobia//2000

[...] The notion that colour is bound up with the fate of Western culture sounds odd, and not very likely. But this is what I want to argue: that colour has been the object of extreme prejudice in Western culture. For the most part, this prejudice has remained unchecked and passed unnoticed. And yet it is a prejudice that is so all-embracing and generalized that, at one time or another, it has enrolled just about every other prejudice in its service. If its object were a furry animal, it would be protected by international law. But its object is, it is said, almost nothing, even though it is at the same time a part of almost everything and exists almost everywhere. It is, I believe, no exaggeration to say that, in the West, since Antiquity, colour has been systematically marginalized, reviled, diminished and degraded. Generations of philosophers, artists, art historians and cultural theorists of one stripe or another have kept this prejudice alive, warm, fed and groomed. As with all prejudices, its manifest form, its loathing, masks a fear: a fear of contamination and corruption by something that is unknown or appears unknowable. This loathing of colour, this fear of corruption through colour, needs a name: chromophobia.

Chromophobia manifests itself in the many and varied attempts to purge colour from culture, to devalue colour, to diminish its significance, to deny its complexity. More specifically: this purging of colour is usually accomplished in one of two ways. In the first, colour is made out to be the property of some 'foreign' body - usually the feminine, the oriental, the primitive, the infantile, the vulgar, the queer or the pathological. In the second, colour is relegated to the realm of the superficial, the supplementary, the inessential or the cosmetic. In one, colour is regarded as alien and therefore dangerous; in the other, it is perceived merely as a secondary quality of experience, and thus unworthy of serious consideration. Colour is dangerous, or it is trivial, or it is both. (It is typical of prejudices to conflate the sinister and the superficial.) Either way, colour is routinely excluded from the higher concerns of the Mind. It is other to the higher values of Western culture. Or perhaps culture is other to the higher values of colour. Or colour is the corruption of culture. [...]

David Batchelor, extract from *Chromophobia* (London: Reaktion, 2000) 22–3.

## Susan Hiller
## On Colour//2007

To experience a hit of 'pure' colour, especially coloured light, is intoxicating. Like Walter Benjamin, I'm remembering glass prisms, kaleidoscopes, and La Sainte-Chapelle in Paris on a sunny day. But what about being invaded by colour, lost inside colour, like the fifteenth-century Sufi Lhaji Shamsodden who wrote, '... Mountains and deserts were a rainbow of coloured light, red, yellow, white, blue. I became as though struck by madness and was carried away by the violence of their persistence and the deep emotion I experienced ...'? Fortunately, some artists know how to offer just the right dosage of colour to provide great pleasure without triggering the violence of total self-abandonment: I'm thinking of Giotto's Scrovegni Chapel, some paintings by Rothko, some works of Yves Klein. I've thought about colour quite a lot, and maybe the fear of overdoing it is why I've only rarely ventured to make it the focus of my work

In 1987 I made a slide/tape work called *Magic Lantern* because I was fascinated by the body's instinctive, creative response to colour. The visual element of *Magic Lantern* is based on simple scientific principles: disks of light in the three primary colours are produced from three separate slide projectors and they combine and re-combine to make other colours through overlapping. The visual sequence eventually ends in a large circle of white light, which can be created by overlapping all three primary colours. In fact, the full sequence of colour in *Magic Lantern* can't be documented because, of course, the projections of bright coloured light provoke after-images (for example, after a red circle projection you will see a green circle). These after-images, which become part of the choreography of the work, are created in your interior vision, in your retina. This phenomenon is well known but usually ignored by everyone except painters or scientists who study optics. In experiencing *Magic Lantern*, the visual aspects of the work are both objective, in the sense of being presented to the audience from 'outside', and subjective, being produced internally in each person's individual eyes and brain. I think *Magic Lantern* gives pleasure by both clarifying and destabilizing perception, and in this way provokes a kind of understanding that what we see is always a fluctuating combination of internal and external events.

Ten years later, I made an audio-visual work for the worldwideweb called *Dream Screens*, whose visual elements are 84 colour fields. This is a deceptively simple work, designed to make room for the reverie of an individual person amidst the competing activities and images of the Internet. The dream screens are infinite sequences and permutations of monochrome colour fields, activated as the viewer clicks a mouse anywhere on the computer screen. This web browsing is an aimlessly pleasurable exploration of glowing colours and the often-surprising after-images that occur between them.

The 'help' map that underlies and structures the viewer's random selection of colour fields merges three kinds of maps. It's a web, like the Internet,/the worldwideweb. It's also a colour wheel, like a classical colour wheel. And it also resembles those ancient maps of the world with us at the bright centre, the known world, fading out to the periphery, the unknown world. At the centre is white light and, out on the edges, blackness, with the colours radiating from light to dark along the spectrum. If you prefer to navigate the colours randomly, you might never uncover the map or another potential tool for navigating *Dream Screens* – the colour list. This names the 84 individual colour options, with reference to the names of traditional pigments and paint colours. If you use the list to 'click' on an intriguing name – for instance, 'Dragons' blood' – you will produce a field of that colour on your computer screen. Having started off as a painter, I intended this litany of names to form a link between new media and the art histories that underlie them. Selecting a series of computer colour fields by using this list might even be a means of tracking the evolution of human creativity from the Paleolithic period (Sap green, Red ochre) to the present (Uranium yellow), via, for instance, Woad, Saffron, and Byzantium purple.

Susan Hiller, Statement for *Colour*, 2007.

## James Welling
## Notes on Colour//2007

Recently I taught a seminar, 'Notes on Colour', at UCLA. It was the first 'colour' class offered by the department of art in many years. As an art student at Cal Arts, I'd managed to go through five years of training without ever studying colour. But that was in the 1970s when art programmes were in upheaval. Now, 35 years later, UCLA offered no classes in 'colour'. This lack is written into UCLA's curriculum and probably into most art schools' programmes: drawing is the first class in the catalogue: 1A. Every art student must take drawing! My colour class was relegated to a three-digit designation, 170, far removed from the programme's core prerequisites.