Ruskin School of Drawing and Fine Art
University of Oxford

AFTER CONSTRUCTIVISM

Brandon Taylor

2011

Abstract

After Constructivism
Brandon Taylor (Brasenose College, University of Oxford)
DPhil
Michaelmas Term 2011

This thesis examines the legacy and consequences of Constructivism in art, from the early days of the Russian avant-garde to recent times and today. The Introduction explains how the concept of *faktura*, first theorised around 1912 by David Burliuk and others, came to designate the material qualities rather than the subject-matter of art. Chapter 1: Towards A Constructive Ideal, traces the progress of *faktura* in the reliefs of V.Tatlin from 1913. The ancestry of *faktura* in the Eastern icon tradition is emphasised, where a close relation between sight and touch already suggested a new type of encounter between the viewer and the object of art. The chapter further examines the importance of *faktura* to Suprematism, and examines A.Rodchenko's appeal to line as a rational element of construction and as a weapon against 'composition' in art. Chapter 2: Time and the Viewer presents evidence of the importance to artists in the period 1940-70 of the real-time encounter between viewer and the art-object, first in American and British 'Constructionism', and then in the Minimal art of Judd, Morris and others. The chapter ends with a discussion of temporality in relation to abstract paintings of Rothko and de Kooning. Chapter 3: Irregular Curves: Science and 'The Organic' reprises the minority Constructivism of Mikhail Matyushin and Pyotr Miturich that claimed organic structures were superior to technicist ones. Evidence is presented that the rectilinear grid was always subject to challenge, initially in the art of Emma Kunz, Jean Arp and other pre-war modernists but latterly among those for whom 'field' and 'curvature' became relevant formats after 1945. Particularly with the development of computing from the 1970s, new geometries based on iteration and scale-invariancy assumed major relevance to constructed art. Chapter 4: Constructivism Now presents evidence of the application of Constructivist principles in recent art, initially in Dan Flavin's 'monuments' to Tatlin and others and subsequently in so-called Neo-Geo and Op art of the 1970s and 1980s. From that period on, albeit often in a register of irony and 'serious play', *faktura* in a Constructivist sense continued, and continues today, to define the relation between viewer and object of art.

Contents

Part I

Introduction

In Moscow in 1912 the painter David Burliuk, older brother of two other artists, Vladimir and Nikolai, published an essay that opened an important divide between what he understood of Picasso and Braque's Cubism and a new and essentially Russian principle that he termed '*faktura*'. Burliuk understood from magazines and hearsay information that Paris Cubism had involved a *fragmentation* of the picture plane and a *dislocation* of material means from pictorial ends. In that essay, itself entitled 'Faktura', he suggested that even though Parisian *facture* may once have expressed the free subjectivity of the artist, it was in drawing attention to materiality itself that the true significance of the Cubist method was to be found. The real meaning of the work of art – what Burliuk called 'the object of rapture' – was henceforward to be found 'neither in the soul of the beholder nor in that of the maker, but in the object itself'.[1] As a viewer of art himself, Burliuk believed that the viewer should be prepared to 'topographically explore the picture', become alert to 'its wonderful secret little countries, where mountains, ravines and abysses … are combined', in an active process that required the viewer to abandon any interest in illusion in the work of art in favour of the disclosures of *faktura* in

[1] D.Burliuk, 'Faktura', in *Poshchechina obshchestvennomu vkusu*, Moscow 1912, p 103; cited by M.Gough, '*Faktura*: the making of the Russian avant-garde', *Res*, 36, Autumn 1999, p 36.

real time.[2] For him, *faktura* even held the key to a wholesale revision of the way in which the history of art should be written. Paintings should be governed by petrography rather than style or biography, he felt; their surfaces should be classified as 'hooked', 'earthy', 'blistered', 'granular', 'fibrous' or 'schistose'.[3] He claimed that these abysses and ravines stimulated the olfactory and haptic senses as well as a kind of tactility that was newly available to the eye. The linguist and formalist Roman Jakobson, who was a friend, remembers that Burliuk's interest in the 'nagging *faktur*a' of a painting was 'quite out of the ordinary'.[4] Partly this was a demand exerted by Burliuk's own work: his *collage* constructions of the period used stuck-on cardboard and aluminium sections, some of them bent slightly outwards to draw the viewer and to catch the ambient light: the jumps between those 'ravines and abysses' and the parts that are relatively flat being precisely a surface dislocation in the spirit of *faktura* [Fig 1].[5] As Burliuk wrote at the same time, 'previously painting only saw, now it feels': a sensory enlargement to which other members of his generation enthusiastically subscribed. [6] In retrospect, it is impossible not to notice the convergence between Burliuk's statement about the 'ravines and abysses' of the picture surface and Braque's famous statement to Daniel-Henry Kahnweiler that 'sand painting gives me some satisfaction', or Picasso's to

---

[2] D.Burliuk, 'Faktura'; Gough, pp 103-4.
[3] D.Burliuk. 'Faktura', p 105; Gough, p 37
[4] R. Jakobson, 'A Futurian of Science', in B.Jangfeldt and S.Rudy (eds), *Roman Jakobson: My Futurist Years*, New York 1997, pp 28-9.
[5] See *Russian Futurists*, St Petersburg, 2000, and *Futurism and After: David Burliuk 1882-1967*, New York 2009. See also Burliuk, 'The Wild Russians' in *Der Blaue Reiter Almanac*, 1912.
[6] D.Burliuk, 'Cubism', in Bowlt, op cit, p 73.

Braque that 'I'm using of bit of earth on our dreadful canvas'. As to the likely viewer of such a work, Burliuk published a further statement in collaboration with his Futurist friends Mayakovsky, Khlebnikov and Khruchenykh that gave voice to what in Paris had only been implied – that 'the object of rapture' called into existence, not a bourgeois viewer given to chasing illusions, but one prepared to find aesthetic significance in *faktura* itself; the ground', as Burliuk put it, 'upon which the viewer's most subtle feelings can develop'.[7] And to the artist's innate formalism there corresponded the viewer's. 'The viewer used to be the idle witness of a street event' he says mockingly, 'but now he as it were presses close to the lens of a *superior visual analysis of the visible essence surrounding us*': the suggestion is that the viewer encounter a painting as though its subject-matter did not exist. In Cézanne's landscapes, says Burliuk as if to clinch the argument, 'there were certain lines going up and down, right and left, but there wasn't a house or trees ... there were areas of a certain colour strength, of a certain character. And that's all'.[8]

That emphasis on the matter of the art-object would prove theoretically fertile across most of the media within the Russian avant-garde. The critic and writer Viktor Shklovsky, soon to found the St Petersburg Opoyaz group of literary analysis, would devise a useful tactility-metaphor in calling *faktura* a 'roughening' – of poetic rhythm, of syntax, and insist that it become a *sine qua*

[7] D.Burliuk, 'Faktura'; cited in Gough, p 36.
[8] D.Burliuk, 'Cubism' (1912), in J.Bowlt, *Russian Art of the Avant-Garde: Theory and Criticism 1902-1934*, New York 1976, pp 74, 75 (my emphases). The Cézanne painting Burliuk mentions may be the *Mont-Saint Victoire* from the Morozov collection, now in the Hermitage. We are not sure.

non of a truly contemporary attitude to artistic form. Moreover Shklovsky would demand in an article of 1914 that the resources of *faktura* be wherever possible 'low': the speech of children or the delirious, any kind of incantatory rhythm, the babbling of the insane; its purpose in either case would be to arrest ordinary perception and make poetry out of 'attenuated, tortuous' speech.[9] 'One word rubs against the other like a cheek against another's cheek', Shklovsky would say in another context about Ovid's *The Art of Love*, whose diction he claimed to be arrestingly slow and emphatic. Likewise ballet is 'a movement so constructed that you have to *feel it as such*'.[10] In thrall to *faktura* the senses are refreshed by defamiliarisation (*ostranenie*) brought about by such devices as plot retardation, episodic composition, doubling, shifting, and finally the 'baring of the device', examples of all of which could be found in

[9] V.Shklovsky, 'The Resurrection of the Word' (1914), in S.Bann and J.E.Bowlt (eds), *Russian Formalism: A Collection of Articles and Texts in Translation*, Scottish Academic Press, Edinburgh 1973, pp 41-7.

[10] V.Shklovsky, *O teorii prozy*, pp 24-5; *Theorie der Prosa*, pp 28-9; cited in Jameson, *The Prison House of Language: Marxism and Literary Form*, p 60. 'I personally feel that defamiliarisation is to be found almost everywhere form is found': see V.Shklovskii, 'Art as Technique' (1917), in L.T.Lemon and M.J.Reis (eds), *Russian Formalist Criticism: Four Essays*, University of Nebraska Press, Lincoln, 1965, p 18, in which he illustrates habituation – the inverse of defamiliarisation – by means of a passage from Tolstoy's diary: 'I was cleaning a room and, meandering about, approached the divan and couldn't remember whether or not I had dusted it. Since these movements are habitual and unconscious, I could not remember and felt that it was impossible to remember – so that if I had dusted and forgot – that is, had acted unconsciously, then it was the same as if I had not. If some conscious person had been watching, then the fact could be established. If, however, no one was looking, or looking on unconsciously, if the whole complex lives of many people go on unconsciously, then such lives are as if they had never been'.

the 'roughened passages' of Andrei Bely, Khlebnikov, Tolstoy, Gogol, Arnaut Daniel, and Japanese verse.[11]

For much of the Russian avant-garde that led more or less directly to Constructivism, immediacy of impression and efficiency of effect were the first and foremost of *faktura's* claims upon the senses. And yet although the chapters and studio work on this project concern the legacy of Russian Constructivism, it purports neither to be a history or a survey of that movement. Historians have accumulated copious amounts of data on the activities of the original Constructivists – and yet we remain without an authoritative view of their lasting effects on the attitudes of subsequent artists, and others who see Constructivist works in exhibitions today. How are those early works to be looked at? What sort of viewing encounter do they encourage, either now or at the time they were made? In Russia either side of the Revolution of 1917, proposals were advanced that would transform the way art-works should be made – including an impulse towards clarity of execution, efficiency of form, and the idea that *making* was itself a central activity of art. In practice, it turned out that Constructivism was seldom lacking in paradox. An impulse towards clarity often led to controversy, even to confusion. Rationality has been shadowed by its opposite. And yet what has remained constant, I argue, has been a concern for engaging the viewer of art in an

[11] He claimed it was also present in Herbert Spencer's maxim that 'a satisfactory style is precisely that which delivers the greatest amount of thought in the fewest words'; see Spencer, *The Philosophy of Style*, New York 1882, pp 2-3.

interactive relationship with the qualities and handling of materials *as such*. Instead of portraits, landscapes, and historical anecdotes, art-objects conceived and made in the spirit of Constructivism have provided occasions for close attention to be paid to surfaces, textures and limits; to line and to interval; to materials, process and scale; to mathematical or geometrical calculation; to pattern and efficiency, as well as to motivated exaggeration, travesty and play. The most far-reaching result has been that the viewer of art is no longer required to enter a make-believe world of imagined scenes and events. After Constructivism, he or she has become a more or less willing participant in a new world of collectively meaningful things, intentionally and systematically made. Above all, the modern viewer has been required to become cognitively expert in the forms and properties of stuff; alert to the ironies and contradictions of the roles that material plays in art; aware of the paradoxes of modern science; and sympathetic to the evolving materialism and secularism of the wider culture so implied. That culture has often veered towards 'nature'; sometimes towards the absurd; occasionally towards both. What is perhaps more surprising is that something akin to original Constructivist ambition shows every sign of continuity today. In the best contemporary art – so I argue and indeed so I demonstrate in my own paintings and constructions – the language of material and making, and therefore the language of form itself, still dominates the situation of the studio with astonishing and unvarying force.

* * *

I must thank my supervisors Maria Chevska and Malcolm Bull for their unfailingly generous support in the exercise of tying together the practice of a Constructivist-type art with a set of historical and critical reflections upon its origins and founding concepts. Many others at the Ruskin have encouraged me in word and deed: I must especially mention Paul Bonaventura, Brian Catling, Jason Gaiger, and Katerina Reed-Tsocha. For practical help beyond the call of duty, my gratitude is due to Juliet Franks and Mark Hathaway. And finally, to my contemporaries in the DPhil community at the Ruskin I extend my warmest thanks for their continued friendship and advice.

Illustrations

1. D.Burliuk, *Collage with Fabric*, 1910 [reconstructed], oil and fabric on cardboard, 25.5 x 35 cm

1. Towards a Constructive Ideal

Alongside the concept and practice of *faktura* it was the icon tradition that was to orchestrate the most resonant advances in studio work. Vladimir Tatlin, having followed a career as an art student in Moscow and then in Penza, punctuated by summers spent on sailing ships and occasionally boxing in a circus ring, had joined the Tower studio in Moscow in 1911 and met most of the luminaries of the then emergent avant-garde: Khlebnikov, Mayakovsky, Larionov, Le Dantu, Falk, Popova, Alexander Vesnin, and more. In 1913 we find him a member of the Union of Youth, where he must have got to know the Burliuks, and where he makes lithographic illustrations to Mayakovsky's poem *Signboards*.[1] Tatlin had already trained as an icon-painter – so it is significant that around 1912 he turned to the rhythms and structures of icon painting in some paintings of female nudes, perhaps helped in that direction by the *Exhibition of Icon Pattern-books and Lubok Prints* that his friend Mikhail Larionov organized, the catalogue for which suggested correspondences with French Cubism – as well as by two official exhibitions of old Russian icons that also opened in Moscow in 1913.[2] And then, in the later part of that year, he shifts the depiction of the human figure towards a statement of purely visual energies within the framework of the pictorial ground: his *Composition-Analysis* of the Madonna and child reduces to a dominant triangle and a set of

[1] See J. Howard, *The Union of Youth*, Manchester University Press 1992 for this membership.
[2] M.Larionov, *Vystavka ikonopisnykh podlinnikov i lubkov, organizovannaya M.F.Larionovym*, Moscow 1913.

textural and structural lines that render both abstract and dynamic the arrangement of the whole [Fig 2]. Having made that initial step, the door to a full object-treatment was firmly ajar. We find him towards the end of 1913 working on a series of 'painterly reliefs' under the aegis of a slogan that was already a mantra of younger artists; 'Distrusting the eye, we place it under the control of touch'.[3] 'Painterly (ie. *zhivopisnyi*) relief' is apparently Tatlin's own term; and though the majority of his works in that vein are now lost, archival photographs suggest an attempt to evolve a pictorial or painterly culture out of materials alone, of which wood, metal, glass and cardboard are the most significant. Hence the format of Tatlin's reliefs is plain wood or board as a background, a vertical rectangle standing twice as high as wide, with various material attachments projecting forwards so as to manufacture real shadows and depths that fluctuate according to the viewer's stance [Fig 3]. They were exhibited in Tatlin's studio at Ostozhenka Street in Moscow in May 1914, and then at the exhibition *Tramway V* in March 1915. Tatlin's approach to his work is described by an eye-witness as he prepares for *Tramway V*: 'He chopped, planed, cut, broke off pieces of glass, diluted size, and for a long time feasted his eyes on a scrap of sheet metal … he fixed chocks, wood, and crushed paper, repeating "marvellous, beautiful, we will colour some bits and

[3] V.Rakitin dates the appearance of the slogan to between 1912 and 1914; see 'The Artist and the Prophet: Marginal Notes on Two Artistic Careers', in *The Great Utopia: The Russian and Soviet Avant-Garde 1915-1932*, Guggenheim Museum, New York, 1992, p 30 and n.42, p 36. It is repeated by Tatlin, 'The Work Ahead of Us' (1920), for which see Zhadova (ed), *Vladimir Tatlin*, p 445.

darken others with smoke"'.[4] Significantly, Tatlin had travelled to Paris to visit Picasso in his rue Schoelcher studio in April 1914. Returning to Russia, he had based one of his *zhivopisnyi* reliefs on Picasso's *Guitar and Bottle* of late 1913 [Fig 4].[5] Their meeting had confirmed Tatlin's interest in reliefs, but he had quickly qualified his admiration for the Spaniard on returning to Russia.

What else had Tatlin seen in Paris? By the time of Tatlin's visit to the rue Schoelcher studio Picasso was continuing to make pictorial things the nature of which very few onlookers would immediately understand. All kinds of visual and tactile paradoxes were now occurring – doubling or trebling of representational languages, *faux*-effects, stippling, and the like, in a kind of orgy of 'roughened' textures that could seduce the viewer with the impression that pictorial unity and object-unity had become finally one. Then, in the summer following Tatlin's visit and made in Avignon, a set of very small table-top works, two circular painting-objects, and three small box-like *tableaux*, open at the front and containing both painted and constructed planes. Perhaps the first was *Still-Life with Knife and Glass*, or one of the six versions of the *Glass of Absinthe*, the former with its workman's lunch of bread and sausage resting on a table-edge, fronted by cloth tassels dangling cheekily down. From this sequence too is the remarkable *Bottle of Bass, Glass and Newspaper*, made of cut and bent tin, wire, sand, and paper, and standing about as tall as an actual

[4] V. Kodasevich, 'Bylo ...', *Dekorativnoe iskusstvo*, no 3, 1980, p 41; cited in C. Lodder, *Russian Constructivism*, New Haven and London 1983, p 14 and p 269, n. 35 and 36.

[5] *Guitar and Bottle* was constructed of cardboard and paper, 102 x 8 cm, but is not longer extant.

glass and a bottle but leaning to the viewer's right as if to suggest a leaning tower [Fig 5].[6] Or it can be seen as a troupe of singers or jugglers performing as if on a small stage, presented frontally in a *tableau* to the viewer who needs to be there. As to that viewer's literal position, the visual clues contained in the object suggest that it be approached close enough for the deliberately crude construction to be seen, but distant enough for the curved and shallow flat planes to fall into place in relation to a unifying, haptic gaze.[7]

Put differently, we witness Picasso searching for a kind of *participant* vision in which the object comes to life under a viewer's regard, having already guided that viewer as to how and in what ways the object should be seen. Sight, then, not as momentary, or fleeting, or passive, but as dynamic, forceful, and consequential – with the difference that what is seen is not a relic but an object-thing whose having-been-made is central to what the viewer sees.
Nevertheless, Tatlin's brief encounter with the Parisian Cubists was to fill him with a sense of the differences between their conception of the art-object and his own. For one thing, those of his reliefs that survive in the photographic record are much more abstract than anything in Picasso's or Braque's Cubism. Secondly, he quickly came to reject the Cubist still-life motif and did not at all share Picasso's sense of humour that liked to mischievously change things into each other and to joke obliquely about, for example, sex. Further, his growing

[6] The *Bottle of Bass, Glass and Newspaper* is MP.250; ZII, 849.
[7] For an archaeology of the deliberately rough-look construction of *Still Life with Knife and Glass*, see J.Heuman, 'A technical study of Picasso's construction Still-Life of 1914', *Tate Papers*, Issue 11, 2009 [on-line journal at http://www.tate.org.uk/]

independence of Parisian Cubism is confirmed by his move around 1915 from *zhivopisnyi* to *kontr*- or counter-reliefs. Those described as *zhivopisnyi* had deployed a ground plane upon which other objects sit. In the *kontr*-reliefs, the figure-ground relationship dissolves and almost disappears: attachments as well as the supporting plane now begin to slant and curve – the association is with taut wire or a billowing sail. Far more than in the *zhivopisnyi* kind, Tatlin's approach to materials in the *kontr*-reliefs depends upon the *necessity* with which particular materials assume different and characteristic forms. Thus wood as a rigid substance would be planed or sawn – assuming the normal functioning of the plane and saw. Tin would be cut, bent and pinned with tacks, given the tools available and the workman's normal use of them. Wallpaper would be glued, even though it may sometimes tear or curl; whereas glass is rigid and retains its conventional function of partitioning space, while preserving transparency across the divide. As Nikolai Tarabukin wrote in 1916, apparently with Tatlin's *zhivopisnyi* reliefs in mind, 'the painter must feel the *inherent characteristics* of each material which of themselves condition the construction of an object. The material dictates the form [to the artist], and not the other way around. Wood, metal, glass etc impose different constructions'.[8]

[8] N.Tarabukin, *Le Dernier Tableau* (written 1916, published 1923), Editions Champ Libre, Paris 1972, pp 104; 123-4, cited by M.Rowel, 'Vladimir Tatlin: Form/Faktura', *October*, 7, Winter 1978, p 91. Khlebnikov wrote a lyrical poem about Tatlin's painterly and the slightly later 'corner reliefs' in the wake of both *0.10* and the *Store* exhibition of March 1916, at a time when Tatlin and the poet were especially close: 'Tatlin, visionary of the blades / And stern bard of the propeller ... He tied a cobweb dale of rigging / Into an iron horseshoe ... So unheard-of and clairvoyant are the tin things unheard of by the brush' – Khlebnikov's words evoke both the high seas and

In terms of their perceptual demands, the *kontr*-reliefs and corner-reliefs that were shown at the notorious *0.10* exhibition in St Petersburg in December 1915 announced such a departure from the *zhivopisnyi* type as to invite a comparison with two icon types: painted wood-panel icons embossed with metal revetments [Fig 6], and the earlier Byzantine relief icon in which the image of a holy figure – usually Christ – is entirely fashioned in precious materials such as enamel, mosaic and steatite. Tatlin knew that both wood-panel and relief icon departed from other types of representation in being charismatic – from χάρις, the imprinting of a Christ- or saint-like presence upon matter. Tatlin also knew that both were intended to be physically and not just optically experienced, 'seen' in the sense of experienced in terms of sound, light, touch and smell, as well as form and colour alone. But it was the Byzantine relief icon that best conformed to a type of vision that may be called *extramissive* – that is, actively moving over the surface of a thing so as to know it by every sense modality available. The mind sees by sending out rays through the eye; they grasp the thing seen and return to the eye, which then converts the collected sensations into data for the mind and memory [Fig 7].[9] Unlike *intramission* in which the mind received impressions, the eye's rays in extramission do not just strike the

---

the mystery of the artist's work. V. Khlebnikov, 'Tatlin', May 1916; reproduced in Zhadova (ed), *Tatlin*, p 336. See J. Milner, *Vladimir Tatlin and the Russian Avant-Garde*, Yale University Press, 1983, p 120 for a better translation.

[9] The model of the eye's extramission descended from Plato, Plutarch, Euclid and Ptolemy and survived at least as far as the notebooks of Leonardo da Vinci.

object but encompass it and absorb its contours, colours and size.[10] In the words of a recent study, 'sight is understood and experienced as touch'.[11]

And yet Tatlin's shift in 1915-16 from *zhivopisnyi* to *kontr*-reliefs had a further and perhaps epochal significance for modern art. If the *zhivopisnyi* type contained distant traces of the Parisian table-top construction, the *kontr*-reliefs did not, or did so decreasingly. Extramissive perception in the former came under pressure to give up its indebtedness to Cubist still-life and to respond to a further demand exerted by the object, namely that materials assume independence even from the conventional format of art – rectangularity, the upright plane, the predominantly frontal viewer – and become something like constructions in their own right. It was a shift in the course of which the last vestiges of a passive bourgeois optic would fall finally away. Tarabukin's comment of 1916 that 'The material dictates the form [to the artist], and not the other way around' may have been made with Tatlin's *Painterly Relief* of 1915 in mind, in which we see vertical elements penetrating a projecting triangle of tin, all surmounted by a glass rhomboid fastened at ninety degrees to the

[10] For the Byzantine analysis, see the account given by R.Nelson, 'To Say and To See: *Ekphrasis* and Vision in Byzantium', in Nelson (ed), *Visuality Before and Beyond the Renaissance: Seeing As Others Saw*, Cambridge University Press, 2000, pp 143-68, and more generally to David C.Lindberg, *Theories of Vision from Al-Kandi to Kepler*, Chicago University Press, 1976.

[11] 'The radiance of light reflected from the gilded surfaces, the flicker of candles and oil lamps placed before the image, the sweetly fragrant incense, the sounds of prayer and music – these inundated the senses. In saturating the material and sensorial to excess, the experience of the icon led to a transcendence of this very materiality and gave access to the intangible, invisible and noetic': Bissera Pentcheva, 'The Performative Icon', *The Art Bulletin*, Dec 2006, Vol XXXVIII, No 4, p 631.

remnants of a pictorial plane [Fig 8].[12] What in Braque or Picasso might have been a domestic object, in Tatlin had become a taut mechanical shape. What in Picasso might have been the neck of a guitar, in Tatlin had become an industrial structure on an almost epic scale. 'Construction' here was rivalling *faktura* as the concept of major practical interest.

The reasons are at least partly clear – even if the longer-term consequences are still disputable. Let us first look at Kasimir Malevich, whose Suprematist works had been hung alongside Tatlin's in December 1915, and who at this stage took the surface of a painting to have a density of a very special kind. Documentary photographs of the notorious *0.10* show a large number of non-objective paintings hanging around a corner-work, the puzzling *Black Square*, a work in which Aleksandr Benois thought he discerned a kind of secular icon, imposing all the perceptual demands that much older icon paintings imposed, but without religious doctrine, and hence potentially with iconoclasm – Malevich had replied that his square was 'the icon of my times' [Fig 9].[13] 'Colour and *faktura* in painting are ends in themselves' Malevich wrote at the time; 'they are the essence of painting'.[14] The consequence was abstraction, or

---

[12] N.Tarabukin, *Le Dernier Tableau* (written 1916, published 1923), Editions Champ Libre, Paris 1972, pp 123-4, cited by M.Rowel, 'Vladimir Tatlin: Form/*Faktura*', *October*, 7, winter 1978, p 91.

[13] See A.Benois, 'Poslednaya futuristicheskaya vystavka', *Rech*, 9 January 1916, and Malevich, letter to Benois, State Russian Museum, St Petersburg, fond 137/1186; cited in O.Tarasov, 'Russian Icons and the Avant-Garde: Tradition and Change', *The Art of Holy Russia: Icons from Moscow, 1400-1660*, Royal Academy London 1998, p 94.

[14] K.Malevich, 'From Cubism and Futurism to Suprematism: The New Realism in Painting' (1915), in T.Andersen (ed), vol 1, p 25.

a kind of non-objectivity, in the face of which the viewer would understand the world as a kind of transaction with pure form. As Malevich summarised it much later in a teleological scheme: first figurative styles ('objects as they are'), then expressive styles ('objects represented to reveal the artist's experience of them'), then deformative ones ('objects treated as disorderly pictorial elements'), and finally 'non-objective' art, or Suprematism, that was the culmination of that sequence.[15] 'Things have disappeared like smoke', he wrote tellingly in 1915. *'Art is the ability to construct* … the habit of seeing Madonnas and Venuses in pictures, with playful fat cupids, will disappear'.[16]

And yet the world retained some kind of presence within the surface of Suprematist painting. Scholars tell an anecdote according to which Malevich, in explaining the origins of non-objectivity, told students in Vitebsk and Smolensk that during a spate of particularly cold weather in Moscow he went to the window 'and was stunned by the contrast between the freshly fallen, blindingly white snow and the black knapsack on a schoolboy leaving for school' – the result was the *Black Square*.[17] He said later that 'by putting names to some paintings, I do not mean that I have sought forms, but that I have considered real forms initially as formless pictorial amalgams, and that,

---

[15] The statement is from K.Malevich, 'Painting and the Problem of Architecture', *Nova Generatsiya*, no 2, 1928; in T.Andersen (ed), *K.Malevich: Esays on Art 1915-1933*, vol 2, pp 7-8.
[16] K.Malevich, loc cit, pp 19, 24, 24-5. Emphases added.
[17] 'Sharp contours against fresh snow' is again suggested by a letter to Mikhail Matyushin in which Malevich announced a turn to '*fevralizm*' in painting. See V.Rakitin, 'The Artist and the Prophet: Marginal Notes on Two Artistic Careers', *The Great Utopia*, p 30, and notes 34 and 35, p 36.

based on them, I have created a pictorial painting that has no connection whatsoever with nature'.[18] This version of the origins of non-objectivity may be compared with Burliuk's, that in Cézanne 'there were areas of a certain colour strength … that's all'; or with Shklovsky's, that 'children and people who are not accustomed to looking at pictures have no perception whatsoever of three-dimensional shapes in them'.[19] The work comprising two rectangles, the larger rectangle hovering above the smaller and seeming to dominate it, and listed in catalogue as *Painterly Realism of a Boy with a Knapsack: Colour Masses in Four Dimensions,* might be compared [Fig 10].[20] Both it and *Red Square: Painterly Realism of a Peasant in Two Dimensions,* also of 1915, may be regarded as 'amalgams' of human-like forms that are then rendered formlessly in the painting itself. The evocation (*ochuchenie*) of a knap-sacked boy or a peasant woman provided a starting-point, while the work's 'painterly realism' arose from the treatment – the *faktura* and the painterly construction – of the work itself.

---

[18] K.Malevich, 'Forms, Colour and Feeling' (1928), in *Kasimir Malevich,* Fundacio Caixa Catalunya, Barcelona 2006, p 184.

[19] He adds revealingly that 'I clearly remember reacting to pictures in this way myself'. See V.Shklovsky, 'Space in painting and Suprematism', *Iskusstvo,* No 8, 3rd September 1919, in Zhadova (ed), *Malevich: Suprematism and Revolution in Russian Art 1910-1930,* Thames and Hudson, London 1982, p 325.

[20] Alfred Barr listed it in the catalogue to the 1936 New York exhibition *Cubism and Abstract Art* as *Suprematist Composition: Red Square and Black Square* and described it as 'a study in equivalents: the red square, smaller but more intense in colour and more active on its diagonal axis, holds its own against the black square which is larger but negative in colour and static in position'; but hung it and reproduced it upside down; see *Cubism and Abstract Art,* Museum of Modern Art, New York 1936, p 124. Zhadova calls it *Black Square and Red Square*; L.Zhadova (ed), *Tatlin,* Thames and Hudson, London 1984, plate 42. The painting now hangs (re-inverted) in the Museum of Modern Art, New York.

The reading of *faktura* and its contribution to pictorial construction is easier to appreciate in X-ray photographs – and those of *Painterly Realism of a Boy with a Knapsack* and *Red Square: Painterly Realism of a Peasant in Two Dimensions*, reveal it well. Though Malevich's special *faktura* is often missed by viewers today – it may have been intended to resist easy translation into the black-and-white photograph – it can be seen clearly in the companion-piece to *Painterly Realism of a Boy with Knapsack*, the *Red and Black Squares* of 1915-16.[21] But Malevich's surface *faktura* attracted other descriptions at the time. The literary critic and theorist Viktor Shklovsky would write that 'only the Suprematists recognised the elements of painting, liberated themselves from the slavery of the object, and revealed their method in a picture which is also a coloured plane in so far as the viewer is concerned'. The Suprematists 'worked long and hard on the object as raw material', Shklovsky observed – in order to give visible substance to its *madeness*, its *sdelannost*. He concluded that the Suprematists 'did for art what chemistry has done for medicine: they isolated the active factor in the remedies'.[22] For him, at least, *faktura* remained the keystone of 'the formal method' and hence of the literary and artistic fact as

[21] Two x-ray 'radiographies' of *Painterly Realism of a Peasant in Two Dimensions* are given in A.Nakov, *Kazimir Malevicz: le peintre absolu*, Vol 3, p 154. *Red and Black Squares* is now in the Willhelm Hack Museum, Ludwigshafen-am-Rhein.
[22] V.Shklovskii, 'Space in painting and Suprematism', *Iskusstvo*, No 8, 3 September 1919; Zhadova, *Tatlin*, p 326. Pavel Filonov's Analytic Art Group had already in 1914 claimed to wrest modern painting away from Paris and reassert it in the Slavophile east. His manifesto of that year had asserted the specific inheritance of the icon and the printed block – 'we are moving the centre of gravity of art to our country', he had said, 'to rediscover there a new art of madeness (*sdelannost*)'. See Ye.F.Kovtun, *Vstupitelnaya statya k katalogu vystavki Pavel Nikolayevich Filonov 18813-1941*, Leningrad 1988; cited in O.Tarasov, *Icon and Devotion: Sacred Spaces in Imperial Russia*, Reaktion 2002, p 368.

such. '*Faktura* is the main distinguishing feature of that specific world of specially constructed objects the totality of which we are accustomed to calling art', Shklovsky claimed more generally. Without *faktura*, there is no vivid perception, no awareness of the material of the world: 'The whole effort of a poet and a painter is aimed first and foremost at creating a continuous and thoroughly palpable object, an object with *faktura*'.[23]

From the position of Tatlin's own experiments in 1915 and 1916 it must have seemed as if Malevich's paintings and his polemicising were in open rivalry to his own – he may even have shifted from *zhivopisny* to *kontr*-reliefs in reaction to Malevich's 'painterly' constructions at the time.[24] Shklovsky for his part may not have seen the reliefs in Tatlin's studio and may not have grasped the significance of the difference between the *zhivopisnyi* and *kontr*-reliefs. 'I do not know whether Tatlin is right or wrong' Shklovsky says, having seen an exhibition of student work in 1920. 'I do not know whether the bent tin sheets ... can grow into the hammered *kontr*-reliefs of the new world'. And yet by the revolutionary year of 1917 the concept of construction was becoming the testing-ground for some significant new experiments amongst the leading

---

[23] See V.Shklovskii, 'On *Faktura* and *Kontr*-Reliefs', *Zhizn isskustvo*, 20 October 1920, in Zhadova (ed), *Tatlin*, pp 341-2. Kruchenykh would himself publish a pamphlet entitled *Faktura slova* in 1923 in which a classification of *faktura*-types is attempted, notably similar to Burliuk's list – tender, heavy, coarse, harsh, muted, dry, moist, etc – even though, as Markov points out, Kruchenykh favoured the harsh and even grating textures rather than the more liquid ones; see V.Markov, *Russian Futurism*, pp 341-2.

[24] Malevich's founding of a Supremus group in Moscow in 1916-17, which included Nadezhda Udaltsova and Vera Pestel among others, was a further blow. See J.Howard, *The Union of Youth*.

figures in the Russian avant-garde, and Tatlin's example would become so important that, at least for a while, the making of relief-like paintings or painting-like sculptures became virtually a default position for a major part of that generational group. Liubov Popova and Ivan Kliun beguilingly mixed Tatlin's principles with what they knew of the sculpto-paintings of Archipenko [Fig 11]. Burliuk, Ivan Puni, Lev Bruni, Vasilii Ermilov, Vera Pestel, Nikolai Prusakov, Natan Altman, Konstantin Vialov, and more, all for a time made reliefs inspired by Tatlin's pioneering work.

And yet it was Malevich's claims for his work that became the occasion of another rivalry that would help define positions within the disputed territory of the Russian avant-garde. This rivalry arose in the lead-up to the 10th State Exhibition, also known as *Non-objective Art and Suprematism*, that opened in Moscow in late April 1919. The younger Aleksandr Rodchenko had prepared a group of black paintings for the exhibition under the banner of 'Non-objectivism'. Malevich's Suprematist works were all white. A 'Manifesto' of Non-Objectivists and Suprematists claimed that 'we have painted our furious canvases to the jeers and catcalls of the overfed bureaucrats and philistines'; that 'we haven't yielded an inch to the bourgeoisie' – recall that the Revolution was a mere fifteen months old.[25] But agreement between the two groups ended there. Rodchenko's paintings were heavily textured discs and overlapping

[25] Attributed to A.Rodchenko and V.Stepanova, *Manifesto of Suprematists and Nonobjectivists: Creative Achievements of the World's Pioneers* is published in translation in P.Noever (ed), *Aleksandr Rodchenko and Varvara Stepanova: the Future Is Our Only Goal*, Prestel, 1991, p 122.

lozenges, painted with differing degrees of shine and exemplifying some primitive figure-ground dynamics, except that the tonality of their colour was uniform from part to part [Fig 12]. 'Long live free colour and tone!' Rodchenko had written as he prepared these works from which colour itself had been fully expunged, all the more effectively to concentrate the viewer's responses upon *faktura*, surface density, and luminosity, the elements, as he saw them then, of planar articulation absolutely freed from descriptive function. Today their *faktura* can hardly be seen, though external light reflected from their surfaces seem to propel the viewer to move and scrutinize their luminosities in a mobile and real-time way. 'What makes Anti's black works all the more successful', Varvara Stepanova wrote in her diary about her nick-named lover, 'is the absence of colours, so that they derive their power from *purely painterly effects* ... Without doubt his black paintings are the best thing of the season. And in them he has demonstrated just what *faktura* is. No one could produce such a wealth of variety and depth'.[26] The contrast for Stepanova was with a group of coloured Suprematist works in the show, whose *faktura* 'doesn't have the same effect on the viewer, since the colours, which dazzle in the full sense of the word, divert the viewer's attention away from it'. In Anti's black paintings supremely, Stepanova wrote, 'there is nothing but painting, and for this reason their *faktura* gains extraordinarily: it creates the impression that the work was painted with quite different materials. The

[26] V.Stepanova, *Notes from the diary on the preparation and management of the 10th and 19th State exhibitions*; in P.Noever (ed), op cit; diary entry for 10 April 1919, p 124. Emphases added.

lustrous, matt, flaky, uneven, smooth parts of the surface produce an extraordinarily strong composition, so strong as to leave no room for colour … It would have been better to free ourselves of Suprematism and exhibit only as Nonobjectivists'.[27]

And yet we also know that Rodchenko was by now prepared to leave *faktura* in that form behind; for, just as the rivalry with Malevich was becoming public, we find him grappling with a different concept that bears with the greatest philosophical and aesthetic force upon the problem of construction – namely *line*. Any worthwhile concept of pictorial construction seemed to require line, and yet how did it differ from edge, or boundary, or perspectival mark? From the spring of 1919 Rodchenko was immersed in an ever-sharpening dispute with Vassily Kandinsky, in whose apartment he and Stepanova were now living, and who had analysed the phenomenon of line in a text of his own published in February.[28] There, Kandinsky was approaching the phenomenon of line in a typically romantic and mystical way. Beginning with a singular graphic point and what he calls its 'inner essence' or its 'inner sound', Kandinsky was proposing that, when freed from practical use – as in the placing of a full-stop – singular graphic points naturally extend, first to straight lines, then to planes, to curves, and from there one can derive 'the entire resources of a whole realm of art' [Fig 13]. In the first instance a single

Comment [j1]: Could you remove this reference to an earlier talk as it will not make sense to a reader? Thanks

[27] V.Stepanova, diary entries for 10 April and 19 April 1919; in Noever (ed), pp 125, 126.

[28] I am indebted here to M.Tupitsyn, 'Against Kandinsky', essay to the exhibition catalogue *Gegen Kandinsky/Against Kandinsky*, Hatje Cantz and The Villa Stuck, Munich, 2996, pp 138-172.

straight line moves in various directions relative to other straight lines, meeting to form planes that retain a certain 'rigid' geometry – Kandinsky may have been thinking of Liubov Popova's celebrated *Painterly Architectonics* of 1918 that are constructed of inter-locking rhomboidal sheets of colour, defined by sharp edges, that seldom admit of circular or curving forms [Fig 14]. But to Kandinsky even the rhomboidal plane was a limited and primitive form, one from which the artist needs to escape, in as much as it involves the use of 'that most primitive of instruments, the ruler', as he vehemently complains. Only when ruler and compass are put aside, he says, will line quickly escape every mechanical effort to contain it and find a 'truly infinite number of means of expression', predominantly curved and colour-rich, that transcend even musical categories, even emotional ones, achieving qualities at once inimitable and fine, beyond words, those of what he calls 'pure art'.[29]

The fruit of Kandinsky's thinking, from the vibrant and swirling *Compositions* of 1910-13 right up to the date of his article in 1919, was entirely contrary to Rodchenko's conception of how line should function once surface *faktura* had been set aside. In fact Rodchenko had already negotiated the interplay of geometrically simple line and volumetric construction in a series of three-dimensional *Spatial Constructions* made out of cardboard in 1918 [Fig 15]; while in 1917 he had 'introduced spatial sharpness in painting through the

[29] W. Kandinsky, 'Little Articles on Big Questions: One Point: On Line', *Iskusstvo*, Moscow 1919, translated in K. Lindsay and P. Vergo (eds.), *Kandinsky: Complete Writings on Art*, vol. I: 1901–1921, London 1982, pp.421–7.

introduction of lines as cuts into the surface plane', as he later described his paintings of that time – 'cuts' being an appropriate word for the carefully wrought slices into the painting surface, crafted so as to look as if a fissure or flap had been created in visual space.[30] By the spring of 1919 he was also working on some sketches for architectural schemes involving intersecting volumes in space, in the context of his membership of the Zhivskulptarkh (Painting-Sculpture-Architecture) group. The deployment of rigid line in his paintings and drawings was in that sense not entirely new. But Kandinsky's article of that spring proved a spur to Rodchenko's thinking. While Kandinsky positions the straight line theoretically as 'primitive', Rodchenko notes the exact opposite in his diary. 'Thought of painting ten pieces, just black on white, with a ruler,' he writes in July 1919. 'It would be exceptionally new. I really need to apply myself to the ruler, claim it as my own'. And indeed, it is within his new paintings of that year that we first find painted lines *as such* – no longer cuts in the plane, nor planar edges, but straight and nearly parallel lines grouped in any number from three up to about seventeen. These lines possess an even thickness, are grouped fan-wise and often gridded, and hover above a monochrome ground, typically ochre, reddish ochre, or green, as pictorial constructions in their own right. Certain of these groups overlap one another to form a pattern more like a trellis than a grid [Fig 16].

[30] A. Rodchenko, 'A Laboratory Passage Through the Art of Painting and Constructive-Spatial Forms Toward the Industrial Initiative of Constructivism', in A. Lavrentiev (ed.), *Aleksandr Rodchenko: Experiments For the Future: Diaries, Essays, Letters, and Other Writings*, Museum of Modern Art, New York 2005, p.131.

Thanks to new research on Rodchenko's methods we can be sure that these gridded or fan-wise lines were painted with dry paint against the side of a ruler or card, often fairly quickly to judge by the smudging that is still visible where the drying has not been allowed to finish. The same research tells us that there is no under-drawing to the paintings and that Rodchenko's geometry is intuitive rather than measured; certainly not Pythagorean.[31] On the contrary, and unlike the 'cuts' of the previous two years, the 1919 lines have a directional energy that gives them tension and force, as if they flow energetically from one end to the other, often in the direction in which they were painted in so far as it can be judged by the viewer's attentive eye. But if this is so, then lines without descriptive function have become a new kind of challenge to the viewer, particularly as to their structural role inside the work of art. Is line here a two- or a three-dimensional thing? Must surface lines remain purely graphic devices, or must they inevitably premise a depiction of some sort? Must they belong solely to the picture plane, or can they exist simultaneously in represented, volumetric space? Can they be seen as solid bars, perhaps tensile or compressed, or can they also be viewed as channels for direction and flow; a pictorial fact, or a vector having quantity and force; a static or a kinetic thing? Rodchenko now begins to talk about his work as a 'laboratory', as if engineering or scientific metaphors also suited the

[31] My thanks are due here to Dr Maria Kokkori of the Courtauld Institute of Art, London. For a full account of her research, see M.Kokkori, *Tekhnologicheskie issledovaniya konstruktivistskoi zhivopisi G. Klutsisa, L. Popovoi, A. Rodchenko iz kollektsii G. Kostaki* (Technical examination of constructivist works by Aleksandr Rodchenko, Gustav Klutsis and Liubov Popova from the George Costakis Collection), Russkoe Isskustvo, Nauka: Moscow.

revolutionary atmosphere well.[32] As he himself wrote in a notebook entry at the time: 'The surface plane is, logically, being discarded so as to express *constructedness*, *architecturalness*, in composition; and there being no further need for it , that old favourite of painting, *faktura*, is being discarded too'.[33]

And yet the problem of construction in painting would prove one of the most puzzling and resistant of all. Sometime around the middle of 1920 Rodchenko produced a work consisting of a zig-zag white line painted on a black ground and measuring some 58 by 51 centimetres – or so we shall describe it for now. The painting's monochrome ground lacks any texture, but creates a depth behind the zig-zag, which therefore comes to lie in, or on, the picture plane. Titled by the artist *Construction No. 126* – both the title and its numbering indicate Rodchenko's systematic method – the painting exemplifies Rodchenko's determination in these years to transcend bourgeois aesthetics and confront what he took to be the demands of the new Soviet life [Fig 17]. Everything that can be seen in the painting leads us to say that it embodies a technical standard, given the artist's method of painting against a piece of card or wooden ruler. And yet, although it is clear that each of the lines of *Construction No. 126* was painted alone, then allowed to dry, it is not clear from the visual evidence whether the work presents a single zig-zag line or

[32] An early recognition of the metaphorical dimension of Russian constructivism is B. Fer, 'Metaphor and Modernity: Russian Constructivism', *Oxford Art Journal*, vol.12, no.1, 1989, pp.14–30.
[33] Cited by A. Lavrentiev in 'What is Linearism?', *The Great Utopia: The Russian and Soviet Avant-Garde 1915-1932*, Solomon R Guggenheim Museum, New York 1992, p 295.

three independent ones – whether it is a constructional or a linear thing. If it is a single zig-zag line, it will seem to run in one direction only, probably from left edge to lower right corner, then up the diagonal to the top-left corner and from there to the right-hand edge. Perhaps the lines' four end-points are significant too, given that two of them occupy corners and hence recognise the shape and proportions of the canvas; but the two others occupy an arbitrary position, determined by the angle of inclination of the lines and an intuitive sense of balance within the pictorial structure as a whole: which is to say that the corner-points seem structural, while the edge-points do not. On the other hand, to take the painting's titular reference to 'construction' at face value is to see three solid components, each formed independently and looking like tensile rods within an enclosing box-like frame; in which case we must give up the impression of a single energetic track across a dark pictorial field. Which is why it matters – and must have done to Rodchenko – whether the word 'construction' offers the suggestion of a three-dimensional thing made up out of three components, or of a planar path lying within the two dimensions of the surface of the work. To Rodchenko and to us, the questions are the same. Can the viewer have it both ways at once? Could the artist? They are questions that point to the paradoxes of what was soon to become known as 'Constructivism' by irritating the very distinction between two-dimensional art and three; between the remnants of bourgeois picture-painting and the possibility of a new constructional mode; between an older and obsolete aesthetics and the promise

of a new utilitarian culture. They encase the philosophical problem of line and construction in a particularly fertile and demanding way.

Other factors, some of them biographical, serve only to compound the interest and difficulty of the case. We know that before *Construction No. 126* was painted Rodchenko had been working on a theoretical statement to be called *Liniizm* ('Line-ism' or 'Linearism'), in which the different aspects of the problem could be addressed. Both it and Rodchenko's other linear paintings of 1920 can be associated with certain interests lying outside the traditional confines of art. There is evidence of his interest in meteorology, cosmology, and mathematics. The artist's grand-son Aleksandr Lavrentiev has told us that S. H. Hinton's *The Fourth Dimension and the New Era of Thought* (1904), M. Willkomm's *Die Wunder des Mikroskops*, (1856), C. Flammarion's *L'Atmosphère* (1872, published in Russia in 1910), C. A. Young's *The Sun* (1910) and A. Zwart's *Bausteine des Weltalls* (1913), were all in Rodchenko's library between 1917 and 1920.[34] Several paintings of 1920 dominated by circles or circular forms certainly *look* like diagrams of the solar eclipse; while a set of linocuts of 1921 sees Rodchenko reverting to geometrical diagrams that resemble the arrangement of lenses in a microscope, or the beguiling geometrical diagrams to be found in Euclid's *Elements* [Fig 18]. Meanwhile *Construction No. 128*, itself of 1920, makes inescapable reference to the Christian cross. Also intriguing is the fact that Rodchenko was fascinated by

[34] See A. Lavrentiev, 'On Priorities and Patents', in M. Dabrowski et al, *Aleksandr Rodchenko*, 1998, p 55.

Georg Cantor's uncountability theorem of 1873 – a mathematical discovery that showed that the number of points on an infinite line is greater than the number of points on a portion of the line itself, hence that infinity comes in degrees (in fact an infinite number) – a result that seems to render even more complex the relation between *point* and *line*.[35] On the other hand there is less evidence of Rodchenko's interest in the tasks and methods of the professional engineer: implying that actual constructional problems, such as those of dividing and joining material, exploring relations between structure and practical functions were of relatively minor importance to his conception of the artist, to his view of the appropriate tasks of the cultural '*konstruktor*'.[36]

And yet to such scientific and mathematical references an important aesthetic and political context must be added. By around 1918 the concept of pictorial *composition* had come to be associated by Russian 'left' artists with the long hegemony of the European bourgeois easel painting tradition. Now, from the end of 1920 and the beginning of 1921, the final deficits of that system had become a clear target for artists within what would soon be known as the Constructivist camp. General avant-gardist enthusiasm for *faktura* had been able to take matters only so far. For this reason, at the end of 1920 a small General Working Group for Objective Analysis was formed around Rodchenko and Stepanova within the Institute of Artistic Culture (INKhUK), which in the

[35] A. Lavrentiev, op cit.
[36] The term *konstruktor* would become routine within Rodchenko's group by 1921 or 1922. See Gough, *The Artist as Producer: Russian Constructivism in Revolution*, pp 101 ff.

early months of 1921 not only expanded to include about 25 members in total but opened a series of vigorous debates on the distinction between 'composition' and 'construction' in the work of art, to which the very nature of the drawn or spatial line would prove central. 'Construction' to different members of the group could mean very different things. To the self-addressed question 'can construction exist in painting?' the five main participants in the debates often changed their minds. In February 1921 they reckoned it could, but some weeks later, that it could not. By the middle of March 1921 a smaller group had begun to assemble, again around Rodchenko and called the First Working Group of Constructivists, who examined more urgently the deployment of materials and the laws that should govern them. Now joined by the theoretician Aleksei Gan, the smaller group drafted a number of 'programme' documents that emphasised the importance of Constructivist attitudes within the redefinition of the concept of *work*, and especially the building of 'scientific communism based on the theory of historical materialism' by means of *tektonika* (ideology applied to materials), *konstruktsiya* (constructiveness) and *faktura* (the conscious and expedient handling of materials) – phrases perhaps designed to attract the practical and ideological support of the new state.[37] And yet it was by no means agreed how 'construction' could be achieved in practice. It was to this end that the smaller group organised an extended debate on the distinction between 'composition'

[37] 'Programma rabochei gruppy konstruktivistov INKhUKa' (Programme of the Working Group of Constructivists of INKhUK); in Lodder, *Russian Constructivism*, pp 94-5.

versus 'construction', only to find each other taking different positions. To the sculptor Konstantin Medunetski, construction meant engineering and the drawing that had to precede it; while to the architect Vladimir Stenberg it meant full three-dimensionality. As a painter Varvara Stepanova was undecided, though initially 'construction' to her could lead strongly towards the 'organic unity' of the picture plane. She had already stated in the debate that 'construction demands the absence of both excess materials and excess elements … we are reducing the excessive … and are clearly drawn to construction'.[38] She therefore proposed a terminological compromise to the effect that 'structure' can exist in the painted or graphic work, whereas 'construction' in the full and genuine sense 'could exist only in real things that occupy real space'.[39] Liubov Popova, who did not belong to the smaller group, seemed to concur: 'Genuine construction cannot exist in painting', she said, 'but only an aspiration towards it, or the representation of it'. Construction is 'the actual making of an object, without representation, without contemplation', ie. without plans or planning. The group issued a 'Protocol' to the effect that however 'construction' was to be defined, 'no superfluous elements' should be found in the *constructed* work, unlike *composition* that was merely a 'conventional signification' – the words come from a Protocol issued in early March 1921 as a statement of general principles.[40] Several participants in the discussion decided to submit paired drawings to try and

[38] Stepanova, session of 28 January 1921; Lodder op cit, p 83.
[39] M. Gough, *The Artist As Producer: Russian Constructivism in Revolution*, Berkeley, Los Angeles and London 2005, p.43, chapter 1, passim.
[40] 'Protokol zasedaniya INKhUKa', issued 4 March 1921; C. Lodder, *Russian Constructivism*, Yale University Press, New Haven and London 1983, p 84.

resolve the issue. Those of the architect Nikolai Ladovskii show his own solution: 'the main indication of construction [being] that in it there should be no excess material or elements', whereas composition involves 'hierarchy and coordination' [Fig 19]. The sculptor Alexei Babichev proposed construction as showing how things could really be built. To a seventh participant in the debate, the Latvian sculptor Karl Ioganson, a construction should be fully independent of the plane and fully independent of 'deduction' as the motivating principle of structure. 'Only in real space is there construction', Ioganson said – soon to develop a set of 'cold structures' marked by a rejection of *faktura* and a new concentration upon an interplay of structural forces held in rigid equilibrium, with a radical minimum of material expenditure.[41]

Rodchenko himself, whose constructional drawing is unfortunately lost, entered the debate in a mood of some puzzlement. 'We must proceed according to the definition of engineering construction and verify, in these terms, whether we can have true construction in painting', he proposed, 'rather than just an approximation'.[42] But he then took an overtly ideological position, suggesting that just as *organisation* had created the Revolution, so *organisation* of the elements of art would produce 'pure construction'. 'Construction is the effective *organisation* of material elements', the Protocol had said. 'The scheme of a construction is the combination of lines, and the planes and forms

---

[41] See Ioganson, 'From Construction to Technics and Invention', translated in *Art Into Life*, pp 70 ff; and M.Gough, *The Artist as Producer*, pp 55, 76 ff.
[42] M. Gough, *The Artist as Producer: Russian Constructivism in Revolution*, p.40.

which they define; it is *a system of forces*' – the words may even be Rodchenko's own. And it is those latter emphases, rather than the precepts of practical engineering, that echo a more pervasive language of direction, energy, and force that permeates both Rodchenko's and Popova's writings of the time, in which it is suggested that the *organisation* of energy at the level of the social collective, even of the state, might be the very concept that could guarantee an effective bond of purpose between revolutionary politics and the 'constructive' work of art.

Support for just such a hypothesis has been presented by Charlotte Douglas, who has proposed that two figures in particular, the Latvian chemist Wilhelm Ostwald and the Russian polymath Aleksandr Bogdanov, both of whom were read widely in the years before and after 1917, could well have formed the intellectual background for this aspect of Constructivist thought. Ostwald had advocated a science of 'energetics' that would eventually explain and systematise the links between morality, economics, sociology and art; while Bogdanov's concept of *tektologiya* or tectology (close to Constructivist *tektonika*) propounded a theory of energy-transfer within dynamic organisms that he liked to call 'a science of organisation', a 'theory of systems'. Bogdanov's theory is often said to be the precursor of cybernetics.[43] Popova for

[43] Ostwald published thirty books in Russia, many of them very popular, between 1888 and 1913; while Bogdanov's *Tektologiya* appeared in three volumes in 1913, 1917 and 1922. Bogdanov had Lunacharsky for a brother-in-law and was for a time close to Lenin through his advocacy of Proletkult – although the two eventually fell out. See C. Douglas, 'A Lost Paradigm of Abstraction: Alexander Bogdanov and the Russian Avant-Garde', in Y. Petrova (ed.), *The Russian Avant-Garde: Representation*

her part already insisted that 'energetics' rather than illusionism typified her series of *Painterly Architectonics* of 1918, an 'energetics' defined by the direction of planes and lines and colours in the work that formed the basis of the work's 'construction'.[44] In Popova's *Space-Force Constructions* of 1920 and 1921, painted with thick paint on plywood, the running 'bars' can convincingly be seen as energy channels that confine and organise the more inchoate swirling patterns that lie between them, and that they harness – 'space-force' and 'construction' hence becoming inseparable and connected terms [Fig 20].[45] 'In Russia', Popova writes in December 1921, 'as a result of social and political conditions that we are experiencing, *organisation* [she emphasises the word] has become the objective of the new synthesis … most attention will be given to making the artistic *organisation* of the object into the principle guiding the creation of even the most practical, everyday things'.[46] *Organisation* in this statement has a metaphorical ring, but it also has the advantage of seeming to reconcile the conflicting practical pressures of surface design versus the depiction of illusory depth. Line or channel as a surface

---

and Interpretation, St Petersburg, 2001, pp.203-1, and I. Lebedeva, 'The Poetry of Science: Projectionism and Electroorganism', *The Great Utopia: The Russian and Soviet Avant-Garde 1915-1932*, Guggenheim Museum, New York (passim).

[44] L. Popova, Statement for the 10th State Exhibition of January 1919; in J. Bowlt (ed), *Russian Art of the Avant-Garde: Theory and Criticism, 1902-1932*, London 1976 and 1988, pp.146, 157.

[45] It was sometimes difficult for Popova to decide which way the energy channel was flowing. There is a documentary photo of *Space-Force Construction* 1921 (Tretyakov Gallery Moscow) that shows it hanging the 'wrong' way up in Popova's studio in 1924. See M. Tupitsysn (ed.), *Rodchenko and Popova: Defining Constructivism*, exhibition catalogue, Tate Modern, London 2009, p.18.

[46] L. Popova, 'Commentary on Drawings' (1921), in M. Tupitsyn (ed.) 2009, p.160.

phenomenon could now express force and dynamism, as well as geometry alone.

And yet that apparent reconciliation was only a momentary one. The question of line in pictorial construction was after all still a question of the surface plane, which meant that its resolution in real space would have to take other forms; and there is evidence that Rodchenko was fully aware of the need for that transition. After the early architectural objects of 1918, he had crossed the gap from plane to volume in a series of hanging structures of 1920 and 1921, created by cutting into a plane sheet and then wiring them together at the swivel points where the cut-out pieces touch. They were efficient in as much as they economised on the material used, and space-saving in so far as they could easily be un-wired and folded flat [Fig 21]. They also elegantly demonstrated how concentric cuts could be made in a single piece of material with the minimum of diagrams or planning – 'deductive' structure is a term that might usefully be applied.[47] What seems not to have been addressed in the hanging constructions is the joints themselves: they appear flimsy and even arbitrary to the contemporary modernist eye. And yet Rodchenko determinedly pursued that style of thinking at the end of 1920 and into 1921, launching a third series of constructed objects, the so-called *Equal Form* constructions that articulate how repeatable units fit together in three dimensions while lacking a

[47] This is the proposal of Gough, op cit, pp 47-50, who goes so far as to associate Rodchenko's efforts here with the paintings of the American artist Frank Stella of the 1960s.

more conventional solid armature or core. Echoing the Taylorist work principles being advocated by Lenin at the highest level of the Bolshevik Party, and by the organisation enthusiast Alexei Gastev, Rodchenko's *Equal Forms* anticipate an incipient ethos of mass-manufacturing and pre-fabricated industrial design, while no less importantly they inaugurate a practical engagement with mathematical principles that would recur in other branches of European art in the decades to come [Fig 22]. The *Equal Forms* were developed 'on an experimental basis', Rodchenko wrote in a memoir of 1921-2. 'The purpose was to demonstrate the principle of usefulness of the proposed forms and the deterministic logic of their combinatorial properties, along with the universality of the principle of equal forms, which can be applied to a great variety of constructions in a different systems, types and functions'.[48] The painted line had now become the solid spar, joined to other spars by carpenter's nails and articulating rectilinear structures in space. Soon enough, Rodchenko would photograph them from a low angle to emphasise their architectural qualities and to endow them with the qualities of an image.

Meanwhile his article 'The Line', published in a revised version in December 1921, represents his most complete reflection on the problem of line and its importance to two and three-dimensional art. It is both meandering, over-length, and – herein lies its value – exasperatingly full of paradoxes that leave

[48] A. Rodchenko, 'Automonograph 1921-22', MS, Rodchenko-Stepanova Archive, reproduced in *Alexander Rodchenko: Constructions/Raumkonstruktionen*, Ostfildern-Ruit, and Galerie Gmurzynska, Cologne 2002, p.103.

finally unresolved (and perhaps unresolvable) the question of what line in the constructed work of art must be. He insists, once more *contra* Kandinsky, that freehand and imprecise lines should disappear. A line can be the result of a 'bordering' or 'edge' relationship, he says in one paragraph; or it can be 'a factor in the fundamental construction of any organism, its skeleton so to speak, its system'. We see him groping for a formulation in which one of visual art's most fundamental concepts can be captured and put to use. In the end – it seems inevitable – line continues to contribute structure in two dimensions as well as three, even though its application to spatial bodies looks less convincing due to inevitable practical limits. Line is 'the sole element of construction and creation', Rodchenko says in a summarising statement that wants to encompass almost every possibility. At one and the same time 'line is trajectory, movement, collision, attachment, slicing apart, joining'. Line is 'first and last in both painting and in any construction whatsoever'.[49]

Such a formula seems to define linearity as at times static and at times kinetic, at times additive and at times disjunctive, at times abstract and at times depictive – both sides of the major binaries being traversed at will. If this was the inevitable destination of *faktura*, at least in a revolutionary state, then history would show how many practices would circumnavigate the problem, and from how many ideological and theoretical positions it would be re-addressed. It is interesting to reflect that 'construction' in the forms that the

[49] A. Rodchenko, 'The Line' (1921), translated in *Art Into Life: Russian Constructivism 1914-1932*, Seattle 1990, pp.72-3.

First Working Group of Constructivists gave it never became the unitary concept that its members hoped for at the start. Tatlin, for instance, had simultaneously won critical support for a type of construction that seemed adequate by itself as a rebuff to the bourgeois culture of art. It was certainly perceived by some as sufficient to counter the pervasive everydayness – as they saw it – of Picasso's own constructed art. Thus Mayakovsky, writing his diary during a 1922 visit to Paris: 'I am looking at the catalogue of the Russian art exhibition in Berlin that happens to lie on his [Picasso's] table. I ask "Does it really satisfy you – to take apart a violin for the thousandth time yet again, to produce, as a result, a violin made of tin that no one would even buy, is impossible to play on and is designed exclusively for hanging there and delighting the artist's eye?" Here a Russian, Tatlin, is presented in the catalogue. For a long time now he has been saying that, instead of mutilating the beautiful tin … artists should provide them with form'.[50] By the time of the Revolution, what in Picasso might have been the neck of a guitar, in Tatlin had become an industrial structure on an almost epic scale. The size difference between Tatlin's project for a *Monument to the Third International* of 1920, scheduled for erection over the river Neva at a height of 400 metres, and Picasso's twenty-one centimetre 'tower' known as *Bottle of Bass, Glass and Newspaper* of 1914 makes the two artists' ideological as well as their artistic disparities clear. By the time of Constructivism at the beginning of 1921 the

[50] An excerpt from V.Mayakovsky, 'A Seven-Day Survey of French Painting (Glavka Picasso)', (1923), translated in L. Zhadova (ed), *Vladimir Tatlin,* p 393.This and other fragments were written during Mayakovsky's trip abroad in the autumn of 1922. It remains unclear to whom Mayakovsky's apparently rhetorical question is being addressed.

Russian avant-garde had all but rejected Cubist 'bourgeois' aesthetics for which the Revolution had no further use.

But what of Production Art, the post-Revolutionary move towards industrial design and manufacture? Rodchenko's great tenacity in investigating line between 1918 and 1921 brought vividly to light the fact that the step from two dimensions to three was for the Constructivists the most ambitious, the most difficult and the most hazardous of all. While their supporters vociferously welcomed the leap into Production Art as a final 'goodbye' to easel painting and a whole tradition of European aristocratic and bourgeois culture, subsequent views of the same transition have seen it as a point of irresolution and even decline. Here is art historian John Bowlt's assessment of 1974: 'However radical and novel the forms created by Rodchenko, the Stenbergs et al during 1918-21', Bowlt says, 'they were basically as "aesthetic" and as "decorative" as an easel painting or sculpture' – suggesting that the move into industrial design offered a merely expedient resolution to the problem of financial and practical support in a country increasingly oriented to economic recovery.[51] A recent assessment from the Museum of Modern Art in New York even spoke of the 'heroism, folly, brilliance and defeat' of Constructivism's world-reforming ambitions during those years: a far more sober reading of

[51] J. Bowlt, 'The Construction of Space', in *Von der Fläche zum Raum / From Surface to Space: Russian 1916-24*, Galerie Gmurzynska, Cologne 1974, pp.10-11.

Russian Revolutionary art than the rhetoric of the Revolution allowed for at the time.[52]

Nor has Rodchenko's addiction to exact and generally orthogonal linearity during this phase very often been addressed. A very different kind of experimental artist, Solomon Nikritin, would write in 1924 that 'the latest fad [he is talking about Productivism] is all the more ridiculous for claiming to construct everyday life. Any sensible person understands that daily life is determined not by artfully constructed beds, kiosks, clothing or theatre sets, but by the technical level of the instruments of production and the clarity of the ensuring worldview'. 'Painters', Nikritin insisted, 'must stay in their places, that is, not enter production'.[53] And perhaps it is not only for reasons of utility, or efficiency, or cheapness, that the majority of Rodchenko's designs for real objects during the 1920s employ a very basic vocabulary of straight wooden spars, hinged flaps, folding screens, and collapsible struts – all of them apparently efficient with respect to space as well as being generally applicable to objects that by the nature of their commission needed to be temporary. Art historian Christina Lodder has drawn attention to the fact that, in its practical application as much as in its artistic prototype, Constructivism in the years after 1921 took on a certain 'look' or linear 'style' that put its revolutionary credentials – its claim to have transcended bourgeois aesthetics – in some

[52] P.Galassi, 'Rodchenko and Photography's Revolution', in M. Dabrowski, L. Dickerman, P. Galassi, *Aleksandr Rodchenko*, Museum of Modern Art, New York, 1998, p.131.
[53] E. Lebedeva, 'Electroorganism and Projectionism', in *The Great Utopia*, 1992, p.442.

doubt. She may be right in her assertion that the best of Rodchenko's practical objects were those made for the Workers' Club at the *Exposition Internationale des arts décoratifs et industriels modernes* in Paris in 1925, the clothing and domestic designs being less successful than they [Fig 23].[54] The final verdict may be that his repeated use of the *straight* line and the *rigid* element did run the risk of becoming a trademark, a fetish; at least a disputable claim about how energy travelled and how boundaries (organisational, natural, cosmic) worked – notwithstanding the many posters, books and magazine covers Rodchenko designed and on which his reputation remains historically secure [Fig 24].

To others, too, it seemed odd that Rodchenko was never able to entertain the possibility of curving or naturally asymmetric form. During the course of the 1920s Tatlin, along with Mikhail Matyushin and Pyotr Miturich, evolved a kind of 'organic' Constructivism in which the principle of strict linearity was put firmly aside. Matyushin, himself a 'futurist' musician (he composed the score for *Victory Over the Sun* in 1913) had exhibited sculptures made from tree-roots as early as 1911 in the conviction that curved and naturally branching structures were inherently constructive. Exhibited again at the First Free State Art Exhibition in Petrograd in 1919 alongside Filonov's 'compositions that made themselves' like natural growing organisms, he continued to research alternatives to the orthogonal grid in a Department of Organic Culture in

[54] C. Lodder, 'Russian Constructivist Design', ibid., pp.137–8.

GINKhUK in that city after 1922, and developed a *zor-ved* or 'see-know' system of bodily perception that sought to combine the attributes of embodied vision with the cognition of total space, but without the rigid geometry of Rodchenko's linear style.[55] Malevich, from 1923 Director of GINKhUK after his UNOVIS phase in Vitebsk, described the Petrograd department as 'a kind of bacteriological institute' that researched 'changes in the behaviour of organisms' both in their evolution and growth relations alike.[56] Khlebnikov, an ally of Matyushin, had written lyrically about Tatlin's *kontr*-reliefs that 'he knotted a spider-web doll of rigging into an iron horseshoe' – a sign that he, Khlebnikov, also supported a minority conviction in the importance of organic form for progressive artistic work. Presciently, Matyushin sketched several possible organic forms for architecture and speculated on the appearance (verified in much later urban theory) of plant-like patterns visible in the growth of towns and cities.[57] Tatlin, for his part, adopted the organic or curved line, first in designs for a man's suit and overcoat in 1923-4 and then for a bentwood chair with a moulded seat in 1927, all of which followed the curved forms and typical movements of the human body.[58] Two principles of organicism quickly emerged in Tatlin's thinking: one, that objects designed for use should have

[55] For Matyushin's 'spatial realism' and his concept of *zorved* or 'see-know', developed from 1918 at the Petrograd Svomas and later at GINKhUK, see A.Povelikhina, 'Matyushin's Spatial System', *The Structurist*, 15/16, 1975/6, pp 64-77. 'Organic' Constructivism is the term used by Lodder, *Russian Constructivism*, Chapter 7, pp 205-23.
[56] I.Karassik, 'Das Institut für Kunstlerische Kultur (GINKhUK)', in H.Klotz (ed), *Matjuschin und die Leningrader Avantgarde* (exhibition catalogue), Karlsruhe 1991, p 40; cited in I.Wünsche, 'Biocentric Modernism: the Other Side of the Avant-Garde', in V.Lahoda (ed), *Local Strategies, International Ambitions*, Prague 2006, p 128.
[57] See Lodder, *Russian Constructivism*, op cit, pp 222-3
[58] The clothing was designed for Leningradodezhda (Leningrad Clothes).

both function and elasticity; and two, that the human body is an exemplary structure in itself. As Tatlin said in an article of 1929, 'a human is an organic being consisting of a skeleton, nerves and muscle … [and therefore] we use as models the phenomena of living nature'.[59] A third principle came from Tatlin's study of material itself, notably wood and especially maple, which had tensile and tactile qualities that when steamed, bent, and fastened, enabled it to be formed into highly efficient structures: 'Here colour, *faktura*, strength, elasticity, weight, durability are all studied', Tatlin would claim. An object from the West 'cannot satisfy us', he further said. 'The conditions of everyday life here impose much greater demands than in the capitalist countries … and this is the reason I show such great interest in organic form … for the creation of a new object'. [60]

In Russia itself, then, Constructivism evolved through a number of attitudes and positions without ever assuming a final or 'official' form. Sparked into life by the debate about *faktura* in the art-object, it had soon developed into an overarching awareness of the importance of material, and making, to the identity of the art-object in a post-religious and in-principle democratising culture. And in that process the identity of the viewer called into being by the art-object evolved rapidly too. If *faktura* had started life as an index of the artist's personality, it had evolved in the Cubist object and relief to become an

[59] V.Tatlin, 'The Artist as Organiser of Everyday Life', *Rabis*, no 48, 25 November 1929; translated in Zhadova (ed), p 267.
[60] V.Tatlin, 'The Problem of Correlating Man and the Object', *Rabis*, no 15, 14 April 1930; translated in Zhadova (ed), *Tatlin*, 268.

injunction that the viewer exercise curiosity, examining and exploring with the eyes, probing and moving with respect to the object; until under the imperatives of full Constructivism and Production Art it had become an assertion of the art-object's madeness and utility, its suitedness to the tasks of a new society. And if at first the viewer had been a kind of aesthete, he or she was quickly enjoined to become first a participant, and then no longer merely a participant but a manipulator and builder of useful things. The viewer who had once been a bourgeois individual savouring surface handling was now, in the aftermath of Constructivism, being urged to become a fully politicised individual aware of his or her place in the planning and construction of the collective.

In Russia itself conditions were to prove hostile to the development of both linear and organic Constructivism. And the distinction could matter deeply. Tatlin was fully aware of the distance between himself and the linear Constructivists. By 1932 he roundly accused them of 'using materials abstractly, for the sake of formal tasks, mechanically applying technology to their art as well'. His own utilitarian prototypes, including a flying machine, the *Letatlin*, had introduced into everyday objects 'form, dictated by complex curvatures' as well as 'curved surfaces' [Fig 25]. Rodchenko, he reflected, 'had gone along a path of geometrical thinking, not understanding me'.[61] But by as early as 1922 the terminology and attitudes of both Constructivisms had

[61] V.Tatlin, 'Art into Technology', *Brigada Khudozhnikov*, 6, 1932, p 16; translation in Lodder, *Russian Constructivism*, p 213.

spread far and wide in Russia, as well as beyond it. Malevich had taken the *faktura* principle to Vitebsk and placed it at the centre of his UNOVIS research group in 1919-20, investigating *faktura* not only in surface but also in volume, colour, light and music in pursuit of what he called a 'Constructivist approach … to reorganising the world' – an attitude very different from that of the First Working Group. While in Vitebsk Malevich had also won over the restless El Lissitzky, who like him harboured ambitions for social transformation through art, but who would soon leave Vitebsk for Germany to join the De Stijl founder Theo Van Doesburg and the Dadaist Hans Richter in an unstable alliance on behalf of an 'International Fraction of Constructivists' at a Düsseldorf conference in 1922, while attempting to take art towards architecture with a spatial and perceptual philosophy of his own.[62]

Even by that date, therefore, 'Constructivism' had become an international byword for debate about the socially progressive work of art that felt no obligation to completely collapse its mission into utilitarianism and design, let alone one based on line alone. Take the case of Władisław Strzemiński, born to a Polish family in Minsk, who knew Tatlin well and entered Malevich's UNOVIS circle briefly in 1919-20, and seems to have known Matyushin's organicism too. By the time Strzemiński and his future wife Katarzyna Kobro arrived back in Poland in 1922 they were already thinking deeply about the unity of a work of art that was both 'constructive' and simultaneously rooted in

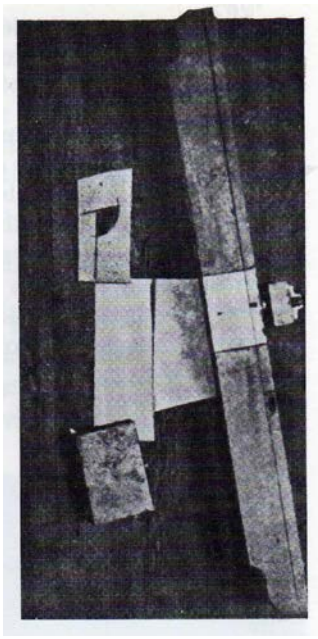
[62] T.Van Doesburg, El Lissitzky, H.Richter, 'Declaration of the International Fraction of Constructivists' (1922), published in *De Stijl*, vol V, no 4, 1923, pp 61-4.

the organic workings of human perception. Strzemiński and Kobro's philosophy of Unism, practiced and published from the mid-1920s onwards to wide appeal in that country, also sought 'the unity of organic forms … that by their character are parallel with nature'. Strzremiński was also critical of Rodchenko's drive for Production, and sought to demonstrate in a series of experimental works how *faktura*, colour and shape, rather than line and material, could also define a profound sense of engagement between a 'constructed' work of art and its viewer [Fig 26].[63] For him and for others in the decades to come, the legacies of Constructivism would be as numerous as they would be controversial.

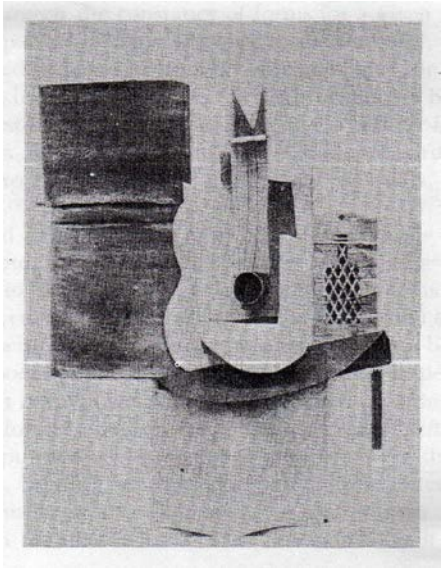
Illustrations

[63] W.Strzremiński, 'Określam sztukę', *Wystavy Nowej Sztuki*, Vilniud 1923, p 19; cited in J.Jedliński, 'To Construct a Seeing', *Władysław Strzemiński: On the 100th Anniversary of His Birth 1893-1952*, Muzeum Sztuki, Łódź, 1993, p 17. Unism was formally announced in Strzremiński's essay 'Dualizm i Unizm', *Droga*, No 6-7, 1927, pp 211-25. The distance quickly established between Rodchenko's group and the Polish, German and other 'international' tendencies of Constructivism is examined in.Lodder, 'International Constructivism and the Legacy of UNOVIS in the 1920s: El Lissitzky, Katarzyna Kobro, Władisław Strzremiński', in V.Lahoda (ed), *Local Strategies, International Ambitions*, Prague 2006, pp 195-204.

2. V.Tatlin, *Madonna: Study for Composition-Analysis*, 1913, gouache and pencil on paper, 49 x 33 cm.



3. V.Tatlin, *Painterly Relief*, 1913 mixed materials [dimensions unknown]

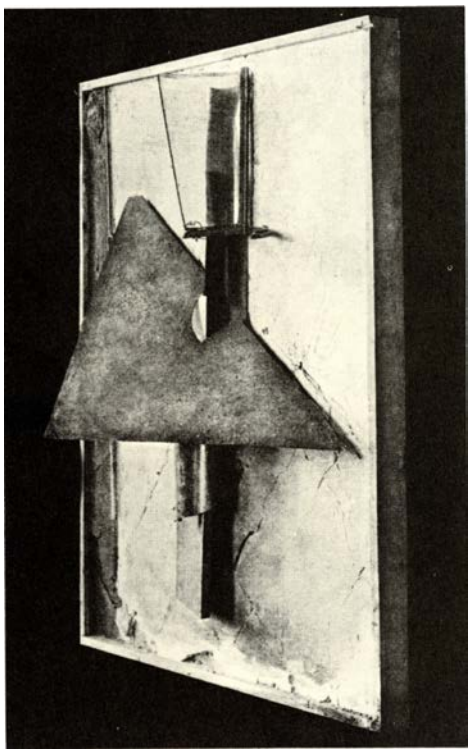


4. P.Picasso, *Guitar and Bottle*, late 1913, mixed materials, [dimensions unknown]

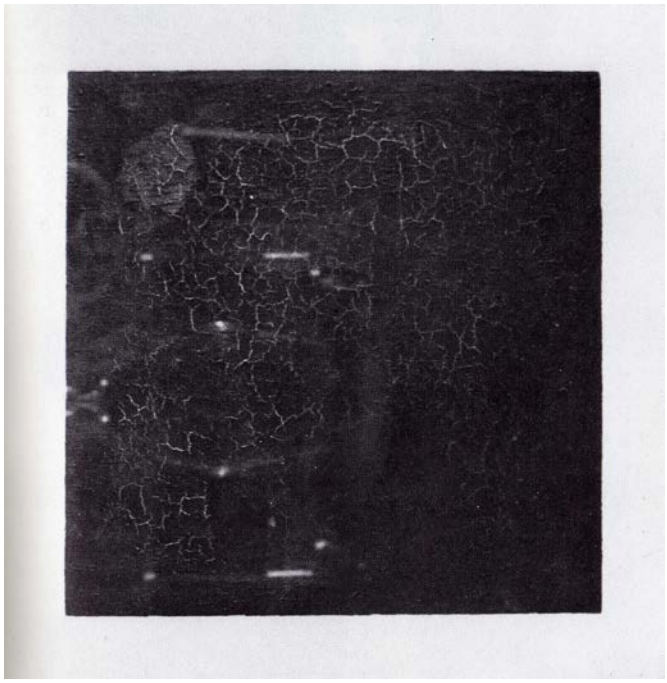
5. P.Picasso, *Bottle of Bass, Glass and Newspaper*, 1914, painted wood and tin, 21 cm high

6. *Icon of the Virgin Hodegetria*, 13th century, tempera on wood, silver-metal revetment, 97 x 67 cm

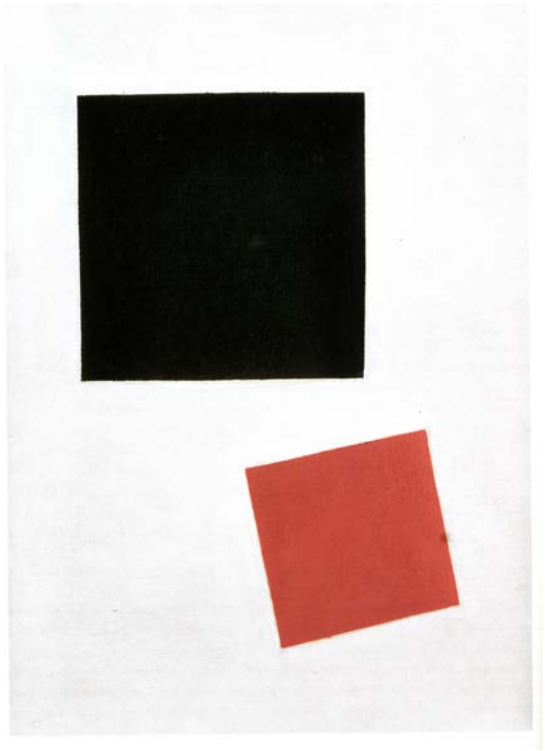
7. *Icon of the Archangel Michael*, 10th century, enamel on gold, 44 x 36 x 2 cm



8. V.Tatlin, *Painterly Relief*, 1915, glass, metal and plaster [dimensions unknown]

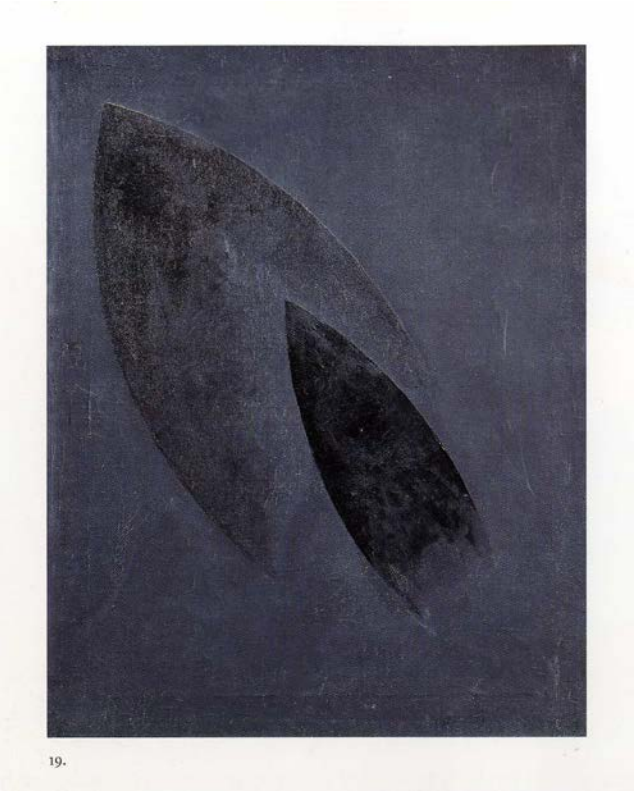


9. K.Malevich, *Black Square*, 1915, oil on canvas, 79.5 x 79.5 cm



10. K.Malevich, *Painterly Realism of a Boy with a Knapsack*, 1915, oil on canvas, 71.4 x 44.4 cm

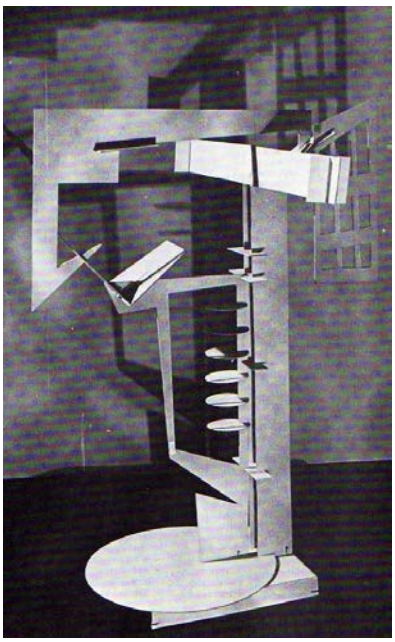
11. I.Kliun, *Non-objective construction in three dimensions*, 1916, wood, iron and wax, 58 x 37 x 7 cm



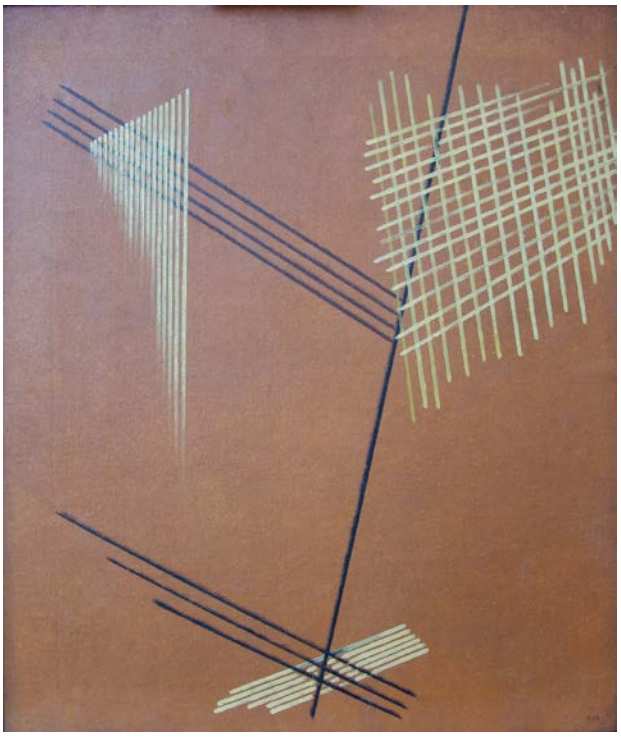
12. A.Rodchenko, *Composition No 81 (Black on Black)*, 1918, 82 x 65 cm

13. W.Kandinsky, *Study for Composition No 7*, 1913, oil on canvas, 78 x 100 cm

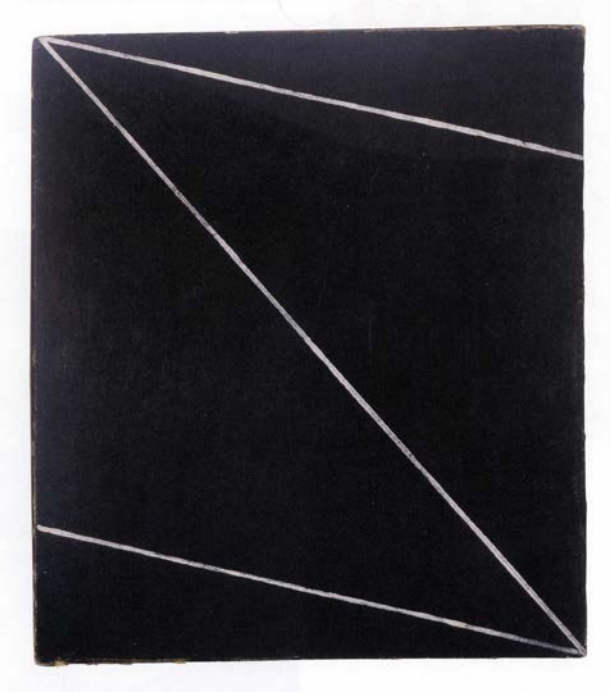
14. L.Popova, *Painterly Architectonics*, 1917, oil on canvas, 44 x 35 cm



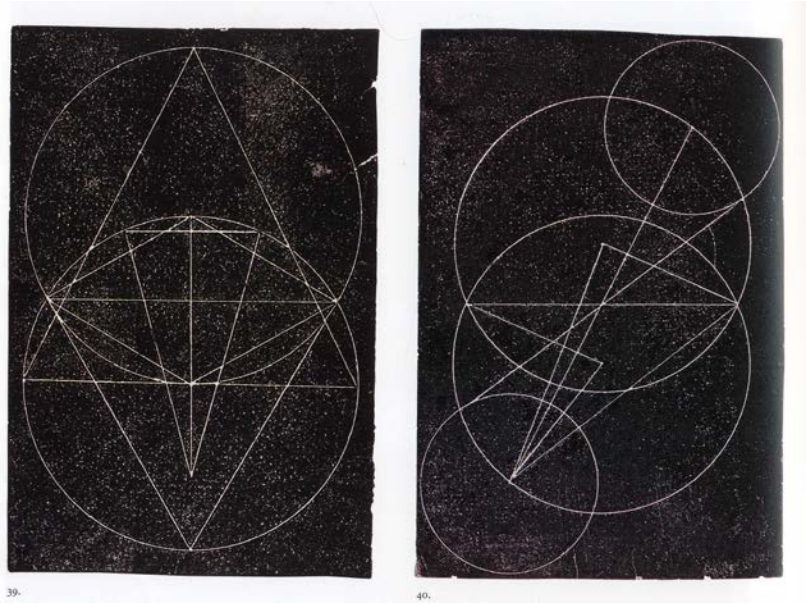
15. A.Rodchenko, *Spatial Construction No 5*, 1918 [dimensions unknown]



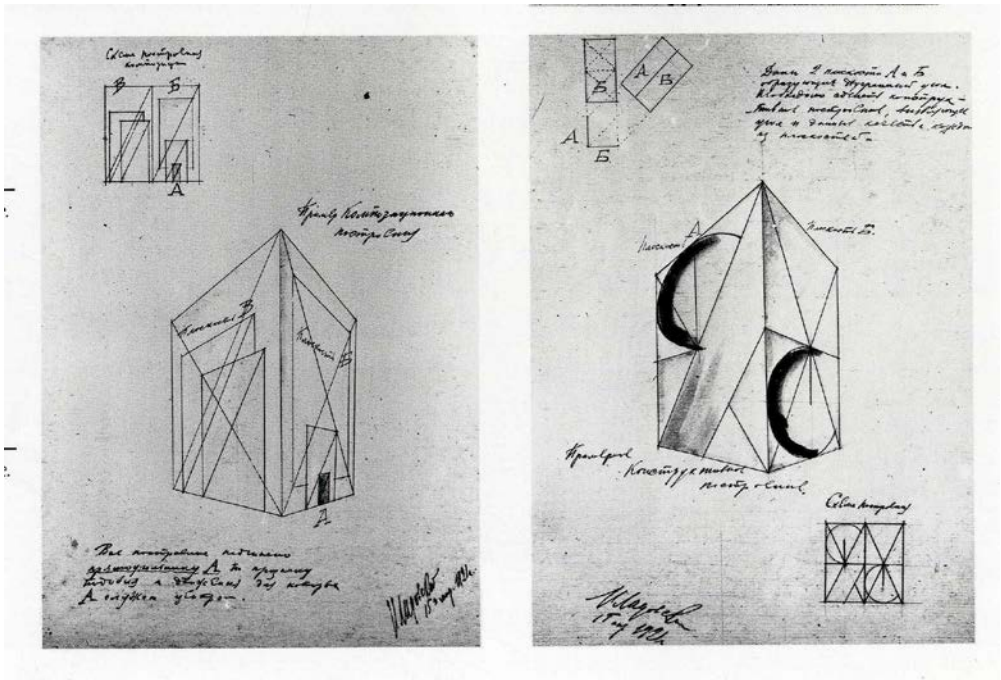
16. A.Rodchenko, *Non-Objective Painting (Line)*, 1919, oil on canvas, 84.5 x 71.1 cm



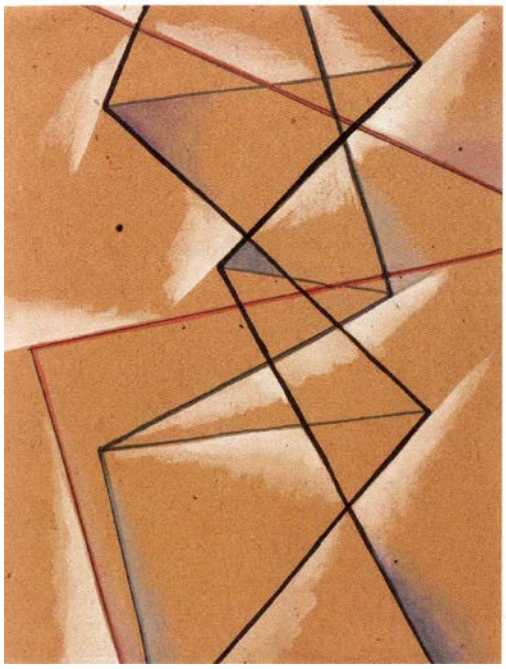
17. A.Rodchenko, *Construction No 126*, oil on canvas, 58.5 x 51 cm



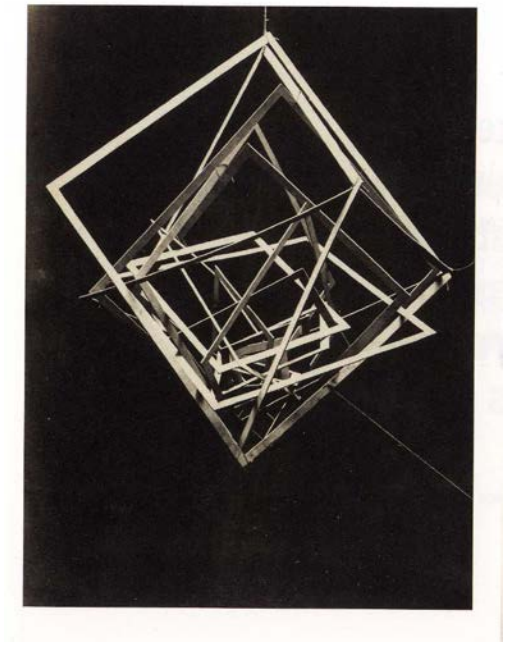
18. A.Rodchenko, *Construction no 58* and *Construction No 60*, both 1921, linocut, 27.5 x 15 cm



19. N.Ladovski, *Composition and Construction drawings*, 1921, ink, pencil and wash on cardboard, each 38 x 27.5 cm



20. L.Popova, *Study for Space-force Construction No 80*, 1921, gouache on paper, 35.2 x 26.6 cm

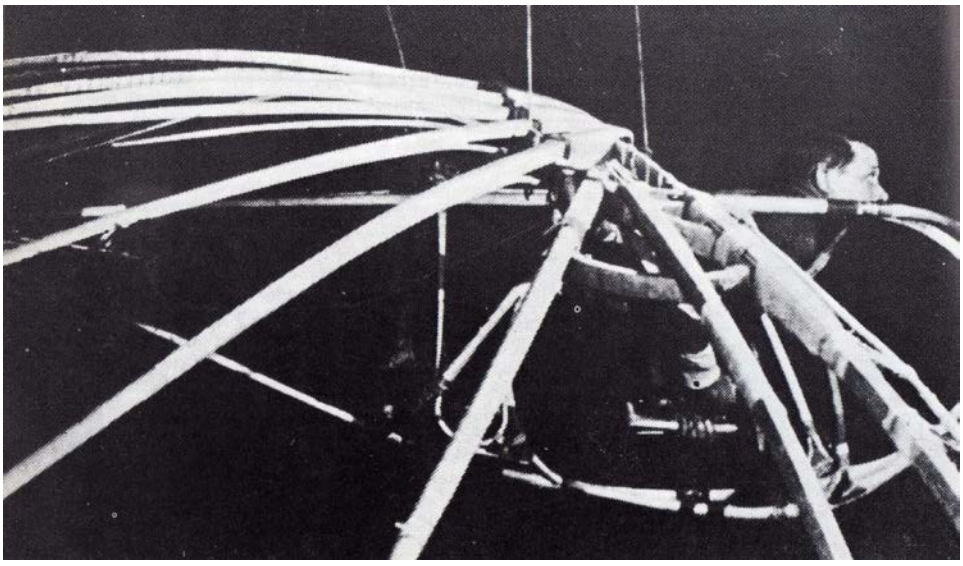


21.A.Rodchenko, *Hanging Spatial Construction No 11: Square in Square*, 1920, wood, 90 x 80 x 85 cm [dimensions unknown]

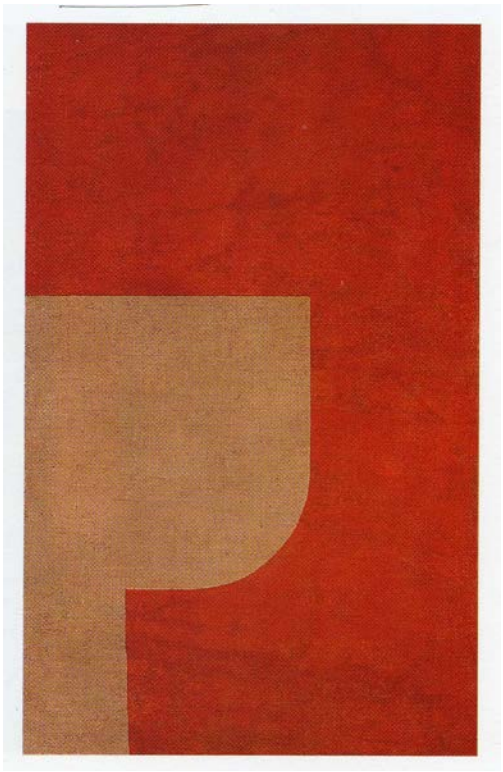
22. A.Rodchenko, *Systematic Construction (Equal Forms series)*, 1921 [dimensions unknown]

23. A.Rodchenko, *Workers' Club installed at the Exposition Internationale des Arts Décoratifs*, Paris 1925

24. A.Rodchenko, Cover for *Novyi LEF*, 1927, letterpress, 23 x 15 cm



25. V.Tatlin, *Letatlin*, 1932



26. W.Strzeminski, *Architectural Composition 6b*, 1926, oil on canvas, 96 x 60 cm

2. Time and the Viewer

Time became important to modern art when painting took on the qualities of an object and demanded that the viewer move. The Cubist *tableau-objet* was the prime mover – but we have noticed others since. Though ideas of time seldom appear overtly in the discussions of the Russian Constructivists, Burliuk's concept of *faktura* certainly implies them; and the relief mode practised by Tatlin and others precipitated a 'real-time' encounter with the work of art in which the viewer was invited to move. Lissitzky's insistence that the viewer of a *Proun* 'circle like a planet round the picture', looking at it from many of its sides, was in effect a refusal of the viewer's instinct to maintain a stable position before two-dimensional work. Mondrian's carefully equilibriated compositions, bordered by a novel type of framing and edge-construction, mobilised a gentler animation of the viewer before the work [Fig 27]. Those precedents, and others, prepared the ground for some explicitly temporal forms of reception that became prominent in the two decades after 1945.

Some artists after Constructivism insisted that the art object itself should move. As early as 1922 Naum Gabo and his brother Antoine Pevsner had resisted the pull of mainstream Constructivism, that of Rodchenko and the First Working Group, by arguing that physical mass be eliminated from the work of art with a view to replacing 'static' rhythms with 'kinetic' ones.[1] The young László Moholy-Nagy, in Berlin, took the hint; and at the end of that year published

[1] N.Gabo and A.Pevsner, *The Realistic Manifesto*, 1922.

with the critic Alfred Kemeny a manifesto of their own, in which they claimed that 'Constructivism means the activation of space by means of a dynamic-constructive system of forces … we must put in the place of the static principle of classical art the dynamic principle of universal life … Instead of static material construction … dynamic construction must be evolved in which material is employed only as the carrier of forces'.[2] Moholy's important 'transparency' paintings were the result, in which planes of colour seemed to float unanchored in the painting's surface space. There followed his *Light Prop for Electric Stage* (later dubbed the *Light-Space Modulator*), finished in 1930. And then, in Chicago via London at the end of the 1930s, first at the New Bauhaus and then at the School of Design, Moholy would stand on traffic islands to photograph streams of moving night-time traffic and register light-patterns that the unaided eye cannot see; or he would attempt to photograph the *faktura*-in-motion of algae growing on a pond.[3] Moholy's elegant hanging objects in Plexiglas of 1940-1 were made to appear almost immaterial, as if constructed not of matter, but of light and line and movement alone [Fig 28].[4]

---

[2] L.Moholy-Nagy and A.Kemeny, 'The Dynamic-Constructive System of Forces', *Der Sturm*, no 12, 1922; cited by Moholy in his own *Vision in Motion*, Chicago 1947, p 238.

[3] These works are discussed in J.Fiedler and H.Moholy-Nagy (eds), *László Moholy-Nagy: Colour in Transparency: Photographic Experiments in Colour 1934-1946*, Bauhaus-Archiv, Berlin 2006.

[4] Gabo himself 'went kinetic' in his American years after 1946, urging artists in a shattered war-torn world to 'go beyond mere expressions of personality (the oldest form of bourgeois *faktura*) to conceive and represent the world without and within him in form and by means of artfully constructed images'; N.Gabo, 'On Constructive Realism' (The Trowbridge Lecture of 1948, Yale University), reprinted in *Gabo: Constructions: Sculpture, Paintings, Drawings, Engravings*, Lund Humphries, London 1957, p 175.

But it is the temporality of the viewer that is our subject here; and more especially the relation between the viewer's *visual* research and his final apprehension of an ordered, singular whole. In Art Concret or Elementarism of the 1930s, for instance, the art-object allowed the viewer to remain stationary, while demanding of him cerebral work of a complex and temporally extended kind. When the Swiss artist Max Bill turned his attention from algebra to the organisation of the square after 1945, he also wished that type of ratiocination be applied to static and durable work. Bill's own paintings of the period were by then being built according to the mapping of number rhythms and intervals onto a limited set of colours according to combinatorial rules: the task for the viewer was no more and no less than to reconstruct the rules by which a painting itself had been made. And that form of temporality he now projected onto virtually every other form of geometrical art. He had just published an analysis of Paul Klee's spatially complex *Surfaces entretendues* (1930) in which he, Bill, claimed to see an 'irreducibly aperspectival space' reminiscent of diagrams that mathematicians employ for representing the fourth dimension, but could never be realised in sculpture. Bill's argument was that the function of viewing was to unravel the spatial paradoxes, the eye-deceiving corners and flattenings that such a painting contained [Fig 29].[5] And he would shortly publish an analysis of one of Mondrian's lozenge paintings, *Composition I with Blue and Yellow* of 1925, to claim that its visible planes and areas constituted a

[5] M.Bill, 'Paul Klee', in *Werk*, no 8, Zurich 1940 – a work to which Valentina Anker nevertheless relates to Bill's metal sculpture *Construction in Thirty Equal Elements*, 1938-9; see her *Max Bill ou la recherche d'un art logique: essai d'une analyse structurale de l'oeuvre d'art*, Editions l'Age d'Homme, Lausanne 1979, p 133.

'nucleus' of forms that spread out beyond the picture plane in a virtually infinite number of possibilities 'for which, like the well-defined rules of a game, only the nucleus was defined'.[6] In both readings – and however unfairly to Klee or Mondrian – Bill's viewer was one absorbed by geometrical paradox, and by the flip-flopping and cascading of possible readings against one another. In fact Bill seldom wavered from a commitment to the principle the art-work itself is a 'non-changeable fact ... an unchangeable message from today into the future', one resistant to the fluctuations of artistic fashion and capable of projecting a set of calm Platonic relations that transcends the flux of the world.[7] In a diamond-format painting of his own, such as *Le Carré Rouge* of 1946, he would again seek affinity to Mondrian by associating the surface area of the white square with that of the implied black rectangle, a red square remaining at the centre – above all to give his viewer difficult and yet rewarding ratiocination to do [Fig 30]. And his further conviction was that no viewer of such paintings would be likely to miss the interplay of two quite independent measures: the *order* that can be divined within some visual arrangement, and the *complexity* of the resulting composition to the senses. There are reasons for believing that Bill took his cue in this from the Harvard mathematician

---

[6] M. Bill, 'Die Komposition 1 / 1925 Piet Mondrian', *Zürcher Kunstgesellschaft*, Jahresbericht, 1956; republished as 'Composition I with Blue and Yellow, 1925 by Piet Mondrian', in *Piet Mondrian 1872-1944: Centennial Exhibition*, Solomon R Guggenheim Museum, New York 1971, pp 74-6. The famous passage in Wittgenstein's *Philosophical Investigations* (1953) which concerned itself with the paradox of holding in mind alternate readings of a simple graphic figure (duck or rabbit) presents a similar instance of whether the mind is *single* or *double* at the time.

[7] See Bill's retrospective statement 'Art as a non-changeable fact', in A.Hill (ed), *DATA: Directions in Art, Theory and Aesthetics*, New York Graphic Society, 1968, p 113.

G.D.Birkhoff's book *Aesthetic Measure*, widely influential among artists since its publication in 1933, in which it had been proposed that aesthetic quality or level (M) increases with *order* (O) and declines with *complexity* (C) in a regular relation of M = O/C, where order itself accrues from vertical symmetry, equilibrium, rotational symmetry and orientation combined.[8] For example Bill's own *Champs de quatre groupes clairs* of 1963 – to take a typical example of his slightly later work – is built from a method in which yellow, violet, blue and green squares are arranged in multiple symmetries and sub-symmetries, with substantial *order* but low visual *complexity* [Fig 31]. In such a case, the claim made on the viewer's attention is that a patient and quite possibly extended reconstruction of those orderings would constitute a complete aesthetic understanding of the work. In like manner, Richard Paul Lhose's paintings incorporated serial orderings of limited numbers of extremely vivid colour-squares for at least two decades after 1945, each one claiming a degree of order that remains just inside the scope of the alert mind's capacity to grasp it (though in practice some may exceed it, and some viewers may succeed where others fail) [Fig 32]. For both Swiss artists, the aesthetic goal was the viewer's apprehension of formal and even mathematical order in the work – with the implication that such apprehension can eventually take a final, instantaneous form. And yet of necessity, all such apprehensions *take time*.[9]

---

[8] G.D.Birkhoff, *Aesthetic Measure*, Harvard University Press, 1933.

[9] According to an account by Max Bense, such works were designed as 'closed' systems in contrast to *tachiste, informel* and expressionist works that showed an

It turns out that some form of interplay between duration and instantaneity in the viewing process (even a fertile coalition of the two) would become a fundamental condition of extremely large number of works after the Second World War, but especially those made according to the principle of relief – shallow arrangements of planes of different materials that implied a physically mobile viewer, in addition to requiring him or her to interrogate the proportional or other calculations that underlay the construction of the work. A method termed Construct*ionism* – quite possibly an erroneous reading of an earlier and politically radical Construct*ivism* – became for the American sculptor Charles Biederman firstly a method of evading mimeticism (it could be handled by photography) at the same time as it became a method of achieving materiality of a truly contemporary kind. The climax of his monumental book *Art as the Evolution of Visual Knowledge*, published in 1948, was a long argument in favour of the principle of relief as a constructed synthesis and transcendence of two-dimensional art (painting) and three (sculpture and architecture). In his book he presented his own constructions along with those of Gabo, Pevsner, Domela, Jean Gorin and Joan Barnes as exemplifying a *rational* constructive aesthetic capable of absorbing the accomplishments of contemporary science, its methods and discoveries, and placing them in the vanguard of what he unapologetically called an 'advanced'

'open' character. See Bense, 'Max Bill, 1963', *Art International*, Vol VIII, 3, 1963, p 32. Bense is here responding to U.Eco, *Opera Aperto*, 1963.

form of human awareness [Fig 33].[10] Gorin – whom Mondrian in the 1920s had viewed as his most important follower[11] – was by the later 1940s expressing the view that the artistic revolutions stemming from Cubism inaugurated a collective, pure functionalism that propagated the values of 'logic, clarity and exactitude'; a sensibility that man of the past could never realise, but that would gradually regenerate the life of contemporary society [Fig 34].[12] Decidedly non-Aristotelian in its inclusion of different materials and media, Constructionist art-making of this type implied a beholder who would see him or herself as incarnating, potentially if not quite yet in practice, an 'evolved' state of consciousness of which the constructed work was both the stimulus and the occasion. Vastly utopian and optimistic, Biederman's 'constructive' viewer would herald and exemplify that future. Interestingly, while Biederman christened plants as 'chemistry-binding' and animals as 'space-binding', humanity, what he called 'this magnificent natural agency by which the past lives in the present and the present for the future', he described as the 'time-binding class of life': a class of creature capable of learning lessons from a progressively enlightened even if still generally benighted recent

---

[10] C.Biedeman, *Art as the Evolution of Visual Knowledge*, Minnesota 1948, especially pp 519-655.
[11] C.Blotkamp, *Mondrian: The Art of Destruction*, London 1994, p 215.
[12] J.Gorin, 'Constant Values in Art' and 'Art of the New Times', unpublished MSS, 1940s, cited by Biederman, *Art As The Evolution of Visual Knowledge*, pp 599, 619. Much of the phraseology recurs in Gorin, 'Art and Philosophy', *Structure*, 4th series, No 2, 1962, pp 32-4, in which he defends a 'rigid intellect, an exact, mathematical technique which reveals the universal and permanent beauty expressed by the pure plastic spatial work of art', in the face of which the viewer, 'having mastered and dominated the *primary* emotion must feel the *ultimate* emotion crystalised in the expression of the composition ... [Thus] we are faced with a *new* emotion ... liberated from any expressionist lyricism and bestowed with a purely concrete and truly constructive plastic activity' (p 340, my emphases).

past.[13] And to the time-binding viewer, for Biederman, there corresponded the fully temporalised work of art.

Biederman himself would soon turn back to Cézanne as the master-constructor of modern painting, publishing a book on him in 1958 in which both the dynamic and stabilising elements in his pictures are claimed to work in tandem. The key – he speculates whether Cézanne knew about the science of crystallography, in which, around the turn of the century, hundreds of structural variations had been discovered – is the painter's melding of symmetry and asymmetry within a single dialectic. Cézanne's well-known comment to Gasquest that the surface of a painting must be interlaced like the locked fingers of two hands, Biederman patiently translates into diagrams of overlapping groups of concentric circles, rhythmically circulating across the surface in a 'chaotic whirl of experience', their 'throbbing rhythms' stabilised only by implied line-lattices that, made explicit in the diagram, imply that 'the edges of the canvas appear like a prism from which stream rays of light' [Fig 35]. It is less a geometrical analysis than a crystallographic one that aimed to recreate the shallow-depth sensations to which Cézanne's surfaces famously give rise – a talisman, in Biederman's eyes, of a Constructionism that is 'neither painting nor sculpture'.[14]

---

[13] Biederman cites Alfred Korzybski's *Manhood of Humanity: The Art and Science of Human Engineering*, Dutton and Co, New York 1923, p 60. See Biederman,.*Art as the Evolution of Visual Knowledge*, p 616.

[14] C.Biederman, *The New Cézanne*, Red Wing, Minnesota, 1958, pp 36, 37, 82.

For further examples of temporalisation we can turn again to Britain, where the viewer's analytical curiosity in the face of Constructionist work – he or she now mobilised as an investigator, as a builder of tomorrow – found practical reflection in architecture. Stephen Gilbert, a CoBrA group member from 1948 to 1951 who divided his working time between London and Paris, evolved a trenchant theory of the activated viewer in connection with a switch in his own practice from expressive painting to relief around 1952, thence to 'space-constructions' around 1954, in which he would attempt to update the achievements of the De Stijl architects with the help of a range of new materials [Fig 36]. The key to Gilbert's development lay in the new materials available to the post-war building trade such as vitreous aluminium, plastics, coloured transparent sheets and double-glazed glass that reduced wall surfaces to 'practically immaterial planes, which yet retain the insulating properties and rigidity of classical construction'. With the aid of these novelties Gilbert recognised the possibility of an architecture that, 'unified with painting and sculpture, creates a new plastic reality'.[15] Reaching beyond Mondrian's purely planar use of colour, as well as what he calls the 'non-integrated' colour-use of van Doesburg and van Eesteren, he envisioned weather-proof and insulating colour-planes that might contribute to open-form constructions in thin and light-weight materials.

[15] S.Gilbert, 'The plastic elements of construction' (1954), in A.Hill (ed), *DATA: Directions in art, theory and aesthetics*, 1968, p 126.

Thanks to recent research we know that Gilbert was invited to collaborate with two sympathetic architects working in Yorkshire between 1955 and 1957, as a result of which he was able to exhibit a model for an organic, façade-less house in Paris at the Salon des Réalités Nouvelles in 1955 – he called it 'the Néovision house' – based on a rhythmic perception of changing colours according to how the viewer/occupant moved [Fig 37].[16] Such a kinetic conception of the viewer's experience of a building appears to be the direct opposite of the static and reposeful aesthetics underlying contemporaneous modernist projects in America, such as Charles and Ray Eames' house in Los Angeles of 1949, or Mies van der Rohe's classicising Farnsworth House in Plano, Illinois, of 1951. It is symptomatic of financial and planning restrictions in Yorkshire at that time that Gilbert's architectural projects were never realised; and yet an indirect result was the building of two private houses in Huddersfield by his former colleagues that must be assumed to exemplify Gilbert's own contribution to theory – the theory that the designed structure be 'interpenetrated by space, visually unenclosed by its transparent glass-wall areas, and determined by the planes of colour composing it'.[17] The sought-after result was a kind of motion that the human subject of architecture would apprehend 'through static movement or rhythm, as well as through the kinetic'.

---

[16] 'Néovision' was the name of a design group in Paris that Gilbert formed with Constant, Nicholas Schöffer and Claude Parent. For this and related projects, see A.Grieve, *Constructed Abstract Art in England: A Neglected Avant-Garde,* Yale University Press 2005, pp 204-9.

[17] The collaboration between Stephen Gilbert and Peter Stead, resulting in the two Huddersfield houses by Stead and David Lewis, is documented in S.Gathercole, 'Art and construction in Britain in the 1950s', *Art History*, Vol 29, no 5, November 2006, pp 887-925.

By means of its open structure, viewers and occupants were to be made aware of the building as 'a series of visual impacts and as a single movement in space', such that we 'can relate our visual knowledge to space-time processes': these formulations are from Gilbert's writings of the time. For him, such visual impacts demanded what he called 'active participation', which for the building's user would be 'a dialogue with time'. Static movement, or visual rhythm, 'unfolds itself and is developed by the spectator's own displacements'.[18]

Working mainly from a studio in Paris, Gilbert soon became disillusioned with the practical demands of architecture and went back to the making of abstract space-constructions in the studio in the later 1950s – which on a smaller scale exemplified further elements in his theory of built form. Exhibited recently after a half-century of neglect, it is now clear how those constructions convincingly fulfil a promise made during his retreat to the studio, namely to provide rhythm by means of the viewer's own motion. Static and kinetic colour rhythms are mobilised by the use of the *curved* surface that 'can appear to increase or decrease its area in relation to the changing point of view of the spectator' and hence to 'reduce visual shape'.[19] The viewer of the twenty-first

[18] S.Gilbert, 'The plastic elements of construction' (1954), pp 127, 128.
[19] S.Gilbert, 'The plastic elements of construction' (1954), p 128. Gilbert would later introduce the metaphor of natural form: 'An art using curves appears more natural to us, for the reason that we are physically conformed by the same laws. The moving leaves of a tree express an extremely complex animation of space, in which, however, one senses the existence of a natural order. Curvilinear space-form is an attempt to integrate with this visible and universal spatiality'. See Gilbert, 'Notes on orthogonal and curvilinear space-form', *Structure*, 5th series, No 2, 1963, p 35.

century can appreciate how openness and asymmetry in Gilbert's constructions combined successfully to induce full spatio-temporal awareness and kinetic flow.

Quite aside from Gilbert's difficulties with his builders, the inter-translation of architecture and art would prove a highly controversial principle for other Constructionists of his generation. A group of that name in London held a series of three studio exhibitions in 1952-3 that demonstrated strong familiarity with Constructivist art internationally and particularly with Biederman's theories of relief construction as an ontologically futurist form.[20] That London context is instructive in showing how widely felt were the pressures experienced by advanced artists everywhere in the 1950s to put the discoveries of the pioneer modernists to good use – to bring them into line, in effect, with a contemporary technical and scientific understanding of the world. To one of the London Constructionists, Anthony Hill, any expressionist or *tachiste* work would be automatically 'abhorent'.[21] Hill, who had mathematical interests, was already experimenting with the possibilities of relief in plastic and board (he would soon include Formica and aluminium) based on Bill and Biederman's example – but from the start was explicit in believing that gallery reliefs were architecture only in a 'pure' form, in a way that buildings were not and could

[20] The exhibitions are the subject of A.Grieve, *Constructed Abstract Art in England: A Neglected Avant-Garde*, Yale University press, 2005, pp 17-30.
[21] A.Hill, 'A view of non-figurative art and mathematics and an analysis of a structural relief', *Leonardo*, vol 10, 1977, p 8.

never be [Fig 38].[22] The difference lay in the posture and position of the viewer. As Hill explains it, the constructed relief but not the building 'is completed by a physical context [uprightness and facingness] and its interaction with the spectator'. And that interaction was such as to prompt the viewer to 'investigate' the work with a view ultimately of 'presenting a complete account of every aspect of the work'; of 'showing how a work of art functions'.[23] In Hill's case, it was an investigation that could far exceed in complexity that demanded by a work of Lohse or Bill; and he would soon publish lengthy mathematical explanations of the calculations in his own works that could prove challenging even to a trained mathematician. For example, Hill's *Constructional Relief* of 1960 was the result of an application to a square format of the rule that the square of an odd number N is the sum of N consecutive integers having N as its middle term (thus $5^2 = 3+4+5+6+7$), modified by rhythms based on sequences of nodes, regions and boundaries within the square. His *Prime Rhythms,* also of 1960, was formed with the help of successive mathematical operations on sequences of twin primes [Fig 39].[24] Inevitably, those relations would play a controversial role in the actual

---

[22] See especially his reflections on his own building-scale relief for a commission on the South Bank in London in 1961; A.Hill, 'The questions of synthesis, collaboration and integration occasioned by the I.U.A.Congress Headquarters building', *Structure*, Fourth series, No 1, 1961, pp 18-22.

[23] A.Hill, 'The structural syndrome in constructive art', in G.Kepes (ed), *Module, Symmetry, Proportion,* George Brazilier Inc, New York 1966, p 163.

[24] Hill's account of this and other works is given in the latter part of 'The structural syndrome in constructive art', pp 164-173. He would soon claim that Mondrian's paintings, though 'disequilibrated', might have been motivated at a subliminal, instinctive level by the kind of lattice-relations given in topology, and that these might be phenomenologically available to a viewer of his work. See Hill, 'Art and Mathesis: Mondrian's Structures', *Leonardo*, Vol I, 1968, pp 233-42.

experience of viewing the work. Could they be intuited or otherwise known? And the recognition of how many of them would count as an adequate engagement with the work? For all that, Hill has affirmed that the unity and completeness of the work must derive from just such a lengthy interaction, and on no account from the exercise of subjective discrimination – let alone 'taste'. He would write confidently that a constructional relief 'neither stands like sculpture nor is it suspended like mobiles and other kinds of constructions; it is not a window or carpet like a painting and neither is it part of the wall ... [It] is the real plastic object *par excellence*, it has the dimension of everyday objects and yet it is not to be confused with them'.[25] The distinction was vitally important. Hill would insist that '[t]he constructional relief is neither relief painting, relief sculpture, nor is it a form of three-dimensional space construction'.[26]

Just as these experiments in London were unfolding, the temporalisation of the artwork was becoming a widespread international concern. Both in the pages of *Réalités Nouvelles* and in the Paris exhibitions of its successive Salons, ideas of time had taken hold. The exhibition *Le Mouvement* at the Denise René Gallery in Paris in April 1955 promoted the idea of the 'transformable work' that picked up on a contemporary climate of kinetic sensation provided by airplanes, automobiles, mobile window-displays, neon advertising and the lure

[25] A.Hill, 'Movement in the Domain of the Static Construction', *Structure*, Second series, No 2, 1960, p 59.
[26] A.Hill, 'The structural syndrome in constructive art', p 162.

of speed – the list is provided by the critic Roger Bordier – now newly apparent in the work of Agam, Pol Bury, Robert Jacobsen, Alexander Calder, Soto, Jean Tinguely, Victor Vasarely, and (in point of origin) Duchamp; and in which the involvement of the viewer was required.[27] Jakov Agam, to take his case, exhibited works in which shallow surface ridges gave rise to optical flickering as well as the occasional *gestalt* as the viewer moved back and forth across the work. The Danish sculptor Robert Jacobsen (like Gilbert a recent defector from the CobrA circle), showed objects that involved complex silhouettes and negative spaces that changed with the viewer's own motion.[28] In Tinguely's experimental manner the object itself moved, made music, clanked and even blew itself up: at the time of the show he was making his first *Méta-Maleviches*, that lifted Suprematist shapes clear of the surface and had them rotate at different speeds thanks to a series of electric motors behind [Fig 40]. Bordier described the *Le Mouvement* show as a way out of both *tachisme* and abstraction; as a revolution comparable to Cubism in the earlier part of the century – even though other critics saw only playthings and robots.[29] The idea of movement had clearly arrived.

---

[27] See R.Bordier, 'New Proposals, Movement, the Transformable Work', *Le Mouvement* (facsimile edition, 1975), and *Denise René: L'Intrépide: Une galerie dans l'aventure d l'art abstrait 1944-1978*, Centre Pompidou, Paris 1998.

[28] Jacobsen was by the time of *Le Mouvement* allied with the Linien II group founded by Paul Gadegaard, Ib Geertsen, Richard Mortensen and others in Copenhagen, several of whom switched from a Dada-like manner to a more geometrical treatment of form in the group's principle exhibitions between 1947 and 1950. For an overview, see *Linien II, 1947-50*, Statens Museum For Kunst, Copenhagen 1988.

[29] R.Bordier, 'Aujourd'hui', *Art et architecture*, Paris, no 2, March-March 1955, p 12.

What is instructive about the London and Paris debates is that constructed relief – the form that requires a viewer to be mobile and interrogative, above all – was claiming territory consistent with the highest moments of modernism. Neither flat plane nor object in space, relief was claiming objecthood of a kind largely forgotten since the days of Cubism and Constructivism. It did so even in London's celebrated *This Is Tomorrow* exhibition of 1956, where 'construction' and 'biology' seemed to alternate creatively throughout the twelve pavilions of the show. In surviving photos, reliefs by Anthony Hill and his colleague John Ernest can be seen in the company of one of Rodchenko's *faktura*-rich black paintings, as well as Malevich's *Painterly Realism of a Boy with Knapsack* of 1915, and his even more reductive *Suprematist Composition: White on White* of 1919 – except that the Russian works are reconstructions built three-dimensionally rather than flat, the first two in plastic and the third in painted-fibre-board [Fig 41]. Due to their out-of-the-way position these unique translations went largely unnoticed at the time, but on their own terms they served to demonstrate that, four decades after they were introduced to modernist art, relief construction and *faktura* found a renewed capacity to launch the art-object kinetically in the medium of the viewer's apprehension of time.

It should come as little surprise, in that case, that one of those epochal works by Malevich would eventually become subject to full kinetic treatment, this time in far-off Venezuela. A chance conversation was all it took to alert the

young artist Jesús Raphael Soto to the qualities of the Russian pioneer. Soto relates how the cousin of a friend had been describing to him a painting she had seen, consisting of a white square with another white square on top – a painting in which, the cousin complained, there was 'nothing to see'. It was enough to propel Soto first to Paris, and thence to Holland in 1951, where at the age of 27 he saw the works of Malevich and Mondrian at first hand, and without the misleading flatness of the photographic record.[30] Once in Holland Soto began to analyse the problem of what he called Mondrian's 'bi-dimensionality', that is, his confinement to horizontals and verticals and to limited optical vibrations at the crossings where horizontals and verticals meet. Encouraged by the publication of Laszlo Moholy-Nagy's *Vision in Motion*, published in English in 1947 and read by many advanced artists of the day, as well as by his inclusion in Denise René's *Le Mouvement* show the following year, Soto knew that the way ahead lay in recasting Mondrian's restricted idiom in a language of curves and diagonals and by exploring seriality, repetition, and the optical sensations so generated. He moved almost immediately to the rhythms set in motion by *two* progressions or sequences overlain one above (or behind) the other across the viewer's line of sight. 'I arrived', he tells us, 'at optical *movement* through the displacement of the spectator in front of the stationary work'. Using Plexiglas to distance an immediate frontal plane from a parallel one lying close behind (usually ten to twenty centimetres) Soto faced head-on 'the problem of

[30] The sole abstractionist in Venezuela at that time was Alejandro Otero, who had exhibited his *Coffee Pots* series in Caracas prior to Soto's Paris trip. It was Otero with whom Soto first discussed Mondrian and on his advice that he first read *Art d'Aujourd'hui*. See *Conversaciones con Jesús Soto / Conversations with Jesús Soto*, Ariel Jiménez, Fundación Cisneros, Caracas, 2006, pp 150-66.

the presence of *time* in art: how to render it perceptible ... '.[31] Compositionally, Soto's method was firstly to mimic or even 'improve' well-known paintings by his forebears in European abstraction. His *A Line In the Squares* of 1962 reprises Malevich's *Painterly Realism of a Boy with a Knapsack* by positioning a red and black square before a striated background, with a thin wire delicately traversing the space between [Fig 42].[32] In 1964 he would superimpose *two* striated surfaces so that the slightest movement of the viewer relative to the work in effect dissolved both surfaces as well as the viewer's sense, not only of the component surfaces but of any stable viewing position before the work. And here an interesting paradox arises. Soto had recognised the alert viewer's appetite for optical flickering, but in doing so had needed to propel the viewer *past and away from* the work to some position beyond it. That tension, between the demand for unity of consciousness in the viewer and the power of the work to attract and arrest – and in this case to paradoxically dismiss him – echoed the debates over the history *tableau* that Caylus and Diderot in France had conducted almost two centuries before.

Those debates about the unity of the viewer's experience were clearly still very much alive. Indeed, Soto's intuition that vivid aesthetic engagement required an enthralled and mobile viewer – required but also produced – found itself

---

[31] 'Excerpts from an interview with Soto, by Claude-Louis Renard', in *Soto: A Retrospective Exhibition*, Solomon R.Guggenheim Museum, New York, 1974-5, pp 15-6.

[32] Malevich's even more reductive *White on White* of 1919 meanwhile had become 'a kind of spiritual touchstone'. At the time of his exhibition at the Stedelijk Museum of Amsterdam in 1969, Soto said that 'To become conscious of the immaterial in its state of pure structure, is to made the final leap towards the absolute'. *Excerpts*, p 13.

reflected in a major critical struggle in mid-1960s New York over the very ontology of the modern work of art. Above all, this was a struggle between two ways of being in the *presence* of modern constructed art, and two ways of claiming *relevancy* for it in the new American culture of the time. It was also a principled disagreement about the claims of two kinds of constructed work to constitute the highest artistic achievement of the day. The protagonists were two highly invested critics, one of whom was an artist and a producer of some of the work in question, and the other of whom was a historically-minded academic with a superb awareness of where a notional viewer stood. The debating style of one was terse, even monosyllabic, that of the other prolix and philosophical. Each would find his critical authority in the work he described, while the work in question became authoritative, in turn, as a result of the descriptions that each gave.

By the spring of 1965 the young artist and part-time critic Donald Judd was acquiring a reputation for decisive and original judgements on the art of his contemporaries. He had recently shown an interest in the artists of the Park Place group, a collective established in downtown Manhattan in an effort to evade the unadventurous dealer-system uptown. He had praised a new level of interest in materials in the work of Anthony Major, Leo Valledor, Mark di Suvero and Robert Grosvenor – among others – especially their openness of form and the relatively bright colours they were now using: he would praise their tendency to ‘less ordinary compositions’, and their ‘quickly variable and

repetitive kind of art, relevantly made of hard, transparent, bright and reflective materials'.[33] A renewed interest in geometry was in evidence too, stimulated in part by the appearance of Camilla Gray's pioneering book on the Russian avant-garde, *The Great Experiment in Art* of 1962.

But Judd now came out with an extraordinary idea – that of the 'specific object' – and an extraordinary judgement, that 'half or more of the best new work in the last few years has been *neither painting nor sculpture*', that a new category of 'three-dimensional work' had absorbed and supplanted both, or that the two media were collapsing into one another. As Judd said of the Kenneth Noland, Jasper Johns, Frank Stella and Robert Rauschenberg, in their work 'the plane is ... emphasised and nearly single. It is clearly a plane one or two inches in front of another plane, the wall, and parallel to it. The relationship of the two planes is specific; it is a form'. He added tellingly, 'Everything on or slightly in the plane of the painting must be arranged laterally'. Sculpture then converges to the extent that it is, like painting, 'nearly an entity, one thing, and not the indefinable sum of a group of entities and references'. Judd had spotted the accumulation of near-simultaneous recent styles, including Abstract Expressionism, Op Art and Pop, and concluded that a linear history of artistic

[33] See D.Judd, 'In the Galleries', *Arts Magazine*, Feb 1964, and 'New York Letter', *Art International*, April 1965; from *Donald Judd: Collected Writings*, pp 112-3, 177. For the Park Place group, see *Reimagining Space: The Park Place Gallery Group in 1960s New York* (curated and with an essay by L.D.Henderson), Blanton Museum of Art, Austin, Texas, 2008.

progress was no longer credible – that 'movements no longer work'.[34] His intuition that a new *attitude* was emerging had arisen apropos a show in Hartford, Connecticut in 1964 entitled *Black, White and Gray*, where work by Robert Morris, Tony Smith and Anne Truitt had been placed in the company of Ad Reinhardt, Barnett Newman, Rauschenberg's white paintings of 1951, as well as some less abstract works by George Brecht, James Lee Byars and some others.[35] About Morris' pieces *Portal*, *Column* and *Slab*, all painted light gray and standing impassively on the floor, as well as Rauschenberg's white panels, Judd had said at the time 'they are next to nothing; you wonder why anyone would build something only barely present'.[36] 'There isn't anything to look at', he wrote. But he turned that absence into a gain, in conceding that 'Morris's pieces *exist* after all, as meagre as they are'. And 'things that exist exist, and everything is on their side. They're here, which is pretty puzzling ... Everything is equal, just existing, and the values and interests they have are only adventitious' [Fig 43]. Judd felt that the new work evidenced a new sensibility in favour of 'a flat and un-hierarchical view of things', one contrary to what he took to be a European perspective and a Western one. Morris's new work 'implies that everything exists in the same way through existing in the most *minimal* way', he claimed, 'but [does so] by clearly being art, purposefully built, useless and unidentifiable'. Furthermore the Hartford show

[34] This and other quotations are from 'Specific Objects', *Arts Yearbook* 8, 1965, in the version reprinted in *Donald Judd: Complete Writings 1959-1975*, Press of the Nova Scotia College of Art and Design, Halifax, and New York University Press 1975, pp 181-9.
[35] See the catalogue to *Black, White and Gray*, Hartford, Connecticut, 1964.
[36] This and following citations are from Judd, 'Nationwide Reports: Hartford', *Arts Magazine*, March 1964; in *Donald Judd: Complete Writings*, pp 117-8.

suggested that Albers, Newman and Reinhardt were the important forerunners. 'The initial appearance of black nothingness [in Reinhardt]', said Judd, 'is of course a precedent for a work of art really *being* nothing'.[37]

The challenge for Judd at that point had been to give voice to his intuition that some works of art were seeking a new mode of being *something*. By 1965 he was clear that the 'minimal' existence of Morris's gray objects was more than just the 'lowest common denominator' it had seemed on the evidence of the Hartford show. He now felt it was the very function of 'three-dimensional work' to free painting from its condition of being a composed rectangle in which forms may respond to the framing edges. Only when a painting begins to assert itself *as a shape*, he now maintained, does it limit the arrangements possible within it – leading to a loss of compositional relationships inside the frame, hence to simpler symmetries and asymmetries, and hence to 'three-dimensional work' in the category of constructed artistic things. Judd was intuitively certain that his work owed no debts to recent West European readings of Constructivism – he mentions Max Bill and the geometrical artists around Victor Vasarely in Paris – yet he was surely aware that his attack on composition in favour of shape closely paralleled the Constructivist discussions in the Moscow InKhuK in 1920 and 1921, where composition figured as a mark of gentility and discretion and where *construction* arising out of *faktura*

[37] Judd, 'Nationwide Reports: Hartford', loc cit. I have emphasised the single word 'minimal': its more celebrated use was to come a few months later with the publication of R.Wollheim, 'Minimal Art', *Arts Magazine*, January 1965.

had become the favoured term.[38] However the debate was no longer overtly ideological. Shape in the new American work signified above all the identity of a made and singular thing; and yet for Judd it was not construction *per se* that had come to guarantee the work's identity, but an aesthetic protocol that made the parts of the work subservient to the whole and on no account a contribution to it. '*A work needs only to be interesting*' was Judd's way of expressing this attitude to the production as well as the reception of three-dimensional work. 'It isn't necessary for a work to have a lot of things to look at, to compare, to analyse one by one, to contemplate. The thing as a whole, its quality as a whole, is what is interesting'.[39]

At this point Judd turned to endorse a panoply of artists who had been, or were, making reliefs or relief-like objects in a variety of materials: Johns and Lee Bontecou and Rauschenberg; George Ortman and Enrico Castellani, Arman and Salvatore Scarpitta, Sven Lukin and Ronald Bladen: a list of no lesss than forty-three artists including John Chamberlain and Anne Truitt on the East Coast and Tony Delap, Larry Bell and Bruce Conner on the West [Fig 44]. Judd also had in view his own sensibilities as an artist. He elsewhere described his turn from wall-mounted reliefs to free-standing floor boxes around 1963 as a final move away from European-type composing, and comments how these pieces 'surprised' and 'puzzled' him before it dawned upon him that they

[38] For his and Stella's 'distance' from 1930s and 1940s geometric painting in Europe, see B.Glaser, 'Questions to Stella and Judd', *Art News*, September 1966; reprinted in G.Battcock (ed), *Minimal Art: A Critical Debate*, E.P.Dutton and Co, New York, 1968, pp 148-164.
[39] D.Judd, 'Specific Objects', pp 184, 187. My emphases.

contained ‘an enormous number of possibilities’ – he presumably considered the multiple speeds and directions of the viewer’s approach, his or her flexible opportunities for encountering the object from all sides, from near or far, that would guarantee the work’s being ‘interesting’ [Fig 45].[40] For the phenomenologist Merleau-Ponty, whose writings Morris had been reading and which Judd also knew, ‘it is not the mind that takes the place of the body and anticipates what we are going to see ... it is my glances themselves – their synergy, their exploration, and their prospecting – which bring the imminent object into focus’. Glance, hand and body for Merleau-Ponty together made up ‘a system of systems devoted to the inspection of the world … capable of leaping over distances, piercing the perceptual future, and outlining hollows and reliefs, distances and deviations – a meaning – in the inconceivable flatness of being’.[41] Judd deduced that in such a perspective the experiential distinction between flatness and volume disappears. For him as well as for Morris, ‘three-dimensional work’ carried the promise of a new kind of experiential unity in consequence of what the exploratory viewer does. Further, as he says in an important aside, ‘the sense of singleness [of a constructed object] ... has a *duration*’.[42]

Almost simultaneously, the young American critic Michael Fried, who at the turn of the 1960s had studied in Europe and also knew Merleau-Ponty’s

---

[40] ‘Donald Judd: an interview with John Coplans’, *Donald Judd*, Pasadena Art Museum, 1971, p 30.
[41] M.Merleau-Ponty, ‘Indirect Language and the Voices of Silence’, in *Signs* (intr. and trans. R.McCleary), Northwestern University Press, 1964, pp 66-7.
[42] D.Judd, ‘Specific Ojbects’, p 182. My emphasis.

writings, having become interested in non-compositional paintings like those of Frank Stella and Kenneth Noland, was turning his attention to sculpture. He had already visited the British sculptor Anthony Caro in London in 1962 and had composed a poem afterwards that read 'By the time Tony Caro came out of this house / I had had my revelation. Thirty seconds / Forty-five at most, was all it took / ... It was a moment of metaphysical clarity, gone as soon as arrived / and leaving us both transformed'.[43] Fried would soon claim that the modernist object possessed an internal structure that could be grasped by the viewer *instantaneously*, while in the case of Minimal or 'literalist' art that structure belonged to an occasion of viewing in which both viewer and object are involved. Caro was to remark to a journalist while on a visit to America in 1965, 'I don't compose … I put them [the sculptures] up the way I want them and see them later': it was an attitude that confirmed for Fried that to speculate about compositional balance was inimical to the success of Caro's sculpture, both in the making and in the viewing. *Not* seeing them as compositions while they were being made; staying close to them in an indoor studio; *not* stepping back to see them from afar; *avoiding* a distanced view – all this meant acquiring and maintaining a special kind of intimacy with the work [Fig 46]. 'If one steps back [from Caro's sculpture]', said Fried in an article of that year, 'whatever the grip of the thing was or may have been is broken and forestalled,

[43] M.Fried, 'Revelation', in 'Seven Poems', *Critical Inquiry*, 34, supplement, Winter 2008, p 190.

and whatever the relationship was or may have been is ended or aborted'.[44] What Fried was soon to claim as truly *modernist* work (work claimed for modernism and open to a modernist mode of apprehension) established its presence by an *immediacy* comparable to that which an authoritative person has. The I-beams, girders and lengths of piping that constituted a Caro sculpture were now described – in an article of 1967 – as related and interdependent the way the way words are to a sentence; the way a note is to a melody; the way an arm's making a gesture is to the person whose arm it is: perhaps the modernist sculpture even wanted to be obeyed.[45] Fried also claimed that, in common with certain works of the eighteenth-century, truly *modernist* works of art, those that convince by their authority and by their manner of existing, remain in a sense indifferent to whether or not they are being looked at; that they deflect the other's gaze rather than seek it; even that a kind of confident indifference is their style.

The authority and intimacy to be found in truly modernist works is then contrasted with the mere *seductiveness* of 'three-dimensional work'. In Fried's unmistakeably gendered metaphor, 'someone has merely to enter the room in which a literalist work has been placed to *become* that beholder, that audience of one – almost as though the work in question has been waiting for him' – suggesting an analogy between the work and a female presence waiting to

---

[44] M.Fried, 'Anthony Caro and Kenneth Noland: Some Notes on Not Composing', *The Lugano Review*, III-IV, 1965, p 206. Caro's remark is from an article by L.Cheek, 'Caro', *Washington Post*, 21 February 1965 (in the Fried text, p 204).
[45] See M.Fried, 'Art and Objecthood', in G.Battcock (ed), *Minimal Art*, p 137.

attract or even proposition the male. 'In as much as [three-dimensional work] *depends on* the beholder, it is *incomplete* without him, it has been waiting for him'. The metaphor continues: 'Once [the male viewer] is in the room the work refuses, obstinately, to let him alone – which is to say, it refuses to stop confronting him, distancing him, isolating him'.[46] And inside that metaphor is another, seemingly misogynist one, as when Fried claims that the work is at the same time primarily a surface, or in the case of the boxes placed upon the floor, 'fundamentally hollow', in relation to which the viewer may be anxious to find out what the 'inside' contains, indeed whether it contains anything at all.

It should be said at once that real-life reviewers of Caro's new metal sculpture described it very differently to Fried – as about 'the experience of being a figure', as about 'elegance and refinement', as 'exercises in technical expertise'.[47] And yet Fried's epiphany with Caro at the time of his growing interest in the new American painters persuaded him that the new 'three-dimensional work' (or *literalist* art, as he caricatured it) had thrown into contrast two temporalities that were in direct and open conflict. Morris had said of *his* phenomenological style that 'the better new work takes relationships out of the work and makes them a function of space, light, and the viewer's

[46] M.Fried, 'Art and Objecthood', in G.Battcock (ed), *Minimal Art*, p 140
[47] From E.Mullins in *Sunday Telegraph*, 26 January 1969 and P.Overy in *The Financial Times*, 4 February 1969, both in response to Anthony Caro, Hayward Gallery, London 1968, and cited with other sources in Taylor, *Art for the Nation: Exhibitions and the London Public*, Manchester University Press, 1999, p 226.

field of vision'.[48] Fried had come to see the same works as thereby *theatrical*, that is, demanding of the attention of the viewer and in a sense entirely constituted by it; had said that the seductiveness of three-dimensional work was thereby the very antithesis of the aloofness or self-absorption of truly modernist work. And it was within this rhetorical framework that the term 'theatrical' in Fried's usage inevitably took on the colouration – however unintended – of *individuals* who are seductive but hollow, especially women who are perceived as being over-done, superficial, even hysterical. Theatre, or theatricality, Fried claimed, 'is now the negation of art'. As finally, 'It is the *overcoming* of theatre that modernist sensibility finds most exalting, and that it experiences as the hallmark of high art in our time'.[49]

In retrospect, the distinction between the real extended time of the viewer's apprehension and the instantaneity that attends the sense of achieved clarity may appear artificial, in as much as apprehension as a process – ratiocination, reflection, inquiry, – must precede any achieved unity of view, while instantaneity can only occur following a process that precedes it. Furthermore

---

[48] Morris, cited by Fried, 'Art and Objecthood' (1967), in G.Battcock (ed), *Minimal Art: A Critical Anthology*, Dutton, New York 1968, .p 125.

[49] M.Fried, 'Art and Objecthood', in G.Battcock (ed), *Minimal Art*, pp 140, 125. My emphasis. That theatre should have assumed such an important role for Fried can appear surprising. At one point in the argument Fried attributes to Artaud and Brecht the virtue of having escaped from traditional theatre by inventing a kind of staging that parades the real time of the action and no longer a fictional time into which the audience is lulled – hence to have been modernists in advance of their time. For a different contemporary reading of the audience's interaction with the time and action of the play, see P.Brook, *The Empty Space*, 1968, especially his concept of *assistance* (Fr), in which sense 'The audience assists the actor, and at the same time for the audience itself assistance comes back from the stage' (Touchstone edition, New York 1996, p 140).

an appeal to theatre had occurred before in modern criticism, for example in Lissitzky's demand that the *Demonstrationsraum* become 'a stage on which the pictures appear as … actors in a drama'. And the several cross-overs between Suprematists, Constructivists, Elementarists, Concretists and others and the life of the stage provide further evidence of sympathy between the two fields. The sense in which that interplay was now an active one can best be gauged by a comparison with Cubism's original *tableaux-objets*, several of which had had the qualities of a dance or circus *tableau* whose performers assume momentary and sometimes final stasis in the longer process of a show. It is perhaps the latter that really prefigured the kind of instantaneity of apprehension that recurred in the 1960s – and that went on recurring, as in a much later critique of Richard Lohse's *Colour Equivalents* that argued that the viewer's apprehension takes place 'singly', notwithstanding the complex interrogation of the picture that precedes it. The Lohse scholar Heinz Holz has suggested, for example, that such instantaneity of perception is akin to the way things are seen in a mirror, 'not analytically and constructively, in the sense that we build them up step by step ... but in the sense that we grasp them at one glance'.[50] Modernist art, Fried had said adventurously at the time, enjoys the condition of 'existing in, indeed secreting or constituting, a continuous and perpetual present', a condition to which the other modernist arts aspire; and as such it commands *conviction* rather than 'interest'. [51] As Fried put it in a final, almost

[50] H.Holz, 'Dialectic, Given Visual Form', in *Richard Paul Lohse: Modular and Serial Orders*, Waser Verlag, Zürich, 1984, p 110.
[51] Fried, 'Art and Objecthood', G. Battcock (ed), *Minimal Art*, p 146.

theological assertion, 'we are all literalists most or all of our lives. Presentness is grace'.[52]

There is little doubt that the debate in America about temporality was epochal in part because it rehearsed and updated the largely forgotten earlier Constructivist assault on 'composition'. 'Construction' had become the favoured term in the Russian avant-garde in reaction to supposedly bourgeois patterns of viewing. In 1960s America, 'object-hood' superceded 'construction' as the obverse of 'composition' but in a phenomenological framework, one that explicitly implicated both the viewer and the object's time.[53] In fact so widespread became the concern for temporality in post-war art that it can be detected in other discussions – and with particular force in respect of paintings and other objects produced on a much-expanded scale. Without doubt, the dramatic size-enlargement of European and American painting in the later 1940s was a reflection of increasing material prosperity, the easy availability of materials, and especially the generous studio spaces in

---

[52] Fried, 'Art and Objecthood', G. Battcock (ed), *Minimal Art*, p 147. Fried found a gendered terminology almost impossible to avoid. 'The success or failure of a given [modernist] painting has come to depend on its ability to *hold* or *stamp itself out* or *compel conviction* as shape', as he put it – which is to endow it with assertiveness and confidence of a stereotypically gendered kind. What decides their very identity as paintings, says Fried, is 'their *confronting of the demand* that they hold as shapes' – again suggesting an exercise in self-control or self-stabilising without which the work will loses its identity or even disappear; 'Art and Objecthood', p 120.

[53] There are few references to the art-work's temporality in the published texts of Russian Constructivism of the 1918-24 period – or any other. The viewer was expected to become a Revolutionary technician and producer of industrial goods, not a seeker after 'interest', let alone 'aesthetic grace'. For a commentary on the situation, see H.Foster, 'Some Uses and Abuses of Russian Constructivism', in *Art Into Life: Russian Constructivism 1914-1932*, University of Washington, Seattle, 2000, pp 248-9.

which art could be made in the booming American economy. Famously, it had been a process in which easel painting began to approximate to mural art – pictures of a size virtually coincident with actual wall surfaces and increasingly capable of dominating the city-goer's visual field. Furthermore the size of the new American painting had itself created a pretext, for many leading artists, to compose the picture in a spirit of wildness and destruction. Dramatic images of tearing (Clifford Still), carving (Jackson Pollock), scratching (Willem de Kooning), and defacing (all three) became stock-in-trade behaviours of the moment – while human or accidental lacerations of the picture surface proliferated to the point where one could no longer tell which abrasions were there by chance and which 'intended' [Fig 47]. More and more, the ambitious painted canvas had ceased to be a picture and had become, in Harold Rosenberg's durable words, 'an arena in which to act', with 'arena' taken both as a theatrical and well as a behavioural term.[54] It has not been emphasised enough that 'Beat' language and existence already shared with Abstract Expressionism a will to elevate the arbitrary into the grand, the hopeless into the radiant and large, in response to the new urban contrasts and power.[55] Either way, the character of this 'acting' lay in its intensification of the *personal* mark, the dribble and the splash as much as the scrape or the scratch,

[54] H.Rosenberg, 'The American Action Painters', *Art News*, 1952; in Rosenberg, *TheTradition of the New*, p 25. See my own 'Torn Pictures', in *Urban Walls: A Generation of Collage in Europe and America*, Hudson Hills Press, New York 2008 pp 9-34 for a fuller treatment.

[55] But see my own corrective in Taylor, *Collage: The Making of Modern Art*, London 2004, pp 145-164.

in an effort to redeem the experience of urban life as a collective, even anonymous, creation.

The tendency was clearly transatlantic. We can see in retrospect how the earliest large-scale European works involving the fully temporalised 'actions' of the artist required tearing large-scale posters from their moorings and further abrading their surfaces with cuts and exposures – the kind of formal disorder found in Paris *affichisme*, for example, seemed to announce not only the fragmentation of the post-war city, but a new kind of attitude to time.[56] Benjamin Buchloh has argued that their lacerations activate and temporalise paper fragments in a manner far exceeding the processes of Cubist *collage* – those aimed originally not at a temporal but a spatial evocation of forms.[57] We may add that the much larger size of the post-war French *affiches lacérées* (lacerated posters) embodied the expressive and destructive repertoire of the whole physical body, an ambitious extension of original Cubist *collage* that had involved merely the desk-bound manipulation of scissors, knife and glue [Fig 48]. And that expanded bodily instrumentality generated just the clash of

[56] One of the earliest works in this manner, the strangely titled and horizontally elongated *Ach Alma Manétro* of 1949 by the French artists Jacques Villeglé and Raymond Hains (Villeglé did the left side, Hains the right), daringly transfers a *décollage* of city advertising hoardings from street to canvas with minimal compositional adjustment: see 'Torn Pictures', op cit, pp 9-10, 12-15.

[57] Buchloh claims that 'it was within *décollage* that the total erosion of even the smallest semantic units is accomplished'. In fact *Ach Alma Manetro* resonates quite efficiently with the name *Bach* (the family of musicians), *Alma Marceau* (the station at the junction of Avenue du Président Wilson and Avenue Marcel Marceau in Paris), and *Métro*, to suggest a range of geographies, histories and technologies to which the temporal dislocation of the work's manufacture roughly corresponds. See B.Buchloh, 'From Detail to Fragment: *Décollage affichiste'*, *October* 56, Spring 1991, pp 107-8.

temporalities that already seemed to characterise the period. Clement Greenberg, who claimed for American abstract art not the significance of the dramatic act but its capacity to evoke 'disinterested contemplation' amidst the noisy distractions of his time, would write a few years later that 'I think a poor life is lived by anyone who doesn't regularly take time out to stand and gaze, or sit and listen, or touch, or smell, or brood, without any further end in mind'. Ideally, 'the whole of the [abstract] picture should be taken in *at a glance*; its unity should be immediately evident, and the supreme quality of a picture, the highest measure of its power to move and control the visual imagination, should reside in its unity. And this is something to be grasped only in an indivisible instant of time'. Greenberg ended his popular exposition with a further, theological speculation that shortly anticipated Fried's own: 'You are summoned and gathered [by the work]', he said, 'into one point in the continuum of duration'.[58]

In hindsight it may be said that the modernists' theological claim to know *instantaneity* – to have the aesthetic encounter be a singular moment 'without duration' – eventually began to look prescriptive and authoritarian, while literalists and others seemed to win a wider sympathy for showing how to accommodate actions, performance, and eventually installation as models for superior artistic work. What in retrospect remains striking is how far the

[58] C.Greenberg, 'The case for abstract art', *Saturday Evening Post*, August 1959; reprinted in J.O'Brian, *Clement Greenberg: The Collected Essays and Criticism*, Vol 4, University of Chicago Press, 1993, pp 75-6, 80.

Minimalist conception of the art-object as 'three-dimensional work', in its own way a reprise of arguments inside Russian Constructivism, now in its turn nourished the experience of large-scale American painting as both vital and active – as if agency or quasi-personhood were somehow there, in the work's very being in the space and time of the viewer. Here are two recent critics addressing American abstraction in ways that acknowledge the art-work's existence as an almost-person with a presence and a character of its own. The first is Charles Harrison, who argues that an achieved painting by Gottlieb, Rothko or Newman was always intended by its maker as 'a partner in the fulfilment of an emotional relationship' with a viewer. A painting 'lives by companionship', as Rothko liked to say.[59] In a statement to the curator Katharine Kuh, the curator of Rothko's first museum retrospective, in Chicago in 1954, Rothko wrote that the largest of his paintings should be seen 'at close quarters, so that the first experience is to be within the picture … I also hang the pictures low rather than high, and particularly in the case of the largest ones, often as close to the floor as is feasible, for that is the way they are painted' [Fig 49].[60] Around the same time Rothko is reported to have said that the ideal viewing distance in front of a large canvas was 'eighteen inches'.[61]

---

[59] M.Rothko, statement in *Tiger's Eye*, Vol 1, no 2, 1947, p 4

[60] Letter from Rothko to Katharine Kuh, 25 September 1954, held in the James E. Breslin Research Archive on Mark Rothko, 1940-1993, Getty Research Institute, Los Angeles, No. 2003.M.23, box 4, file 133.

[61] Cited in Teresa Hensick and Paul Whitmore, 'Rothko's Harvard Murals', in M.B.Cohn (ed), *Mark Rothko's Harvard Murals*, Harvard University Art Museums, 19888, p 15. For the effects of close viewing generally in Rothko's 1950s paintings, see T.Crow, 'The Marginal Difference in Rothko's Abstraction', in G.Phillips and T.Crow (eds), *Seeing Rothko*, Tate Publishing in association with the Getty Research Institute, 2005, pp 25-40.

Gottlieb and Rothko had themselves written of the need for an explanation of their work 'to come out of a consummated experience between picture and onlooker' – and for Rothko especially the upright rather than elongated format was always preferred in his mature works of the 1950s, suggesting a viewing position that presupposed an upright posture, one that was implicitly reserved for a single viewer at a time.[62]

Calling attention to the uprightness and physical scale of Rothko's *Light Red Over Black* of 1957, Harrison's claim is not (of course) that the forms and colours of the painting are those of a person, but that certain effects familiar from life-sized figure paintings evoke a quasi-human presence when the work is considered 'under its literal aspect', that is, as an object with a particular mass, volume and mode of address. He proposes that the way both Rothko and Newman constructed their paintings 'produces effects comparable in qualitative terms to the effects achieved by some painters in pictures of single or at least isolated figures'. In fact there seems broad agreement that the optimum viewing distance from a mid-1950s Rothko 'will in some sense be like a social or sociable distance from another person'.[63] According to

---

[62]Letter from Adolf Gottlieb and Mark Rothko to the *New York Times*, 13 June1943; cited in C.Harrison, 'Disorder and Insensitivity: The Concept of Experience in Abstract Expressionist Painting', in D.Thistlewood (ed), *American Abstract Expressionism*, Liverpool University Press and Tate Gallery, Liverpool, 1993, p 114.

[63] Harrison, 'Disorder and Insensitivity', p 125. And yet a fear of decorativeness or easy serenity was one reason why the intimacy that Rothko looked for was always to be partnered by a sense of tragedy somehow embodied in the work. In the drafts of an essay he was preparing on Nietzsche in the mid-1950s he would refer to the opposite of serenity, to the 'utter violence' that he claimed pervaded 'every inch of [the paintings'] surface'. Rothko, drafts of a projected

Harrison's further suggestion, 'what defines it as the appropriate viewing distance is in fact a carefully adjusted sense of tone and colour relationships' experienced as a kind of '*destitution of one's self*' as the very condition of the relationship's consummation. And that loss of self can then appear, as in every creative human encounter, to be one in which there is 'risk but no threat'.[64]

Or take the following, from a viewer of Willem de Kooning's paintings of the 1970s, who speaks both as an actual viewer and as the viewer that it seems the picture wants [Fig 50]. Richard Wollheim, himself interested in psychoanalytical correspondencies in painting, argues that De Kooning shared with his mentor the American painter Hans Hofmann the idea of composition-within-a-frame – but that unlike Hofmann he came to incorporate within his frame 'sensations of activity, sensations of moving the limbs or muscles, but all experienced in a heavily regressive mode'.[65] De Kooning 'crams his pictures with infantile experiences of sucking, touching, biting, excreting, retaining, smearing, sniffing, swallowing, gurgling, stroking, wetting'. And for these sensations, says Wollheim, 'De Kooning relies upon the lusciousness of the paint, and he conveys their archaic character by the fat and gaudy substance

---

essay on Nietzsche, James E.Breslin Research Archive on Mark Rothko, 1940-1993, Getty Research Institute, No 2003.M.23. Box 17.

[64] C.Harrison, 'Disorder and Insensitivity', pp 116, 118, 125, 126.

[65] Hofmann argued that a two-dimensional plasticity in which elements of the painting adjust to each other but without representional 'holes' was the essence of the modern picture's appeal. See H.Hofmann, 'Excerpts from the Teaching of Hans Hofmann', in H.Hofmann, *Search for the Real and Other Essays*, MIT Press, 1948, p 65. Here as elsewhere, Hofmann's touchstone A.Hildrebrand's *The Problem of Form in Painting and Sculpture*, Stechert and Co, New York and London 1907, in as much it offered what Hofmann glossed as 'absolute two-dimensionality of vision from every angle of observation'. See Hofmann, 'Sculpture', *Search for the Real*, p 53.

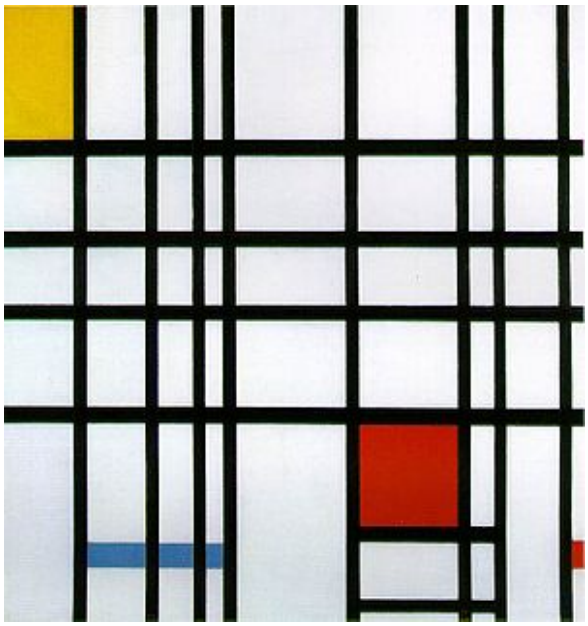
into which he works it up. And he selects as the vehicle of the self the box-like look of the support, for which he characteristically chooses a near-square format, and he then establishes a correspondence between the near-square look and the simplicity and fragility of the rudimentary self'. We become partners in this intimacy, Wollheim insists, when the viewer recognises how the painting's contents define its own compass as a physical painting and lend to it the character of a self. 'De Kooning's pictures assimilate themselves to enormous shallow saucers in which a great deal of primitive glory is held in delicate suspense: it slops around, but it is kept back by the rim'.[66]

Here as elsewhere in large-format expressive painting, the possibilities for modernist instantaneity seem precluded by the very dynamism of those 'sensations of activity' that the relevant paint surfaces present. The viewer is made kinetic externally, moving and adjusting position in front of the box-like thing; but also internally, in as much as kinaesthetic sensations and infantile recollections have been mobilised as well. Instantaneity may or may not accrue. Perhaps the practiced viewer can flip-flop between the two responses at will. In either case, the physical as well as subjective temporalisation of the viewer before the object, first presaged in Russian Constructivism, had by the 1970s become intrinsic to the most sophisticated practices and cultures of Western art. Even by that time, Judd had begun to extend his animus against 'composition' to justify the production of serially ordered units; after which

[66] R.Wollheim, *Painting As An Art*, Thames and Hudson, London 1986, pp 348, 349.

stacking, piling, sorting, and hefting material would emerge, in his and others' art, as variant technologies of making that would demand the viewer's time [Fig 51]. But meanwhile, other half-remembered legacies of the original Constructivist project were coming clearly into view.

Illustrations



27. P.Mondrian, *Composition with Yellow, Blue and Red*, 1937, oil on canvas, 72.5 x 69 cm

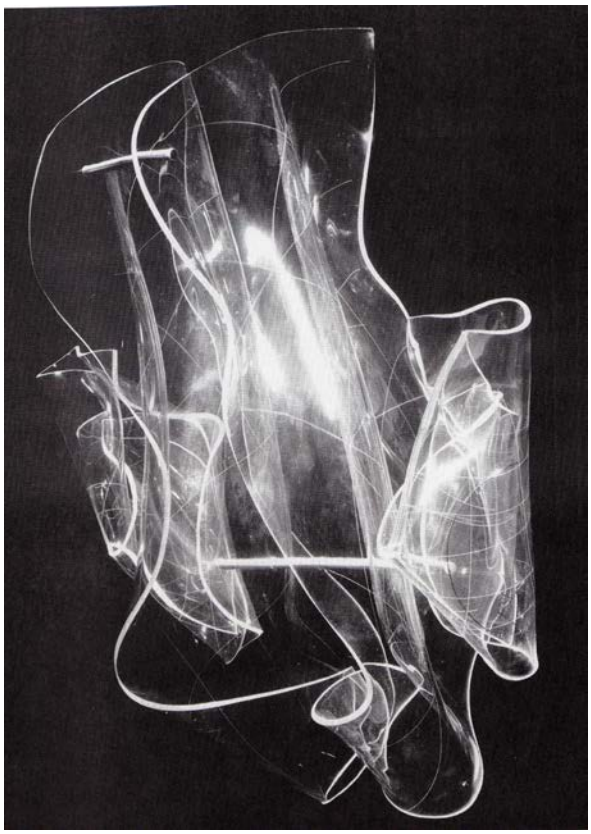
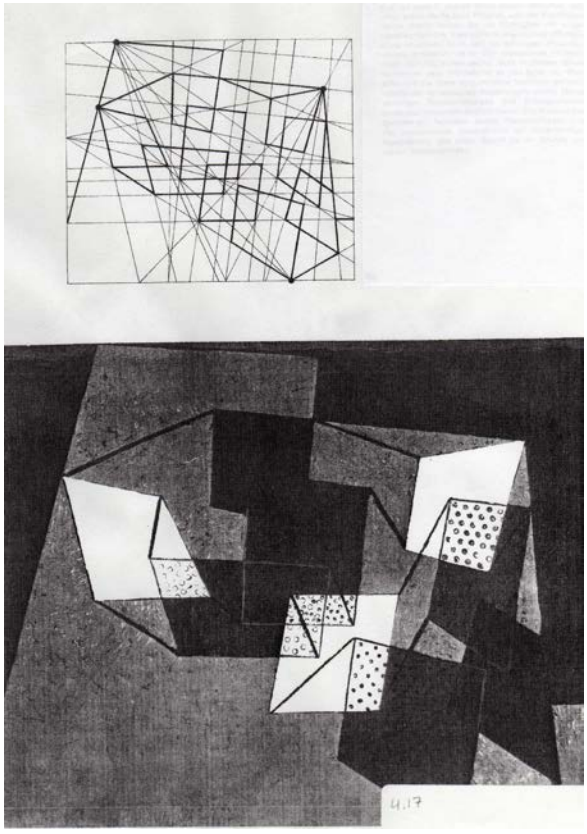
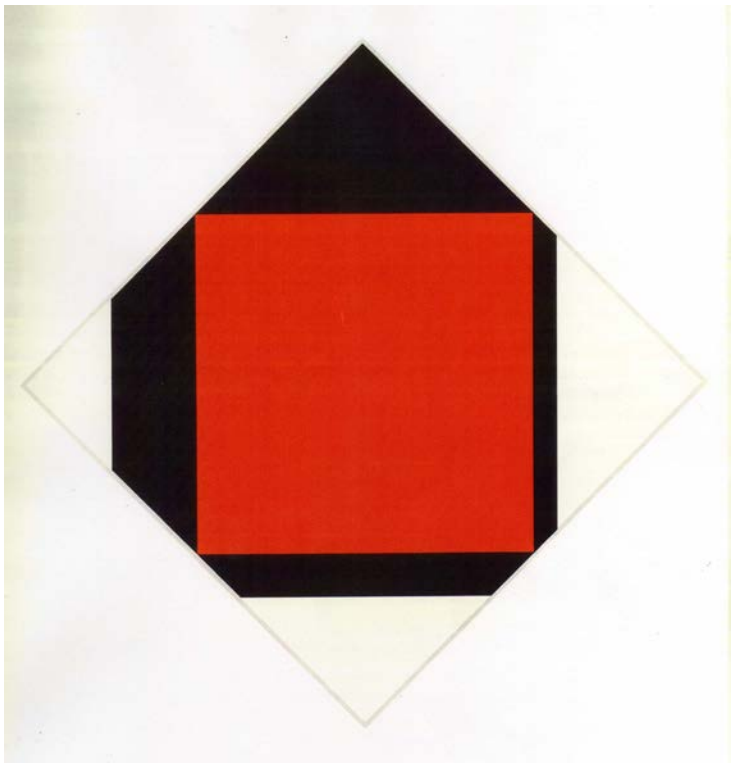


Fig 28. L.Moholy-Nagy, Plexiglas sculpture, 1940 [dimensions unknown]

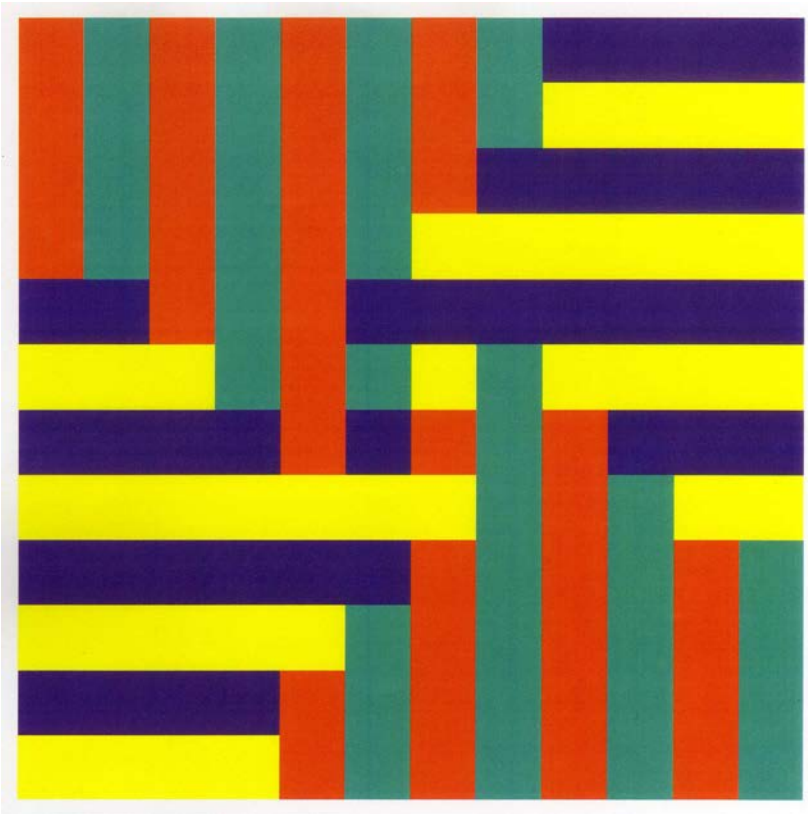


29. M.Bill, *Analysis of P.Klee's 'Surfaces entretenues' 1930*, 1940

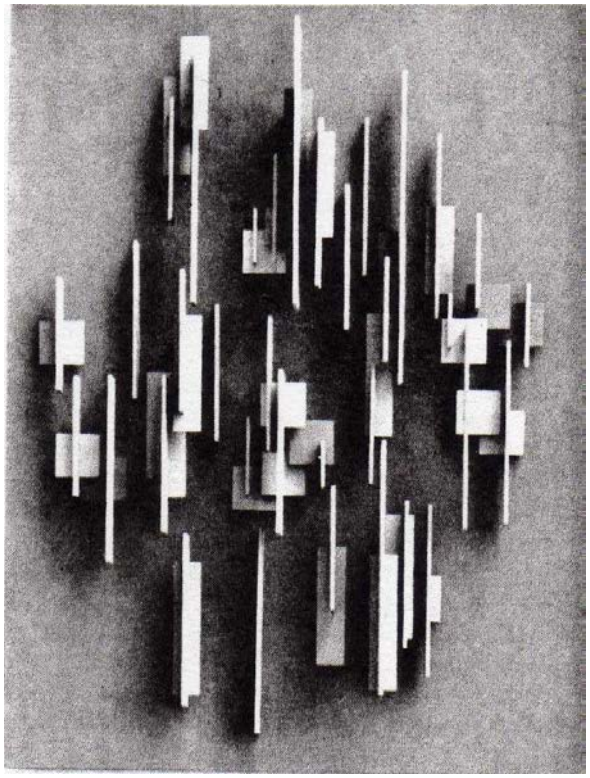


30. M.Bill, *The Red Square*, 1946, oil on canvas, 70 x 70 cm

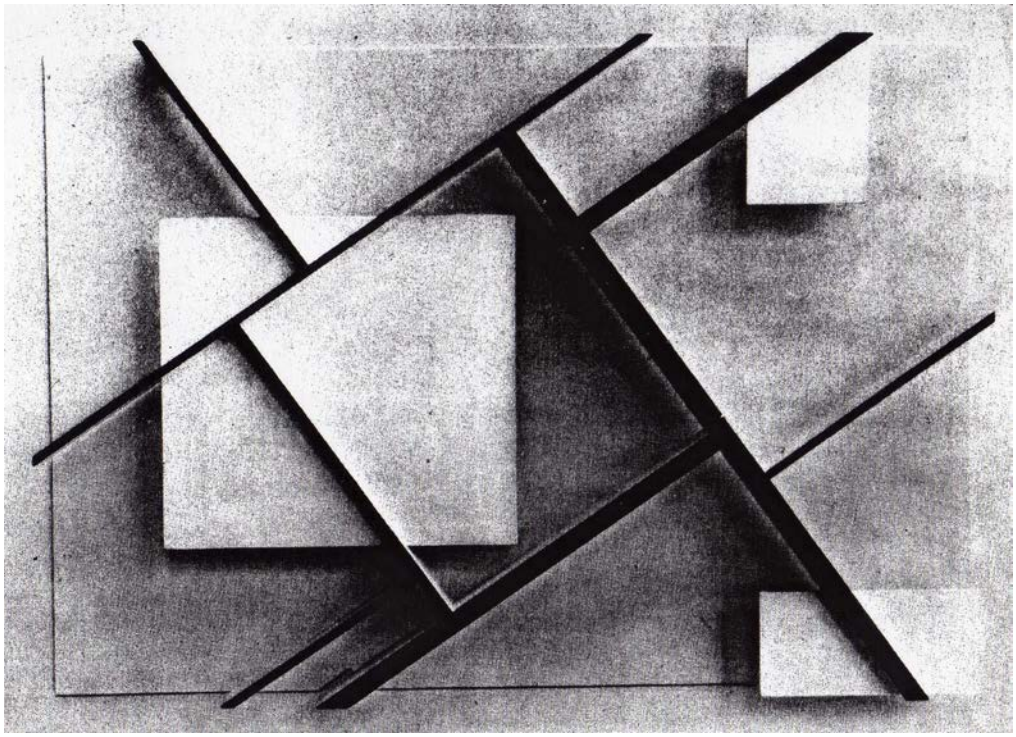
31. M.Bill, *Field of Four Colour Groups*, 1963, oil on canvas, 53 x 53 cm



32. R.Lohse, *Colour Groups Arranged in a Square*, 1944, oil on canvas, 50 x 50 cm



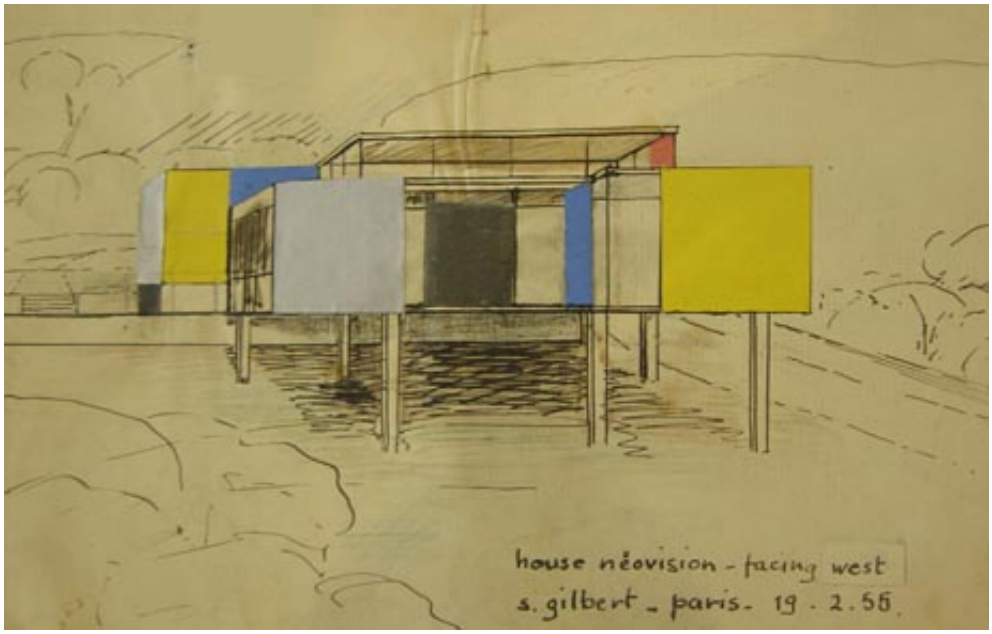
33. C.Biederman, *Construction*, 1954, wood and paint on panel [dimensions unknown]



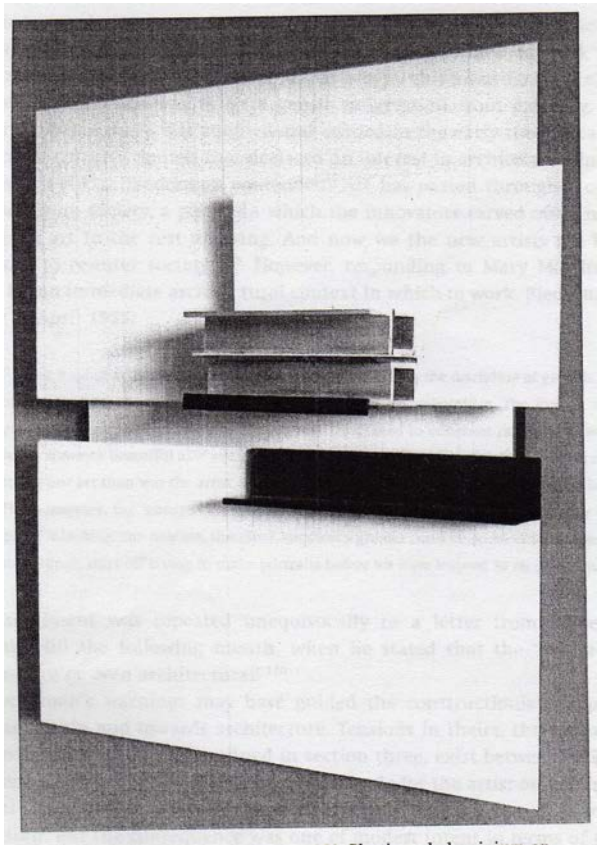
34. J.Gorin, *Spatio-Temporal Architecture no 57*, 1946, oil on wood, 100 x 115 x 7 cm

35. C.Biederman, *Diagram of Cézanne Still-life*, c 1940, pencil on photograph

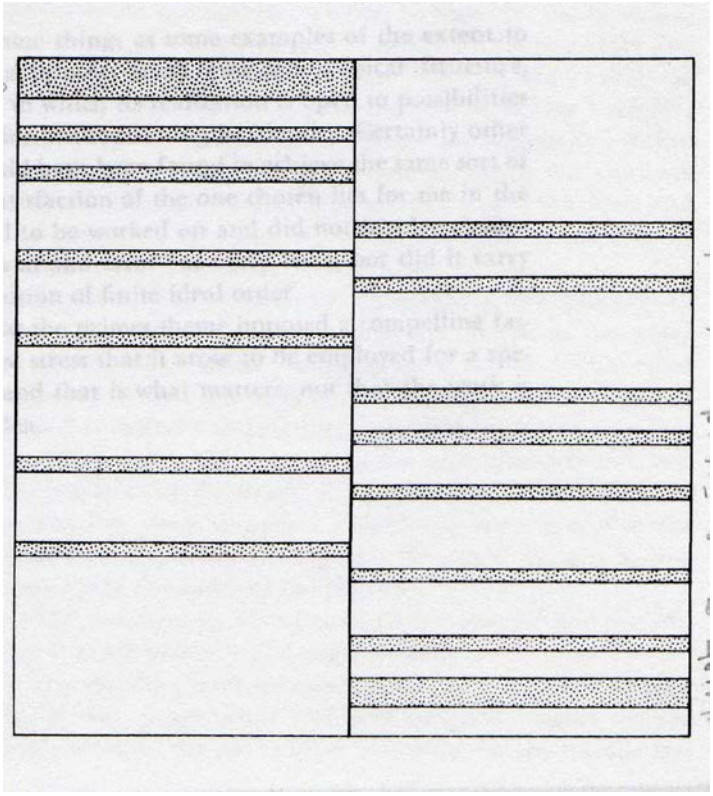
36. S.Gilbert, *Space-Frame Construction*, 1956-7, painted aluminium, 100 x 81 x 58 cm



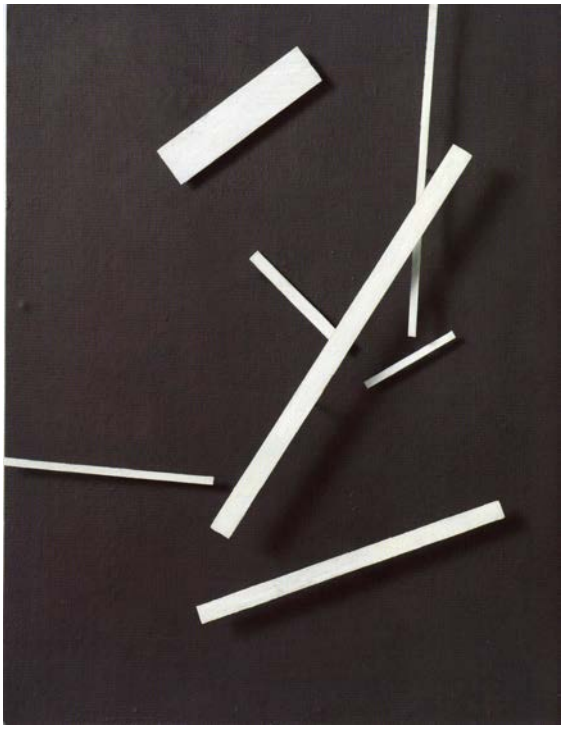
37. S.Gilbert, *Sketch for Néovision House,* 1955, pencil and watercolour on paper, 18 x 27 cm



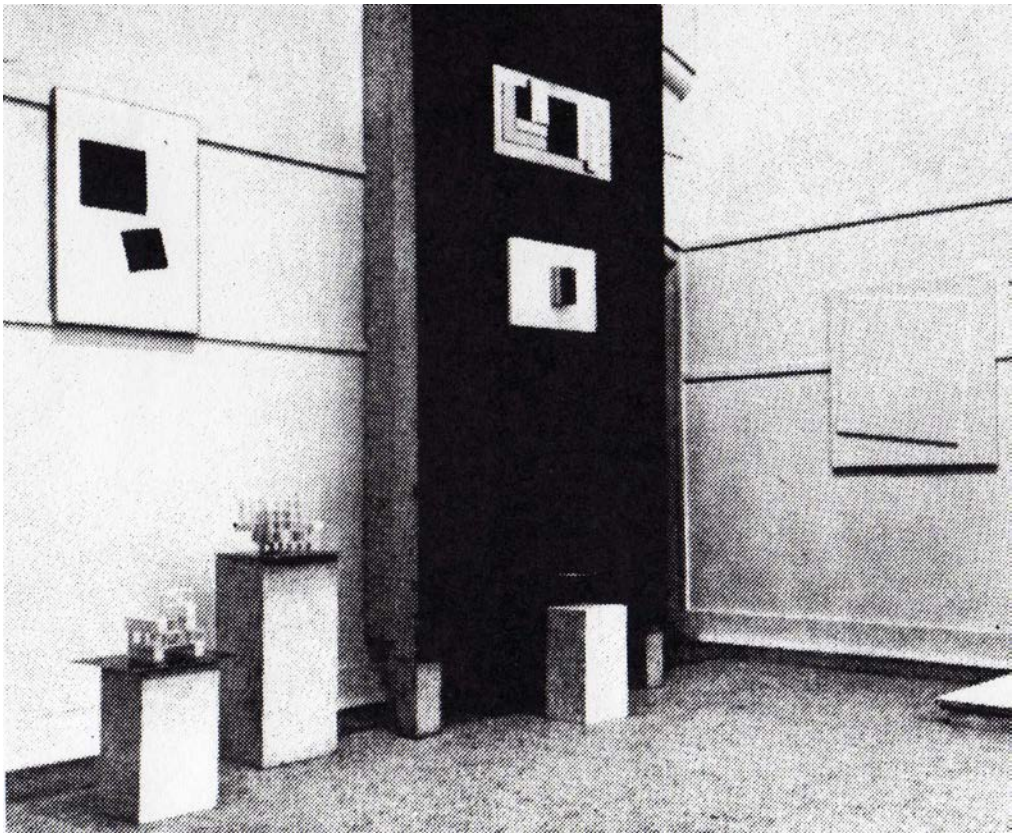
38. A.Hill, *Relief Construction,* 1959, plastic and aluminium on enamel, 17.5 x 16.75 x 4.75”



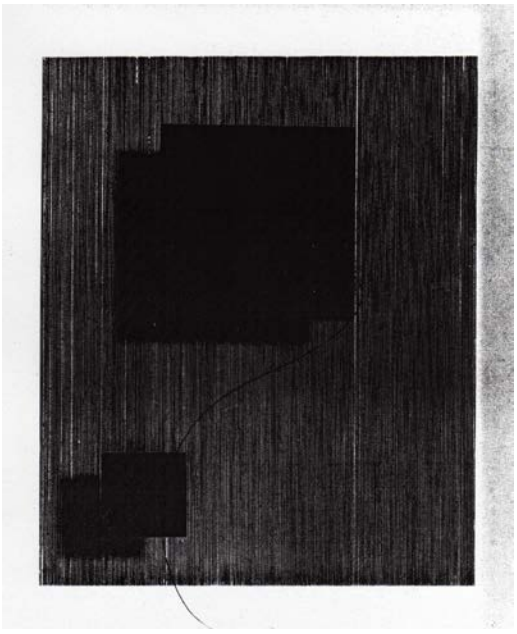
39. A.Hill, Diagram for *Prime Rhythms*, 1960



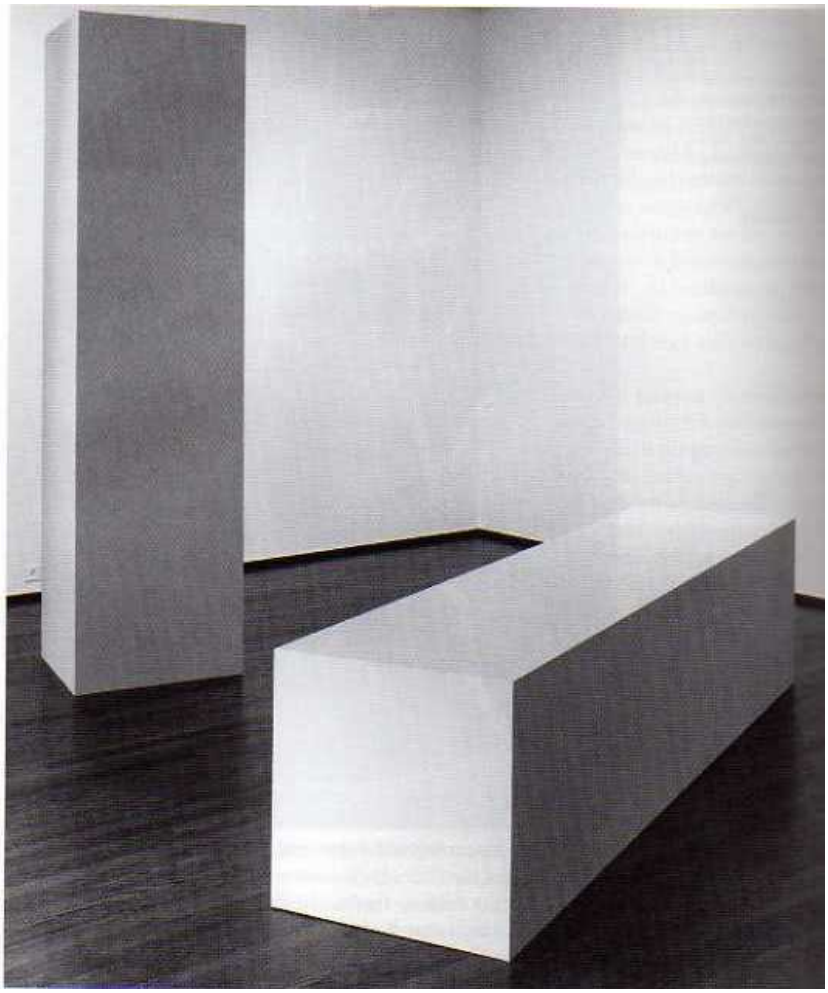
40. J.Tinguely, from the *Meta-Malevich* series, 1954, box, metal elements, wheels, belt and electric motor, 61.x 50 x 20 cm



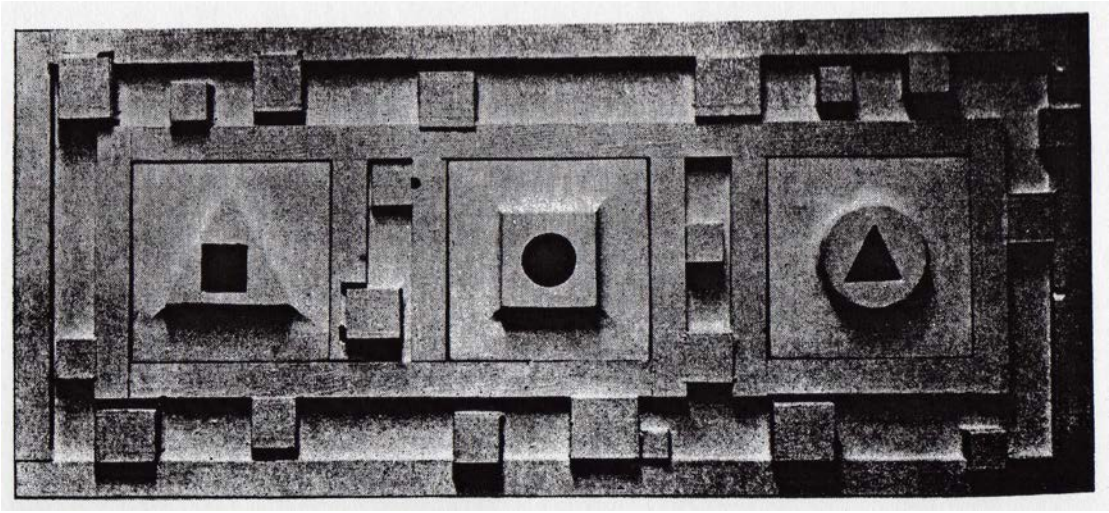
41. Group 5 Pavilion at *This is Tomorrow* exhibition, London, 1956



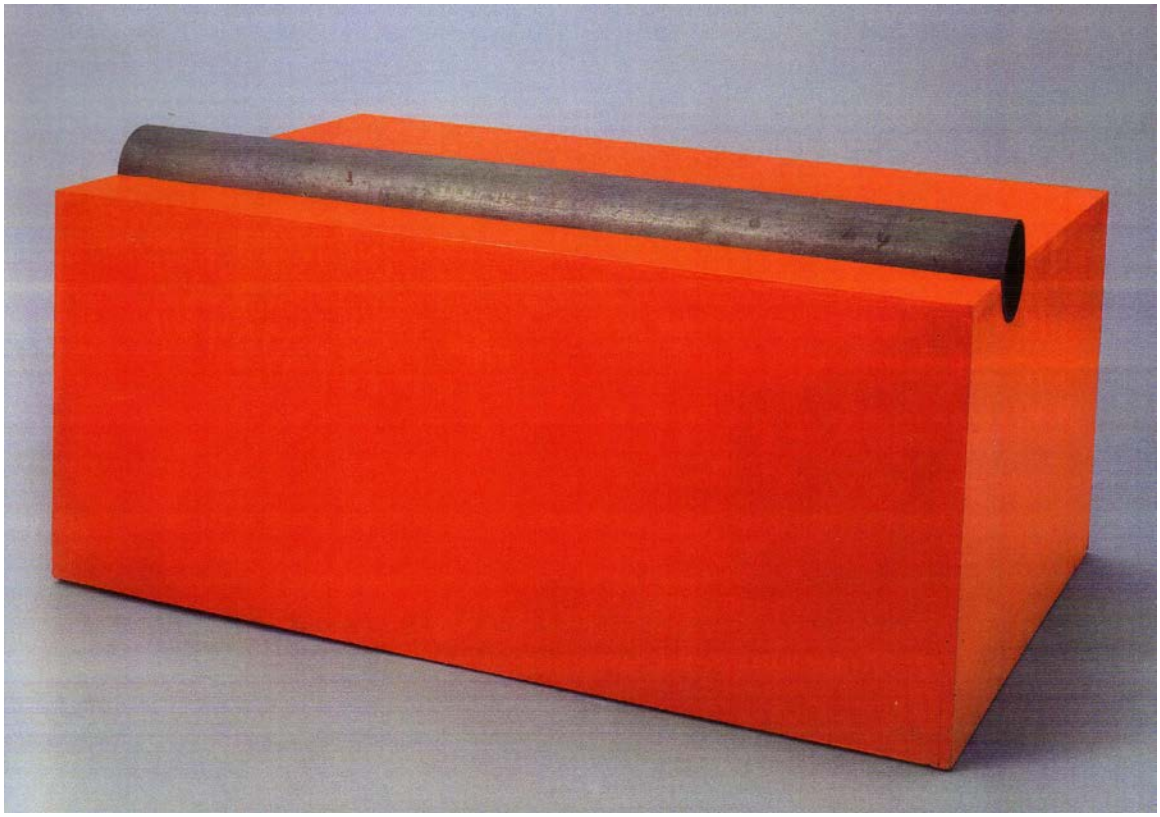
42. J-R. Soto, *Line in the Squares*, 1962, construction in wire [dimensions unknown]



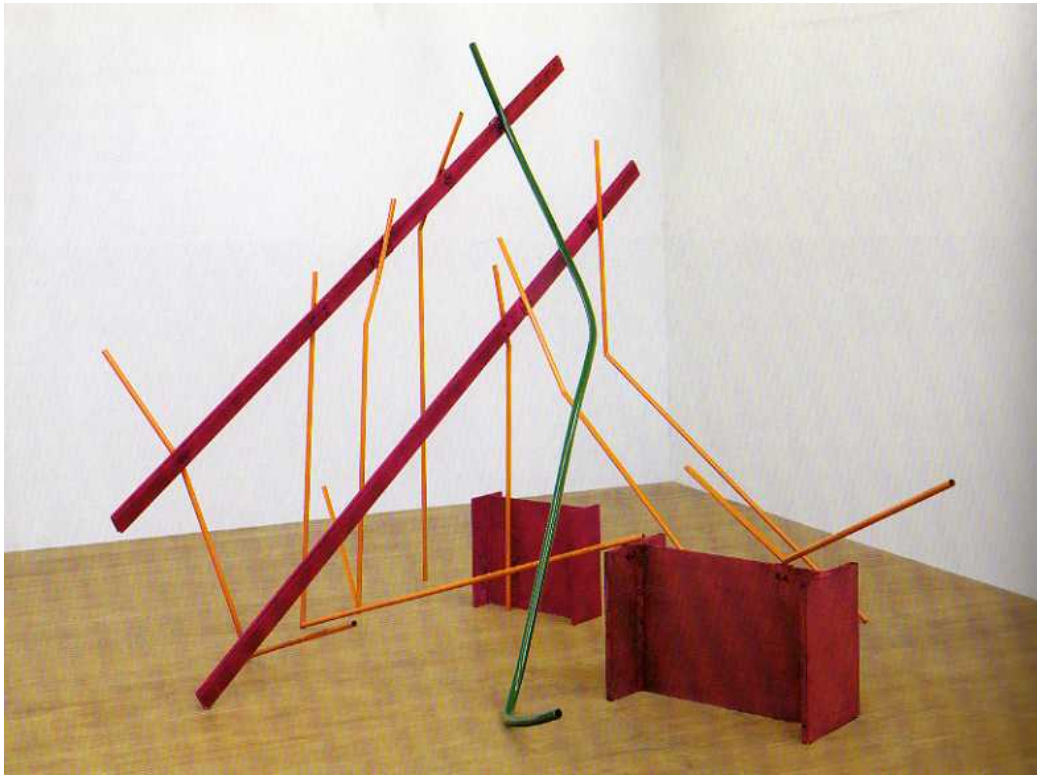
43. R.Morris, *Two Columns*, 1961, painted aluminium, each 243.8 x 61 x 61 cm



44. G.Ortman, *Stages of Life*, 1956, relief panel [dimensions unknown]



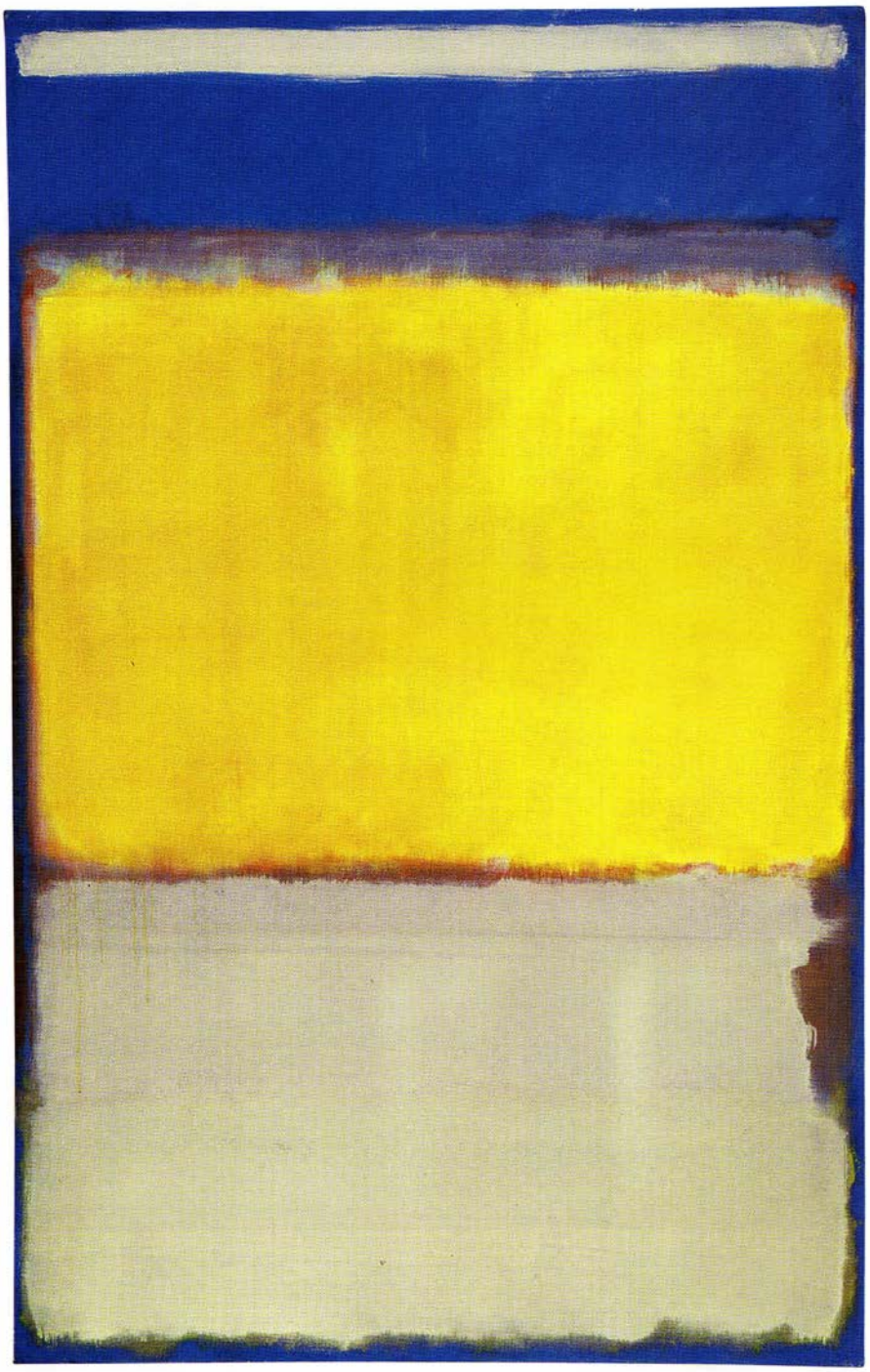
45. D.Judd, *Untitled*, 1963, Oil paint on wood with iron pipe, 49.5 x 114.3 x 77.4 cm



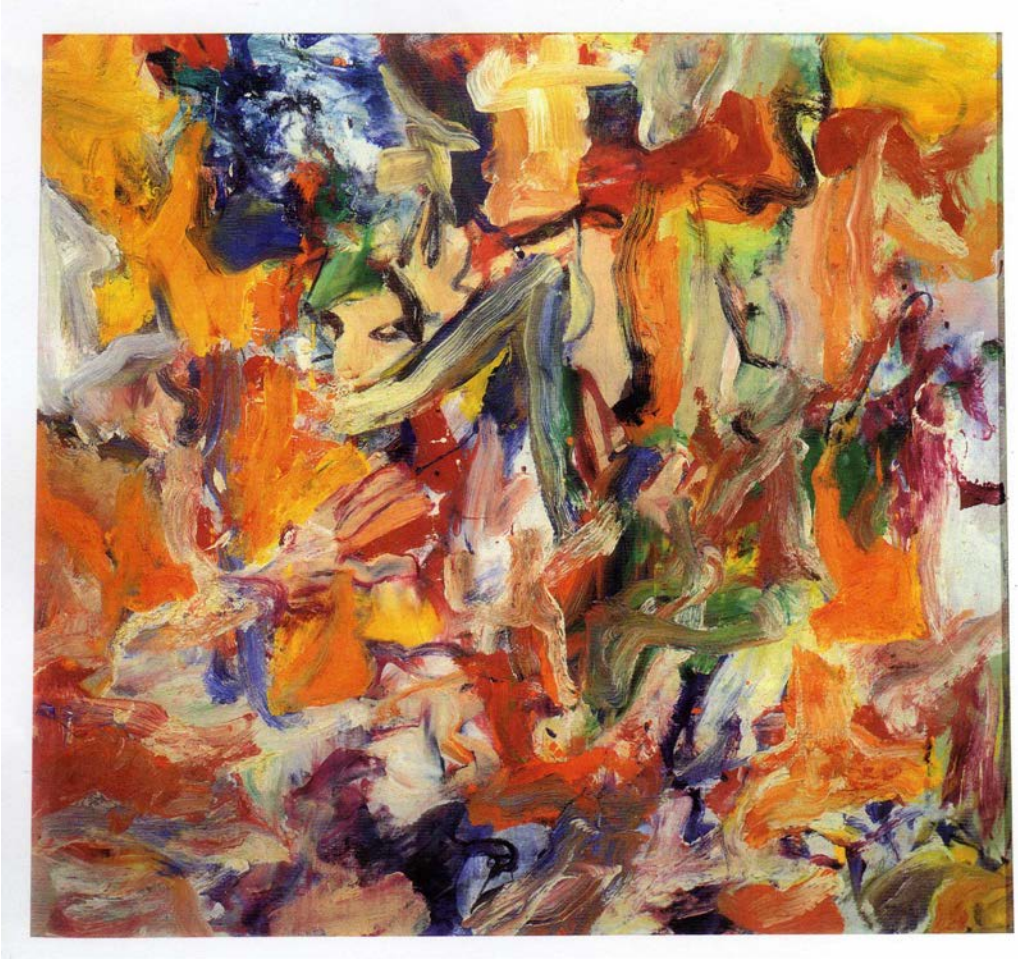
46. A.Caro, *The Month of May*, 1963, painted steel and aluminium, 9’2” x 10’ x 11’9”

47. C.Still, *Untitled*, 1957, oil on canvas, 9’4” x 12’10”

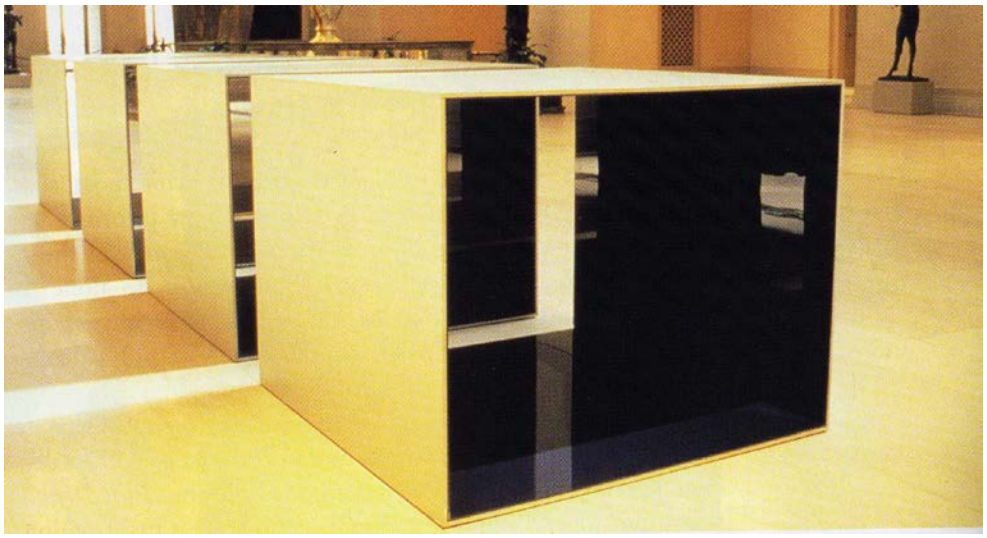
48. P.Picasso, *Table with Guitar*, 1913, pasted paper, chalk and pins, 61.5 x 39.5 cm



49. M.Rothko, *No 10*, 1950, oil on canvas, 229.4 x 145.1 cm



50. W.De Kooning, *Untitled XIV,* 1977, oil on canvas, 55x 59”



51. D.Judd, *Untitled*, 1969, anodised aluminium and blue plexiglass, each unit 120.6 x 151.7 x 151.7 cm

3. Irregular Curves: Science and 'The Organic'

Modernism's dialogue with the forms of 'nature' was always a lively one; and in this chapter we uncover how the dominant rectilinear mode of mainstream Constructivism – and more particularly the grid – became subject to challenge, variation, and finally irrevocable decay from the middle part of the century on. This is all the more surprising in view of the well-known argument of the American critic Rosalind Krauss, that the grid as a device of geometry became virtually emblematic in early modern art, having no instances in the art of the nineteenth century and an oddly unchanging quality throughout roughly the first three-quarters of the twentieth. Krauss acknowledged the ambivalence of the grid in as much as the more abstract versions extended implicitly beyond the frame, while others veered towards the pictorial and reflected the structure of windows and other light-sources in later nineteenth-century Symbolist art. And yet in emphasising the grid as 'pure relationship with *no connection to nature'*, she was at pains to remind her readers of the resonance between the grid and the manufactured world of buildings, cities and built environments on the one hand, and representational formats such as maps, graphs, charts and diagrams on the other – all of them symptoms and instruments of the technical world of the modern. Of course, it is true that for Rodchenko and the First Working Group in 1921 the grid was already functioning precisely to evoke the instrumental world, hence to provide a perfect anti-compositional format as well as to embody technical modernity in the form of the efficient, the

verifiable, and the true – to become a 'factual display,' as Lawrence Alloway later called it [Fig 52].[1] And yet as taken up by other abstractionists (Mondrian and Agnes Martin are examples), the grid had also functioned metaphorically as a signifier *simultaneously* of Matter (the base line or horizon) and of Spirit (the infinite and even the ineffable), even if it suited modern art to keep that contradiction hidden or in suspension. 'The grid's mythic power', Krauss concluded, 'is that it makes us able to think we are dealing with materialism (or sometimes science, or logic) while at the same time it provides us with a release into belief … Given the absolute rift that had opened between the sacred and the secular, the modern artist was obviously faced with the necessity to choose between one mode of expression and other … [A]t this juncture he tried to decide for both'.[2]

In fact, the grid was never as stable or as open to verification as many of those statements imply. From the earliest days of Constructivism it had been the ambition of certain Constructivists, notably Tatlin, Pyotr Miturich and Mikhail Matyushin, to establish form-relationships between 'nature' and the human body; in Matyushin's case to make art-objects that echoed the roots and branches of trees, or that duplicated the patterns of cellular growth [Fig 53]. From the date of his and Antoine Pevsner's 'Realistic Manifesto', 1920, Naum Gabo had sought alternatives to strict linearity in the name of another

[1] L.Alloway, *Systemic Painting*, Solomon R Guggenheim Museum, New York, 1966; reprinted in G.Battcock (ed), *Minimal Art: A Critical Anthology*, New York 1968, pp
[2] R.Krauss, 'Grids' *October*, Summer, 1979, pp 51, 54. For a discussion of the grid in relation to Minimal art, see J.Elderfield, 'Grids', *Artforum*, May 1972, pp 52-9.

Constructivism – that of the curved and even mobile form. Gabo's work in England during the decade 1936-46 brought him into contact with a culture already sympathetic to nature's irregular patterns; and his stringed Perspex constructions of those years could easily be read as the inverse of the technician's or the draughtsman's orthogonal grid. His reputation notwithstanding, Mondrian never painted a regular geometric grid. Even a work as reductive as *Composition in Black and Grey* of 1918-19 is carefully 'disequilibriated', to use his own term for his avoidance of strict bilateral symmetry. Van Doesburg, too, claimed 'universal' relevance precisely by means of a balanced asymmetry in his most powerful works – their very avoidance of a regular grid. Moholy-Nagy, for his part, introduced self-similar floating shapes into his transparency paintings of the 1920s, as if to escape the mathematics of the regular surface plane. Elsewhere in European modernism the same interest in the organic world would often arise. The British writer Geoffrey Grigson intervened in the debate between abstractionists and Surrealists in the 1930s by appeal to the practices of the Bakairi of Central Brazil, admiring how in their intricate wood carvings 'they read into these designs … snakes, swarms of bees, etc' and treated those complex natural patterns as counterparts to 'the ideological and emotional complexity of the needs of human beings'.[3] Qualities of the 'organic' and the 'biomorphic' were routinely associated with the inter-war work of Hans Arp, whose painted reliefs

[3] G.Grigson, 'Comments on England, *Axis,* no 1, January 1935, p 8, citing Wilhelm Wundt's *Elements of Folk Psychology: Outlines of a Psychological History of the Development of Mankind,* (1912), trans E.Schaub, New York 1916.

were ‘like the curve of a leaf … at the same time as the accomplishment of nature herself’, as one critic wrote of them in 1932 [Fig 54].[4] Kandinsky, who had fallen out with the First Working Group of Constructivists in 1920 over the very nature of line, in 1935 claimed to see ‘no essential difference between a line one calls “abstract” and a fish … [they] are living beings with forces peculiar to them … they are forces of expression for these beings, and of impression on human beings’.[5] The pervasive patterns of the animal kingdom, the irregularities of the flow of liquids, the growth and propagation of plants, even the shape and qualities of the cosmos itself – already before mid-century these complex forms had presented a challenge to the better-known form-*gestalts* that had become ubiquitous in mainstream modernism – I mean the squares, rectangles and circles that predominated in European and American abstraction throughout the 1920s and 1930s yet, which at certain moments would lose their hold on the imagination of the artist, more especially the artist who claimed a degree of interest in ‘nature’ herself.

It is an attitude that can be traced to at least the seventeenth-century. In *The Garden of Cyrus* of 1658 (later illustrated by Paul Nash), the British alchemist Sir Thomas Browne wrote of ‘this reticulate or net-work [that] was also considerable in the inward parts of man, not only from the first subtegmen or warp of his formation, but in the netting fibres of the veins and vessels of life

[4] H..Schiess, ‘Hans Arp’ *Abstraction-Création*, no 1, 1932, p 2. For a fuller account, see E.Robertson, *Arp: Painter, Poet, Sculptor*, New Haven and London 2006.
[5] W.Kandinsky, ‘Line and Fish’, *Axis*, no 2, 1935, p 6; reprinted in K.C.Lindsay and P.Vergo (eds), *Kandinsky: Complete Writings on Art*, vol 2, pp 774-5.

… [E]mphatically extending that elegant expression of scripture "Thou has embroidered me", Thou hast wrought me up after the finest way of texture, and as it were with a needle'.[6] In twentieth century art a correspondence between the patterns of nature and the forms and conditions of the body was not infrequently attempted. Take the Swiss artist Emma Kunz's magnificent drawings, done mostly before the mid-point of the twentieth century, the majority made with coloured pencils (sometimes oil pastel) on a grid that already seems about to collapse under the weight of its own detail. The grid's smaller units are millimetre squares, too small for the eye to encompass in a sweeping regard, while her sheets of paper are unusually large, measuring some two-and-a-half to three feet square – a newly flexible format which the artist covers with connecting lines structured somehow around a central organising point [Fig 55]. It is generally held that Kunz's interest in the microscope and plant forms led her to an appreciation of the special geometry of flowers and crystals, especially those based on the unusual properties of the number five, examples of which had been captured in the elegant photographic enlargements of Karl Blossfeldt at the same time. But what is striking about Kunz's drawings is that as well as horizontal and vertical symmetries, they contain diagonal correspondences in the main structures, but with variations in the balanced corners. Star-patterns, especially based on four, five or eight nodes and often repeated across a surface, predominate.[7] Small differences

---

[6] Sir T.Browne, *The Garden of Cyrus*, 1658 (ed. W.A.Greenhill), Macmillian and Co Ltd, 1906, p 123.

[7] It is assumed that Kunz took 'Penta' as her adopted name because of the esoteric properties of pentagrams and other properties of the number 5, including $\sqrt{5}$, notably

within larger symmetries, sub-patterns within larger patterns, and systems of radiating lines emanating from a centre, seemingly invoke the mandala systems of Tantric and Taoist thought while responding no less acutely to the linear tensile structures of early twentieth century Western engineering, in which connecting rods combine at precisely calculated points to provide efficient structures, some of them akin to plant-forms seen microscopically.

Instrumentally Kunz's work was heterodox too. We know that she used her drawings for healing, even though she never joined Rudolf Steiner's fashionable Anthroposophy movement of the time (it too made claims for the therapeutic effects of art). We know that she used a pendulum to help organise the asymmetries of the work, lying it upon the floor between artist and patient as an aid to diagnosis: one can imagine the horizontal drawing commanding the space between artist and patient and lending physical measure to the consultation scene. Yet little is understood about Kunz's diagnostic methods other than that a drawing, once in place, would provide a template for an awareness of energy-lines on the side of the patient and their modification during the therapeutic work. What *is* clear is that the placing of the drawing in a horizontal position between two individuals inaugurated a new kind of sharing of the visual encounter that *doubled* the one-painting-one-viewer convention of most male modernist art: here was a two-person format happy to

---

its relation to the Golden Ratio. I am indebted here to C.de Zegher and H.Teicher (eds), *3 X Abstraction: New Methods of Drawing: Hilma af Klint, Emma Kunz, Agnes Martin*, The Drawing Centre, New York and Yale University Press, 2005.

abandon full ego consciousness on the part of the artist and have it replaced by a posture of egolessness in both the making and the utilisation of the work. Even today, the viewer is mesmerised by the powerful 'lines of force' of Kunz's drawings, akin to patterns of magnetism, gravity, or wave vibration that radiate energy in ways that the eye cannot always rationally comprehend. Looking closer, we find that several drawings exhibit relations of *self-similarity*, in which smaller structures resemble the larger ones of which they form a part: a mathematical and geometrical concept being explored at around that time by French mathematicians Gaston Julia and Pierre Fatou and published as diagrams in the specialist literature of the day [Fig 56].[8] Moreover Cymatics, the study of wave-vibration pioneered by her contemporary and compatriot Hans Jenny, was another of Kunz's interests. By 1930 Jenny was a family physician in Dornach, near Kunz's home in Brittnau, and went on to revolutionise the study of periodic phenomena in nature such as the Chladni figures that are visually so close to Kunz's work. It is largely because of that affinity that Kunz's own prediction that her work 'would not be fully understood until the twenty-first century' has proved substantially true.[9]

[8] Gaston Julia (1893-1978) and Pierre Fatou (1878-1929). Fatou published his paper 'Fundamental Theory of Iteration', in *Comptes Rendus*, December 1917.

[9] Hans Jenny's (1904-1973) two volumes on Cymatics (from the Greek *ta kymatika*, or matters pertaining to waves), originally published in 1967 and 1974, are collected in Jenny, *Cymatics: A Study of Wave Phenomena and Vibration*, Newmarket, New Hampshire 2001. Kunz's prediction is reported in Harald Szeeman, 'More than Art: Tied into Primal Mud and Mystic Light', in Anton C.Meier, *Emma Kunz: Life, Work*, Emma Kunz Zentrum, Würenlos, 1998, p 84.

Given that Kunz lived and worked in near-isolation on the remote fringes of the Swiss art world, it is not surprising that her drawings have remained outside the canon of modern art until recently. Another explanation is that her work prefigures a certain kind of complexity that has enlivened the practice of contemporary art between the 1970s and now; one characterised by a shift from single to multiple symmetries, from straight to irregular line, from the geometric grid to the patterned diversity of the phenomenal world. Already by the early 1940s, a compositional format known as 'all-overness' was being eagerly explored by abstract artists possessed of a sense of experiential multiplicity, teemingness, and human crowds. Clement Greenberg pointed early on to the fact that the Mark Tobey's 'white calligraphy' paintings from around 1944 were knitting together closely similar elements that 'repeat themselves without marked variation from one edge of the picture to another'. He didn't add (though he might have done) that Tobey had lived on the West Coast of the USA rather than the East, hence closer to the Eastern civilisations of the Pacific, and that in the 1930s had learned Chinese calligraphy and Japanese Zen before using a small-flecked 'all-overness' in an effort to mirror the emotive and cognitive effects of the teeming modern city, exactly the context from which the experience of crowds had arisen [Fig 57]. As Tobey said of his upright painting *New York* of 1944, the calligraphic impulse provided him with a way 'of painting the turmoil and the tumult of the great cities, the intertwining of the light and the streams of people caught up in the mesh of their net'. Likewise, Greenberg was quick to see the significance of

Pollock's mural-shaped paintings for Peggy Guggenheim's apartment, also of 1944, in which he adopted an 'all-over' manner of marking the canvas, this time stretched out sideways so as to occupy almost the whole of the viewer's perceptual field.[10] And teemingness in these works gave rise to a distinctive – even significant – perceptual effect. Pollock's works, and the laterally expansive near-monochrome canvases of Barnett Newman from the late 1940s, were among the earliest to propose a formal alternative to the traditional mode of perception that assembled *gestalts* against a background and prompted the viewer to estimate the distances and colour-relations between them. The engaged viewer of 'all-over' work was now encouraged to adopt a wandering, unfocussed attention, a lateral awareness that attached small importance to the physical limits of the canvas or the physical qualities of the work while losing him or herself in the unfocused quality of the whole [Fig 58]. Nor was the pattern on the canvas – if any – to be seen as multiplying itself by implication in the spaces beyond the frame, in the way that some had attributed (however mistakenly) to Mondrian before the war. On the contrary, a laterally extended and un-hierarchical visual display now demanded to be looked at as more or less coincident with nothing other than the visual field of the viewer, bounded by a frame and yet able to stand in some kind of relation to modes of cognition outside of art.

---

[10] C.Greenberg, 'The Crisis of the Easel Picture', *The Nation*, 1948, in *Art and Culture*, pp 154-7; and Tobey, cited in J.Russell, 'A Singular Vibration: The Art of Mark Tobey', *Mark Tobey*, Beyeler, Basel, 1971, p 21.

It is no coincidence, I think, that lateral or 'open' perception unencumbered by *gestalts* in mutual relation was also a preoccupation of several powerful new psychologies and epistemologies of the day. A ground-breaking book by the Austrian psychoanalyst Anton Ehrenzweig of 1953, *The Psychoanalysis of Artistic Vision and Hearing*, called new attention to the kind of 'wandering' or *gestalt*-free perception evoked in the perceiving subject where dominant form-features and hence clear *gestalts* did not or could not exist. In such cases, 'many forms have equal power to attract the eye and so we are left in doubt where we should direct our attention first', Ehrenzweig explained while citing a retinue of modernists from Cézanne and Picasso to the gestural abstract painting of his day. 'Overlapping and superimposition of forms occur which add to the general ambiguity and doubt, and obstruct the formation of a pregnant and unambiguous *gestalt* pattern' – this now became a sign in Ehrenzweig's writings of what he called 'unconscious thing-free perception,' mobilised at far deeper levels of the mind and characterised by 'oceanic feeling' rather than by focussed attention to singular and discrete things.[11] To Ehrenzweig, 'unconscious scanning' of layered visual data was a form of apprehension in closer harmony with universal and even cosmic wholes.

[11] As Ehrenzweig pointed out, Herbert Read in his *Art and Industry* (1934) had already referred to the 'wandering' attention elicited by some modern paintings (Read, op cit, p 145); see *The Psychoanalysis of Artistic Vision and Hearing: An Introduction to a Theory of Unconscious Perception*, Sheldon Press, London 1953, pp 22-3. In his subsequent and more celebrated *The Hidden Order of Art: A Study in the Psychology of Artistic Imagination*, 1967, Ehrenzweig elaborated the distinction between 'surface' perception and thing-free 'depth perception' in a psychoanalytic register.

Something akin to that latter awareness was also alive in California in the 1950s, a culture whose awareness of the resonances between Eastern cosmology and Western science was surely ahead of most other places at the time. Here, the emergence of *gestalt*-free abstract composition in the fine arts can be pinpointed with a certain historical accuracy. Karl Benjamin's interlocked-form paintings from 1955 to the end of the decade eschewed the bunching of forms centrally that had been a mark of Analytic Cubism, spreading them instead laterally from edge to edge of the canvas precisely without implying a viewer's fixed or stable attention to the central ones first. Benjamin's trick as a painter was to so ambiguate the painted overlap-relations as to finally confuse the viewer's sense of what constituted figure and what could be read as ground [Fig 59]. Lorser Feitelson's contemporaneous and slightly larger canvases did the same, this time with triangular shapes rather than Benjamin's jigsaw ones, but again resisting univocal spatial readings, while keeping most of the forms straight-edged and clean.

The originality of the West-Coast method of organising the picture as a perceptual field was immediately clear. It quickly alerted the Los Angeles critic for *Art News*, Jules Langsner, to the possibility that here was a generic style-shift in need of a new terminology. In an epochal show curated by him at the Los Angeles County Museum in 1959, he proposed that the new painting distinguished itself in as much as 'colour and shape are *one and the same entity*: form gains its existence through colour and colour its through form.

Colour and form', proposed Langsner, 'here are indivisible … to eliminate semantic confusion, it is helpful to unite the two elements in a single word – *colour-form*'. 'Colour-forms', he added, 'are complementaries of each other, coupled together as in the Chinese symbol for *yin* and *yang'*.[12] It would not be long before those interested in physics and art would recognise that compositional (that is structural) symbiosis characterised the physics of the micro-particular as well as the origins and evolution of the galactic whole.[13]

Langsner's other terminological innovation was that the new Californian painting is 'hard-edged'. In itself this seemed to indicate a desirable withdrawal from personal *angst* (widely viewed as a European and an East Coast disease), a renunciation of personality, and a commitment to forms and arrangements that were sufficient in themselves: in Langsner's words, 'a shift in the viewer's attention away from the fugitive life of emotion to the enduring life of art'. Forms are now 'finite, flat, rimmed by a clean hard edge … presented in uniform flat colour running border to border'.[14] There can be little doubt that in part it was the new freedoms of West Coast jazz – known as 'cool' – that helped inspire the anti-compositional mood of the studios

---

[12] J.Langsner, 'Four Abstract Classicists', in *Four Abstract Classicists*, Los Angeles County Museum, 1959, pp 10-11. It would probably be agreed today that Langsner's alignment of Benjamin, Feitelson, Hammersley and McLaughlin with 'classicism' and hence with a Greco-Roman version of aesthetic order was a mistake. Earlier he has proposed that they might be referred to collectively as 'the slide-rule school; see Langsner, 'Art News from Los Angeles', *Art News*, 55, May 1956, p 60.

[13] A good representative is Fritjof Capra, who was trained in theoretical physics and became interested in Japanese Zen mysticism while in the USA. See Capra, *The Tao of Physics*, Wildwood House, New York 1975.

[14] Langsner, *Four Abstract Classicists*, p 10.

nearby.[15] Of the four painters in Langsner's 1959 show, the most uncompromising compositionally was John McLaughlin, whose large, rectangular colour-forms occupied an ostensibly logical format but with translational rather than rotational symmetry – an artful kind of geometry that stimulated reflective left-to-right scanning (and back again) on the part of a viewer standing before a canvas far wider than high; and that, in common with other West Coast painting answered as much to contemporary research in physics and the psychology of perception as to a new kind of apprehension of the experiential whole [Fig 60].

As so often in modernism, the critical challenge was to provide tools for eking out the metaphors that could plausibly connect the new in painting with the world beyond the studio: to mirror the fashionable in science, even to make claims for a certain contemporaneity, the kind of 'up-to-dateness' that Pollock himself, in 1950, had referred to gropingly as 'the experience of our age'; or that Clement Greenberg had earlier claimed as the goal of ambitious modernist art, namely an articulation of 'the most advanced view of the world obtaining at the time'.[16] Partly, of course, that would have to imply a gauging of the distance between the new painting on either coast and the offshoots of

[15] The links between music, art, deisgn and architecture on the West Coast were the subject of a recent exhibition at the Orange County Museum, and a catalogue, E.Armstrong (ed), *Birth of the Cool: Californian Art, Design and Culture at Midcentury*, Orange Country Museum and Prestel Publishing, 2007.
[16] J.Pollock, 'Notes' (1950), in *Jackson Pollock: Interviews, Articles, and Reviews*, Museum of Modern Art, New York 1999, p 24; and C.Greenberg, 'The Present Prospects of American Painting and Sculpture', *Horizon*, October 1947; O'Brian Vol 3, p 167.

Constructivism before the war – including Mondrian, van Doesburg, and other European abstractionists whose adherence to rational geometry was already under strain. In practice, it fell to the critic Sidney Tillim in 1959 to propose that the new West Coast painting 'precludes geometric orthodoxy, which must [here] be defined as the determination of space by purely formal relationships geared to the right angle' – he meant everything stemming from the rectilinear stretcher, and the frame – and to Lawrence Alloway, who was the first to codify how the picture as a sort of shallow tray containing discrete objects had dissolved into one in which figure and field interact. 'All areas of the canvas are meshed indissolubly', wrote Alloway in the spring of 1960, providing 'a compound of obscurity and symmetry [that] makes geometry not an emblem of order but a subject of uncertainty'. McLaughlin's own words summarise the new standpoint of post-geometric colour-painting well. 'Art is not in the painting and it is not in the object – it consists of the perception which the spectator experiences'.[17] The slightly younger Dean Fleming, also a Californian and also beholden to Zen, would say of his geometric paintings of the early 1960s based on the perceptual switching to-and-fro of the Necker cube, that 'if an open viewer allows the reading to be in his own time, he can begin to receive an experience which separates from the work he sees, and he

[17] S.Tillim, 'What Happened to Geometry?' *Arts Magazine*, New York, 33 (9), June 1959, p 38; and L.Alloway, 'On The Edge', *Architectural Design*, London Vol XXX (4), April 1960, pp 164, 165.

can participate in the reversals of space and the apparent contradiction between stillness and sudden motion, weight and gravitationlessness' [Fig 61].[18]

Alloway's early recognition that the new abstract painting was more like a *skin* than a container, that 'both sides of an edge are on the same plane', seems to me the essential formulation of the new phenomenological effect – one that precisely describes the nature of the total pictorial field. The word 'field' is itself of some interest here. Clearly unconnected with agriculture, it still suggests an undifferentiated, wide, and attractive space, one of freedom and openness that resounds with ethical values of a broadly experimental and libertarian kind. It may be uncoincidental that America's moon-shot of 1962 was the first in which a manned space capsule had escaped the earth's gravitational field; or that 'colour-field' was also the term given to the colour-designations of the sub-atomic particle known as the quark [quork?] on its discovery by Murray Gell-Mann and George Zweig in 1964. The publication of Umberto Eco's *Opera Aperta* in 1962 (later published in English as *The Open Work*) provided further speculation from the world of literary and cultural theory of how field-formats, and hence openness, were rehearsing on a visual level some fundamental ideas of modern science, including the categories of indeterminacy and statistical distribution that guide the interpretation of natural facts in quantum physics. Eco speculated that such an art 'calls into question the principle of causality, bivalent logics, univocal

[18] Dean Fleming, 'Statement', in L.Alloway, *Systemic Painting*, Guggenheim Museum, New York 1966, p 23.

relationships, and the principle of contradiction'; and it was with enthusiasm that he cited an article by Georges Mathieu of 1959 in which the French painter argued that informal and lyrical abstract art had recognised 'the failure of concepts of space, matter, parity, and gravitation, along with the resurgence of notions of indeterminacy and probability, of contradiction and entropy', qualities 'seeming to indicate the reawakening of mysticism and the possibilities of a new transcendence'.[19] It was not mysticism, however, so much as the new physics that supplied the more powerful ideas.

Enter, at this juncture, the ever-heretical Salvador Dalí. We know that several of the Surrealists had tried to keep abreast of the discoveries of the 1920s and 1930s in relativity theory and particle physics – and that Salvador Dalí was particularly absorbed by the idea of warped geometry (the famous melting watches) stretching and retarding space in such paintings as the contracting-and-expanding *Bather* of 1928: a reclining and allegedly masturbating figure whose very coherence before sight seems relativistically deformed, as if her body-parts were travelling at variable speeds relative to the astonished viewer [Fig 62]. Other Surrealists greeted the 1927 announcement by Werner Heisenberg of the 'uncertainty' principle of quantum mechanics with fascination and evident sympathy; while Surrealist-inclined abstract painters of the stature of Wolfgang Paalen, Oscar Dominguez and Roberto Matta also

[19] U.Eco, *The Open Work* (trans A.Cancogni), Harvard University Press and Hutchinson Radius, 1989, pp 87; and G.Mathieu, 'D'Aristote à l'abstraction lyrique', *L'Oeil*, April 1959, cited in *op.supra*, p 88. Compare Hans Hofmann's 'bad conscience' about his squares and rectangles: see his *Et Sanctum Santorum* (1962) versus *Magnum Opus* (1962), both Berkeley Art Museum, San Fransisco.

made efforts to imagine the probabilistic qualities of sub-atomic movement in their paintings in the decade or so from 1935 – as if to acknowledge that the particle world is random, teeming and discontinuous, one in which the older geometries no longer apply.[20] Dalí for his part, by the mid-1950s domiciled in New York, renewed his own fascination for particle physics in a work of 1958 that contained an all-over structure of ben-day dots concealing a detail of Raphael's *Sistine Madonna* inside a human ear: it turns out to be the ear of Pope John XXIII taken from *Paris Match* and enlarged. The painting's full title, *Quasi-grey picture which, closely seen, is an abstract one; seen from two metres is the Sistine Madonna of Raphael; and from fifteen metres is the ear of an angel measuring one metre and a half; painted with anti-matter, therefore with pure energy*, points to an unlikely fusion of Dalí's conservative Catholicism and the experiments of contemporary science, mostly obviously the thesis of the relativity of observation to the position of the observer [Fig 63]. Publishing an 'Anti-Matter Manifesto' to coincide with the work's first exhibition, Dalí claimed 'if the physicists are producing anti-matter, let it be allowed to the painters, already specialists in angels, to paint it … my father today is Dr Heisenberg'.[21] This single heterodox work would tend to confirm Eco's diagnosis that openness in the work of art was of a piece with

[20] Dalí's fascination with relativity and particle physics and the Surrealist relation to modern physics has been expertly documented in G.Parkinson, *Surrealism, Art and Modern Science: Relativity, Quantum Mechanics, Epistemology*, Yale University Press 2008.

[21] The doctrine of the insemination of the Virgin through the ear was widely accepted among Catholic theologians in the middle ages: the ear was also the organ for the reception of the Holy Word. For further contextual detail on the work, see M.R.Taylor, 'The Sistine Madonna, 1958', in D.Ades (ed), *Dalí*, Palazzo Grassi, Venice, 2004, pp 386-9.

indefiniteness, metamorphosis, undecidability, transformation and subjectivity, with the Baroque principle of fluidity against the Renaissance principle of fixity. 'In the modern scientific universe', Eco suggests, 'the various component parts are all endowed with equal value and dignity, and the whole construct expands towards a totality which is close to the infinite. It refuses to be hemmed in by any ideal normative conception of the world. It shares in a general urge toward discovery and constantly renewed contact with reality'.[22]

It was a mode of thinking that was widespread among modernist artists with an eye for science. When Langsner's exhibition of West Coast abstraction reached London in 1960 a group of British painters including John Plumb, Robyn Denny, John Hoyland, Gordon House and the brothers Bernard and Harold Cohen took both it and the publication of new work in *Scientific American* to heart. Poring long and hard over Edwin Land's May 1959 article 'Experiments in Colour Vision' made them aware that, contrary to Newton and Chevreul, 'the eye can build coloured worlds of its own out of informative materials that have always been supposed to be inherently drab and colourless'.[23] Already in that year, a no less epochal show had taken place in London entitled *Place*, which had their large and generally hard-edged paintings in floor-to-ceiling arrangements designed to be seen as suffusing the viewer's whole perceptual field, almost as if that viewer were a subject in a

[22] U.Eco, *The Open Work* (trans A.Cancogni), Harvard University Press and Hutchinson Radius, 1989, p 14.
[23] Edwin H.Land, 'Experiments in Colour Vision', *Scientific American*, May 1959.

laboratory of vision [Fig 64]. In likewise fashion, the viewer of a large contemporary American work such as Larry Poons' *Out* of 1967 – to take a central example of the kind of American painting now routinely known as 'colour-field' – would be quickly disburdened of two responses that would have seemed normal a couple of generations before: sustained attention to singular and centralised forms; and appreciation of the art object as a discrete and manufactured physical thing [Fig 65]. To the contrary, Poons' viewer would need to surrender to a wide expanse of coloured canvas in which float various ellipsoid incidents seemingly in gradual motion to left or right (hence the work's apt title). As high as a grown man and two-and-a-half times as wide, such a painting would prove too large to comprehend as a solid object and would demand to be read as a sensational visual field having only a residual connection with the everyday one where things are apprehended in relation. And the very decorativeness of a Poons surface would certify that it could never be read as a 'picture' or as an 'event' – which is to say that the viewer's best associations were likely to be either with the particulate and very small, or with the cosmic and very large. Bridget Riley in London would by this date be painting formats of wave-like repetitions based on but optically transcending any evidence of an underlying grid [Fig 60]. Either way, field-painting on both sides of the Atlantic became 'optical' at around the same moment and in response to the same set of internal and external concerns: at one extreme, a vibration virtually confined to the mechanism of the human eye (Op Art); at another, virtually monochrome surfaces that give rise to sensations

of infinity, boundless space, and emptiness, underscored by some artists by painting only the edges of the painting (Jo Baer, Cesar Paternosto) such that the viewer needed to move right and left and back again while trying to hold the sensations delivered by each side in the mind's eye.[24]

For all that (it may be said), a Constructivist insistence on rational formats did persist in what in the 1960s was called 'systemic' or Systems art; may even have formed a precondition for art that welcomed repetition or symmetry, but in a different form. The exhibition *Systemic Painting* at the Guggenheim Museum in 1966 may be an instance of this sort. Claimed by its curator Lawrence Alloway to exemplify a 'shift of sensibility' away from gestural painting towards flat colour, hard linear edges, symmetry, and paintings designed beforehand rather than spontaneously evolved – Barnett Newman and Alexander Liberman were among the originators – *Systemic Painting* rung several changes on the remnants of Constructivist geometry in art. 'Paintings based on modules are included, with the grid either contained in the rectangle or expanding to take in part of the surrounding space', in the words of Alloway's own statement. And yet by his own admission the tendency in work by Jo Baer, Robert Mangold, Edwin Ruda, Kenneth Noland, Frank Stella and others was to modulate the inexpressive surface with a frank declaration of subjective and even randomised design [Fig 67]. The image is 'subject to

[24] For the still undervalued work of Paternosto, see his *The Stone and the Thread: Andean Roots of Abstract Art*, University of Texas Press, 1996, and *The Amerindian Paradigm*, Palais des Beaux-Arts, Brussels, 2001.

continuous transformation, destruction and reconstruction', Alloway explained. 'The system is the means by which we approach art'; suggesting that whereas Malevich and Mondrian had sought to universalise their geometry (at least this was the perception) the new American work contained no appeal to Plato or Pythagoras. Indeed 'the personal is not expunged by using a neat technique' said Alloway. Rather 'the artist's conceptual order is just as personal as autographic tracks … A system is as human as a splash of paint'.[25]

What is no less interesting is that just such a falling-away from 'pure' rationality can be found in the group formed in England, and known as Systems. Ostensibly far more rigorous than the American 'systemic' painters, Systems artist sought to resume the mathematical experiments of the London Constructionists of the 1950s in pursuit of the fully rational work of art. The group, founded by Jeffrey Steele and his Finnish wife Arja Nenonen in 1969, showed a determined attachment to linearity and the ordering principles of number – but did so in full awareness of a pull towards disorder in even the most mathematically organised scheme.[26] Their mentor Anthony Hill was well-known for maintaining a Dada alter-ego 'Achill Redo' in the midst of his carefully crafted mathematical work – claiming in a set of lecture notes to want to both 'amaze and amuse' with the help of his little-known (and infrequently

[25] L.Alloway, 'Introduction', *Systemic Painting*, Guggenheim Museum, New York 1966, pp 19, 17, 18.
[26] The artists selected for the initial shows included, aside from Anthony Hill, Mary Martin, Peter Lowe, Michael Kidner, Malcolm Hughes, Jean Spencer, David Saunders and Gillian Wise. For a full account see A.Fowler, *Constructivist Art in Britain 1913-2005*, PhD dissertation, University of Southampton, 2005.

exhibited) collages, which he has called 'accretions'.[27] Hill's explicit linkage of his 'amaze and amuse' alliteration with the programme of J.Huizinga's pre-war classic *Homo Ludens* – widely read in the London Constructionist group – suggests once more that mathematical systems in art were intended to be entertaining and game-playing as much as exercise for the rational mind. Steele himself had painted swirling wave-forms involving a complex geometry of curves before seeing Victor Vasarely's highly ordered optical work in Paris, and converting to his side [Fig 68]. Or as Systems group member Peter Lowe insisted on behalf of the group as a whole, 'you can work intuitively with a system … the choices that you make need not be rational ones … it's your personality, its irrational element, and this is not ruled out by the use of a system'.[28] Rational assembly in the spirit of Constructivism here seems to encounter its inevitable destiny, not in the objective ordering of material, but in personal choice.

It is in such a context that a unique but historically late attempt to build a personal phenomenology out of rational grids might be mentioned briefly. A typical Agnes Martin's grid – the American artist painted them for almost forty years after destroying her earlier work in 1960 – though visibly crafted from graphite or crayon, and paint, shares with the drawings of Emma Kunz the ability to evoke an unseen field of forces in a way that stages a rhythm between

[27] A Hill, 'Art Looks at Architecture', *DOCOMOMA bulletin*, London, Autumn 1995, p 11.
[28] Peter Lowe in discussion with Stephen Bann and other Systems artists, *Studio International*, May 1972.

the visible and the invisible, the here and the not-here, the inert and the living. Martin herself was receptive to feelings of mergence and boundlessness that so many viewers claimed to experience in front of her art. 'My paintings have neither object nor space nor line nor anything – no forms. They are light, lightness, about merging, about formlessness, breaking down form. You wouldn't think of form by the ocean' [Fig 69].[29] Martin's reference here to the 'formless ocean' is a reliable pointer to a dimension of experience in which whole objects disappear and awareness becomes diffuse, unfocussed and even oblique, hence modulating the regular geometric grid once more into a pictorial or perceptual field.

And yet by the height of Martin's career in the 1970s the perceptual and cognitive model of the field had already begun to give way to other formats, other geometries, other metaphors of vision and the cognitive process. The more intuitive formats of *Systemic Painting*, or the ludic impulses of Systems art, already provided ample evidence of that. But by now, even more far-reaching cognitive changes were afoot, the most impressive of these arising from the scientific study of hard-to-predict systems such as the weather, flowing liquids, and population growth – all of them significantly involving phenomena occupying three dimensions as well as two. Tides, eddies, cyclones, cloud-patterns and atmospheres had fascinated Leonardo da Vinci

[29] To Martin', art was 'a single direct going into a field of vision as you would cross an empty beach to look at the ocean' quoted in A.Wilson, 'Linear Webs', *Art and Artists*, I, October 1966, p 68.

some half a millennium earlier, but by the middle of the twentieth century were still defying the best efforts of mathematicians to describe them. And yet understanding these phenomena promised clear military benefits, particularly for the USA. It turned out that computing was to provide the key. The first advance was the famous meteorological modelling undertaken by Edward Lorenz with the help of state-of-the-art computers in the 1950s, which gave birth not only to a new mathematics of stable versus unstable patterns of change – including the celebrated Butterfly Effect – but to a new level of popular interest in the physics and mathematics of dynamical systems including patterns of movement in the human and animal world.[30] In particular the phenomenon of *swarming*, whether of birds in flight, shoals of fish in rapid motion, or the movements of crowds teeming through and across cities, exhibiting 'wave' motions at sporting events or reacting to conflict situations in patterns of coalescence, dispersal and escape – all now captured on film with the glamour of accelerated or slowed-down motion – at that moment presented a profound challenge to experimental scientists and artists alike.

One obvious response was for the artist to welcome, rather than resist, the complexities of pattern inherent in the motion of particulate or granular matter. Elias Canetti chose sand grains as 'crowd symbols' for his story 'Crowds and Power' of 1960 because of what its author called 'the smallness and sameness of its parts … [and] the endlessness of sand: there is always more of it than the

[30] The classic exposition is E.N.Lorenz, 'Deterministic Nonperiodic Flow', *Journal of the Atmospheric Sciences*, Vol 20, no 2, March 1963, pp 130-41.

eye can take in'.[31] For others, the conjunction of nanoscience (the biology and mechanics of the very small) with the new scientific interest in the physics of swarming was enough to provoke human and even political metaphors for the work of art. One of these was the Düsseldorf artist Günter Uecker, who from around 1957, in the context of the ZERO group in that city, made a series of paintings in which nails hammered into a white-painted canvas (and themselves painted white) eliminated colour and rectilinearity in favour of swirling irregular patterns of small elements – the nails and their shadows – redolent of breathing or undulating masses: these were both highly physical works premised upon basic artisanal practices, as well as liberating expressions of escape from the orthogonal utopias of De Stijl and linear Constructivism. The Portuguese painter Filipe Rocha da Silva, to take another example, developed a series of visual formats that while referring at one remove to the Portuguese revolution of 1974 – notably its democratic impulse – invoke the collective power and purpose of the human mass as a patterned synchronisation of its many-millioned parts [Fig 70]. A popular book of 2003 by Steven Strogatz entitled *Sync: The Emerging Science of Spontaneous Order* has been cited by da Silva as a form of endorsement: 'What I tried to do was humanise pointillist paintings', the artist has said, 'turning them into huge battlefields where crowds could move and express themselves, becoming as illegible as the word in Camus's story 'The Artist at Work' and achieving an abstract quality when

[31] E.Canetti, *Crowds and Power*, Claasen Verlag, Hamburg 1960 (Phoenix Press, London, 2000), p 86.

observed from a distance'.[32] The nanoscale humans that populated Silva's works can be looked upon as resembling both brain cells and individual neurons, according to the artist, or the complex patterns of pandemic diseases and computer viruses. They can be placed alongside equally swarm-conscious work by the likes of Vija Celmins or Susan Derges, who look at the heavens or at water, as well as the later work of Alighiero Boetti. Recent theory has it that swarming systems may well be self-regulating, and further that self-regulation (rather than Divine inspiration) may be a structural feature of the expanding and contracting universe as a whole. The mathematics and physics of swarming has also led to speculation on the spread and patterning of social contagions such as addiction and perhaps crime.[33]

On a related level, the collapse of figure-ground configurations in the fine arts can be viewed as a crisis in the concept of a determinate boundary, hence of shape, and hence of line itself, whether curved or straight. To be more precise, the compositional straight line that had taken on the values of energy, direction and political dynamism in 1920s Constructivism, and then became *de rigeur* in 'rational' art of the mid-twentieth century as an index of efficiency, simplicity and functionality, now became subject to the severest mathematical doubt. One context for this investigation was provided by mathematicians in the 1970s

[32] S.Strogatz, *Sync: The Emerging Science of Spontaneous Order*, 2003; F. Rocha da Silva, 'Nanoscale and Painting', *Leonardo*, Vol 41, no 4, 2008, pp 351-2. Camus's story of 1957 revolves around a would-be famous artist whose painting contains a single word written so small that it can scarcely be read: it is either *solitaire* (solitary) or *solidaire* (unified, united).

[33] N.Christakis and J.Fowler, *The Surprising Power of Our Social Networks and How They Shape Our Lives*, Little, Brown and Co, New York 2009.

who began to reconsider the geometrical properties of the complex plane, the graphic space that, since around the end of the eighteenth century, had been used to represent the real numbers stretching as a straight line conventionally from east to west as well as the so-called complex numbers (defined as pairings of real numbers and imaginary numbers, the latter understood as multiples of $\sqrt{-1}$, or *i*) that could be positioned both east-to-west and north-to-south on what was now called the complex plane. The Swiss mathematician Karl Friedrich Gauss had discovered in 1799 that an equation of degree *n* could have all its solutions represented as points on the complex plane. The question that now assumed significance in the study of turbulence patterns was whether these solutions were stable or otherwise. Powerful computers deployed by the Cornell mathematician John Hubbard in the 1970s discovered extraordinary new linearities formed by the border between points on the complex plane that did (or did not) stabilise when subjected to a fairly simple iteration of the form $z \rightarrow z^2 + c$, where z begins at zero and where c is the complex number being tested. We should remember how, back in Emma Kunz's pre-computer days, the French mathematicians Gaston Julia and Pierre Fatou had discovered elaborate repeating patterns that displayed an element of self-similarity under simple iteration – the property that part of a shape repeated the larger shape to which it belonged. Now, in the 1970s, Hubbard's computers were discovering boundary-shapes that seemed of infinite complexity in the complex plane, as well as successfully mimicking the behaviour of inscrutable natural phenomena such as weather-cycles and water-flows. The French theorist Benoit

Mandelbrot by the mid-1970s succeeded in generalising Hubbard's conclusions by uncovering what became called the Mandelbrot set, a boundary-shape in the complex plane that ramified under simple iteration in structures of literally endless self-similarity, and in which concepts of distance, measure, interval and direction became virtually inapplicable – in which Euclidean mathematics and the additive grid based on the real number sequence could no longer claim either descriptive or metaphorical validity [Fig 71]. The publication to great public enthusiasm of Mandelbrot's *The Fractal Geometry of Nature* in 1977 showed how shapes in the natural world as well as in the larger cosmos were based not on Euclidian linearity and stable boundaries but on self-replicating curvatures exhibiting regularity-within-irregularity as well as being mysteriously beautiful to behold. At the very least, to speak of beauty was now to speak not of symmetries based on the real-number line, but to acknowledge a family of complex curvatures, enclosures, and eventually three-dimensional morphologies in which the cosmically large and the infinitesimally small were nearly identical, and unlike anything seen or imagined by the human mind hitherto.

It was to be expected that such an imaginative shift would not without its echoes in the middle-sized world of architecture and the fine arts. The patterned correspondence of the cosmic and the micro-particular had finally shattered the modernist assumption that Matter and Spirit (or, we may add, Knowledge) could be bridged by the metaphor of the grid. Heinz-Otto Peitgen

of the University of Bremen, himself the author of numerous books on the Mandelbrot set, considers that moment to form a watershed. Before fractals, 'everything was very geometric, straight-line approaches', he reflected, with Josef Albers' embedded colour-squares and Bauhaus architecture providing just two versions of a cultural form that 'seems now to have passed'.[34] The ubiquitous double-curve geometry that characterised Cubist art, or the straight-line grids of Mondrian or van Doesburg's abstraction, or the square-and-rectangle patterns of Richard Lohse's, even the elegant off-centre circles and rectangles of Ben Nicholson's, now seemed to embody pictorial geometries no longer corresponding to the shapes and dispositions of buildings, towns or streets, nor to objects of everyday use in which circular or cylindrical motion was essential – which is to recognise that rectangle, grid and circle could no longer function as powerful metaphors for industrial modernity or even for modern instrumentality as such. 'Clouds are not round and mountains are not cones' was the slogan Mandelbrot brought to the scene. 'The new geometry,' says one scientist giving a popular explanation of Mandelbrot's work, 'mirrors a universe that is rough, not rounded, scabrous not smooth. It is a geometry of the pitted, pocked, and broken up, the twisted, tangled, and intertwined'. Furthermore Mandelbrot had argued that, over and above its possible metaphors, the new geometrical order of the fractal made a claim about the world, namely that such complex shapes carry meaning: 'The pits and tangles

[34] Conversation with Peitgen reported by J.Gleick, *Chaos: Making a New Science*, p 229. Peitgen's books include *The Beauty of Fractals*, 1986, *Fractals For The Classroom*, 2 volumes 1991 and 1992, and *Chaos and Fractals: New Frontieres of Science*, 1992.

are more than blemishes distorting the classic shapes of Euclidian geometry, they are often keys to the essence of a thing'.[35] At more or less the same historical moment, the systematic asymmetry and polycentrism of buildings by master-architects like Frank Gehry and Santiago Calatrava became part of a normative cultural experience, while painters and sculptors became newly fascinated by the form-giving possibilities of repetition-within-variation on the model of the fractal set.

A few examples will illustrate the case. A striking instance is the so-called Ulysses project designed by the artist and physicist Jean-Pierre Hébert in Santa Barbara, in which a small metal ball is set in motion inside a sand tray according to special software combining rule-governed motion with minor irregularities that produce randomised or unstable effects [Fig 72].

Meanwhile, the discovery of the fractal has cast light on an idiom long since labelled 'expressionist'. Careful attention trained upon the blobs and edges of paintings by Marcel Barbeau and Jean-Paul Riopelle (both members of the Quebec-based group Les Automatistes) has revealed a characteristic fractal structure of a measurable order of complexity.[36] Jackson Pollock's all-over drip paintings of the 1940s and 1950s have also long been recognised as at once

[35] J.Gleick, *Chaos: The Amazing Science of the Unpredictable*, Vintage Books, New York 1998, p 94.

[36] Measured that is by its fractal dimension, defined (informally) as a measurement of how completely a fractal fills space, at any scale however large or small. For this and the close visual analogue of the so-called Sierpinski triangle, see V.Tamás, *Fluctuations and Scaling in Biology*, Oxford 2001.

symmetric and asymmetric, wild and controlled. But here too the pattern-complexity in his work, resulting from the release of pigments of various viscosities from sticks and brushes waved at various speeds at various distances above a horizontal canvas, and under the pull of various accelerations and decelerations of the hand and arm, can now be seen as a fractal performance – Pollock's statement 'I am nature' seen in a very different light. A growing literature on the subject suggests that his drips, swirls and edges exhibit gradually increasing recursivity and self-similarity (albeit statistical rather than exact, and within a margin of variation traceable to the artist's orientation and physical stance) that maximises the yield of pleasure in relation to the pain of confusion claimed by viewers and hence goes some way to accounting for the continued aesthetic fascination of his work [Fig 73].[37]

The practical difficulty of reconciling scale-invariant fractal shapes with the fixed rectangle of the stretched canvas is perhaps one obvious reason why painters have not been consciously attracted to the new mode of geometry. And yet given the importance of the third-dimension (and time) to patterns of

[37] Notably R.P.Taylor et al, 'Fractal Analysis of Pollock's Drip Paintings', *Nature*, 399, 3 June 1999, p 422; R.P.Taylor, A.P.Micolich and D.Jonas, 'Fractal Expressionism', *Physics World*, 12, October 1999, pp 25-8; R.P.Taylor, 'Order in Pollock's Chaos', *Scientific American*, December 2002, pp 84-9; R.P.Taylor, A.P.Micolich and D.Jonas, 'The Construction of Jackson Pollock's Fractal Drip Paintings', *Leonardo*, 35, 2002, pp 203-7; J.R.Mureika, G.C.Cupchitz and C.C.Dyer, 'Multi-Fractal Fingerprints in the Visual Arts', *Leonardo*, 37, 2004, pp 53-6; K.Jones-Smith and H. Mathur, 'Revisiting Pollock's Drip Paintings', *Nature*, 444, November 2006, E9-E10; and most recently C.Cernuschi, A.Herczynski and D.Martin, 'Abstract Expressionism and Fractal Geometry', in E.Landau and C.Cernuschi, *Pollock Matters*, Chesnut Hill, Mass., Boston College, 2007, pp 91-104, and C.Cernuschi and A.Herczynski, 'The Subversion of Gravity in Jackson Pollock's Abstraction', *Art Bulletin*, Vol XC, No 4, December 2008, pp 616-639.

turbulence and recursivity, it is not surprising to find that both have appealed to some major contemporary sculptors. Modernism's grand ambition of reconciling Matter with Spirit has been approached in this new register by the American sculptor Richard Serra. He had already broken the rules of modernist sculpture in the 1970s with his massively heavy steel and lead props and plates, arranged in the viewer's space such as to defeat, or supplant, a purely optical apprehension of form and its relations. The great achievement of those early pieces was to generate a kind of 'field of force' in the vicinity of the art-object, above all a kind of phenomenological intensity in which rational relations of measured space and time gave the impression of being sucked gravitationally into the material of the thing itself. Routinely understood as informed by Merleau-Ponty's writing, as well as by the Japanese concept *MA* in which space and time are intertwined – and well exemplified in the Zen gardens of Myoshin-ji near Kyoto, which Serra visited in 1970 – a no less compelling reading comes from the field of physics itself. Serra by his own testimony has enjoyed an intellectual friendship with the astrophysicist and compressed-matter theorist Freeman Dyson: Serra has credited him with 'making the fantasy of physics applicable to one's imagination'.[38] A skilled populariser like Dyson was the natural complement to a sculptor preoccupied from the beginning of his long career with gravity, time, and cognition; and it comes as little surprise that in a body of work dating from the late 1990s Serra has forced massive steel plates into complex curvilinear shapes from which the

[38] For the Dyson reference, see 'Interview with Richard Serra', in *Richard Serra: Torqued Ellipses*, DIA Centre, New York, 1997, p 13 [BT numbering]

regularities of orthogonal geometry have all but disappeared. The *Torqued Ellipse* sculptures of 1997-8, formed by 'torquing' or twisting an ellipsoid cylinder such that its top ellipse mismatches its bottom, produced leaning or overhanging curvatures reaching from floor-line to high above the viewer's head [Fig 74]. With two such shapes placed one inside the other so as to form an even more irregular space between the two, and with a narrow entrance for the intrepid viewer in the outer skin, its phenomenological effects are far more thoroughgoing than the pictorial kinetics of 1950s art. In fact its effects on cognition and bodily stability are extreme. 'One of the strange things about these pieces', Serra says, 'as you follow the form from the inside or outside, is that because the surface is continuously inclined you don't sense the distance to any single part of the surface. It's very difficult to know exactly what is going on with the movement of the surface … There's no *gestalt* reading: you don't know the form even if you walk around it several times'. The experience resembles his account of the Zen gardens, in which 'the articulation of discrete elements within the field and the sense of the field as a whole emerge only by constant walking and looking … [in the gardens] directions, continuity, and paths work together to deny a fixed measure'.[39] And yet the human-scale cognitive indeterminacy of the torqued ellipses also forms a counterpart to the quantum indeterminacy that transformed modern physics following the discoveries of Max Planck and Werner Heisenberg in the first three decades of

[39] 'The primary characteristic of the gardens is that the paths around and through them are curvilinear. The geometry of the site prompts walking in arcs'; R.Serra, 'Interview with L.Cooke', in *Richard Serra: Writings, Interviews*, University of Chicago Press, 1994, pp 257-8.

the twentieth century, and of which Dyson has been a leading theorist. Furthermore Serra's is an indeterminacy that reaches right into the viewer's body. Not only does he or she have to stay in motion relative to the sculpture (no *gestalts* on offer, no favoured viewing point), but movement threatens to detach the body from its own sense of uprightness and orientation. The experience is that space and time coalesce, while moving at different speeds. 'It is destabilising [the words are again Serra's] because you don't quite know how the steel is torquing, toward you or away from you. The disorientation you might feel, the destabilisation of the space, seems to be part and parcel of your movement'.[40] An attentive viewer inside Serra's torqued sculptures will agree that the evidence of the eye and brain become challenged by the movement of the legs and feet. 'Where your head is and where your feet are seem not to be aligned: what's going on at the level of your feet and what's going on at the level of your head are removed, quite distinct'.[41] Serra may or may not be aware that the toroidal volumes formed by shoals of fish, each individual fish travelling vis-à-vis its neighbours according to discernible attractions and repulsions, has attracted scientific attention in an astonishingly close-matched way.[42] By the end of the 1990s the dimension of time in the constructed work had all but obliterated the conventions of linearity that characterised modern painting and sculpture at the start.

---

[40] L.Cooke, 'Interview with Richard Serra', pp 15-6, 16-7
[41] L.Cooke, 'Interview with Richard Serra', p 1 29
[42] See the discussion of 'self-propelled particles' (SPPs) in P.Ball, *Flow*, Oxford University Press 2009, pp 124-163.

By contrast, the organic patterning that fascinated the 'organic' Constructivists Matyushin and Miturich, as well as the so-called 'biomorphic' shapes that characterised the work of Hans Arp and Juan Miró in the 1930s, look almost childish when placed alongside the forms suggested by the recent physics of turbulence and recursivity. Studies in chaos and gravity, in particular, have been in part responsible for the ingenious method devised by the British sculptor Richard Deacon for generating a new lexicon of form-bound curvatures that in turn offer a substantially revised iconography for hand-crafted sculpture today. Almost a decade after a sculpture training in London in the 1970s, Deacon spent a year in New York, during which time he made drawings inspired by Rilke's *Sonnets to Orpheus* (it seems he was led there by Rilke's essay on Rodin). These drawings attempted to construct a volume that, like Orpheus, breathed and sang with approximately the topology of a human head, namely an enclosure with one or more relevant openings. Known collectively as *Its Opheus When There's Singing*, the drawings result from a process of constructing curves with something like an enclosure in mind, but done under the guidance of a single repeated rule, using string, a pin, and a pencil, nothing more. 'All the curves', Deacon tells us, 'were built up from arcs or segments of circles of varying radii', a mode of construction that 'created a very fine mesh of marks from which a final form slowly emerged, almost as if it had been captured'.[43] The resulting outlines eventually became sculptures in steel, wood, concrete and plastics that do not mimic the form of

[43] R.Deacon, 'Silence, Exile, Cunning' (1986-8), in J.Thompson and others, *Richard Deacon*, Phaidon Press, London 2000, p 117.

the mouth or the ear but resonate with the complex biological configuration of the body's organs expanded to human and sometimes superhuman scale [Fig 75]. Their placement on a flat horizontal floor then served to make emphatic what the sculptor calls a 'curved relationship to the ground'. And yet during and subsequent to this phase, Deacon was reading widely in chaos theory. 'Originally my interest in chaos theory was in the idea of interconnectedness that it implies … then I became attracted to its notion that order comes out of disorder'. Then followed complexity theory, in which, in his own words 'it is seen as inevitable in any sufficiently complex system that order will emerge'.[44] The regular photographing of clouds in the European sky has provided – for Deacon as it did for Mandelbrot – a stimulus to inquiry into shape, flow, pattern and emergence, as shown by Deacon's superimposition on his cloud photos of cellular forms with complex topological twists [Fig 76]. The tipping-points between regular and irregular turbulence, the astonishing curvatures of the new geometry, have provided a constant in Deacon's work. 'The kind of work I'm interested in making', he said in a recent studio conversation, 'is between stable and unstable … between solidarity and fluidity … between the space outside and the space inside … between one thing and another … between me and the world'.[45]

---

[44] R.Deacon, 'Interview with Ian Tromp' (1999), in J.Thompson and others, *Richard Deacon*, 2000, pp 158-9.
[45] 'Richard Deacon', in J.Richards (ed), *Inside the Studio: Two Decades of Talks with Artists in New York*, Independent Curators International, New York, 2004, pp 180-1.

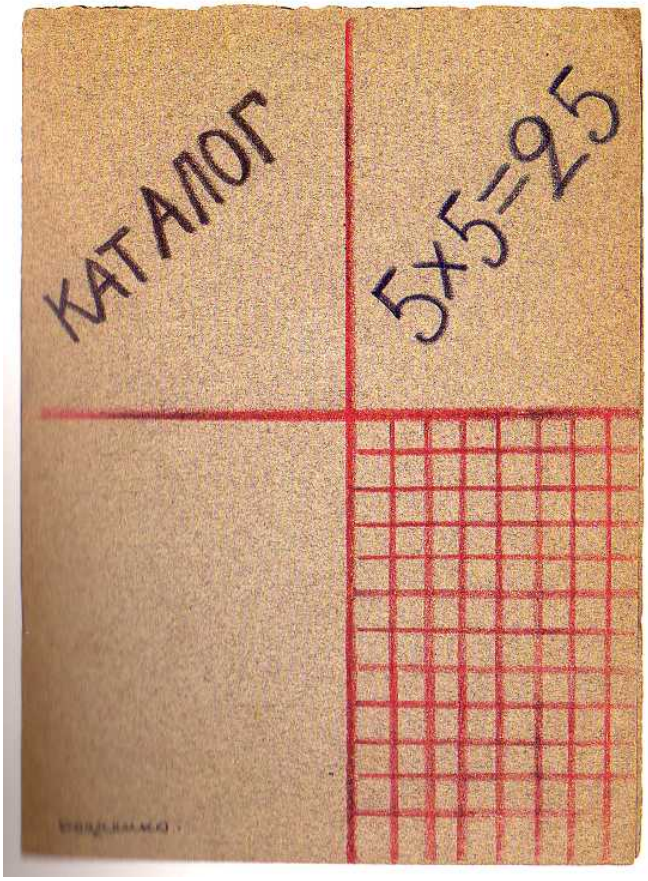
And yet from the start, modernism's dialogue with 'nature' was beset by a major practical and theoretical difficulty, namely the reconciliation of the visual patterns of 'nature' (spiralling, branching, chaotic, irregular) with the inalienable properties of the modernist art-object and the visual and tactile qualities of its media. On the one hand, none of the artists discussed in this chapter have shown any loss of adherence to the modernist principle of connectedness between worked material and form: the principle that anchored the modern art-object in *matter* while rejecting the blandishments of fantasy or the unseen. That principle had successfully secured the identity of the viewer as the product of an encounter available only in the presence of the work; even held in thrall there by his or her apprehension of the qualities of the manufactured thing – its *faktura*, its construction. And yet there is a sense in which the basic physical determinants of the work (stretched rectangular canvas in the case of painting, opaque and self-supporting matter in the case of sculpture) could be seen as imposing unwanted limits, or limitations, on the resulting form. David Burliuk believed he summarised the shortcomings of Cubism by saying that it meant 'understanding everything we see only as a series of cuts through various flat surfaces' – a 'cut' here being defined as a clean straight boundary between forms, such as scissors or a knife might make.[46] Yet in going on to enthuse about the 'abysses and ravines' in a painting's surface, describing Monet's as 'fibrous … like moss … [with]

[46] D.Burliuk, cited by Vladimir Markov, *Russian Futurism*, p 49. I have discussed the perceptual effects of the scissored edge in art in 'The Cutting Edge', *Exit Magazine*, 35, 2009, pp 16-31

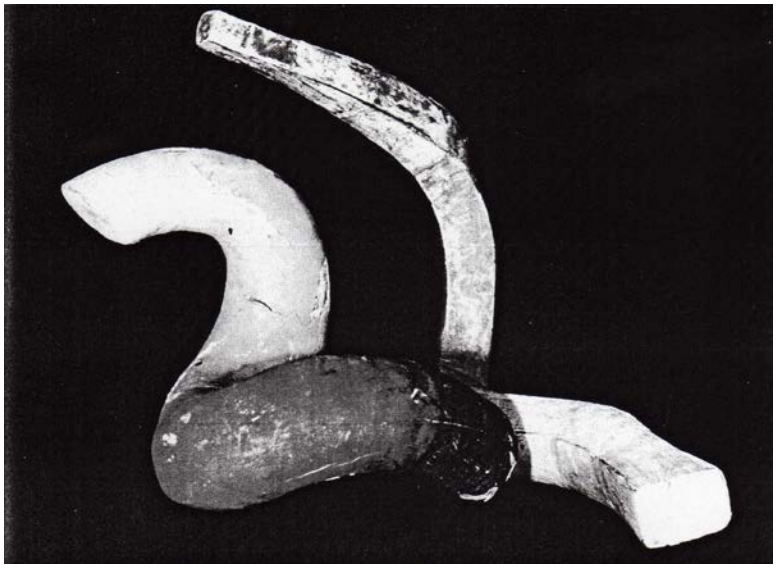
delicate threads of strange and wonderful plants', Burliuk had begun to suspect that rectilinearity alone might not be enough.[47] What emerged from his researches was that it could often be the tools of art as much as its cognitive metaphors that pulled pictorial structures back onto the flat, straightening them or dividing them from one another with a straight edge; but that *faktura* could predominate in other ways too. The evolving historical redundancy of the straight line and its progeny, the grid – the gradual decay of their rights to pictorial dominance under pressure from modern science and mathematics, especially computing – has been our theme here. Which is to say that under the sway of a 'post-medium' condition, the modern work of art that is also a constructed one needed to seek other ways of being made; other ways of *con*structing and hence *in*structing its viewers.

[47] D.Burliuk, 'Faktura' (1912), cited in M.Gough, '*Faktura*: the making of the Russian avant-garde', *Res*, 36, Autumn 1999, p 37.

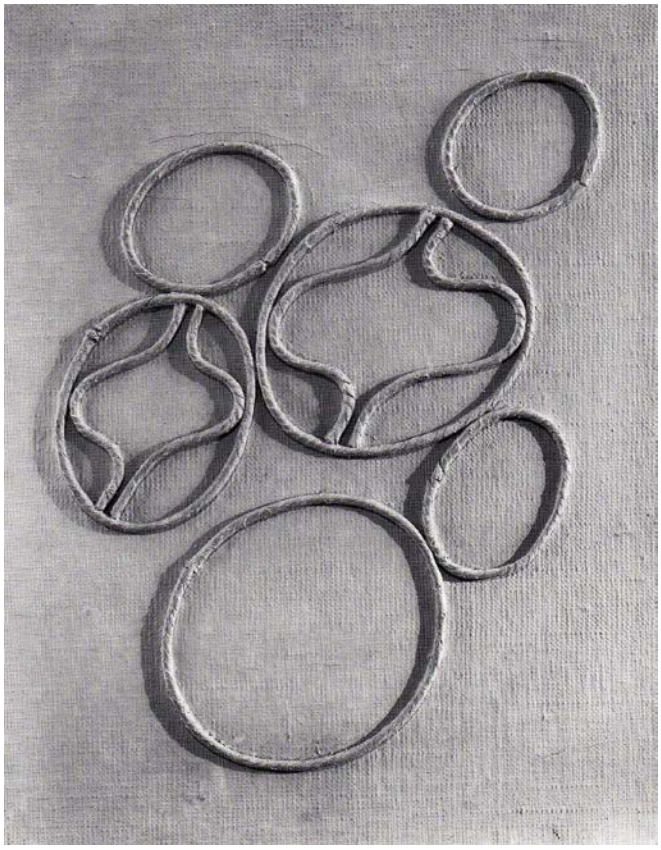
Illustrations



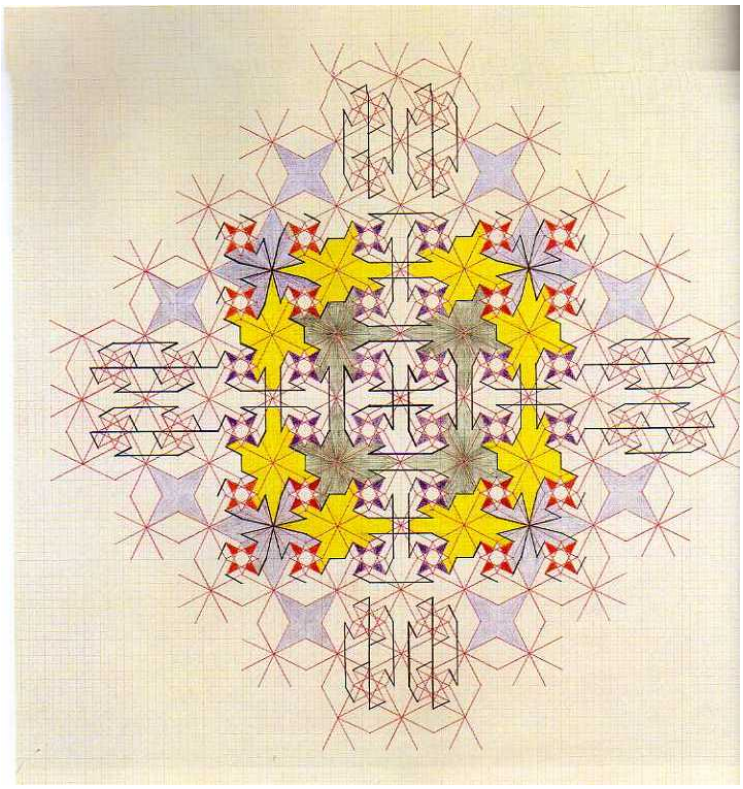
52. A.Rodchenko, *Cover for '5 x 5 = 25' exhibition*, 1921, crayon on paper, 19.2 x 14 cm



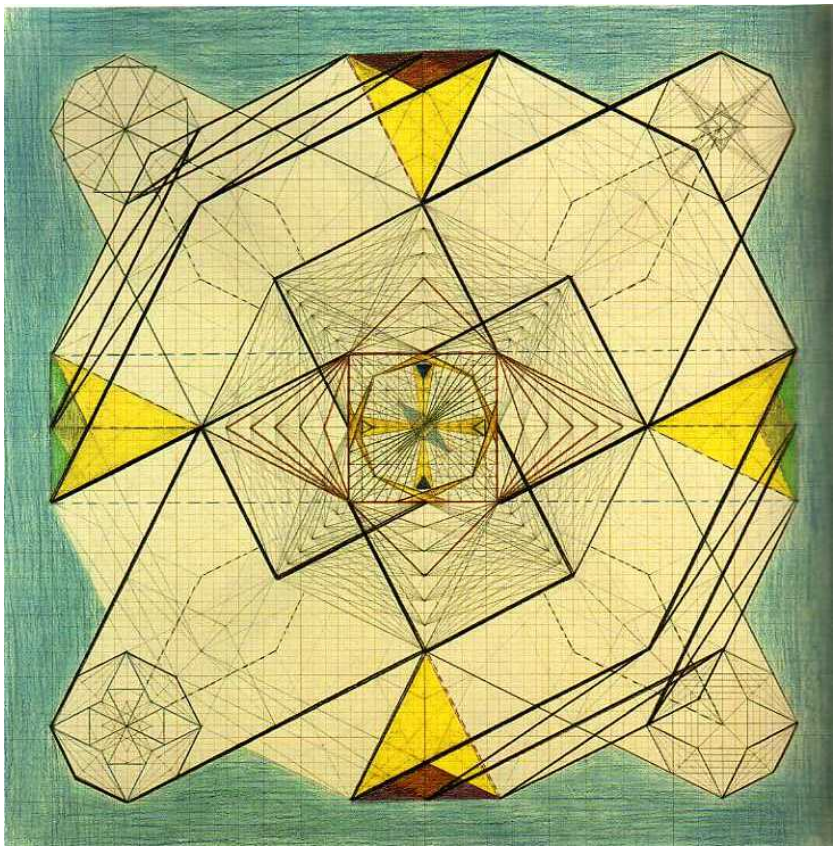
53. M.Matyushin, *Sculpture with tree-root and wood*, c 1913 [dimensions unknown]



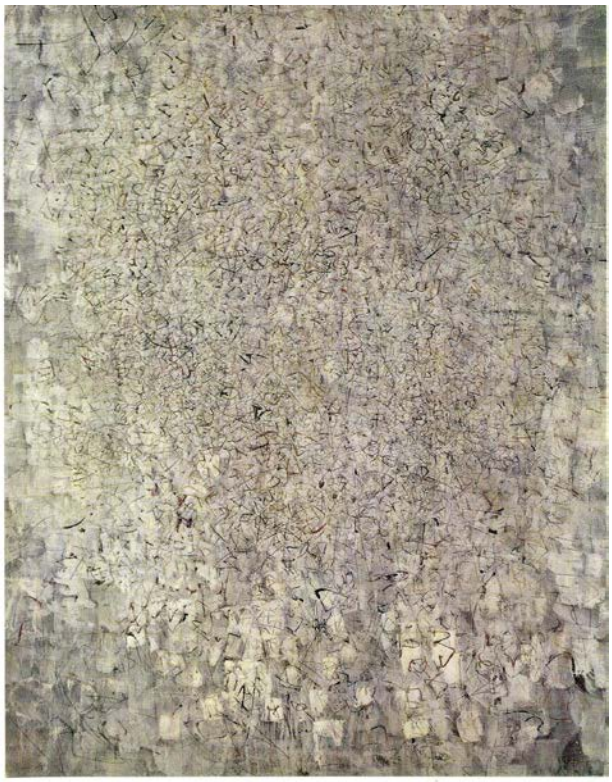
54. H.Arp, *Leaves and Navels*, 1929, oil and cord on canvas, 35 x 27.3 cm



55. E.Kunz, *Work no 105*, n.d., coloured pencil on graph paper, 100 x 100 cm



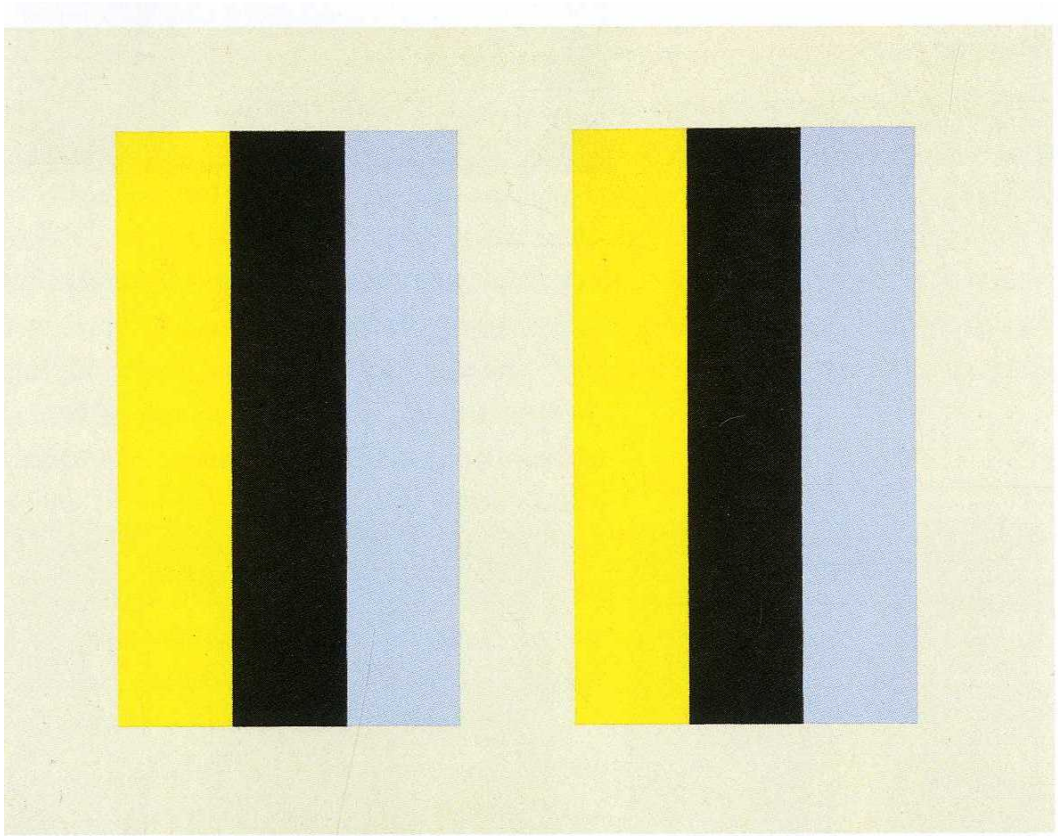
56. E.Kunz, *Work no 069*, n.d., pencil and coloured pencil on graph paper, 70 x 70 cm



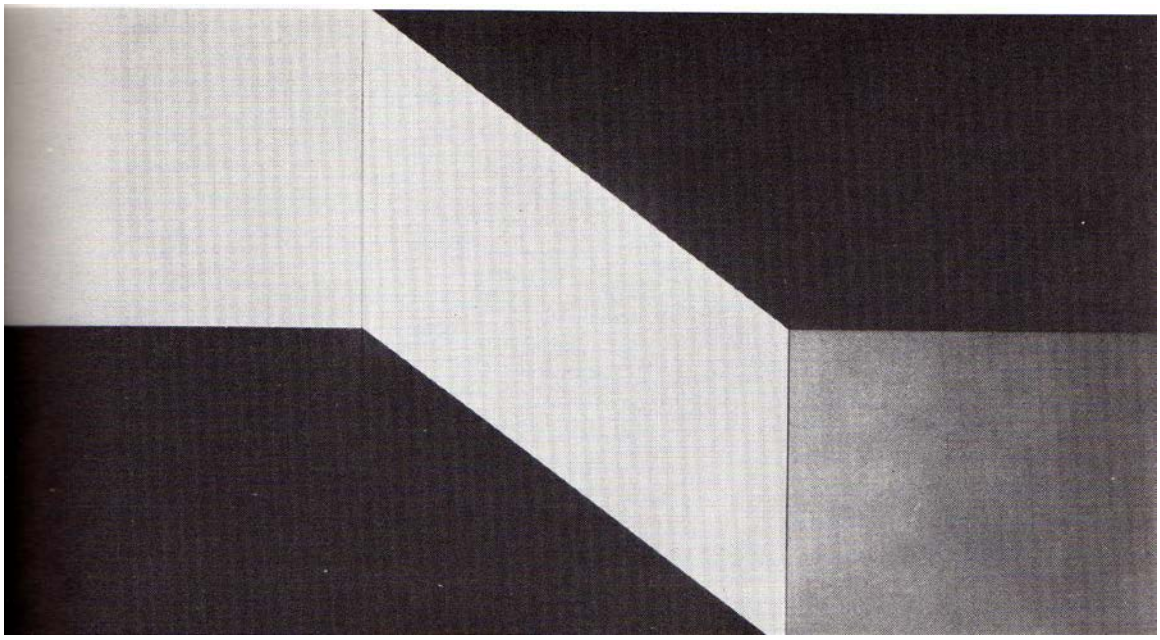
57. M.Tobey, *White Journey*, 1956, tempera on panel, 44 x 35”

58. B.Newman, *Who's Afraid of Red, Yellow and Blue I*, 1966, oil on canvas, 190.5 x 121.9 cm

59. K.Benjamin, *Totem Group IV*, 1957, oil on canvas, 101.6 x 127 cm

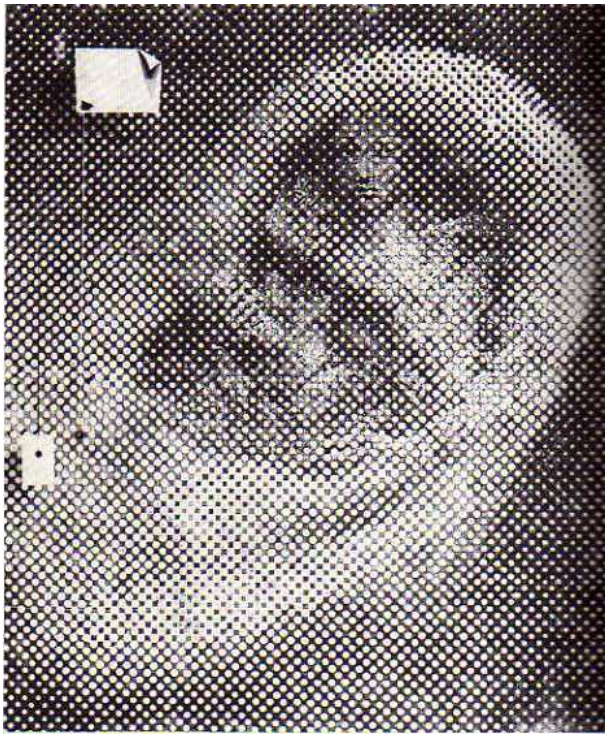


60. J.McLaughlin, *No 26*, 1961, oil on canvas, 110 x 155 cm

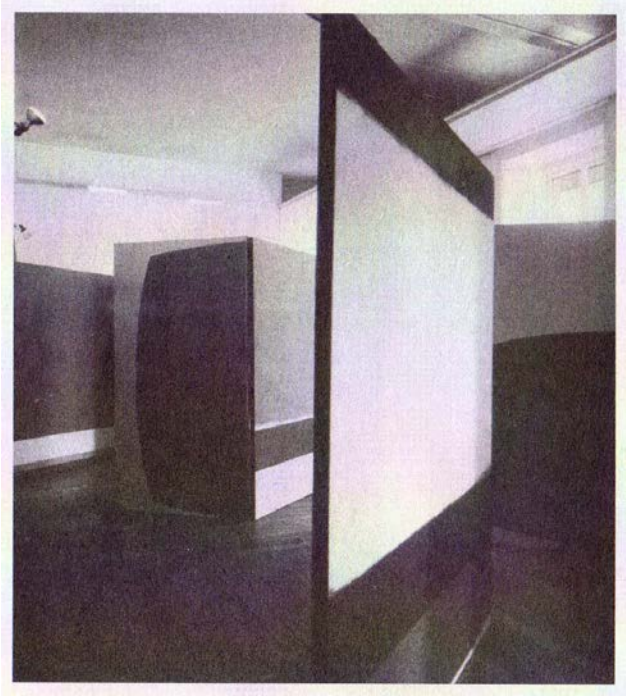


61. D.Fleming, *2V Dwan 2*, 1965-6, acrylic on canvas, 99 x 198”

62. S.Dalí, *The Bather*, 1928, oil on canvas, 63.5 x 74.9 cm

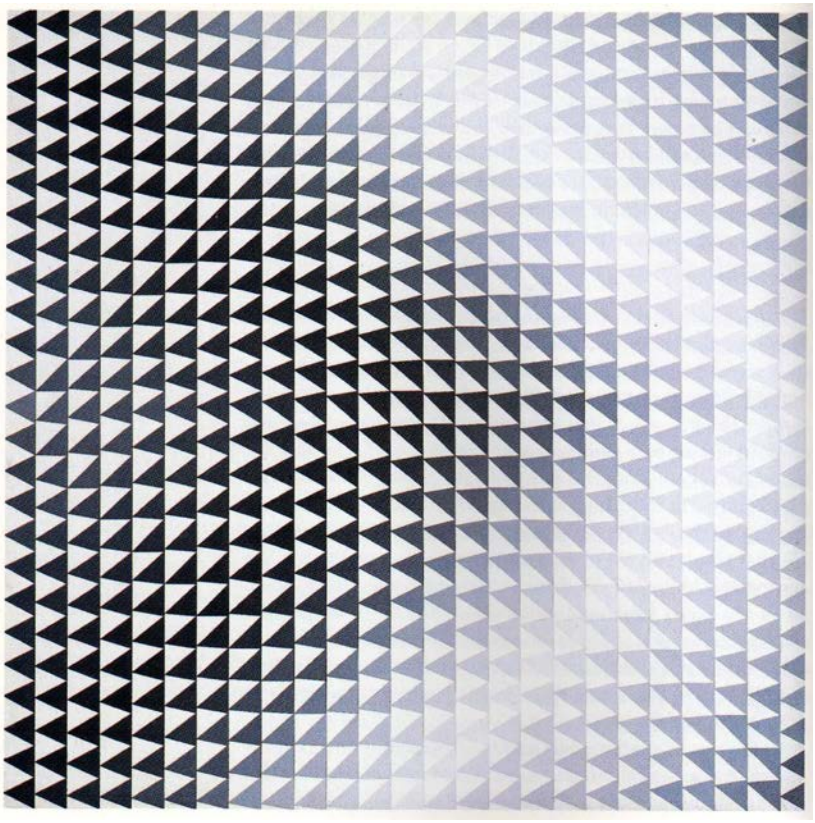


63. S.Dalí, The *Sistine Madonna*, 1958, oil on canvas, 224.6 x 191.3 cm

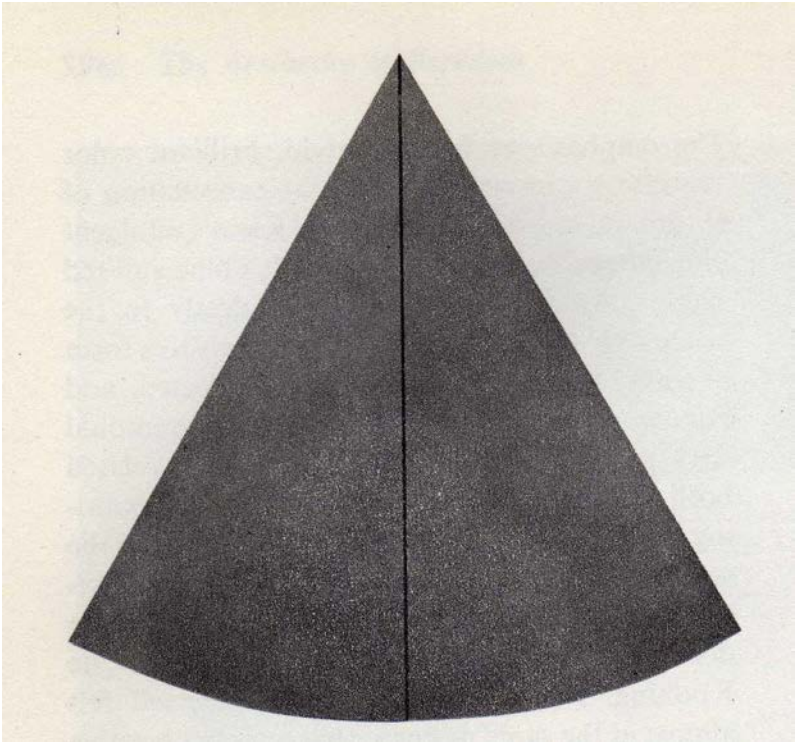


64. Robyn Denny and others, *Place* exhibition London, 1960

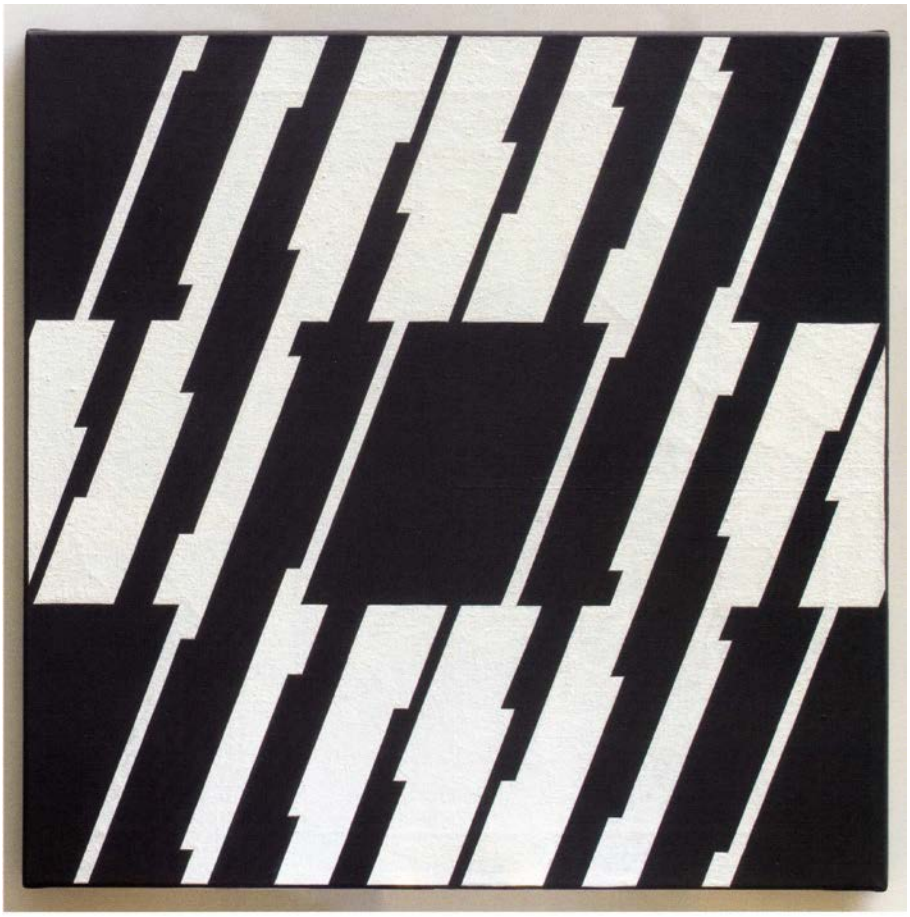
65. L.Poons, *Out*, 1967, acrylic on canvas, 110 x 190”



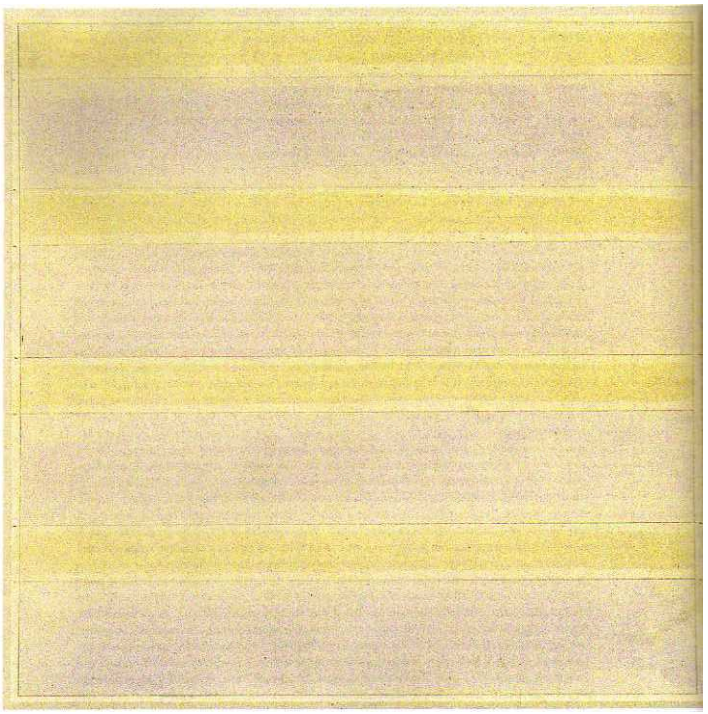
66. B.Riley, *Burn*, 1964, emulsion on hardboard, 56 x 56 cm



67. R.Mangold, *Grey-Green Curved Area*, 1966, oil on masonite, 48 x 48”

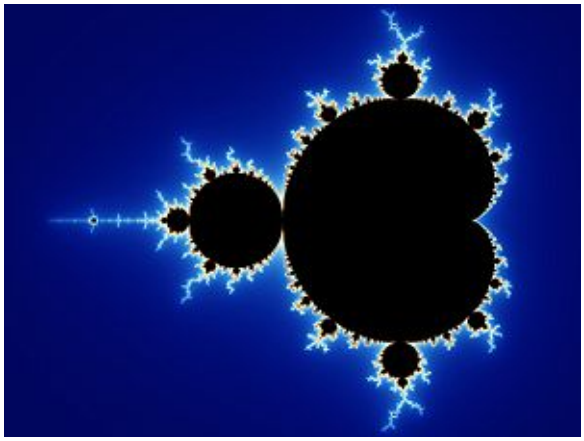


68. J.Steele, *Y Cynilwyn*, 1964, oil on canvas, 61 x 61 cm

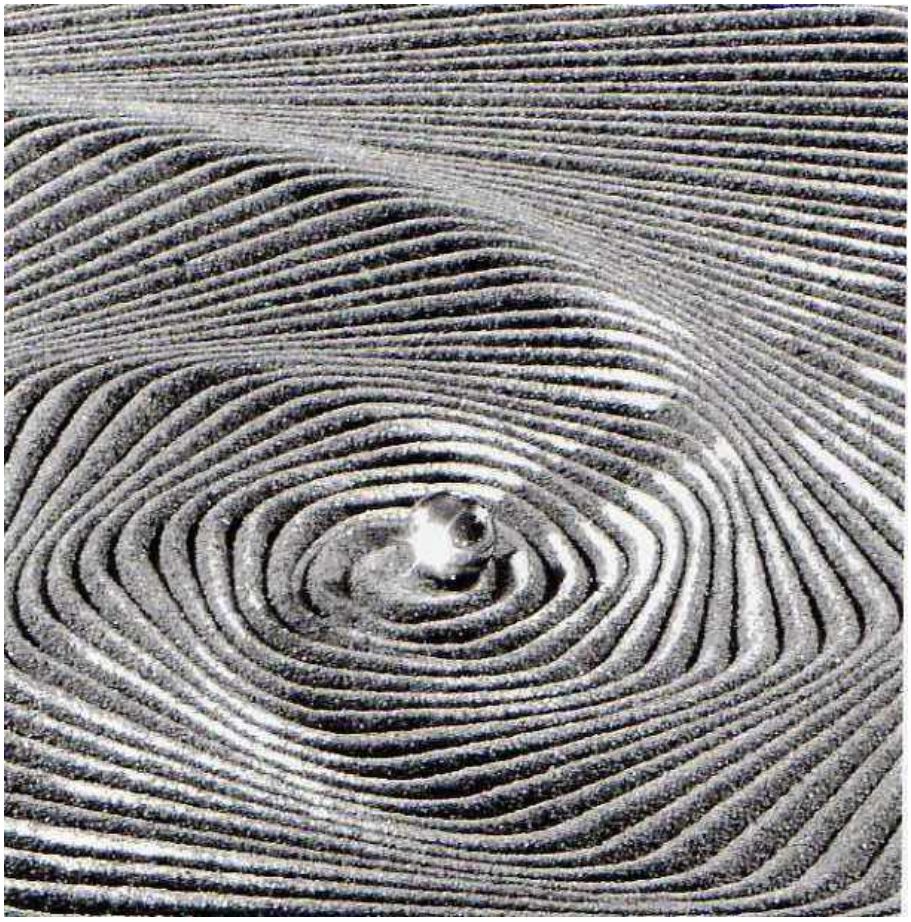


69. A.Martin, *Untitled*, 1977, watercolour and graphite on paper, 9 x 9”

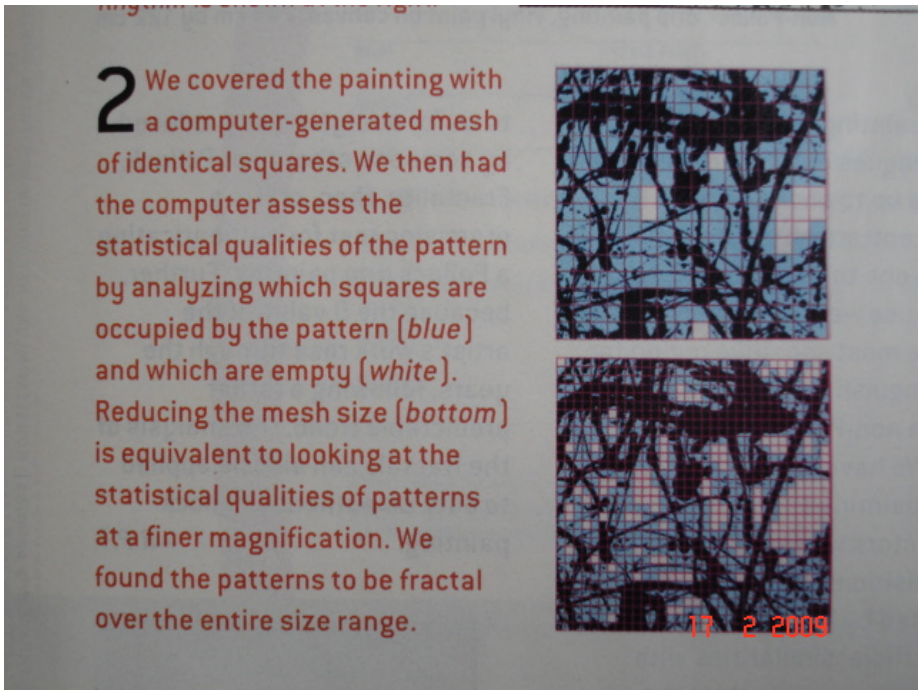
70. F.Rocha Da Silva, *Sky Cleaning*, 2000, mixed media on canvas, 96 x 45 cm



71. Mandelbrot Set



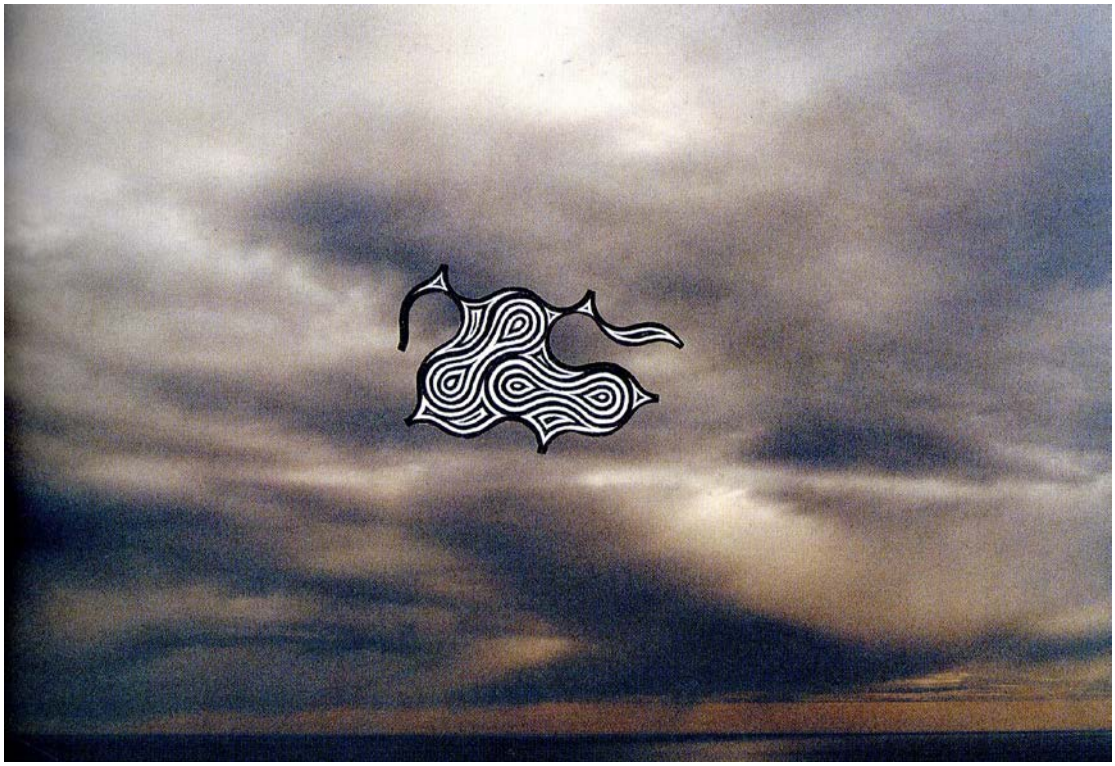
72. J-P. Hébert, *Pentagonal Sand Trace*, 2006, computer and device-mediated sand drawing, 80 x 80 cm



73. A.Micolich and D.Jonas, fractal analysis of a Jackson Pollock painting, *Leonardo 35*, 2002

74. R.Serra, *Double Torqued Elipse II*, 1998, weatherproof steel, 3.6 x 8.7 x 5.9 m

75. R.Deacon, *These Are The Facts*, 1987-8, hardboard, mild steel, carpet, bronze, 200 x 195 x 133 cm



76. R.Deacon, *Caithness No 2*, 1999, photo and ink on paper, 57 x 85 cm

4. Constructivism Now

The status of Russian Constructivism in the minds of artists working now is the final and perhaps essential topic of this thesis. For the suspicion must be that the key terms of earlier Constructivism, such as efficiency, rationality, the properties of matter, the activity of the viewer, even the building of socialism, look a little ridiculous in a world governed by the imperatives of climate-change, the clash of religions, and the shocks and reversals of economic change. My sense is that constructive methods in the fine arts have cast a long shadow, perhaps a lengthening one; and this chapter will try and demonstrate the ways in which several of Russian Constructivism's original concepts is both present and absent in the work of certain leading artists now.

When the young Dan Flavin made his first *Monument to Vladimir Tatlin* in 1964 by arranging in a certain order a number of fluorescent light tubes that required being plugged in and switched on, it was immediately clear that an new attitude to art-making had taken hold [Fig 77]. Flavin had studied art history at Columbia University in the late 1950s and had trained briefly for the priesthood: yet those ambitions had changed on being given a copy of Camilla Gray's newly-published *The Great Experiment: Russian Art 1863-1922,* in whose later chapters he found an account of the use of simple geometrical structures by radical artists of the 1917 Russian Revolution. Purchasing white fluorescent lights from the Radar Fluorescent Company in New York and erecting a tower-like structure in the studio became Flavin's way of

acknowledging Tatlin's ambitions for his planned *Monument to the III International* of 1920, but without any trace of the Russian's revolutionary politics [Fig 78]. Regularising Tatlin's variable geometry and then massively simplifying his constructional plan was already enough to introduce a certain irony into Flavin's new idea. Those light-tubes would *ignore* the assumption of a single-point light source that creates shadows around objects and had done so since the beginnings of artistic time; they would *confound* the principle that the art object is to be looked at directly (for you can't stare into a fluorescent tube); and they would *counter* the principle of permanency and durability that monuments historically had always sought. In Flavin's words: 'I always use "monuments" in quotes to emphasise the ironic humour of the temporary monument. Those "monuments" only survive as long as the light system is useful, about two thousand hours'.[1] And that posture is the key to what Constructivism was to become for a generation and beyond. Flavin's contemporary Robert Smithson was quick to connect Flavin's methods with what both artists liked to call 'inactive history': a sense that history was reversing, becoming entropic; that unlike the marble and granite monuments of the tradition, the new ones including Flavin's were 'not built for the ages, but rather against the ages … involved in a systematic reduction of time down to fractions of seconds, rather than representing the long spaces of centuries'. Flavin's own monuments are 'anti-Newtonian', said Smithson, 'against the wheels of the time-clock. His destruction of classical time and space is based

[1] D.Flavin, reported by S.Munchnic, 'Flavin Exhibit: His Artistry Comes to Light', *LA Times*, 23 April 1984.

on an entirely new notion of the structure of matter'.[2] Which is to confirm that Flavin's fluorescent dedications to Tatlin and other modernists (Brancusi, James Joyce, and Louis Sullivan among them) seemed to suggest a view of modernism as different – as involving a falling-away of ideological seriousness in the form it once assumed. His 1966 work *Greens Crossing Greens (to Piet Mondrian, who lacked green)*, for instance, not only supplied De Stijl's missing colour – a virtually heretical act – but reprises through its criss-cross arrangement the assault on Mondrian's rigid orthogonality that was launched in the 1920s by Mondrian's rival Theo Van Doesburg, for whom the diagonal was the route to 'counter-composition' and thence to what became a thinly-concealed adherence to Dada [Fig 79]. A final irony lies in the fact that in no less than 45 completed *Monuments to Vladimir Tatlin* made and plugged in between 1964 and 1990, Flavin ran through permutations and combinations of lengths, orientations, and sizes of structural units determined by mass commercial manufacture, that is, in a manner never adopted by Tatlin but more characteristic of his rival Rodchenko in his *Equal Form* constructions of 1920-21. As seen through Smithson's eyes at the time, Flavin and other artists of his generation (Morris, LeWitt and Judd) got off on 'mistakes and dead-ends' rather than proven artistic problems. They went to B-movies rather than to 'nature'; the crummier sci-fi or horror-movie variety the better. Artists having

[2] R.Smithson, 'Entropy and the New Monuments', *Artforum*, June 1966; reprinted in J.Flam (ed), *Robert Smithson: the collected writings*, University of California, 1996, these citations, p 11.

that kind of sensibility have X-ray eyes, said Smithson, 'and can see through all of the cloddish substance that passes for "the deep and profound" these days'.[3]

Armed with such evidence we can say that a posture of ironic play with modernist precedents may be a guiding principle of much art of the last half-century that we continue to value or puzzle over now. For 'land artists' of the 1960s and 1970s, too, the geometrical principles espoused by the First Working Group of Constructivists in 1921 (and taken further within so-called International Constructivism) formed a backdrop suitable for acknowledgement and levity at the same time. When marking horizontal territory became important to artists during the 1960s, the convention was to fall back upon straight lines, perfect circles, polygons, rectangles, or other Euclidean forms that resonated – if taken at face value – with ancient rituals suffused with cosmic power. And yet those spiral jetties, circular motorcycle tracks, or lines traced by walking in the grass betrayed an attitude to pioneer modernism that was as much quotational as it was 'serious' outdoor work. The mile-long parallel lines drawn in the Mohave Desert in California in chalk by Walter de Maria in 1968 were (perhaps) best seen from a position somewhere in the air [Fig 80]. Actions such as the paths trodden by Richard Long or wandered by Hamish Fulton managed to conceal beneath a thin veneer of contemplative travel (the landscape meditation, the romantic journey) a parodic quality that

[3] R.Smithson, 'Entropy and the New Monuments,' loc cit, p 16. In fact Flavin's fluorescent-light monuments can also be seen as a repudiation of the utter urgency with which Morris and Judd, especially, explored the phenomenology of viewer's time. But that distinction is beyond the scope of the central argument here.

was hidden and yet evident at almost every turn: in contradistinction to the Constructivist requirement for accountability and efficient action, Long abandoned all pretence of rational motivation for his travels by tramping back-and-forth to wear down suburban meadow-grass, in one example, or by walking for a fixed time in an arbitrary direction from the city centre before stopping, in another [Fig 81]. Regarded as parody and play, such gestures even joined the artist in a bond of sympathy with the actions of the confined, the excluded, or the mentally ill – at any rate the marginal in society, or those who would gladly subvert its norms.[4] Likewise, a great deal of so-called Conceptual art, dependent more upon an idea-structure than the experience of a made object, can be seen now – as was partly intended then – as a clever manipulation of mute data (including data's repetitive or inconsequential character) equivalent in its charge to that of a well-crafted and delivered joke. Even artists who actually laid claim to 'rational' methods of construction or the ideals of Constructivist efficiency, such as the Systems formation mentioned previously, can be looked upon as having concealed a fascination for arbitrary and sometimes absurd results behind a declared commitment to extremely rigorous form: at its most basic, the spirit of Dada behind (and even within) the exacting geometric grid. Though at one time prized for reviving Constructivist rationality in art, it is the presence of the contrary attitude in Systems art that is more interesting now.

[4] For a reading of Long's early work as the output of a parodist or a clown, see my 'Absurd Lines, Protest Walks: Notes on Richard Long', *Sculpture Journal*, Vol 18, no 2, 2009, pp 176-88.

Looked upon sociologically, it may well be that this seemingly epochal adjustment in the terms of seriousness of 'good' art can be located in other cultural patterns of the period, in just the way that the ideological conditions of Revolutionary Russia marked the postures and ambitions of the First Working Group. The events leading to the end of the Cold War in 1989 must be among the most consequential of these patterns – after which the ideals of Constructivism understood as a set of blueprints for social utopia could not be expected fully to recover. After the steady decay of ideological models typical of inter-war modernity, and with a simultaneous attenuation of interest in phenomenology and existentialism – both of the latter popular for at least a decade after the end of hostilities in 1945 – artists from the later 1960s found themselves exploring attitudes of irony, pastiche, and quotation even while conforming to a new and very different requirement, that the art-work survive in a world of spectacularised appearance and entertainment as well. By the end of the 1970s and the political swing rightwards in both Europe and America, the ambitions of original Constructivism were bound to seem irretrievably unrealistic, even misconceived. 'The formalist project in geometry is discredited' wrote the New York painter Peter Halley in a lucid polemic of the mid-1980s: 'It no longer seems possible to explore form as form … as it did to the Constructivists … it no longer seems possible to accept geometric form as either transcendental order, detached signifier, or as the basic gestalt of visual perception' (the question whether the original Constructivists actually deployed

geometry in that way is beside the point).[5] To Halley and to others of his generation and geography, the grid, the rectangle and the square were by now available for consideration in very different terms. In fact, Halley's search for what he terms 'the veiled signifieds that the geometric may yield' illustrates well the melding of older accounts of politics with a new posture of social reference – if social reference it can be called – in the order of something like pastiche. 'I identify myself more with a New Left position', said Halley somewhat awkwardly in an interview in 1986, 'in which an absurdist or existential position is integrated with Marxian concepts'. Or again: 'It is difficult nowadays to talk about a political situation. Along with "reality", politics is sort of an outdated notion'.[6] He meant that in the wake of phenomenology and existentialism, a new attitude had emerged in the form of 'a fascination with sociological and political reality … [namely] a triumph of the market over nature'.[7] In an unlikely combination of Baudrillard's thesis of hyperreality and Foucault's geometry of regimentation and surveillance, Halley's paintings of the time presented 'cells' of personal confinement rendered in the Day-glo textures familiar from suburban motel-room décor combined with conduits intended for plumbing, electricity and gas: a virtually canonical mixture – for the present argument – of more or less traditional

---

[5] P.Halley, 'The Crisis in Geometry', *Arts Magazine*, June/Summer 1984; republished in *Peter Halley: Collected Essays 1981-87*, Zurich and New York, 1988, p 75.
[6] P.Halley, 'The Crisis of Geometry', op cit, p 75; and 'From Criticism to Complicity' (discussion between Jeff Koons, Sherrie Levine, Philip Taaffe, Peter Halley, Ashley Bickerton), *Flash Art*, no 129, summer 1986, pp 46-9; reprinted in C.Harrison and P.Wood (eds), *Art in Theory: An Anthology of Changing Ideas 1900-2000*, Blackwell, Oxford, p 1044.
[7] P.Halley, 'Nature and Culture', *Arts Magazine*, September 1983; in *Peter Halley: Collected Essays*, pp 67, 71.

seriousness in art with the terms of its own manifest failure [Fig 82].[8] Above all, the sharp rise in market choice in Europe and America after 1989 (shopping, and a rapid expansion of the communications media) proved strongly conducive to a massive growth of interest in new accounts of human subjectivity, ones no longer ruptured by the old ideological binaries of left and right, serious and popular, frivolous and deep, but far more closely keyed to rising education levels and to ideals of free intellectual choice. That historical moment underlined once more that the versions of high-mindedness embodied in classic modernism had to be abandoned (at the risk of looking jejune) in favour of more openly nuanced positions.

Over the same period, something epochal had occurred in art with respect to the inherently elusive concept of form. Tarabukin's famous Constructivist injunction that 'material dictates form [to the artist], and not the other way round' was already in crisis within the generation of Judd, Morris and Flavin, as our recent reflections have shown. What the Constructivists liked to think of as motivated (and to that extent efficient) form had threatened to collapse back into brute thing-hood in the practise of Minimalism generally. Flavin himself – here as elsewhere less orthodox than his Minimalist colleagues – had courted

[8] The Day-glo paint is 'a signifier of "low-budget mysticism"', said Halley in another attempt to cross the meaningful with the frivolous: 'It is the afterglow of radiation'; see 'Notes on the Paintings' (1982), in *Peter Halley: Collected Essays*, p 23. More recently the critic Wayne Kostenbaum has bridged the same divide: Halley's paintings 'allow the viewer to be entirely alone with an ambition to reform the world; alone, too, with the paralysis that slows down and kills ambition. The paintings predict apocalypse and then say "the explosion has been postponed; don't worry, go back to sleep"'. See Kostenbaum, 'Garbo/Thoreau: Notes on the Work of Peter Halley', in *Peter Halley*, Waddington Galleries, 1999, p 10.

in his early light-pieces an attitude that sought, not the articulation of form but its very absence or dispersal. For instance the single light-tube of his 1963 piece *Diagonal of Personal Ecstasy* was not only mounted against his studio wall at an angle of 45° to register 'dynamic equilibrium' (he well knew De Stijl's controversial term), but, as he himself put it, 'any other placement could have been just as engaging'. Armed with Kant's statement that 'the Sublime is to be found in a *formless* object, so far as in it, or by occasion of it, boundlessness is represented', thereafter formlessness occasioned by an implied infinity would function for Flavin as yet another hesitation in the face of Constructivism's urge for the 'efficient' and fully motivated work of art.[9]

Of course, doubts about form had surfaced periodically since Constructivism. It had been Bataille's urge to lower and deform matter – to render it literally 'formless' – that expressed a challenge to the streamlining agendas of the European totalitarian regimes of the 1930s (and at a time of crisis in Surrealism and geometric abstraction alike). Matter, far from having an *appropriate* form, could for Bataille best be defined as 'the *non-logical difference* that represents in relation to the economy of the universe what *crime* represents in relation to

[9] D.Flavin, 'In Daylight or Cool White: An Autobiographical Sketch' (first published in *Artforum*, December 1965, pp 21-4), in which he cites Kant, *The Critique of Judgement*; reprinted in *Dan Flavin: The Architecture of Light*, Deutsche Guggenheim, Berlin 2000, pp 57-8. The colour of *Diagonal of Personal Ecstasy* seemed arbitrarily chosen too: 'At first I chose gold; the radiant tube and the shadow cast by its supporting pen seemed ironic enough to hold alone' (loc. cit). In fact Flavin quickly rechristened *Diagonal of Personal Ecstasy* as *Diagonal of 25 May 1963: to Constantin Brancusi*; only to re-dedicate it subsequently to the art-historian Robert Rosenblum.

the law'.[10] In New York a more domesticated version of something like that same impulse had appeared in the Museum of Modern Art's *The Art of Assemblage* show of 1961, in which decay, extravagance and happenstance had been the keys – another antidote to Constructivist mantras of efficiency and motivation at a time of the boosting of post-war consumption routines through advertising and TV. Summarised by its curator William Seitz, it was a show in which the matter of art was 'pre-formed natural or manufactured material, objects or garments not intended as art materials … [and] assembled rather than painted'.[11] American artists represented, including Motherwell, Rauschenberg, Nevelson, Bontecou and Herms, were attracted less by an ideal of Constructivist efficiency than by the possibilities of free image-juxtaposition and a liberal switching to-and-fro between media that played fast and loose – from a Constructivist standpoint – with standards of material organisation founded on social optimism and the super-valuation of the new [Fig 83]. Even before *The Art of Assemblage*, Abstract Expressionism and *art informel* had celebrated a certain expansive wastefulness in regard to materials, scale, and intensity in the fine arts that likewise paid little heed to founding Constructivist principles. And then, as evidenced in an appetite for expediency and

---

[10] G.Bataille, 'The notion of expenditure', *La Critique Sociale 7*, January 1933, in A.Stoekl (ed), *Georges Bataille: Visions of Excess*, pp 116, 117, 129 (Bataille's emphases).

[11] W.Seitz, *The Art of Assemblage*, Museum of Modern Art, New York 1961, p 6. A statement by Man Ray *against* the importance of 'good form' in material was cited by William Seitz as central to the spirit of *The Art of Assemblage* show. 'In whatever form it is finally presented', wrote Man Ray, 'by a painting, by a photograph, by an arrangement of various objects, or by one object itself slightly modified, each object is designed to amuse, annoy, bewilder, inspire reflection, but *not* to arouse admiration for any technical excellence usually sought or valued in objects classified as works of art'.

contrivance, what may be termed ‘slack’ Constructivism appeared during the 1980s in harness with a revival of interest and appreciation for Bataille.[12]

A dialogue of form and anti-form, then, had never been entirely remote from the search for newly viable terms for subjectivity; and in the art of recent decades the distinction between ‘profundity’ and its ironic antitheses has been perhaps the most important and general collapsing binary of all. Crudely measured, it seems that since the end of the Cold War, subjective experience has been registered less in the old terms of unitary ideological consciousness and more in the terms of de-centredness and malleability; imbrication and nomadism rather than absolute distinction or difference. In the newer paradigm, social and even medical events are increasingly measured as probable rather than predictable; communications are ‘layered’ or ‘networked’ rather than directional and linear. Human time is fluid rather than mechanical – certainly not utopian in the sense of progressing towards a definable end. And of course, no account of Constructivism as a twenty-first century discourse should ignore the fact that several of these predicates are visual ones too; which is to confirm once more that, to a couple of generations nurtured on computer software that shifts the viewer from possible world to possible world at the click of a keyboard mouse, the historical moment into which Constructivism was born has largely passed away. To speak in visual terms alone, we can say

[12] To discover a precedent even further back, compare Apollinaire’s delighted description of Picasso’s constructions as if they were a kind of Dada: ‘You can paint with whatever you like, with pipes, stamps, postcards, or playing cards, candle sticks, waxed cloth, collars, painted paper, newspapers’. *Méditations esthétiques*, p 10.

that with the decay of older geometries and the cognitive models to which they corresponded, visual artists now find analogues for subjectivity (the very term sounds increasingly *passé*) in shapes, textures and formats that suggest processes and temporalities stemming from iteration, instability, awkwardness and uncertainty – far beyond Aristotelian logic and binary pairs.

And yet this thesis has been concerned to emphasise that the translation of something like original Constructivist *faktura* into aesthetic, ideological, and even moral qualities of the art object has lain at the centre of modernism – has given it depth and significance, as well as a resolutely secular face. What we still call the 'modern' period has imagined a viewer who is curious, alert, and conscious of his or her place in a material world; which is to say that *faktura* in the modern work of art has encouraged an understanding that making – the working of form – at its best has been a bulwark against other-worldliness, the alienation of labour, spectacle, even the attractions of technology. And that relationship has frequently been dialectical, in as much as viewers of the relevant sort have sought out and cherished art objects of the relevant sort. That is the aesthetic background, in short, against which the apparent decay of *faktura* in much recent Western modernism has appeared as a symptom of urgency – at the very least, an occasion for reflection and further work. The question now is whether fabrication is still important to aesthetics and art. How strong is the evidence that Constructivist principles governing the relation

between matter, material and form still animate the fine arts with consequence and vigour? Does madeness still matter?

The voice of doubt will come from those who think that screen space, the space of computing and web-based communication that is becoming a global tool, may be having the effect of rendering Constructivist *faktura* and with it most tactile and kinetic responses to sensation – delivered in whatever medium – a remaindered or obsolete ideal. Put bluntly, such a voice would argue that, as the pixelated screen comes to replace the other materials and media of art, the human need for participation in made things will come to an end; or will attenuate so seriously as to put in question the continued utility of the kind of muscular and visceral awareness that has defined the fabricating skills of the human organism for centuries. That extreme scenario is not in prospect, presumably. Notwithstanding, one notices that a certain destabilisation took place among the so-called 'fabricator' artists of the late twentieth century, in as much as their work seemed to demonstrate a radical dissociation between image and manufacture, as if the former could be demotic or 'low' while the latter remain 'high' (it was a similar kind of separation that occurred in Cubism). And it is at least arguable that this dissociation was responsible for making the materials of the new art objects (plastics, polymers, and alloys, chiefly) point laconically to the sensations of the immediate culture, but seldom forwards or outwards in the direction of a world still about to be imagined, let alone built. In 'fabricator' art of the 1990s certain humorous or ironic

significations could be claimed by the art-object, but little was advanced by them in the way of reflection on materiality as such; let alone on the individual's capacity to plan the building of objects, or make things by hand. It could be argued too that in the wider communications environment that formed the fabricators' historical envelope – the regime of digitisation, we might call it – intercourse with ordinary matter faded, to the point where screen space, the perceptual space positioned a mere twenty or so inches from the viewer's eyes, became both ubiquitous as well as almost completely spectral. Neither flattened nor full, shallow or deep, real or unreal, the space of the pixel-array was (and remains) informational; its essence lying not in pictorial effects (hence not in constructed ones), but in networks – complex, rapid, relational – that eventuate from the user's participation in the vast resources of the invisible global web. In comparison to Flavin's fluorescent tubes that poked friendly fun at the masters of high modernism, disposed as those tubes were in the specialised space of the gallery interior, screen spaces glow with an altogether different (some would say increasingly conventional) inner light.

That is one argument. On the other side of the coin is evidence that the madeness of the art object (the foundation-stone of original Constructivism) remains a source of abiding fascination for artists working now; and still functions as a major source of critical and cultural power. We are talking, of course, not about *styles* of art-making but about *attitudes* – attitudes to the modernist past, as well as attitudes to what might be feasible as well as vital in

visual culture now. One pointer to the general situation may be the contemporary American artist Amy Sillman, whose paintings 'trace a dotted line', as she puts it in self-description, back to Abstract Expressionism and the mode of perceptual engagement that works in that idiom still demand [Fig 84]. 'If you want to make something with your hands', Sillman says in what looks like a restatement of the *faktura* principle; 'if you want the body to lead the mind and not the other way around, you may likely end up in the aisle of the cultural supermarket that includes painterly materials and AbEx delivery systems; canvas, oil sticks, fat paint brushes, rags, trowels, scrapers, mops, sponges, buckets and drop cloths', such that 'the tools themselves will mandate a certain phenomenology of making that emanates from shapes, stains, spills and smudges' Yet her attitude is to work with the *faktura* protocol not in the Constructivist manner but in a mood of self-mockery, as well as exhibiting scepticism in the face of AbEx's recent demotion as a canonical manner in art. Actually, Sillman appeals in her self-explication to the subtle posture known as 'camp' in which – here she leans on Susan Sontag's classic essay – the artist embraces stylisation, artifice, extravagance, the mannered and the banal. 'The banal is always a category of the contemporary', says Sontag persuasively. 'Camp' is a matter of character rather than content. In camp 'the essential element is seriousness, a seriousness that fails'.[13]

[13] A. Sillman, 'AbEx and Disco Balls; In defense of Abstract Expressionism', *Artforum*, Summer 2011, pp 322, 325; citing S.Sontag, 'Notes on "Camp"' (1964), *Against Interpretation*, London 1967, p 293 and passim.

And although Sillman cannot be called a Constructivist artist, her attitude seems to be shared by several others who are – who understand the past-ness of classic modernism but also the fertility of that version of modernism for work that seems salient now. Contemporary attitude-painting more widely, we might say, is flexible, competent, and knowing. It is sometimes careless with the materials of art, but never lavish or wasteful. Canvases are on the whole lightly touched or re-touched, and show no signs of anxious re-working that might be called a waste of paint. Colours tend to be mild and acid-tasting, and promise few strong tastes; only pleasant or calming aromas. The scale of work is generally modest, and compatible with domestic display. Attitude-painting is often decorative, but knows that decorativeness is no longer beyond the pale. Such art likes to parade its failed confidence in politics as a means of solving problems, and is insouciant generally in its view of the great modernist shibboleths: organisation and the plan. Above all, there is no longer any heavy impasto and more especially no sign of anger, especially in the form of existential rage; no painterly potlatch, that is, or the burdening of the viewer with guilt and perhaps a duty to admire the painter's skill (it will not go un-noticed that female painters are among the foremost talents working today). In sum, attitude-painting tends to be artefactual rather than 'natural', without-depth as a new and relevant form of depth, namely the sort that acknowledges doubt as the only form of clarity, confusion and uncertainty as the only certainties we have or have any business to need.

If I end with some instances of work that is marked by these attitudes, yet certainly Constructivist in tone, that is not to be taken as a final verdict on a situation that is *in principle* mobile and open to change – for such a sensibility is vital for practice now, and runs the risk of hardening into an idea if codified too confidently or too far. Soon after 1970 the California artist Mary Heilmann began making paintings with some version of Constructivist geometry in mind, but with a casual inventiveness that rejected the rigours of utopian or systematic method. Or rather: her methods have been a touch unmethodical, her constructive systems loose and even 'wrong'. A painting of 1973 entitled *Little 9 x 9* organised an informal geometric grid by starting with a square canvas painted black (already suggestive, perhaps) and then running a dry brush – perhaps a thumb or finger – through an overlay of un-dried red paint nine times horizontally and nine vertically, in a weave-like sequence beginning at upper right and ending at lower left [Fig 85]. Yet the process contained no cosmic suggestiveness *à la* Malevich or Mondrian, no metaphors for the Bolshevik Party *à la* Rodchenko; rather a posture of do-it-yourself inventiveness not far from the attitude of suck-it-and-see. A recent Heilmann painting such as *Neo Noir* (1998) begins with primary-coloured rectangles on an empty ground that have then been sharpened and re-defined by an overlay of dark strokes that serve to reposition and re-size the rectangles, which now appear irregular and even random in the painting field [Fig 86]. In either case, a physical system of marking the canvas has been used that eschews rigid temporalities or orderings of interval, in favour of approximate, casual or even

slightly irregular ones. The great instrumental temporalities of modernism – they include planned sequences of operations leading to a 'finished' result, within a declared relationship to industrial and developmental time – are renounced in favour of human-scale manufacture within the time-framework of domestic routine or the studio; an attitude of openness to adjustment *en route*, of not knowing and perhaps not caring what comes next. It seems as if Heilmann has carefully measured her distance from original Constructivism. Her time-signatures no longer involve utopian time – the rush towards radiant future bliss for mankind – but come nearer to what the philosopher Boris Groys has called 'wasted time'; a kind of pause in time following the realisation that the utopia premised in Constructivism is extremely unlikely to happen.[14] Other paintings by Heilmann have presented stick-like structures made by removing masking tape from a painted plane; structures that look borrowed and unreliable, as if they might collapse at any moment. Given the larger shifts of sensibility that they echo but also anticipate, Heilmann's paintings look increasingly attractive today, her 'anti-systems' simultaneously 'absorbing and loosening' the ancestral geometries of a receding but forever-returning Constructivist past.[15]

---

[14] In Groys' words, 'time that attests to our life as pure being-in-time, beyond its use within the framework of modern economic and political projects'. B.Groys, 'Comrades of Time', in *Going Public*, Sternberg Press, Berlin and New York 2010, p 90.

[15] The latter phrases are from the review by Anne Wagner of Heilmann's retrospective at the Orange County Museum, 2007; see 'Field Trips', *Artforum*, November 2007, pp 307-13; these citations, p 308.

Or take the irregular or asymmetric formats evolved in the recent work of the German-born artist Tomma Abts. In her work we find evidence of extremely fine material crafting in a suite of paintings that revert more or less to the physical scale of the icon – where one branch of modern painting began. A work like *Tabel* of 1999 may be read as a set of globular shapes from the biological world – until the fully-engaged viewer notices a certain systematic instability in the image but also in the process of perceiving it [Fig 87]. What at first appears to be a top-bottom symmetry looks suddenly imprecise. What initially appear to be *gestalts*-in-the-making, comprised of ocular or breast-like pairs, or regular step-like arrangements of form, mysteriously evaporate when close inspection reveals layerings, coverings, occlusions and redefinitions that underlie and deconstruct the painting's superficial surface pattern. Aware of modernism's obsession with structure, but in a different register, Abts constructs in a work like *Fewe* of 2005 a shallow space by means of shadows beneath 'bars' that organise a surface in the manner of a complex crystal formed over exceedingly long intervals of time; while *Veeke* of the same year has stick-like painted lines disposed in relation to each other in a manner implying self-generating organisation rather than one imposed from outside: they both clearly recognise Constructivism's commitment to line as pictorial structure, as well as the picture-surface as a *sui generis* field of force [Fig 88]. But the viewer then notices – is invited to see – what appears as an extremely long history of very deliberate decision-making on the painter's part, as if the rules that govern the artist's choices were complex, albeit constrained by basic

regularities of formation that mandate equality of revision to different parts (but with in-built irregularities) or the cancellation of overly attractive incident across the canvas as a whole. The experience of such paintings, then, is one in which particular groups of shapes, tonalities and shadings promise a familiar *gestalt* such as a viewer might expect from looking at his or her face in a mirror – and yet also frustrate one. The paintings 'resonate with the presence and promise of a *gestalt* emerging, even in a moment of its dissolution': this from a fine essay by the Belgian critic Jan Verwoert, who even reads Abts' irregularities politically, claiming that 'in defying the ostentatious theatricality of Abstract Expressionism's grand gestures and *tachisme'*s nervous mark-making … she refutes the deeply patriarchally coded visual rhetorics of high performance: creation through apocalyptic struggle and climax in melodramatic moments of breakthrough or failure'; which is to say that her temporalities are radically unlike those of the modernist ideologies that preceded her. Her slowly-made and slow-to-perceive paintings maintain a drama of what Verwoert aptly calls latency, that is, 'an echo of decisions taken in time and shapes lost and found'.[16] Whether deliberately casual (Heilmann) or deliberately slow (Abts), the processes of the 'new' Constructivism are themselves a kind of comment on the mainly climactic or triumphalist temporalities that populate the modernist record.[17]

---

[16] J.Verwoert, 'The Beauty and Politics of Latency: On the Work of Tomma Abts', *Tomma Abts*, Phaidon Press, 2008, pp 95, 94.

[17] It should be noted that Julia Kristeva had already proposed a concept of *cyclical* time, linked to reproduction, as a feminist alternative to dominant narratives of linear historical time (the time of progress and achievement) in 'Le temps des femmes', *33/44: Cahiers de recherche de sciences des texts et documents*, 5, Winter 1979, pp 5-

That is one explanation for the work's quite evident salience and critical power. Yet a further pointer is the recognition – halting, patchy, and hard to verify – that vivid paradigms from the scientific world are being mimicked, reflected, or articulated in the surfaces and strategies of recent work; and here is a further and fertile link (as it seems to me) with the spirit of early Constructivism. For instance, the disciplines that can be associated with the asymmetries of Abts' new paintings include topology, cosmology, and nano-science, all of them characterised by acute challenges of visualisation, that is, the translation of inherently hard-to-represent data into a legible and even useful visual form. Heilmann's processes are more 'organic' in the sense of appearing slightly insouciant, even while suggesting the presence of lower-level regularities, or a set of attitudes that encompass the whole. In fact, an interest in rule-following may well underlie both artists' work – the kind that echoes natural processes of growth, generation and self-regulating change. The more general situation is that artists sympathetic to Constructivism feel confident in taking direction from the visual data of 'new' science and mathematics, while feeling no affinity at all for the geometric devices of pre-war modernism (the square, the circle, and the grid). Take the regularities and instabilities of pattern – now increasingly accessible in the popular scientific press. We now know, or think we know, that the same physical laws that govern heat transfer organise clouds,

---

19; published in English as 'Women's time', *Signs*, 7, no 1, Autumn 1981, pp 13-35 and again in N.Keohane et al (eds), *Feminist Theory: a critique of ideology*, Chicago 1982.

the shapes and movements of stones, and the appearance of bubbles on a pan of hot milk [Fig 89]. The patterns of a river network and a retinal nerve seem to have principles of connection and division in common – as well as tantalising and precise relations to the extraordinary laws of scale. Or consider the forces that produce viscous fingering in mineral dendrites and growing bacilli, or that form elaborate branching networks when air enters a vacuum between windowpanes, or when water confronts oil inside porous rock [Fig 90]. Such forces produce an instability that makes bulges and elongations that cannot be explained otherwise than in terms of small random changes triggering rule-governed amplifications of startling and somehow beguiling form. Equations known as Laplacian instabilities can now be applied by powerful computers to tease out how aggregation-patterns of many kinds (including those known to the physics of diffusion) can be understood as the result of competition between forces delicately balanced at the molecular level in nature.[18] There, vectors conducive to instability must reach a compromise with inertial forces before a pattern will result: a delicate balance that rides the trough of featureless homogeneity on the one side and mere randomness on the other. In a related branch of pattern-mathematics, small random changes trigger instabilities whose magnitude can only be apprehended probabilistically: in such cases there is simply no way of telling whether small perturbations will produce changes of a given size or scale – they are scale-invariant in the sense that for a certain class of disorderly events we cannot be sure whether we are

[18] Equations named after the eighteenth century mathematician Pierre-Simon Laplace (1749-1827)

looking at the whole system or just one of its parts. Perhaps for the first time, physicists, economists, ecologists, and geologists find themselves talking the same language, at least a set of overlapping ones – and artists have learnt how to join in. In the words of science writer Philip Ball, the edge of chaos rather than chaos itself 'sounds like a dangerous place to be, but it is a place where we have always lived'.[19]

The founding attitudes of Constructivism still flourish, in that case, despite (and perhaps because of) their apparent undoing by the regime of 'information' in the digital age. The unfolding of one in the context of the other seems unmistakeable; and there may be reasons for this symbiosis that go directly to the basic cognitive structures and understandings of our time. It is very striking, for instance, that often geometry remains the key. Recall how disenchantment with *linear* explanation has been growing apace during the period – suggesting that *directional* line has become as near-worthless as a cognitive tool as it has become discredited as a graphic one. Whether in culture or in politics, talk of 'origins' and 'destinations' has come to seem simplistic, even misguided, just as the once-popular notion of the 'progress' of history (Marxist or millenarial) could not be articulated without it. In those terms alone, other accounts of cultural generation emerge if we think instead in terms of feedback-loops, self-regulation and instability. Even the jumps and

[19] P.Ball, *Nature's Patterns*, Oxford University Press 2008, p 183. I have given a longer account of some of these correspondences in the title essay of the exhibition *Against Grids: Paintings and Objects by Ian Dawson, Nick Mead, and Katie Pratt*, RIBA Gallery Liverpool, 2010, pp 2-9.

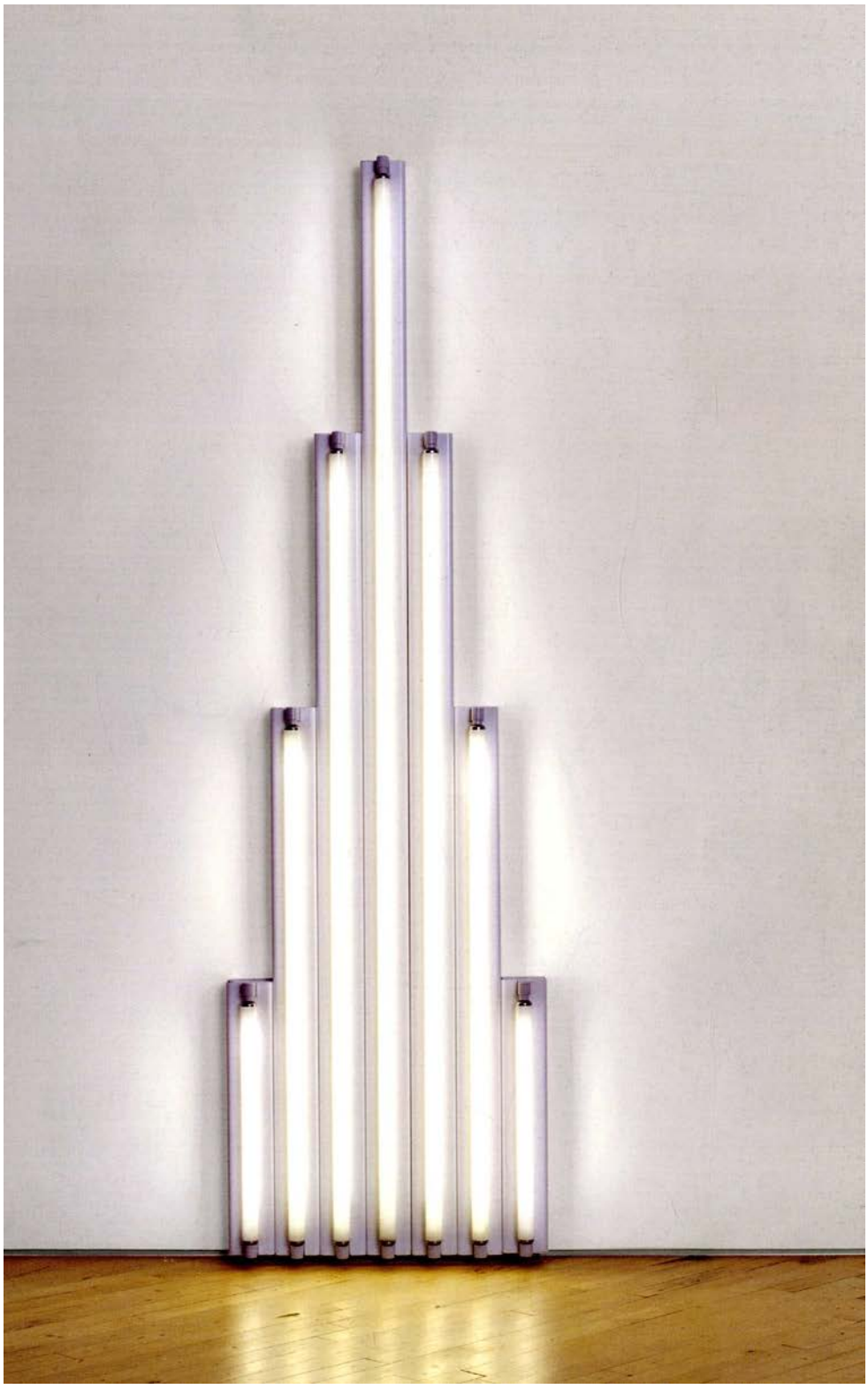
discontinuities in the Constructivist legacy to art-making may be subject to such patterning.

Meanwhile the *faktura* principle seems to flourish tenaciously in something like the form it enjoyed in the days of the Russian Revolution. 'The world is still tactile and material', said Sillman recently; 'to touch it is to know it'.[20] Or here is a major theorist of the European experience, complaining as long ago as the 1940s that the design 'improvements' of his day so were reorganising human responses to things as to force experience itself to wither under the law of pure functionality, as when objects and utilities 'assume a form that limits contact with them to mere operation, and tolerates no surplus'. His examples were the disappearance of casement windows in favour of sliding frames, of latches in favour of turn-able handles, that was bringing with it an expulsion from social relations of what he called 'hesitation, deliberation, civility'. The human type that was even then becoming new, says Theodor Adorno, 'cannot be properly understood without awareness of what he is continuously exposed to from the world of things about him, even in his most secret innervations', as if to affirm that once more that tactility and the madeness of things belong to ideology as much as programmes and purposes do.[21] Necessarily, we do not know what Adorno would have made of the era of digital information and its now familiar embodiment, the immaterial arena of the computer screen. And

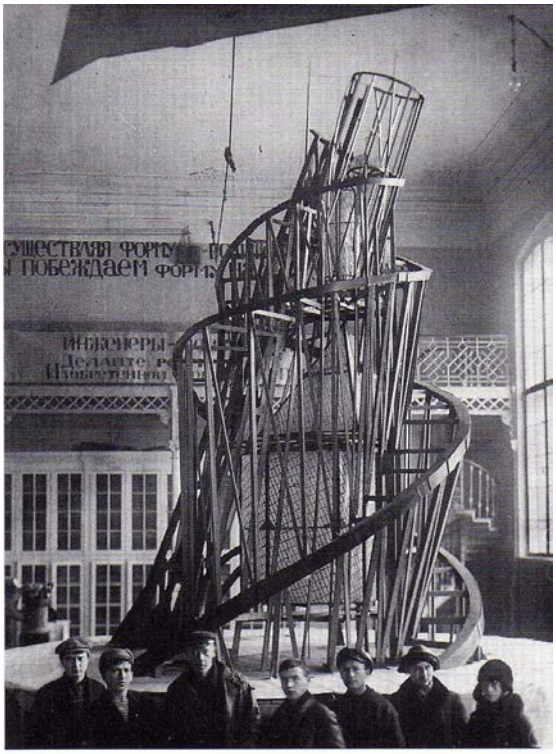
[20] A.Sillman, 'AbEx and Disco Balls,' p 325.
[21] Already the march of technology and especially its military forms (Adorno is referring to both modernists and fascists in that phrase) were making gestures 'precise and hard, and with them men': see T.Adorno, *Minima Moralia: Reflections from Damaged Life*, 1951; NLB edition 1974, p 40.

strictly speaking, it is too early to say whether some usable account of Constructivist *faktura* will outlast it. But the nature of the challenge will be obvious.

Illustrations

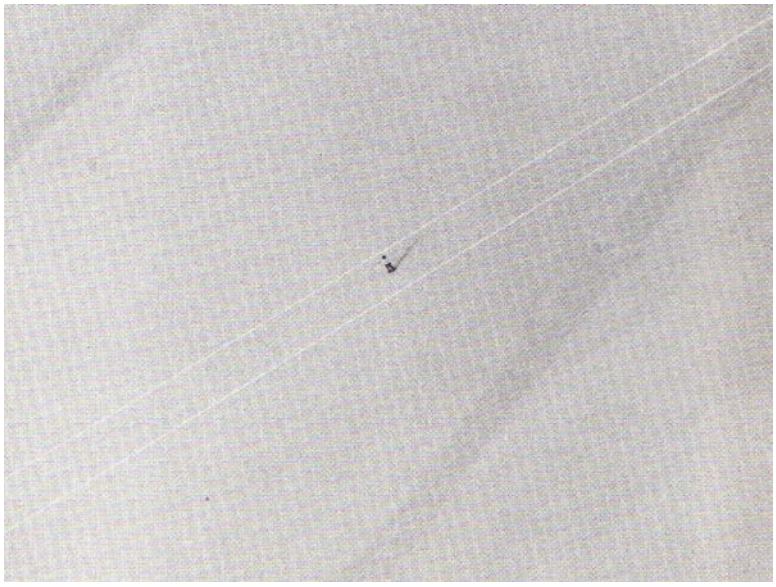


77. D.Flavin, *Monument to Vladimir Tatlin*, 1964, fluorescent lights, 8’ high



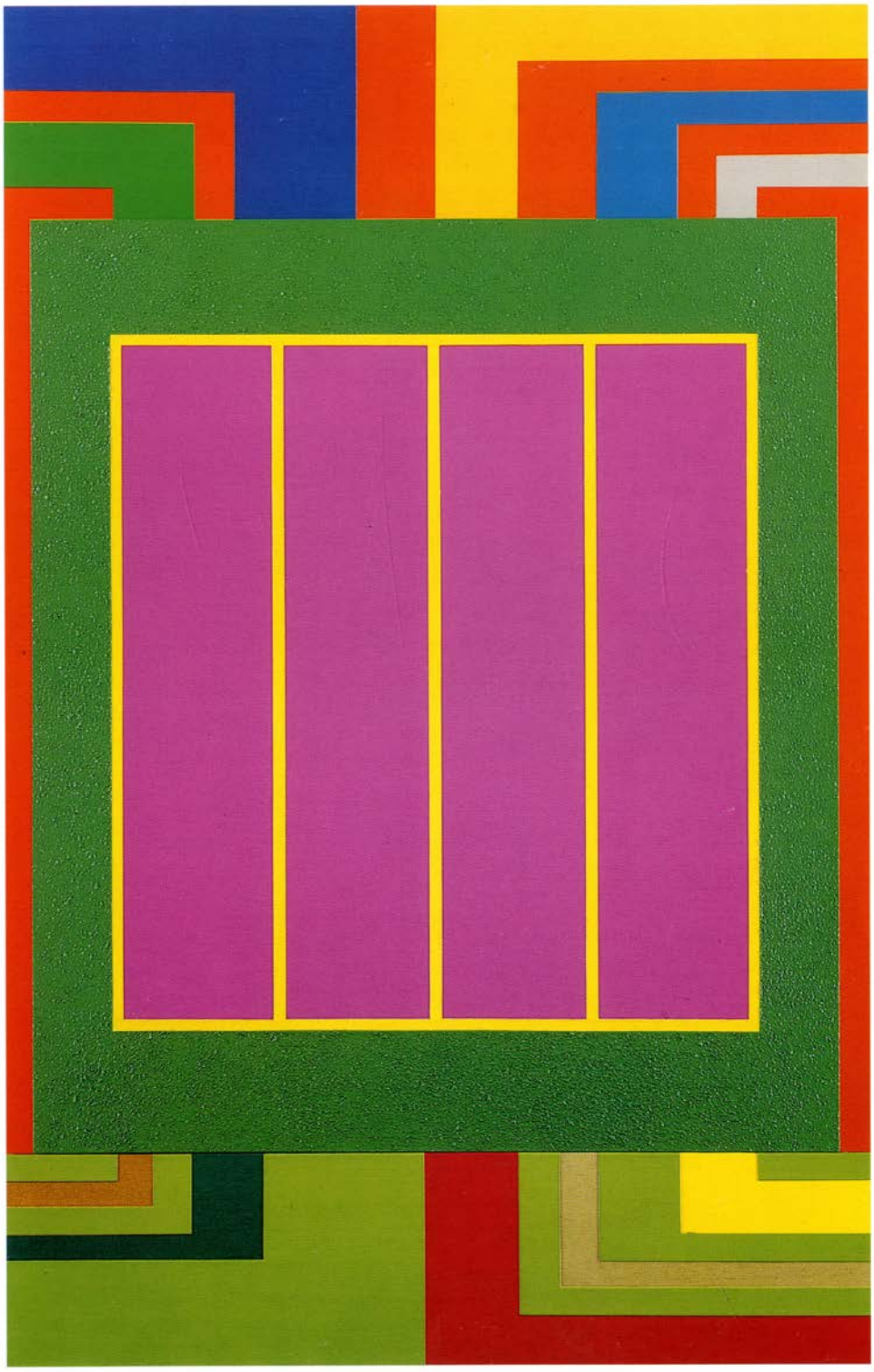
78. V.Tatlin, *Monument to the III International* (model), 1920

79. D.Flavin, *Greens Crossing Greens (to Piet Mondrian, who lacked green)*, 1966, light fixtures with green lamp, 133 x 584 x 303 cm



80. W. de Maria, *Mile-Long Chalk Lines, Mojave Desert, California*, 1968

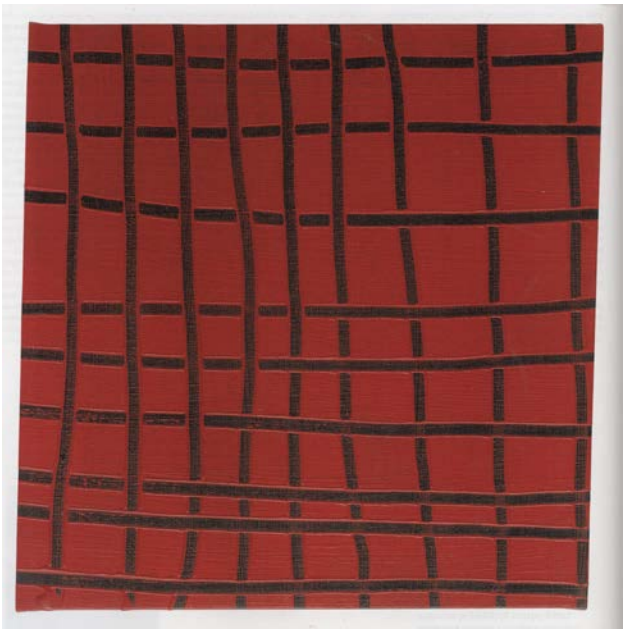
81. R.Long, *A Line Made By Walking*, 1968, photo



82. P.Halley, *Time Crisis*, 1999, acrylic, Day-Glo, pearlescent and metalic acrylic, on canvas, 244 x 158 cm

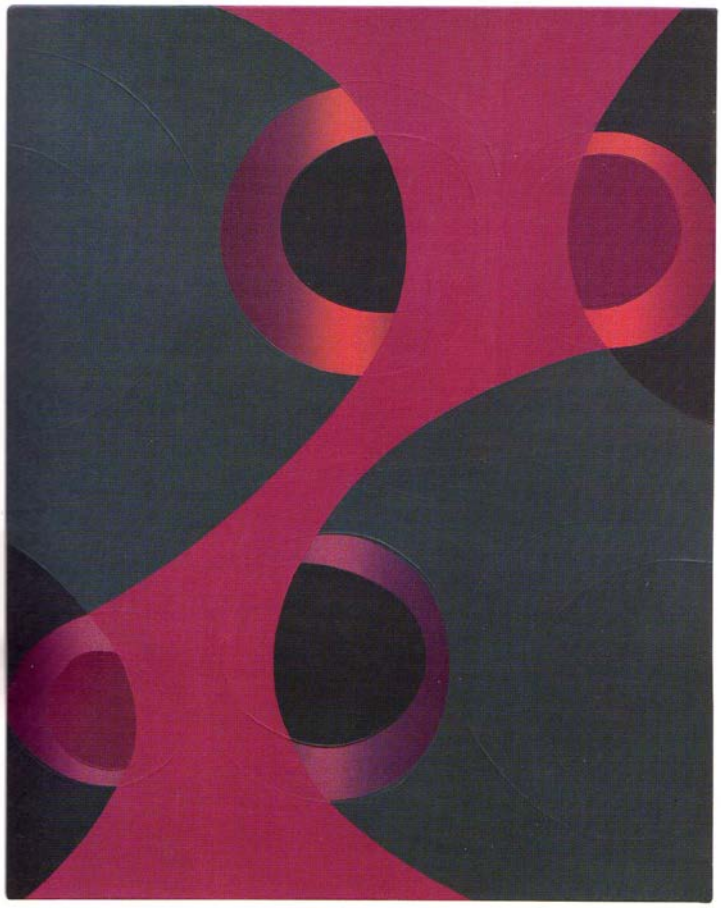
83. G.Herms, *The Librarian*, 1960, wood box, papers, bell, books and stool, 144.8 x 160 x 53.3 cm

84. A.Sillman, *Blue Rays*, 2009, oil on canvas, 84.5 x 90.8 cm

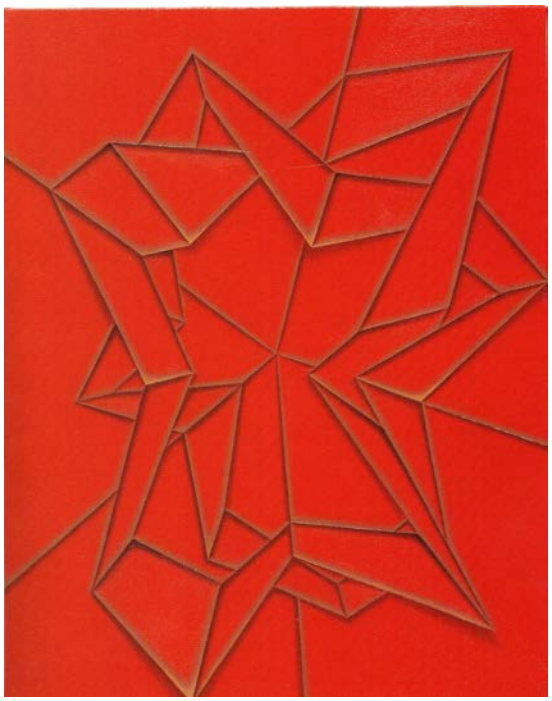


85. M.Heilmann, *Little 9 x 9,* 1973, oil on canvas, 23 x 23”

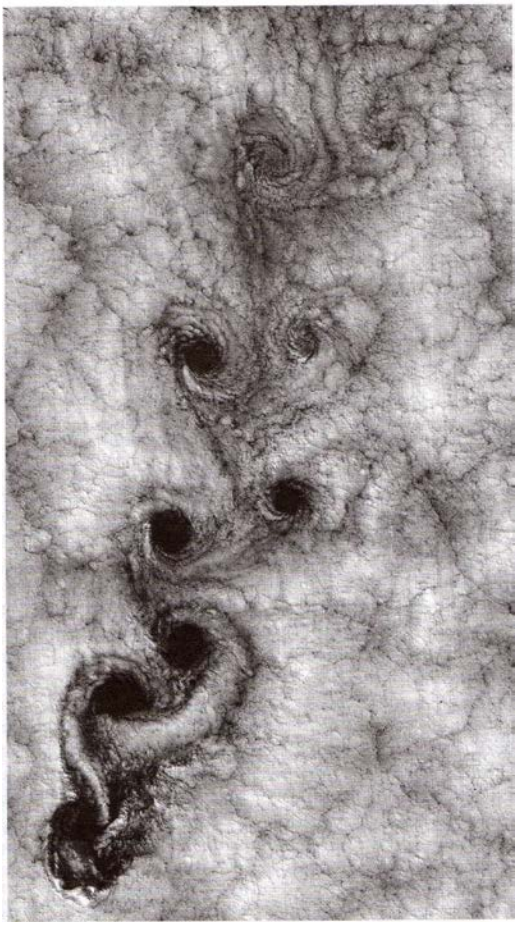
86. M.Heilmann, *Neo Noir*, 1998, oil on canvas, 75 x 60”



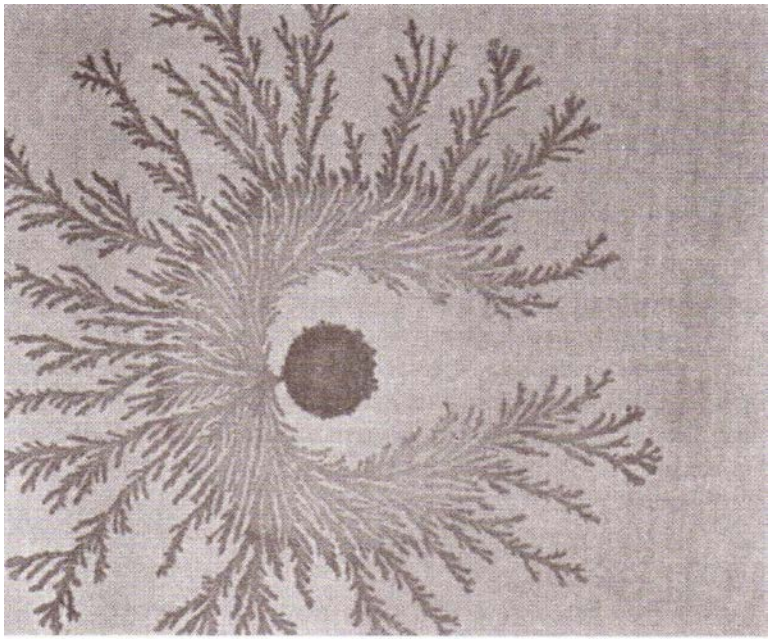
87. T.Abts, *Tabel*, l999, oil and acrylic on canvas, 48 x 38 cm



88. T.Abts, *Fewe*, 2005, oil and acrylic on canvas, 48 x 38 cm



89. Vortex corridor in turbulent atmospheric flow [from P.Ball, *Nature's Patterns*, 2009]



90. Mutant colony of a *Bacillus Subtilis* cluster [from P.Ball, *Nature's Patterns*, 2009]

List of Illustrations

20. L.Popova, *Study for Space-Force Construction No 80*, 1921, gouache on paper, 35.2 x 26.6 cm

21. A.Rodchenko, *Hanging Spatial Construction No 11: Square in Square*, 1920, wood, 90 x 80 x 85 cm [dimensions unknown]

22. A.Rodchenko, *Systematic Construction (Equal Form series]*, 1921 [dimensions unknown]

23. A.Rodchenko, *Workers' Club* installed at the Exposition Internationale des Arts Décoratifs, Paris 1925

24. A.Rodchenko, cover for *Novyi Lef*, 1927, letterpress, 23 x 15 cm

25. V.Tatlin, *Letatlin*, 1932

26. W.Streminski, *Architectural Composition 6b*, 1926, oil on canvas, 96 x 60 cm

27. P.Mondrian, *Composition with Yellow, Blue and Red*, 1937, oil on canvas, 72.5 x 69 cm

28. L.Moholy-Nagy, Sculpture in Plexiglas, 1940 [dimensions unknown]

29. M.Bill, Analysis of P.Klee's '*Surfaces Entretenues', 1930*, 1940

30. M.Bill, The Red Square, 1946, oil on canvas, 70 x 70 cm

31. M.Bill, *Field of Four Colour Groups*, 1963, oil on canvas, 53 x 53 cm

32. R.Lohse, *Colour Groups Arranged in a Square*, 1944, oil on canvas, 50 x 50 cm

33. C.Biederman, *Construction*, 1954, wood and paint on panel [dimensions unknown]

34. J.Gorin, *Spatio-Temporal Architecture no 57*, 1946, oil on wood, 100 x 115 x 7 cm

35. C.Biederman, *Diagram of Cézanne Still-Life*, c 1940, pencil on photograph

36. S.Gilbert, *Space-Frame Construction*, 1956-7, painted aluminium, 100 x 81 x 58 cm

37. S.Gilbert, *Sketch for Néovision House*, 1955, pencil and watercolour on paper, 18 x 27 cm

38. A.Hill, *Relief Construction*, 1959, plastic and aluminium on enamel, 17.5 x 16.75 x 4.75"

39. A.Hill, diagram for *Prime Rhythms*, 1960

40. J.Tinguely, from the *Méta-Malevich* series, 1954, box, metal elements, wheels, belt and electric motor, 61 x 50 x 20 cm

41. Group 5 Pavilion at *This is Tomorrow* exhibition, London 1956

42. J-R.Soto, *Line in the Squares*, 1962, construction in wire [dimensions unknown]

43. R.Morris, *Two Columns*, 1961, painted aluminium, each 243.8 x 61 x 61 cm

44. G.Ortman, *Stages of Life*, 1956, relief panel [dimensions unknown]

45. D.Judd, *Untitlted*, 1963, oil paint on wood with iron pipe, 49.5 x 114.3 x 77.4 cm

46. A.Caro, *The Month of May*, 1963, painted steel and aluminium, 9'2" x 10' x 11'9"

47. C.Still, *Untitled*, 1957, oil on canvas, 9'4" x 12'10"

48.P.Picasso, *Table with Guitar*, 1913, pasted paper, chalk and pins, 61.5 x 39.5 cm

49.M.Rothko, No 10, 1950, oil on canvas, 229.4 x 145.1 cm

50. W.De Kooning, *Untitled XIV*, 1977, oil on canvas, 55 x 59"

51. D.Judd, *Untitled*, 1969, anodised aluminium and blue Plexiglas, each unit 120.6 x 151.7 x 151.7 cm

52. A.Rodchenko, *Cover for '5 x 5 = 25' exhibition*, 1921, crayon on paper, 192 x 14 cm

53. M.Matyushin, *Sculpture with tree-root and wood*, c 1913 [dimensions unknown]

54. H.Arp, *Leaves and Navels*, 1929, oil and cord on canvas, 35 x 27.3 cm

55. E.Kunz, *Work no 105*, n.d., coloured pencil on graph paper, 100 x 100 cm

56. E.Kunz, *Work no 069*, n.d., pencil and coloured pencil on graph paper, 70 x 70 c

57. M.Tobey, *White Journey*, 1956, tempera on panel, 44 x 35"

58. B.Newman, *Who's Afraid of Red, Yellow and Blue I*, 1966, oil n canvas, 190.5 x 121.9 cm

59. K.Benjamin, *Totem Group IV*, 1957, oil on canvas, 101.6 x 127 cm

60. J.McLaughlin, *No 26*, 1961, oil on canvas, 110 x 155 cm

61. D.Fleming, *2V Dwan 2*, 1965-6, acrylic on canvas, 99 x 198"

62. S.Dalí, *The Bather*, 1928, oil on canvas, 63.5 x 74.8 cm

63. S.Dalí, *The Sistine Madonna*, 1958, oil on canvas, 224.6 x 191.3 cm

64. Robyn Denny and others, *Place* exhibition, London, 1960

65. L.Poons, *Out*, 1967, acrylic on canvas, 110 x 190”

66. B.Riley, *Burn*, 1964, emulsion on hardboard, 56 x 56 cm

67. R.Mangold, *Grey-Green Curved Area*, 1966, oil on masonite, 48 x 48”

68. J.Steele, *Y Cynilwyn*, 1964, oil on canvas, 61 x 61 cm

69. A.Martin, *Untitled*, 1977, watercolour and graphite on paper, 9 x 9”

70. F.Rocha Da Silva, *Sky Cleaning*, 2000, mixed media on canvas, 96 x 45 cm

71. Mandelbrot Set

72. J-P.Hébert, *Pentagonal Sand Trace*, 2006, computer and device-mediated sand drawing, 80 x 80 cm

73. A.Micolich and D.Jonas, fractal analysis of a Jackson Pollock painting, *Leonardo*, 35, 2002

74. R.Serra, *Double Torqued Ellipse*, 1998, weatherproof steel, 3.6 x 8.7 x 5.9 m

75. R.Deacon, *These Are The Facts*, 1987-8, hardboard, mild steel, carpet, bronze, 200 x 195 x 133 cm

76. R.Deacon, *Caithness No 2*, 1999, photo and ink on paper, 57 x 85 cm

77. D.Flavin, *Monument to Vladimir Tatlin*, 1964, fluorescent lights, 8’ high

78. V.Tatlin, *Monument to the III International* (model), 1920

79. D.Flavin, *Greens Crossing Greens (to Piet Mondrian, who lacked green)*, 1966, light fixtures with green lamp, 133 x 584 x 303 cm

80. W. de Maria, *Mile-Long Chalk Lines*, Mojave Desert, California, 1968

81. R.Long, *A Line Made By Walking*, 1968, photo

82. P.Halley, *Time Crisis*, 1999, acrylic, Day-Glo, pearlescent and metallic acrylic, on canvas, 244 x 158 cm

83. G.Herms, *The Librarian*, 1960, wood box, papers, bell, books and stool, 144.8 x 160 x 53.3 c

84. A.Sillman, *Blue Rays*, 2009, oil on canvas, 84.5 x 90.8 cm

85. M.Heilmann, *Little 9 x 9*, 1973, oil on canvas, 23 x 23”

86. M.Heilmann, *Neo Noir*, 1998, oil on canvas, 75 x 60”

87.T.Abts, *Tabel*, 1999, oil and acrylic on canvas, 48 x 38 cm

88. T.Abts, *Fewe*, oil and acrylic on canvas, 48 x 38 cm

89. Vortex corridor in turbulent atmospheric flow [from P.Ball, *Nature’s Patterns*, 2009]

90. Mutant colony of a *Bacillus Subtilis* cluster [from P.Ball, *Nature’s Patterns*, 2009]

Part II: Documentation

Documentation

Preamble

This documentation traces the evolution of the research between the date of registration in September 2008 and November 2011. It should be said at the outset that work on the same topic in two media, each of them necessary to the other but distinct in their methods and materials, can normally be expected to occupy different temporalities and obey different rhythms, seldom settling into convenient patterns. We know from art's history that the relationship between the practice of art and the written word is complex enough when the artist is one person, the writer another. There, apparently innocent questions about the terms of priority of art over writing, or writing over art, quickly proliferate into questions about professional training and qualification; about institutional validation and social expectation; above all about the conceptual dependency of one medium upon the other. When the artist and the writer are the same person – as happened frequently in modernism – the same questions might be assumed to get easier. Questions about priority, for instance, seem in principle to turn into questions about self-knowledge; given that the writer might be expected to have privileged access to his own intentions in art; or that the artist, access to the traditions of his own medium, as recorded by the critical fraternity in writerly terms. Things are far less simple, of course. For one thing, the account that the artist gives of his own intentions changes many times as the work proceeds, so that the 'finished' work can show evidence of half-forgotten or modified strategies, changes of direction, and sheer blind experiment, to which an account of 'what is meant' by the artist or the work can only be supplied in hindsight, and with due hesitation. Secondly, the relation between artistic intention and consciousness of precedent – works from the tradition, believed to provide a kind of basis or context – is subject to all the distortions of cognitive error, partial memory, oversight, and the limitations of incomplete knowledge in the first place. And importantly, it is sometimes best for the artist to forget the well-known precedents or pretend they did not exist – or to not look at them. 'Research' for an artist may as suitably involve closing a book, as opening one. In the present case, and though Russian Constructivism remains the practical tradition in which the studio work for this research is grounded, I have maintained that practice must remain anterior to, and perhaps renovate, all previous writerly formulations and theoretical mandates that precedent might be thought to impose. Against a background of varied levels of commitment to rationality and organisation, then – both of them key terms of the Constructivist legacy – I have often allowed the production of art to be digressive rather than obedient to conceptual norms; to proceed as much through error than in certainty. And it seems relevant to add that a tendency of my own working method has been to stray freely into modernist literature (Conrad, Maddox Ford, Nabokov, Gertrude Stein and others) for lessons as to

form itself – evident in those changes of pace and rhythm, feints, shifts of diction, surges and fades of 'meaning', marks of vigour, detail, colour, etc, that are abundant in modernist writing and that are themselves visual qualities in all but name. It is thanks to those digressive tactics, perhaps, that the sense of unity between visual and verbal registers in the present project has always felt as if it were a strong one; and notwithstanding a number of blind alleys and false clues – all useful in the longer time-frame of work – I can say that the two media have enjoyed fertile relations and a generally harmonious life. This is not to say, of course, that some avenues of inquiry have not been more productive than others, or that some others have not proved tangential to the project as finally defined. But a 'documentation' implies an unvarnished record; and so I offer no excuse for describing here all of the stages and moments of the work, more or less in the order in which they occurred.

2008

September. The project at the outset bore the title 'What Abstraction Wants' and was founded on a set of convictions about the viewer's role in art – specifically convictions arising out of a reading of M.Fried, *Absorption and Theatricality: painting and the beholder in the age of Diderot* (University of California Press, 1980) and more recently W.J.T.Mitchell, 'What do pictures *really* want?' (*October* 77, Summer 1996), as well as the methodology of C.Harrison, *Painting the Difference: Sex and Spectator in Modern Art* (University of Chicago Press, 2005), among other texts; which in their turn had helped generate a set of six paintings of my own begun earlier in the year and still proceeding. These paintings comprised bars of intense colour arranged vertically in the case of a landscape canvas or horizontally in the case of same or similar canvases hung portraitwise. These paintings launched questions of a fixed versus a flexible orientation for the picture (a problem addressed previously by Lissitzky), and the nature of the viewer's orientation to the work. That is to say that issues relating to the work's autonomy, and the viewing encounter, were already in play. I was also interested at this point by Harrison's idea that an abstract painting could in some circumstances be 'like another person' (C.Harrison, 'Disorder and Insensitivity: The Concept of Experience in Abstract Expressionist Painting', in D.Thistelwood (ed), *American Abstract Expressionism*, Liverpool University Press 1993, p 114).

Colour Study # 4, oil on canvas, 40.5 x 50.5 cm, September 2008

Colour Study # 5, oil on canvas, 40.5 x 50.5 cm, September 2008

November. I gave a presentation to the Ruskin graduate seminar in Michaelmas Term on the idea that a physical object could manifest desires; in a wider sense that finding subjective attributes in inanimate things was legitimate and even necessary to a culture of whatever level of development.

December. Two paintings from this series were exhibited in college as part of the quincentenary celebrations during Brasenose Arts Week, Oxford.

Colour Study # 6 and # 4, Brasenose College Oxford, December 2008

2009

February. I gave a lecture to the Ruskin Research Seminar entitled 'Art as Technique'; the title taken from V.Shklovsky, ''Iskusstvo kak pryem' (1915) and developing the argument given by Shklovsky that the conventional relation between 'form' and 'content' in the work of art should be reversed: that 'content' has little claim to be more than an occasion, and sometimes only a pretext, for 'form' (compare Aristotle, *Poetics*). In pursuit of this argument I gave the example of Gogol's story 'The Overcoat' (1842) about which Nabokov says that its 'curvature' in literary space relates it 'to such conceptions of modern physics as the Concertina Universe or the Explosion Universe … where neither rational mathematics nor indeed any of our pseudo-physical agreements with ourselves can be seriously said to exist' (Nabokov, *Nikolai Gogol*, New Directions Paperbacks, New York 1961, pp 144, 145).

March. I gave a paper to the Research Seminar at Reading University entitled 'Irregular Abstraction', exploring some modernist 'ways out' of Euclidean geometry in abstract art, and some recent crossovers within sculpture showing the complex curvatures and spatial systems arising

from the development of computing. Here I built upon a body of new writing in the popular scientific literature, especially on fractal geometry and the mathematics of scale. I discussed rule-following in birds and animals with the physicist Professor David Malvern.

March. At the conference *Constructivism and the Art of Everyday Life* at Tate Modern, London, held to mark the exhibition *Rodchenko and Popova: Defining Constructivism*, I gave a lecture 'Alexander Rodchenko's Lines of Force', attending closely to Rodchenko's use of line as direction, energy, and travel. Researching this lecture (subsequently published in *Tate Papers*, October 2009) brought about a significant readjustment in the terms of the project; first a decisive reorientation towards the Constructivist legacy; and specifically towards the lesser-known 'organic' Constructivism of Mikhail Matyushin, Pyotr Miturich, and Vladimir Tatlin, whose relevance to the practice of recent art is, so I argue, less than fully understood.

From this point onwards I felt able to write about Constructivist principles as they were articulated within the wider field of modernism, and between this date and the summer of 2011 several chapter-length essays on the subject were completed, four of which are presented in this submission.

Summer. At this stage I was engaged in two types of work in the studio, each disturbingly different from the other. One was a set of wooden collages made from shallow boxes and assorted objects, found rather than made, and showing some indebtedness to Kurt Schwitters.

Collage Box # 2, found materials, 36.5 x 23.5 cm, Summer 2009

The other was a set of geometric paintings inspired by Joseph Albers' geometrical woodcuts and lithographs of the late 1930s. The direction taken in the latter paintings, ostensibly aimed at producing a mind-baffling interlock of the surface in abstract art, has since been set aside.

Interlock Painting # 1 (after Albers), oil on canvas, 40 x 50 cm, Summer 2009

Interlock Painting # 2 (after Albers), oil on canvas, 40 x 50 cm, Summer 2009

Autumn. I began to vary the format and more importantly my attitude to the bar paintings mentioned earlier. The Albers-type work especially had proved time-consuming and contained few pointers to 'going on'. Now, using a free mixture of incompatible paint-types (emulsion, enamel, acrylic, oil) I applied paint quickly and even casually in vertical bars, then tipped the painted bars through an angle before they were dry, producing 'runs' and 'cracks' in the picture surface, only partially controlled and largely the result of chance. These paintings were both fast to execute and enjoyable to look at. They required high concentration, but were productive of high visual reward.

Vertical Run # 1, enamel, oil, and acrylic on canvas, 50 x 40 cm, Autumn 2009

Vertical Run # 2, enamel, oil, and acrylic on canvas, 50 x 40 cm, Autumn 2009

Winter. These smaller paintings were now done on a larger scale, with the angle of tipping regulated to 90° and more control exercised over the lengths, viscosities, patterns (etc) of the drips. These works taken collectively seemed fully compatible with early Constructivist attitudes to form, to the important requirement of 'efficiency', and to the summarary formulation of Nikolai Tarabukin (applied to Tatlin in 1916) that 'material now dictates form [to the artist], and not the other way round'. I felt that a bridge had been built between the material ideologies of the Constructivists and my own sympathies and temperament as a painter. Above all, the concept of *faktura* seemed to contain the important key.

Large Vertical Run # 2, acrylic and oil on canvas, 105 x 80 cm, Winter 2009/10

2010

March. As part of the conference *Abstract Connections*, held to mark the exhibition *Van Doesburg and the International Avant-Garde: Creating A New World* at Tate Modern, London, I gave a lecture entitled 'The Attractions of Geometry'. Once more this proved a stimulating exercise and threw me into dialogue with other artists and theorists working in the longer ethics and practice of Constructivism (Alf Löhr, Andrew Bick, Mark

Bartlett, among others), in addition to providing a context for thinking about the relation of Constructivism to Dada.

May. I curated an exhibition *Against Grids: Objects and Paintings by Ian Dawson, Nick Mead, Katie Pratt*, at the RIBA gallery in Liverpool and wrote a catalogue text. This provided an opportunity to put into print my evolving reflections on non-Euclidean geometry and the concept of the Baroque. At the same time I contributed a paper on 'neo-baroque' as a category of the contemporary to the international conference on Hispanic Baroque held simultaneously at Liverpool University, reading a text on 'Turbulence'. At the close of the conference I spoke on a panel at Tate Liverpool.

Paintings by Nick Mead, *Against Grids*, RIBA Gallery Liverpool 2010

May. The DPhil group at the Ruskin staged an exhibition at the Ovada Gallery Oxford entitled *Praxes*, to which I contributed a two large and seven smaller paintings done in the manner already described, and wrote a short printed text for visitors expounding the orientation of the work. This text is reproduced as Appendix I below.

Praxes, Ovada Gallery Oxford, May 2010

Praxes, Ovada Gallery Oxford May 2010

Early summer. I did one more painting in the controlled-run method, and several more that contained larger intersecting blobs, the latter group representing a cul-de-sac, as I saw it, that while extending the method previously used offered little new in the way of pictorial organisation. As if in reaction, I painted several small paintings and a single large one in something like the De Stijl method, with carefully constructed blocks of colour enlivened by protruding 'lips' of brighter and contrasting hue. The gain was in enabling a notional viewer to see the paintings 'from the side' – a concept that had intrigued me some years earlier in connection with the concept of relief. Notwithstanding, I chose not to continue that experiment at the time.

Vertical Run # 7, acrylic and oil on canvas, 90 x 60 cm, Summer 2010

Poured Painting # 7, acrylic on canvas, 50 x 40 cm, Summer 2010

Poured Painting # 9, acrylic on canvas, 50 x 40 cm, Summer 2010

Summer. While on the north coast of Spain I took several photographs of wave-formations at the moment of appearing to 'tip' from one pattern of stability to another, and became interested in the appearance of those same photographs when turned upside down.

Waves (photograph), July 2010

Waves (photograph), July 2010

I also studied the exhibition *Cadaqués de Picasso: Centenari de L'Estada de Pablo Picasso a Cadaqués 1910-1010*, held at the Museu de Cadaqués to mark Picasso's stay in the village in the summer of 1910, at which point his Cubism was at its most problematic; not least, I already felt, because of the problems posed to the painter by the form(s) of the sea. This was the phase that D-H. Kahnweiler announced in his report 'Il a éclater la forme homogène' ('he has shattered the closed form'); and that T.J.Clark more recently described as 'a kind of end-game, with fewer and fewer pieces left on the board'. Struck by the distinctive geographical setting of Cadaqués, already registered as 'delirious' by the young Salvador Dalí whose family lived around the bay, I explored further the connections between geological patterning in rocks, rocks subject to moving light, and water, and the qualities of the Cubist picture-plane that gave way in Picasso's art to a distinctive type of pictorial construction, in Céret the following year.

October. I took part in a teaching session for Ruskin undergraduate students at which Maria Chevska and Neil Tait gave substantial lectures on contemporary painting, appended by a shorter presentation from me. Still in pursuit of the 'water' motif, I made an attempt to examine the attraction of the sea to modernist painters, but failed to move much beyond unhelpfully general speculation. At the time, the topic seemed stubbornly beyond the reach of my work. On the other hand Maria Chevska's accomplished talk on the painters Amy Sillman, Wilhelm Sasnal, and others, provided pointers to a group of seemingly shared strategies among contemporary artists, and ones that I could use. This proved to be a moment of extreme clarity in the conceptual framing and articulation of my own work.

October. I attended two exhibitions by Bridget Riley, one at the National Gallery, London, and the other in Southampton. I also attended a lecture by the artist on her work; noting the importance to her of natural patterning, especially in rocks and shale subject to the action of strong sun-light, and the almost organic correspondence of those phenomena with the forms of abstract Constructive art.

November 2010. For the Transfer Stage I presented an collection of recent paintings with a focus on some new work involving more complex criss-crossings of paint runs, done in a more openly experimental attitude – one frankly unconcerned with taste or coherence and more interested in 'bad' results, or results that are difficult to like. The question of 'good' or 'bad' taste seemed to be constantly in play now: together with the questions of what 'liking' a painting might mean; and what it

might mean to think of a painting as *mine*. What part was temperament allowed to play in fully motivated work?

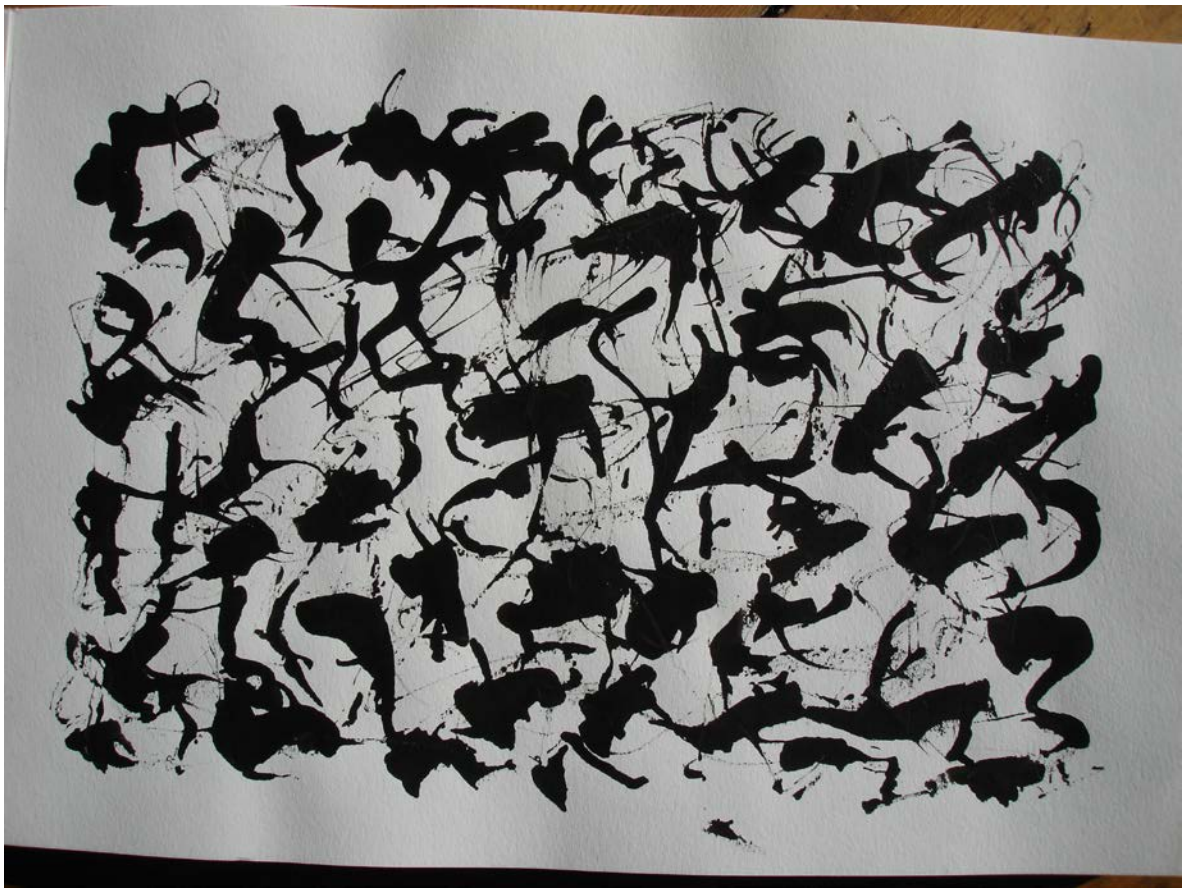
Poured Painting # 11, acrylic on canvas, 50 x 40 cm, Autumn 2010

Poured Painting # 13, acrylic on canvas, 50 x 40 cm, Autumn 2010

For the Transfer meeting, and following the research of the summer, I prepared a text attempting to bring together in one argument Russian Futurism, the 'formal method' of the Moscow linguists, Picasso in 1910, something about Bridget Riley, and a close reading of V.Nabokov's late masterpiece *Pale Fire* (1968). This text, entitled 'Geology, Cubism, Prose', remains unpublished but might at some future stage be polished and re-launched.

2011

In the winter of 2010-11 I made some ink drawings, both in a small pad and others on A1 paper, with a view to exploring the functions of line, beginning with water-flow patterns drawn in a type of mimicry of water falling over rocks and resulting in a web of meandering and intersecting lines. The aim was that these drawings would manifest 'fluidity'; but in their final state they looked like *tachiste* field-drawing of the 1950s. The gain however was in a relaxation in my working attitude, including my attitude to 'mistakes' made while working; hence contributing substantially to a satisfactory practical attitude to the materials of the studio.



Small Drawing, ink on paper, 21 x 29.5 cm, January 2011

Large Drawing # 3, ink on paper, 76 x 57.5 cm, March 2011

Large Drawing # 4, ink on paper, 76 x 57.5 cm, March 2011

I also executed a group of left-handed ink drawings based on a chance encounter with a black and white photo of a group of dancers (among them Robert Rauschenberg and Robert Morris) performing Yvonne Rainer's experimental early dance piece *We Shall Run* (1963).

We Shall Run (Yvonne Rainer), ink on paper, 32 x 26 cm, April 2011

At a tutorial meeting to discuss these drawings, the question of how to reconcile the relative randomness of left-handed drawing with the discipline implied by Constructivist-type adherence to motivated form came into focus. At the end of the meeting a challenging suggestion arose from Malcolm Bull that the answer might lie in combining both.

February. At this stage I was writing chapter 4 of the thesis and specifically some paragraphs on the American painter Mary Heilmann. In painting, one particular work of hers was giving me trouble. *Winter Surf* (1993) was not only an image evoking the sight of waves breaking on the California coast, but in its facture seemed perfectly poised between plan

and error, nature and humour. Once again in a spirit of mimicry, I embarked on a single large painting and one smaller one with breaking waves somewhere in mind. This departure was made suddenly problematic however by the tragedy of the Japanese tsunami in early March, together with the news images of vast water-born forces that appeared for several weeks in the press. This moment precipitated a kind of *impasse*. In retrospect it taught me to be wary both of mimicry in relation to the paintings of others, and of reacting quickly to dramatic images presented in the press. In an effort to resolve a way to continue, I embarked on another text, on time signatures in art, inspired by Yvonne Rainer, Gertrude Stein's 1935 essay 'Portraits and Repetition', and the (surely misnamed) concept of 'women's time', the subject and title of a 1969 paper by Julia Kristeva. Though some paragraphs of 'Time Signatures' appear in Chapter 4 above, the larger text remains incomplete. The paintings referred to have been destroyed.

May and June. I embarked on a new set of small paintings involving very simple formats in the main motifs, overlaying a field of scumbled or gestural marks, quickly done. This construction of a double layer, quickly executed in acrylic paint, promised a set of new formats and a relaxation of anxiety about resemblances between my work and that of other artists.

Fast Painting # 2, oil on canvas, 40 x 30 cm, May 2011

Fast Painting # 3, oil on canvas, 30 x 40 cm, June 2011

June. An exhibition organised by the DPhil group took place at the old power station in Oxford. Termed Powerhouse, the exhibition imposed a requirement to meet the challenges of an old industrial space of large proportions; and with this in mind I made a group of new paintings, attempting for the first time to incorporate a freely drawn linear armature, upon which appeared more rational compartments of plain colour: in effect the opening of a formal problem whose solution would become a preoccupation over the next twelve months.

Linear Compartment Painting # 1, oil on canvas, 50 x 40 cm, June 2011

Large Powerhouse Painting, oil on canvas, 101.5 x 76 cm, June 2011

Considering them bright and over-assertive, I paired each larger painting with a smaller one, and hung them in areas demarcated on the walls of the power station such as might be found in old wallpaper or wall covering.

Powerhouse Exhibition, Oxford, June 2011

In the case of one painting done at this time but not exhibited, I experimented with a linear under-layer in masking tape that I only much later felt confident in exposing by removal of the tape. In retrospect that experiment proved more permanently interesting than the exhibited works.

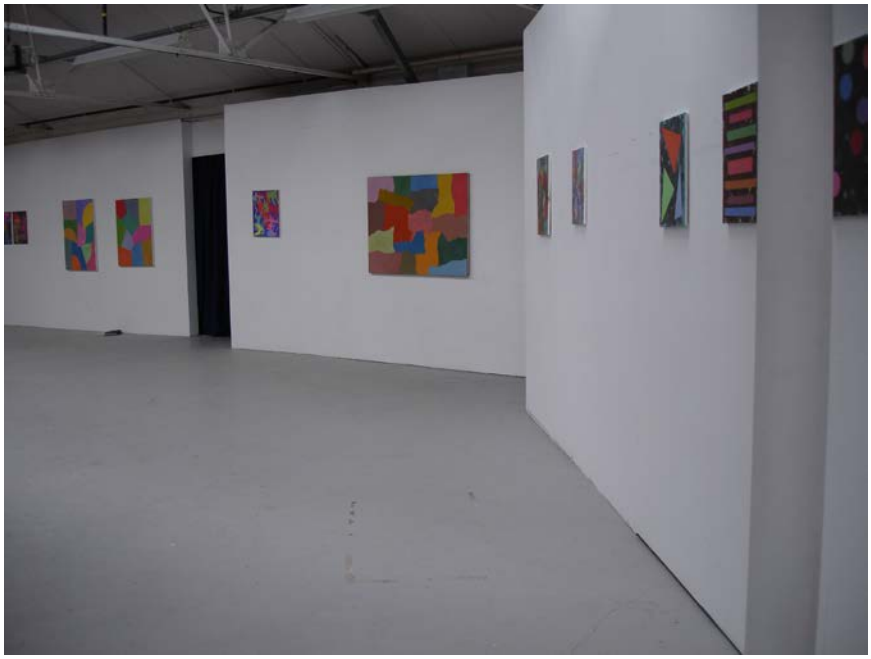
Linear Compartment Painting # 2, oil on canvas, 91.5 x 76 cm, June 2011

Linear Compartment Painting # 2, oil on canvas, 91.5 x 76 cm, June 2011 [with tape removed]

June. I presented a paper at the conference *Construction and Its Shadow* at Leeds City Art Gallery, devoted to relations between Dada and Constructivism and organised in conjunction with an exhibition of that name curated by the artist Andrew Bick. This threw me usefully into dialogue with, among others, art historians Jon Wood and Sam Gathercole, and the Systems artist Jeffrey Steele.

June. At the conference *Utopia I: Russian Art 1915–1930* held at the Courtauld Institute of Art, London, I gave a lecture entitled 'Geometry After Utopia' which surveyed the reappearance of Constructivist attitudes and principles in New York art of the 1980s.

June. For the Confirmation Meeting at the Ruskin I mounted an exhibition at the Bullingdon Road Project Space, of paintings mostly done in the spring together with a selection of work from the two previous years; and accompanied, though not framed, by an early draft of the text of Chapter 4. The exhibition enabled me to assess the relation of the works to size and scale, and above all how they 'held up' in a relatively large and clean space.



Confirmation Exhibition, Bullingdon Road, Oxford, June 2011

Confirmation Exhibition, Bullingdon Road, Oxford, June 2011

Confirmation Exhibition, Bullingdon Road, Oxford, June 2011

Confirmation Exhibition, Bullingdon Road, Oxford, June 2011

In discussion of the work with the assessors, two conclusions were of especial importance. One was the consequence of a chance reference by Brian Catling to some of the paintings that looked 'chalky': this struck me as a correct assessment of the fact that the colour range of many recent paintings was too bright, as if they had been painted in the evening in failing light, or in a cold room (both true). Gradually from this point onwards I would become more interested in dark or muted surfaces, enlivened, as the case may be, with markings of different kinds in a lighter hue. The second lasting outcome was recognition of a danger, familiar to many painters aware of the attractions and yet also the insulation of British modernism, in establishing too-suggestive relations between painting and landscape, as in the work of the Cornish school of the 1950s and 1960s, or the West country painters of the present day.

July. For a number of weeks in the early summer I become closely absorbed in the tone and appearance of some new paintings based on the floating circle by the London painter Mali Morris, and tried, again in a spirit of misguided mimicry, to duplicate the lively precision and confidence of her work. Several large paintings containing circles were attempted, but soon abandoned. I also looked again at the work of John McLean and Michael Canney, both of whom claimed modernist credentials albeit of different kinds (Greenberg for McLean, Constructive art for Canney). Eventually unhappy with the sheer volume and variety of this referencing, I turned, or returned, to more basic qualities of the picture surface itself.

Panel Painting # 1, oil on cardboard on plywood, 37.5 x 25.5 cm, June 2011

A point of certainty was to be found in some smaller pieces I had made previously, not on canvas but on cardboard laid down on plywood panel. Here I felt I had achieved a type of *faktura* or madeness that was satisfying in the execution and perhaps original in its result. *Faktura* here was to mean an apparently rough and unkempt surface, enlivened all the while by some elegant and perhaps confident accents, casually disposed. I made several more works in this idiom, and felt quickly at ease with their simplicity, intensity and format.

Panel Painting # 3, oil on cardboard on plywood, 38 x 27 cm, July 2011

Panel Painting # 4, oil on cardboard on plywood, 37.5 x 26 cm, August 2011

August/September. While in France I addressed the issue of why it seemed difficult to scale these smaller oil-on-cardboard-on-plywood works to a larger size. I attempted to reproduce the feel and presence of the smaller cardboard surfaces by laying paper down on larger stretched

canvases; first newsprint and then remaindered bits of A4, quite slowly building a painting from that newly partitioned or cell-like surface, and increasingly happy to be working in a method and medium for which I knew (and still know) no good precedents in modern art. The dominant formal question seemed to be that of providing internal dynamic contexts for these cell-like partitions, based on the shape, unevenness, and position *alone* of the cell in question. Simultaneously I was engaged in two sets of reading that fed productively into the work. The first was a book on thermodynamics by Philip Ball, from which I began to think of the paintings as lying within the same cognitive territory as convection science: the way temperature changes alter the shape and patterning of liquids. The second was a body of theoretical and historical writing by and about the Polish modernist Wladislaw Strzeminski, whose early theory of Unism contained some points of contact with my own project, especially in regard to surface and line. By this stage the initial larger paintings were generating others, and it seemed possible to think of a series of works having a single generic character, both structured and self-organised and having an intensity and concentration of their own. Here I felt that I was working in freedom from known precedents, while resolving the problems of painting with the means of painting alone. A short written explication of this group, now presented as Appendix 3, refers.

Small Convection, oil on cardboard on canvas, 41 x 33 cm, August 2011

Convection # 1, oil on paper on canvas, 65 x 46 cm, September 2011

Convection # 2, oil on paper on canvas, 92 x 65 cm, October 2011

October. I travelled to Poland to speak at the conference *The Readability of Images: Wladislaw Strzeminski* at the Museum Sztuki, Łodz, and delivered an under-researched paper on 'The Biological Line'; returning to complete a second larger painting and prepare the ground for further works to come.

Convection # 3, oil on paper on canvas, 92 x 65 cm, October 2011

Appendix I: Catalogue to the Ovada Gallery Exhibition, Oxford, 2010

NOTES ON THE PAINTINGS

In terms of their style, these paintings may be described as a hybrid, even mongrel combination of two already venerated concepts of modern art, and I shall try here to explain why that pairing might be interesting. When the group around Alexander Rodchenko launched an attack on the idea of pictorial composition in Soviet Russia in the spring of 1921 they were determined to get rid of artistic subjectivity and replace that concept with an idea of construction, in which the shapes and forms of material could come to be seen as verifiable in relation to one another, 'factual' and even 'true' in a sense not often seen before in art. Constructing material (and materialist) structures was to provide the perfect antidote to what the group saw as a redundant aesthetic of balance, relationships, and legible subject-matter. It became clear that giving up painting altogether might be necessary to achieve that end; and in practice most Constructivists renounced the use of paint and brushes in favour of prosaic matter in the form of wooden spars, wire and occasionally collage, that is, the cutting-up of mostly photographic material and sticking the pieces down in a given position, relative both to the ground-plane and to each other. It is a nice fact that, almost simultaneously, an international Dada movement, programmatically opposed to everything (Dada included), also found in collage a congenial method of defamiliarising the material world to the point of making its familiar coherences look absurd. Was Constructivism then absurd? In a way it was, and perhaps was meant to be. My point is that veneration for the idea of construction in modern painting turns out to be consistent, at a virtually hidden level, with practices of untidiness, experiment, and the apparently random use of paint as a viscous medium: sticky, expensive, and inherently unpredictable when allowed to melt, drip and coalesce with other types of material or to form unstable pacts with certain kinds of surfaces. And that gives a clue to the second of modern art's venerated moments, one to which Constructivism seems at first glance inevitably hostile. The poet Allen Ginsburg pointed out that the word 'beat' – launched upon the public in an article in the New York Times in 1952 – came to mean not only penniless, exhausted, without a place to sleep or stay, but also wide-eyed, receptive to vision and perhaps illumination, hence beat, 'beatific'. 'Everything belongs to me because I am poor' – the phrase comes from Jack Kerouac – is close enough to the working-method of that exemplary beat-Constructivist, Kurt Schwitters, who

roamed the streets looking for remaindered fragments of existence, the banal and lowered objects that remain once the feast of consumption has ended and the people have gone home for a rest. For Schwitters and for us, the eye of the beat-Constructivist turns away from the shining surfaces of the contemporary city, to find in its gutters bits of detritus that sparkle with their own life and industry, formed by desire, competition and exchange. The impulses that formed the paintings in the present exhibition, then, are both 'beat' and 'Constructivist' at the same time. They were preceded by a group of collage-objects formed of paper, wood and plastic dejecta accumulated over years of scavenging. The paintings themselves also revel in the casual and the ecstatic, while paying dutiful homage to the squared-up grid of the canvas rectangle and the properties of the viscous medium dripped, vibrated or splashed upon it. For all Constructivist-type paintings, beat or other, are in the end obliged to respect the material properties of the canvas rectangle, including its horizontal and vertical orientations that face the viewer and appeal for attention and careful scrutiny. That said, most of their other visual effects can be traced to the familiar laws of diffusion and dispersal that govern the behaviour of viscous material when it comes into contact with a surface having qualities of its own. It is in this sense that they are made the same way other things in the world are made: through a contest of regularity and accident, planning and disorder. In medieval Japan, the word 'sabi' meant chill, lean or withered, while a rhyming word 'wabi' meant the misery of living away from society in a superficially cheerless state – at least until the 14th century when both words began to signify the spiritual richness to be derived from self-imposed poverty of means and of expression. Today, 'wabi-sabi' is understood to mean the imperfect and the variegated, the crude or the irregular, whatever can accommodate attrition or degradation, or can survive ambiguity and contradiction: it can mean incomplete, relative, dark, contaminated, corroded, or seasonal. It is also said to be best if the creator of such things is of no distinction, invisible, anonymous: another reason why a blatant miscegenation of distinct (and distinctive) modernist traditions seems worth a try.

Appendix II: Catalogue to the Powerhouse Show, Oxford, 2011

NOTES ON THE PAINTINGS

The hanging of paintings in an old power station is more than just a practical act. The exhibition space 'is not a living room', wrote El Lissitzky as he prepared his Demonstrationsraum for the Great Berlin Art Exhibition in 1923, determined to activate the viewer, to make him or her move. 'We are destroying the wall as a resting-place for pictures'. Increasingly since then, it has become normal practice to conceive of the relation between a painting and its surroundings as open to modulation and experiment, a matter of curatorial authorship and control. By now, every curator knows that the claims made by the pristine white interior (autonomy of the object, opticality of its surface, absence of reference to the outer world) cannot be matched in practice – however hard he or she may try – given the presence of awkward corners, exterior windows, even the body that the viewer brings into the space. And yet the unsettling of the legendary neutrality of the white-box interior may amount to far more than an easy relativism. The philosopher Richard Rorty has made much of the difference between those who adhere to a metaphysics of finality and those who perpetrate irony. The terms of a 'final' vocabulary, says Rorty, are those in which 'we formulate praise of our friends and contempt for our enemies, our long-term projects and our highest hopes'. They are 'as far as [the user] can go with language'. Meanwhile the ironist is one with 'radical and continuing doubts' about the language he currently uses and who realises that his present language cannot dissolve those doubts; one for whom the choice between vocabularies is made 'neither within a neutral and universal meta-vocabulary, nor by an attempt to fight one's way past appearances to the real, but simply by playing the new vocabulary off against the old'. Hence ironists are aware that the terms in which they describe themselves and their works are subject to change; they are 'aware of the fragility of their final vocabularies, and thus of their selves'. In Rorty's terms, finalists describe, while ironists redescribe – not with sarcasm or ridicule, rather in a spirit of serious play. In these terms the languages invented and applied by Karl Marx, or the Pope, would qualify as final ones. Other philosophers and some fiction writers – Proust, Nabokov, Kundera among the latter – are on the side of irony in as much as they are able and prepared to exploit their own contingency. And this difference of attitude to final languages and vocabularies can be seen in the visual arts, where Constructivists, Conceptualists and Minimalists tend to be finalists,

perhaps, while Cubists have been ironists. Art Concret and Abstract Expressionists have tended to be finalists in their search for 'truth', while Warhol and Pop artists have tended to be ironists. In modernism, geometry and purity have been the standard terms of a final language, while montage and mixing the terms of an ironic one: un-dogmatic about the 'end' or ends of painting, open to stylistic contingency, and keyed to the environments (both human and physical) in which the works themselves might live.

The presentation of paintings in an old power-station, in that case, might be regarded as doubly ironic: once, in being dominated by the presence of rusty staircases, cranes, broken light-fittings, and the ghosts of a manufacturing culture long since mothballed – now pressed into service as a space for art – and twice, in being paintings at all. After all, the routine declarations of the 'end' of painting by the modernist avant-garde were mostly issued in the command-language of finality, one that said 'this is the new art, and the millennium will be built upon it, so accept it or perish'. But such exhortations look impossible now. The pairing of a large geometric painting with a small *art informel* one – for instance – is intended to make that impossibility clear; the more so since I have left unspecified whether the work is one item or two. Where geometry is deployed at all it has no identity and no system; rather it proceeds by inventing rules and then breaking them (including the rule suggested in that process). And in the ungainliness of the power-station interior, some geometry had to be legible at a distance, while the invitation contained in the smaller paintings was that they be read from a distance of no more than a few inches. Sometimes, smaller works are made from the paint left over from the making of larger ones. Which is to suggest that, viewed from beyond the power-station, the paintings seek membership of a cognitive world in which time is ruptured and non-utopian, and in which 'the real' is a set of stories supplied by science, whose constantly modulating 'final' languages may turn out to be the finest fictions of all.

References are to El Lissitzky, 'Proun room, Great Berlin Art Exhibition', G, Berlin 1923; in S.Lissitzky-Küppers, *El Lissitzky: Life, Letters, Texts*, Thames and Hudson, London 1968, p 365; and R.Rorty, *Contingency, Irony and Solidarity*, Cambridge University Press 1989, p 73-4

Appendix III: Exhibition of paintings, Oxford, 2012

NOTES ON THE PAINTINGS

Painting in the long shadow of Constructivism encounters obstacles and opportunities today; foremost among them the status of 'the organic' when seen against the backdrop of modernism's infatuation – for good and ill – with the geometry of the plane. Though the dominant early strain of Constructivism, that of Rodchenko and Popova and the First Working Group of 1920-1, was fixated upon the organising possibilities of the straight line, another tendency, represented by Mikhail Matiushin, Pyotr Miturich and the later Tatlin, preferred to examine the curved, the granular and the cell-like in relation to the properties of matter and the processes of the physical world. In subsequent mainstream modernism, the line and the plane enjoyed easy relations with the picture surface, from at least Art Concret to Minimalism; whereas the facts and language of organic form were mercilessly hijacked, if we look back, by romantics, expressionists and others, who made extravagant claims for spontaneity, randomness and so forth, but were receptive only to how nature 'looks' or 'feels' in some familiar visual settings. But how does nature 'look' and 'feel' today? Thanks largely to the power of computing, the culture is awash with images of how the flow of liquids and temperature gradients interact; how formerly inscrutable systems such as microscopic and cosmic fluctuations work.[1] And constructive painting can learn some lessons here. The present group of paintings might even be called Convections, on the strength of their correspondence – within approximate limits of fidelity – to what physicists tell us about heat-transfer within a container; those patterns of dynamic regularity that underlie all of nature and might even to said to shape the world. For instance, we know that convection cells form in accordance with the viscosity, speed of heating or cooling (etc) of the liquid in question; and in ways that seem oddly analogous to process of construction in painting. To be more precise, the development of cell-patterning within a shaped container can be compared with pictorial organisation inside the four sides of a rectangular canvas. As the Polish modernist Strzeminski liked to point out in his theory of Unism, the antithesis of non-hierarchical construction in art – which is social construction as well as formal – is the Baroque, that is, the spilling out and multiplying of form beyond the confines of its physical frame.[2] To take a further example: hexagonal convection cells come out roughly the same size as each other, a size which is roughly equal to the depth of the liquid in question. Roll-cells,

those that form between hotter and cooler planes, seem to bend at their endpoints to meet their container at 90°, apparently to maximise physical stability. Other roll cells 'adopt themselves to the shape of their environment by curling up into concentric circles, thus avoiding meeting any boundaries at all', to cite a recent account by the science writer Philip Ball. And it is surely remarkable that cellular organisation that functions to maximise physical stability matches the codes of visual construction quite exactly, in as much as we seem able to recognise stability purely from a structure's visual form. Now, scientists even believe that nature's forms may be conscious of their own history. The same writer might well have been describing cultural change, when he says of the possible alternative patterns in a convecting fluid, 'it is not easy to predict which will be produced in any given experiment. When several alternative patterns are possible in principle for a particular set of conditions, which one is selected may depend upon how the system is prepared, that is, on the initial conditions [but also] … on the past history of the system'.[3] For all that, correlations between the studio and the laboratory are by no means exact. For the very visibility of cellular natural patterns depends upon sophisticated new technologies of visualisation, in which data remote in time or space is converted into an image on an electronic screen via enhancement through the addition of colour, shading, and adjustments in orientation and scale, showing the relative positions of particles, but fictionalising most of their other qualities. Colour, which forms the painter's lexicon, lies at the centre of this paradox, for colours are visual properties that from a scientific viewpoint have virtually no reality at all on the basis of which reliable inductions can be made. As the Harvard empiricist W.V.Quine said in a pleasing alliteration, 'cosmically, colours would not qualify as kinds'.[4] Yet for the artist, colours are the kinds that count; such that, in forming cells inside the work of art, he can articulate relations of intensity and proximity that are not to be found articulated elsewhere. In the language of the organic, colours, and with them shapes, can be considered the convection-cells of the self-organising work of art. Formed with the hand and brush, they offer a kind of 'rough' organic geometry that stands somewhere between Euclid and the forces acting inside a saucepan of boiling milk, or soap bubbles associating in a dish. It may be an ancient question whether the pattern-languages of nature are completely coincident with the codings of human sight; but, as so often in modernism, it would seem to be a question that is always new.

---

[1] See my title essay for the exhibition *Against Grids*, RIBA Gallery, Liverpool 2010.
[2] W.Strzeminski, *Unism in Painting*, Łodz 1927-8.
[3] P.Ball, *Nature's Patterns: Flow*, Oxford 2009, pp 56, 57.
[4] W.V.Quine, 'Natural Kinds', *Ontological Relativity and Other Essays*, New York 1969, p 127.