

SECONDARY RESEARCH

Ella Frost

Year 4 BA Fine Art: Painting and Printmaking

The Books, Artists, Contemporary and Contextual ideas that have supported my practice this year.

My Secondary Research works through my key themes within my practice. These themes have been and are the backbone of my practice and have developed by the different areas of my research. The research surrounding my concepts, has been integral to my gradual growth in understanding and confidence in my practice this year.

I started by broadly exploring my ideas through the context of colour, light and form. As my outcomes moved forward and began to naturally shape around these colour-filled immersive environments (which intertwined with virtual mediums), I explored genres such as New Media Art and Abstraction. These genres presented the idea of artworks searching for new standards in art forms and how to make use of this newly discovered language of virtual mediums, which drew me in and challenge my understanding of the works potential.

The research I do is a crucial part of my practice. Over this year it has centered around colour theory¹ and the impact of those colour together², Immersive Installations, Artist Videos and

¹Goethe, J.W.V. (1810). *Theory of Colours*. USA. John Murray.

² Albers, J. (1963). *Interaction of Colour*. USA. Yale University.

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VIDEO

Albers' Color Class. YouTube Talk, Creative Arts Workshop (2020)

< <https://www.youtube.com/watch?v=fdZllwyZSHo&list=PLk0sDGQFxA4w5y2e3iGQZgnfKJ3XNdHB&index=10> >

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Matt Bollinger / New York Studio School. YouTube Lecture, New York Studio School of Drawing, Painting and Sculpture, (2019).

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EXHIBITIONS

Project *Live Colour*

Location London, UK

Lighting Design Liz West Studio, UK

HERVISIONS by Zaiba Jabbar

Face-Up, a pop-up exhibition part of the Tate's "The Lives of Net Art". Zaiba Jabbar.

In Real Life Olafur Eliasson 2019.

TERMS / MOVEMENTS

- Colour Theory
- Abstraction
- Virtual Reality
- Ontology (in Art)
- Figuration
- Interactive Installations
- New Media Art

ARTISTS

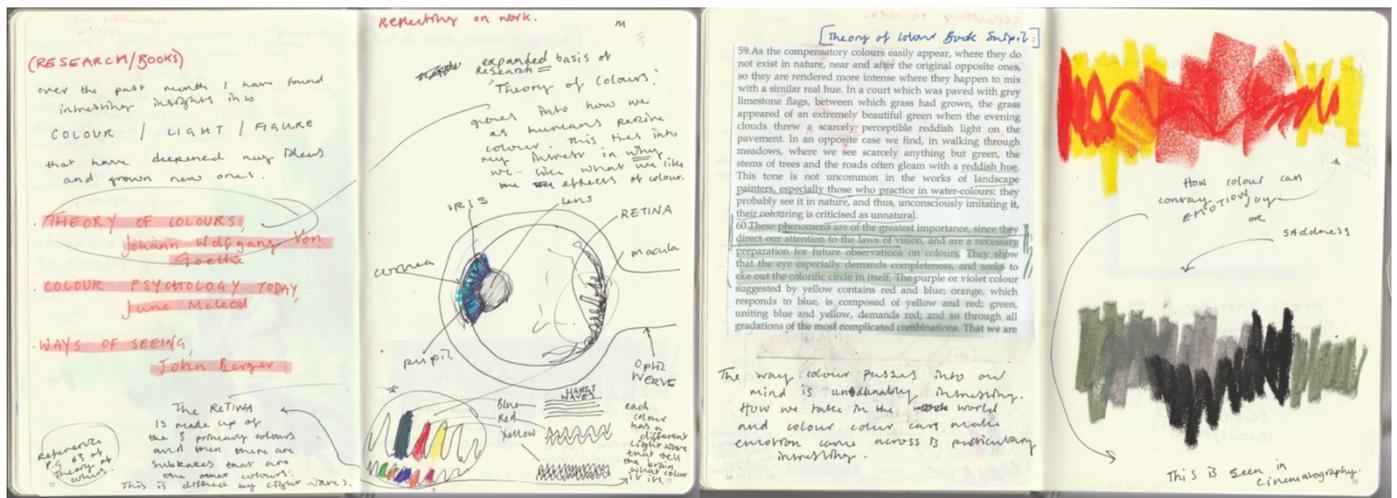
- Olafur Eliasson
- Josef Albers
- Helen Frankenthaler
- Mark Rothko
- Matt Bollinger

- Max Hattler
- Ben Rdgway
- Frank Bowling
- Helen Garrett
- Helio Oiticica
- Zach Lieberman
- Zaiba Jabbar
- Yayoi Kusama

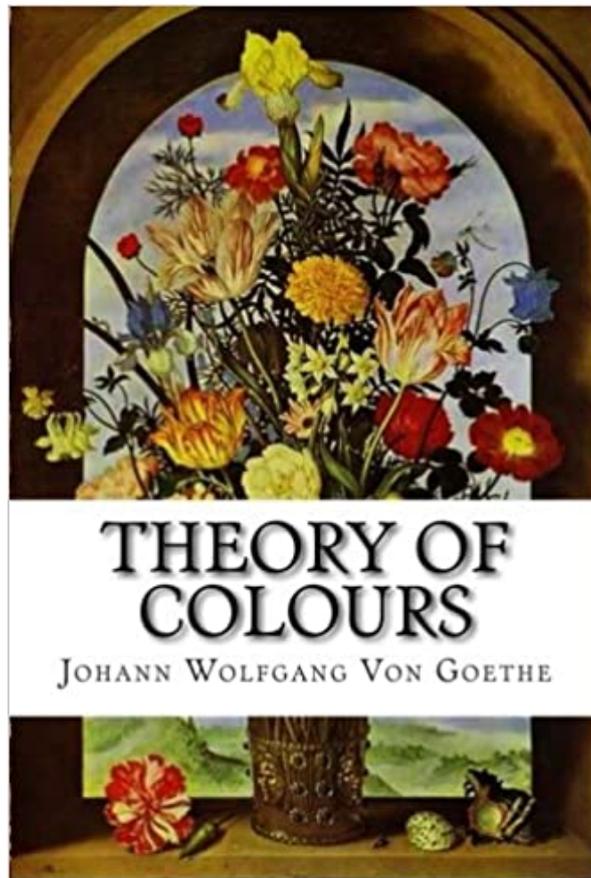
BOOKS

Theory of Colours, Johann Wolfgang Von Goethe (Book)

Theory of Colours has been a starting point and area of inspiration and ideas for my works. Particularly in how Goethe talks through concepts around how the human mind perceives colour, the effect of shadows, refraction, and chromatic aberration. The depth in his studies and experiments has made me experiment with new ways of using colour.



Sketchbook pages following ideas about perception from *Theory of Colours*



(Sections taken from my reading of the text which have notable interested.)

Theory of Colours

Johann Wolfgang Von Goethe

Introduction Reference p.g. 24-26

"In our prefatory observations we assumed the reader to be acquainted with what was known respecting light; here we assume the same with regard to the eye. We observed that all nature manifests itself by means of colours to the sense of sight. We now assert, extraordinary as it may in some degree appear, that the eye sees no form, inasmuch as light, shade, and colour together constitute that which to our vision distinguishes object from object, and the parts of an object from each other. From these three, light, shade, and colour, we construct the visible [Pg xxxix] world, and thus, at the same time, make painting possible, an art which has the power of producing on a flat surface a much more perfect visible world than the actual one can be...

That we may not, however, appear too anxious to shun such an explanation, we would restate what has been said as follows: colour is an elementary phenomenon in nature adapted to the sense of vision; a phenomenon which, like all others, exhibits itself by separation and contrast, by

commixture and union, by augmentation and neutralization, by communication and dissolution; under these general terms its nature may be best comprehended.

We do not press this mode of stating the subject on any one. Those who, like ourselves, find it convenient, will readily adopt it; but we have no desire to enter the lists hereafter in its defence. From time immemorial it has been dangerous to treat of colour; so much so, that [Pg xli] one of our predecessors ventured on a certain occasion to say, "The ox becomes furious if a red cloth is shown to him; but the philosopher, who speaks of colour only in a general way, begins to rave."

*Nevertheless, if we are to proceed to give some account of our work, to which we have appealed, we must begin by explaining how we have classed **the different conditions under which colour is produced**. We found **three modes** in which it appears; three classes of colours, or rather three exhibitions of them all. The distinctions of these classes are easily expressed...*

The interested in this section of writing was in the way colour comes across differently to each individual. Moreover, making me think towards how moments in day to day life could come across to each individual and how I could potentially capture that within my work. Goethe then goes on to talk about the different ways colour is perceived.

*"Thus, in the first instance, we considered colours, as far as they may be said **to belong to the eye itself**, and to depend on an action and re-action of the organ; next, they attracted our attention as perceived in, or by means of, colourless mediums; and lastly, where we could consider them as belonging to particular substances. **We have denominated the first, physiological, the second, physical, the third, chemical colours.** The first are fleeting and not to be arrested; the next are passing, but still for a while enduring; the last may be made permanent for any length of time."*

Reference p.g. 31 - 39

PART 1. PHYSIOLOGICAL COLOURS.

"EFFECTS OF LIGHT AND DARKNESS ON THE EYE.

5.

*The **retina**, after being acted upon by light or darkness, is found to be in **two** different states, which are entirely opposed to each other.*

6.

If we keep the eyes open in a totally dark place, a certain sense of privation is experienced. The organ is abandoned to itself; it retires into itself. That stimulating and grateful contact is wanting by means of which it is connected with the external world, and becomes part of a whole.

[Pg 3]

7.

If we look on a white, strongly illumined surface, the eye is dazzled, and for a time is incapable of distinguishing objects moderately lighted.

8.

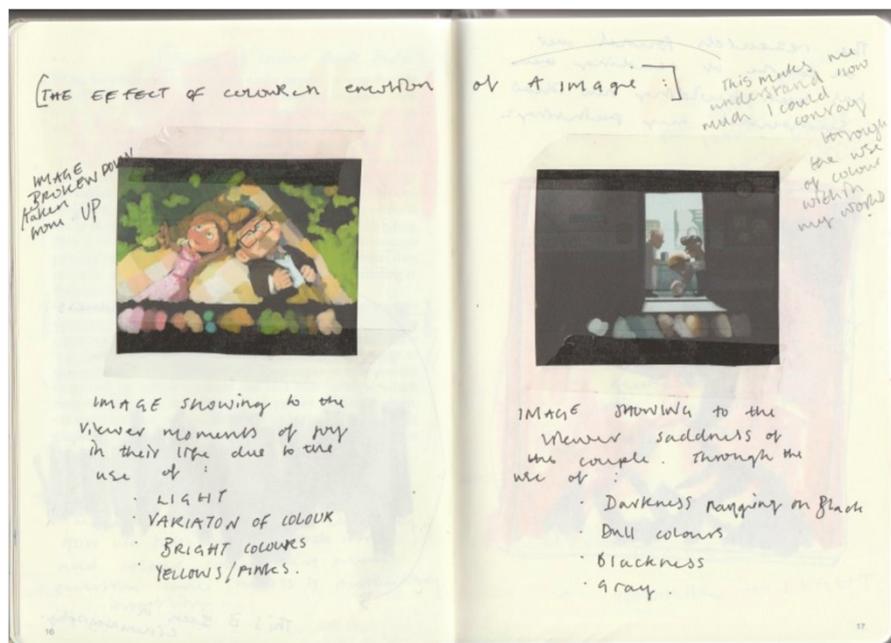
The whole of the retina is acted on in each of these extreme states, and thus we can only experience one of these effects at a time. In the one case (6) we found the organ in the utmost relaxation and susceptibility; in the other (7) in an overstrained state, and scarcely susceptible at all.

9.

If we pass suddenly from the one state to the other, even without supposing these to be the extremes, but only, perhaps, a change from bright to dusky, the difference is remarkable, and we find that the effects last for some time.

10.

In passing from bright daylight to a dusky place we distinguish nothing at first: by degrees the eye recovers its susceptibility; strong eyes sooner than weak ones; the former in a minute, while the latter may require seven or eight minutes.



Sketchbook pages looking into and understanding effects of colour on an image

11.

The fact that the eye is not susceptible to faint [Pg 4] impressions of light, if we pass from light to comparative darkness, has led to curious mistakes in scientific observations. Thus an observer, whose eyes required some time to recover their tone, was long under the impression that rotten wood did not emit light at noon-day, even in a dark room. The fact was, he did not see the faint light, because he was in the habit of passing from bright sunshine to the dark room, and only subsequently remained so long there that the eye had time to recover itself.

The same may have happened to Doctor Wall, who, in the daytime, even in a dark room, could hardly perceive the electric light of amber."

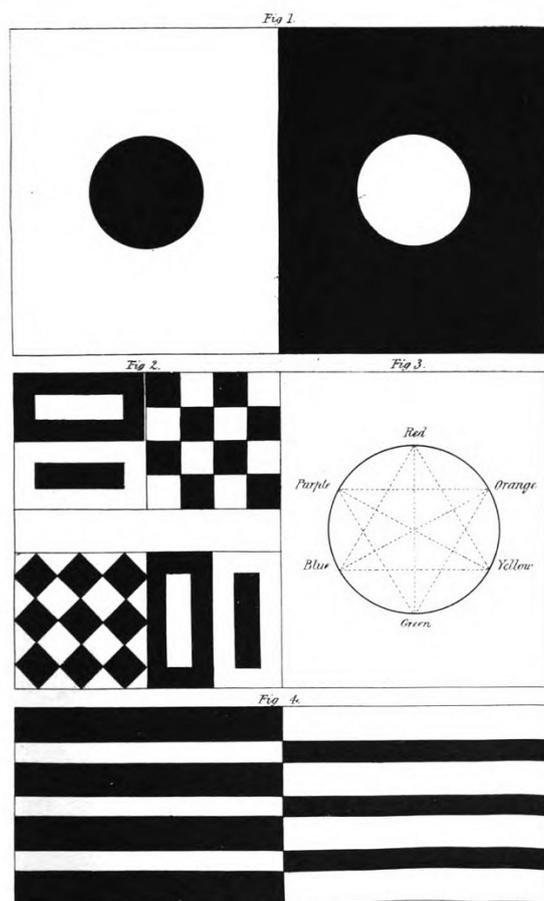
Though this is a very biological breakdown of how we perceive colour in the human mind, the way light can create different human sensations is really interesting and something to consider when creating a work. Making me ask the question – how / could I draw some of this knowledge into a work to almost communicate with the way the retina is working?

"EFFECTS OF BLACK AND WHITE OBJECTS ON THE EYE.

15.

In the same manner as the retina generally is affected by brightness and darkness, so it is affected by single bright or dark objects. If light and dark produce different results on the whole retina, so black and white objects seen at the same time produce the same states together which light and dark occasioned in succession.

A dark object appears smaller than a bright one of the same size. Let a white disk be placed on a black ground, and a black disk on a white ground, both being exactly similar in size; let them be seen together at some distance, and we shall pronounce the last to be about a fifth part smaller than the other. If the black circle be made larger by so much, they will appear equal.



Thus Tycho de Brahe remarked that the moon in conjunction (the darker state) appears about a fifth part smaller than when in opposition (the bright full state). The first crescent appears to belong to a larger disk than the remaining dark portion, which can sometimes be distinguished at the period of the new moon. Black dresses make people appear smaller than light ones. Lights seen behind an edge make an apparent notch in it. A ruler, behind which the flame of a light just appears, seems to us indented. The rising or setting sun appears to make a notch in the horizon ...

Perhaps the peculiarly grateful sensation which we experience in looking at the skilfully treated *chiaro-scuro* of colourless pictures and similar works of art arises chiefly from the simultaneous impression of a whole, which by the organ itself is sought, rather than arrived at, in succession, and which, whatever may be the result, can never be arrested. ...

A grey object on a black ground appears much brighter than the same object on a white ground. If both comparisons are seen together the spectator can hardly persuade himself that the two greys are identical. We believe this again to be a proof of the great excitability of the retina, and of the silent resistance which every vital principle is forced to exhibit when any definite or immutable state is presented to it. Thus inspiration already presupposes expiration; thus every systole its diastole. It is the universal formula of life which manifests itself in this as in all other cases. When darkness is presented to the eye it demands brightness, and vice versâ: it shows its vital energy, its fitness to receive the impression of the object, precisely by spontaneously tending to an opposite state."

The conversation about in this section about the way darker objects can appear smaller than light ones, I think is a really interesting point with regard to how I use light and dark within the works. This also ties into Interaction of Colour by Josef Albers³, talking about the way different shapes and colours next to one another make the mind think differently of them.

³ Albers, J. (1963). Interaction of Colour. USA. Yale University.

Reference p.g. 42 - 46

"COLOURED OBJECTS.

47.

We have hitherto seen the physiological colours displayed in the after-vision of colourless bright objects, and also in the after-vision of general colourless brightness; we shall now find analogous appearances if a given colour be presented to the eye: in considering this, all that has been hitherto detailed must be present to our recollection.

48.

The impression of coloured objects remains in the eye like that of colourless ones, but in this case the energy of the retina, stimulated as it is to produce the opposite colour, will be more apparent.

49.

Let a small piece of bright-coloured paper or silk stuff be held before a moderately lighted white surface; let the observer look steadfastly [Pg 21] on the small coloured object, and let it be taken away after a time while his eyes remain unmoved; the spectrum of another colour will then be visible on the white plane. The coloured paper may be also left in its place while the eye is directed to another part of the white plane; the same spectrum will be visible there too, for it arises from an image which now belongs to the eye.

50.

In order at once to see what colour will be evoked by this contrast, the chromatic circle^[1] may be referred to. The colours are here arranged in a general way according to the natural order, and the arrangement will be found to be directly applicable in the present case; for the colours diametrically opposed to each other in this diagram are those which reciprocally evoke each other in the eye. Thus, yellow demands purple; orange, blue; red, green; and vice versâ: thus again all intermediate gradations reciprocally evoke each other; the simpler colour demanding the compound, and vice versâ.—Note C. ...

54. In looking directly at a flower the image is not produced, but it appears immediately as the direction of the eye is altered. Again, by looking sideways on the object, a double image is seen for a moment, for the spectrum then appears near and on the real object.

The twilight accounts for the eye being in a perfect state of repose, and thus very susceptible, and the colour of the poppy is sufficiently powerful in the summer twilight of the longest days to act with full effect and produce a compensatory image. I have no doubt these appearances might be reduced to experiment, and the same effect produced by pieces of coloured paper. Those who wish to take the most effectual means for observing the appearance in nature—suppose in a garden—should fix the eyes on the bright flowers selected for the purpose, and, immediately after, look on the gravel path. This will be seen studded with spots of the opposite colour. The experiment is practicable on a cloudy day, and even in the brightest sunshine, for the sun-light, by enhancing the brilliancy of the flower, renders it fit to produce the compensatory colour

sufficiently distinct to be perceptible even in a bright light. Thus, peonies produce beautiful green, marigolds vivid blue spectra.

56. We have hitherto seen the opposite colours producing each other successively on the retina: it now remains to show by experiment that the same effects can exist simultaneously. If a coloured object impinges on one part of the retina, the remaining portion at the same moment has a tendency to produce the compensatory colour. To pursue a former experiment, if we look on a yellow piece of paper placed on a white surface, the remaining part of the organ has already a tendency to produce a purple hue on the colourless surface: in this case the small portion of yellow is not powerful enough to produce [Pg 26] this appearance distinctly, but, if a white paper is placed on a yellow wall, we shall see the white tinged with a purple hue. ...

60. These phenomena are of the greatest importance, since they direct our attention to the laws of vision, and are a necessary preparation for future observations on colours. They show that the eye especially demands completeness, and seeks to eke out the colorific circle in itself. The purple or violet colour suggested by yellow contains red and blue; orange, which responds to blue, is composed of yellow and red; green, uniting blue and yellow, demands red; and so through all gradations of the most complicated combinations. That we are compelled in this case to assume three leading colours has been already remarked by other observers."

This section in the text I found particularly interesting as it showed different ways that the human brain takes in colour. Notable points were that the retina is actually making the colours appear in our minds, without which we wouldn't be able to see any colour. Moreover, making me consider how I could use all one colour and a singular tone which highlights. To explore on a simple level how the retina distinguishes between the different hues.

Reference p.g. 52 - 55

"FAINT LIGHTS.**81.**

Light, in its full force, appears purely white, and it gives this impression also in its highest degree of dazzling splendour. Light, which is not so powerful, can also, under various conditions, remain colourless. Several naturalists and mathematicians have endeavoured to measure its degrees—Lambert, Bouguer, Rumford.

82.

Yet an appearance of colour presently manifests itself in fainter lights, for in their relation to absolute light they resemble the coloured spectra of dazzling objects (39).

83.

A light of any kind becomes weaker, either when its own force, from whatever cause, is diminished, or when the eye is so circumstanced or placed, that it cannot be sufficiently impressed by the action of the light. Those appearances which may be called objective, come under the head of physical colours. We will only advert here to the transition from white to red heat in glowing iron. We may also observe[Pg 39] that the flames of lights at night appear redder in proportion to their distance from the eye.—Note F.

84.

Candle-light at night acts as yellow when seen near; we can perceive this by the effect it produces on other colours. At night a pale yellow is hardly to be distinguished from white; blue approaches to green, and rose-colour to orange.

85.

Candle-light at twilight acts powerfully as a yellow light: this is best proved by the purple blue shadows which, under these circumstances, are evoked by the eye.

86.

The retina may be so excited by a strong light that it cannot perceive fainter lights (11): if it perceive these they appear coloured: hence candle-light by day appears reddish, thus resembling, in its relation to fuller light, the spectrum of a dazzling object; nay, if at night we look long and intently on the flame of a light, it appears to increase in redness.

87.

There are faint lights which, notwithstanding their moderate lustre, give an impression of a[Pg 40] white, or, at the most, of a light yellow appearance on the retina; such as the moon in its full

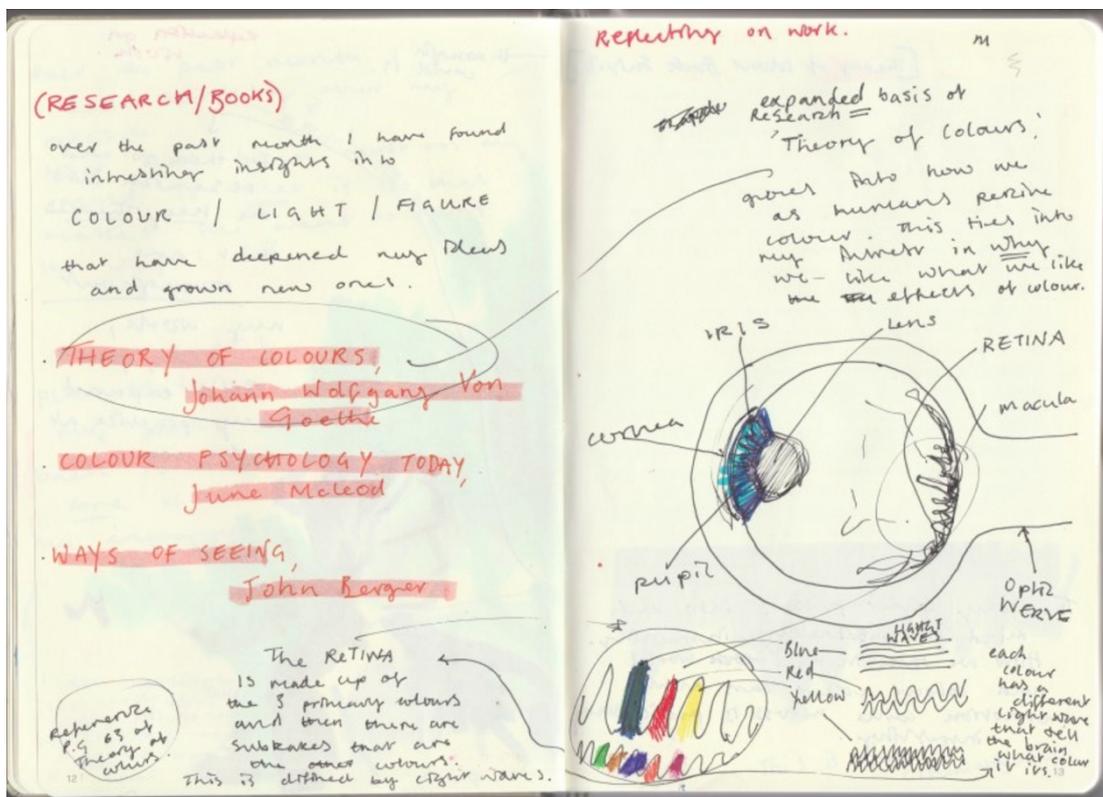
splendour. Rotten wood has even a kind of bluish light. All this will hereafter be the subject of further remarks.

88.

If at night we place a light near a white or greyish wall so that the surface be illumined from this central point to some extent, we find, on observing the spreading light at some distance, that the boundary of the illumined surface appears to be surrounded with a yellow circle, which on the outside tends to red-yellow. We thus observe that when light direct or reflected does not act in its full force, it gives an impression of yellow, of reddish, and lastly even of red. Here we find the transition to halos which we are accustomed to see in some mode or other round luminous points...

In conclusion we may, however, at once advert to some peculiar states or dispositions of the organ. There are painters who, instead of rendering the colours of nature, diffuse a general tone, a warm or cold hue, over the picture. In some, again, a predilection for certain colours displays itself; in others a want of feeling for harmony."

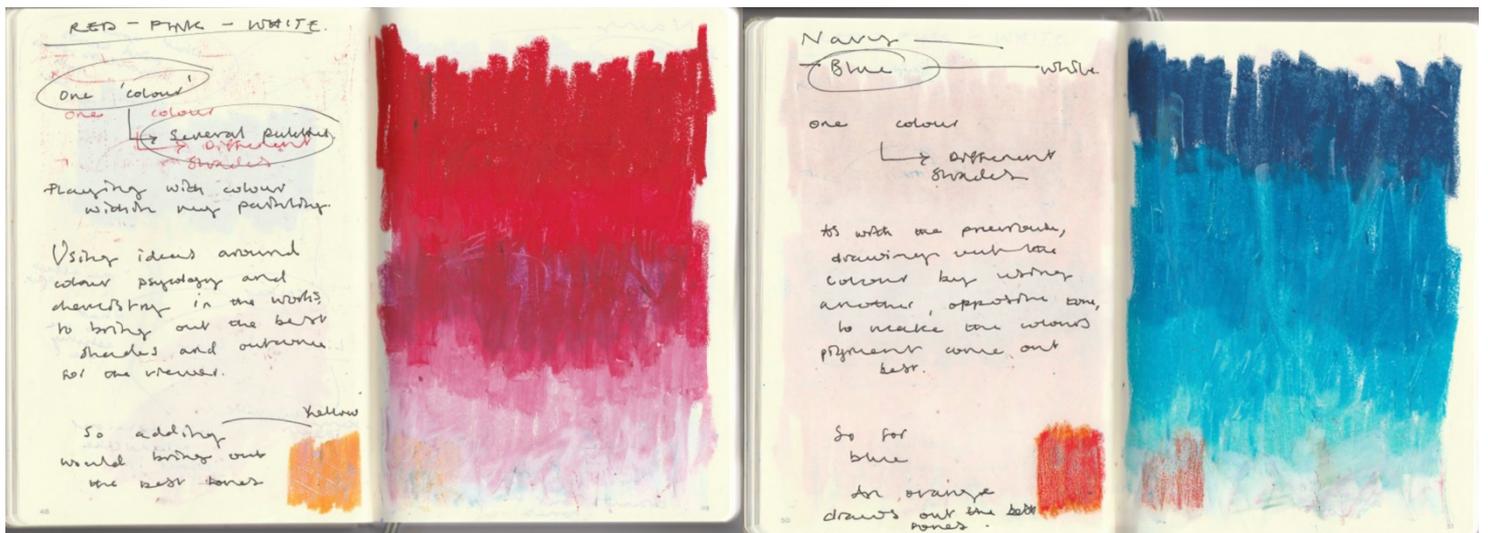
The conversation here about *faint lights* is really curious to me as within my works there is often a gradient that works out towards the edge. In this way understanding light is key to be able to explore the width of the capability of the paint and piece.



Sketchbook page looking into how we physically take in colour.

Interaction of Colour, Josef Albers. (Book)

Interaction of Colour has been the other key ready behind my concepts around colour in my work. Albers book shows the relationship between colours and how they change and alter depending on the circumstances. *Interaction of Colour* has not only build up a deeper knowledge of how to use colour but also made me look towards how to experiment with it. Moreover, making the work aim to be more thought-provoking and informed.



Sketchbook page looking into the relationship of different colours.



(Sections taken from my reading of the text which have notable interested.)

“In visual perception a color is almost never seen as it really is—as it physically is. This fact makes color the most relative medium in art” . —Josef Albers, 1965

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“Color is perhaps the most subtle and beguiling phenomena interpreted by our senses. Its variations can be profound or invisible—depending on our own biology, or on the culture in which our experience of color has been shaped. We use it both to describe our psychological state and to influence it. We cannot escape it, and yet we often are unaware of how the colors we experience play against, and interact with, one another.

The inspiration for this project, Josef Albers, was an artist of keen perception and a teacher of unique passion. His artistic output inspires a deep contemplation of the significance of color, not just in relation to the experience of art but to human experience itself. The interdisciplinary nature of Albers’ concern with visual perception is still surprising us, and a new generation of curators and academics—to which the editor of this volume belongs—is weighing anew his impact in ways that those closer to his own period might not have perceived fully.” – David E. Little⁴

⁴ Little, D. E. (2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.

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The physio-psychological phenomenon of the so-called after-image is the reason why we don't see neighboring colors as what they actually are, that is, physically. In our perception, juxtaposed colors change each other in two ways, on the one hand in regard to light, on the other in relation to hue. As there is nothing large or small in itself but only in relationship, so any color appears lighter or darker and brighter or duller in connection with other colors.... This interaction permits the knowing colorist to make opaque color look transparent, heavy ones turn light, colorless neutrals become colorful, warm ones seem cool, and vice versa. It makes [it] possible to make equal colors look different, and different ones look alike, that even defined shapes as well as

Among the many color exercises in his book is one named "Intersecting Colors," which inspired the title for this exhibition.⁴ In it Albers tells the reader to place a light, medium, and dark shade of red paper next to one another, so that they color areas vanish from our sight.⁵

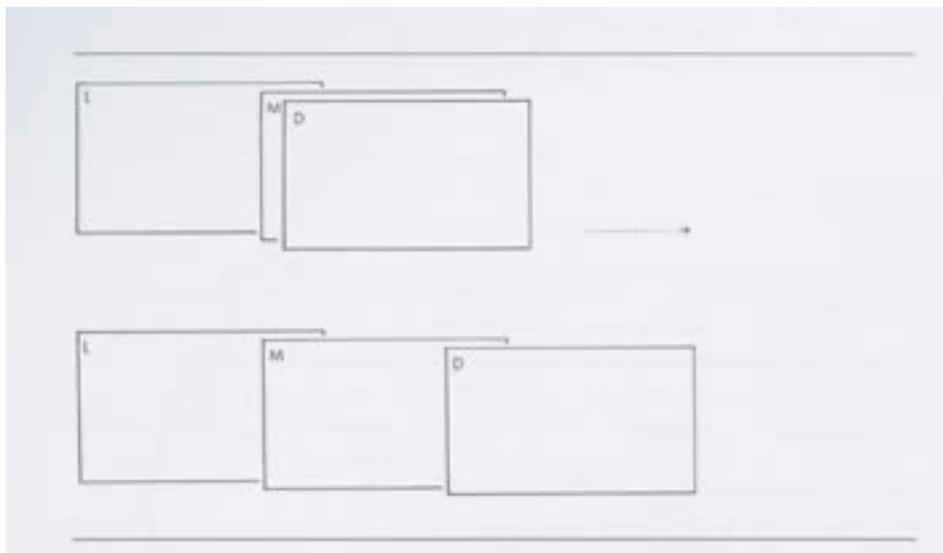


Figure Above ⁶

Among the many colour exercises in his book is one named "Intersecting Colors," which inspired the title for this exhibition. In it Albers tells the reader to place a light, medium, and dark shade of red paper next to one another, so that they

partly overlap (fig. 5). He then instructs the reader to move the darkest sheet of paper toward the right, so that it slowly reveals more of the medium-red paper in the middle. If one looks closely at the middle red during this process, an optical illusion will occur; the medium-red paper will appear to become lighter in hue on one edge and darker on the other, seemingly

⁵ Hubel and Wiesel, "Receptive Fields of Single Neurons"; Hubel and Wiesel, "Receptive Fields, Binocular Interaction and Functional Architecture"; Hubel, Eye, Brain, and Vision.

⁶ "Intersecting Colors" diagram from Josef Albers, *Interaction of Color* (New Haven: Yale University Press, 1963). Image courtesy the Josef and Anni Albers Foundation/Yale University Press.

taking on the properties of its neighbouring colours. While common sense tells us that the paper could not have changed colour, **our brain seems to indicate otherwise.**

I think its really interesting how the book talks about the connection to the human brain and to how we perceive. This links into what too what Goethe talks about in theory of Colours. The way both text talk about the perception of the human brain I think I really interesting area to draw on in the future works.

"It is not a coincidence that Albers' concern with the deceptiveness of visual perception developed during a momentous period in vision science. During his lifetime great advances were made in improving our knowledge of how the brain interprets the information it receives from the eye. The American physiologist Ida Henrietta Hyde (1857–1945) invented the microelectrode in the 1930s, enabling scientists to record the activity of single cells in the brain. Advancements in neuroanatomy then made it possible to understand how these cells are interconnected." - Vanja Malloy⁷

(The connection between Josef Albers and Goethe expanded)

Influence of Goethe in Interaction of Colour

"Weimar was Goethe's adopted hometown. He moved there at age twenty-six in 1775 and remained a prominent resident until his death in 1832. Goethe's spirit must have permeated the very air of the early Bauhaus, which opened in Weimar in 1919, nearly a century after the great writer's death. Walking daily to the former Royal Reithaus in the park on the River Ilm where he gave his preliminary design course, or Vorkurs, from 1923 to 1925, Albers would have passed Goethe's picturesque garden house, already by 1886 a public memorial site and shrine for the writer's admirers. Goethe's writings on color were central to the teaching of Klee, who was the Formmeister in the weaving workshop that Anni Albers joined in 1923 and whose work and ideas were greatly admired by both Anni and Josef Albers.¹⁰ In a 1973 letter to Rudolf Arnheim, Albers wrote, "my reading of Goethe's Theory of Colors goes back to a far-distant past, probably to a time before I joined the Bauhaus in 1920 when I was 32 years old..."

Goethe's poetic imagination permeated Albers's teaching, especially the color course. Goethe's research in physical science never lost sight of the intimate relationship between the human being and the objects of scientific curiosity— whether physical phenomena like light or biological ones like the plants that populated his environment. Albers's insistence on the primacy of the relationships operating within a framework of known facts took its cue from Goethe, whose "course as a scientist took him not only on a search for data, but also on an active and imaginative quest for relationships in man and in nature."

⁷ Malloy, V. (2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.

In his preface to Die Farbenlehre of 1810, translated into English as "Theory of Color," Goethe suggested a highly nuanced notion of "theory," writing that "any theoretical endeavor should do no more than outline the paths along which a deed may wander with the touch of life until it bears fruit in keeping with the laws of nature." 13 Albers' s writings on color are frequently referred to, similarly, as color "theory," but Albers himself was careful to avoid that label. He always insisted that practice came before theory and that he was teaching a philosophy and a way of seeing and not a theory; we should note that Albers titled his own work Interaction of Color."

The part of Goethe' s long and detailed treatise most relevant to Albers' s enterprise is the section "Physiological Colors" at the beginning of part 1:

"It is appropriate to start with a study of physiological colors because they are wholly, or largely, a property of the observer, of the eye. These colors are the basis for our entire theory..."

*We have called them physiological colors because they are the property of the healthy eye. We consider them innate conditions for sight, evidence of the living interaction between its inner nature and the outer world."*⁸

Colour, according to Goethe' s formulation, is "a property of the observer," whose colour perceptions are "fleeting." For Albers, the important distinction was between "ocular seeing," the neurobiological processes of sight, and "vision," which, coupled with imagination, is a transformative process. In an undated written statement explaining the use of colour in his own work, Albers gave an extended explanation of what Goethe had named "physiological colours" :

"The physio-psychological phenomenon of the so-called after-image is the reason why we don' t see neighboring colors as what they actually are, that is, physically.

In our perception, juxtaposed colors, change each other in two ways, on the one hand in regard to light, on the other in relation to hue.

As there is nothing large or small in itself but only in relationship, so any color appears lighter or darker and brighter or duller in connection with other colors. That is, a light color makes any less light one darker or heavier than it really is, and vice versa. As to hue, a strong red, for instance, pushes its neighbors towards green, its opposite hue.

This effect can be understood in two ways. First as it is done usually, in an additive direction as any outspoken hue adds its complementary hue to its neighbor. But it is just as important to see this as a subtractive influence in absorbing from its neighbor its own hue, or light.

⁸ Goethe, J.W.V. (1810). *Theory of Colours*. USA. John Murray.

This interaction of colors exists in all color combinations to a larger or smaller degree, but is in most cases unrecognizable even for trained eyes.

This interaction permits the knowing colorist to make opaque colors look transparent, heavy ones turn light, colorless neutrals become colorful, warm ones seem cool, and vice versa. It makes [it] possible to make equal colors look different, and different ones look alike, that even defined shapes as well as color areas vanish from our sight.

Though there are other factors which change the psychic effect of colors, as placement and shape, quantity and recurrence, in my paintings, "Homage to the Square," the interaction of color caused by juxtaposition was one of my main concerns.⁹

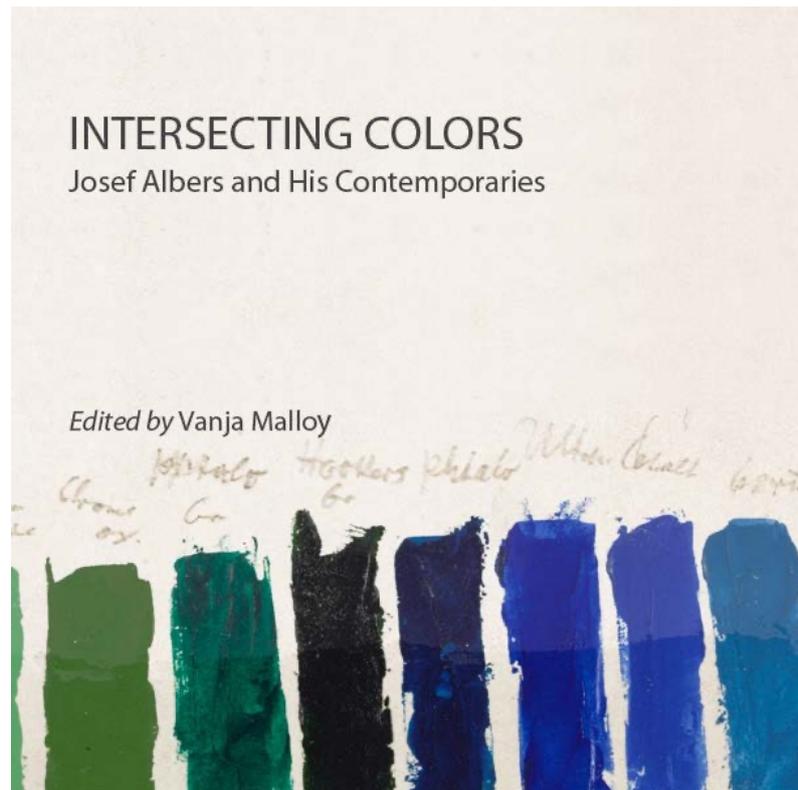
In the introduction to *Interaction of Color*, moreover, Albers includes a firm statement about the difference between factual "knowledge" and artistic "vision" :

The book does not begin with optics and physiology of visual perception, nor with any presentation of the physics of light and wave length... What counts here—first and last—is not so-called knowledge of so-called facts, but vision—seeing. Seeing here implies Schauen (as in Weltanschauung) and is coupled with fantasy, with imagination."¹⁰

I think the connection between the two books is really interesting to note. The way both talk about perception, vision and effects of different colours together I find really insightful. This moreover develops my understanding for how I could use colour with the works I make to best come across to the viewer.

⁹ Albers, J. (1963). *Interaction of Colour*. USA. Yale University.

¹⁰ Malloy, V. (2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.



(Sections taken from my reading of the text which have notable interested.)

This text¹¹ as reference above has been really interesting in bring together different areas of research into one. There is also a lot the perception of colour and the relationships between them which build on both Albers and Goethes ideas.

Explaining Color in **Two** 1963 Publications

Sarah Lowengard

Introduction

*“...Advocates for the extreme form of this dichotomy may point to the historical opposition between the mathematical explanations of color offered by Sir Isaac Newton (1643–1727) and published as *Opticks* in 1704, versus those of romantic philosopher Johann Wolfgang von Goethe (1749–1832) in his multi-volume *Farbenlehre* (*Theory of Colors*, which appeared between 1791 and 1807). Indeed, Goethe’s insistence on the irrelevance of Newtonian mathematics to what he considered a useful or worldly understanding of color has sometimes served as a marker of antiscientific approaches to the expansion of knowledge.*”

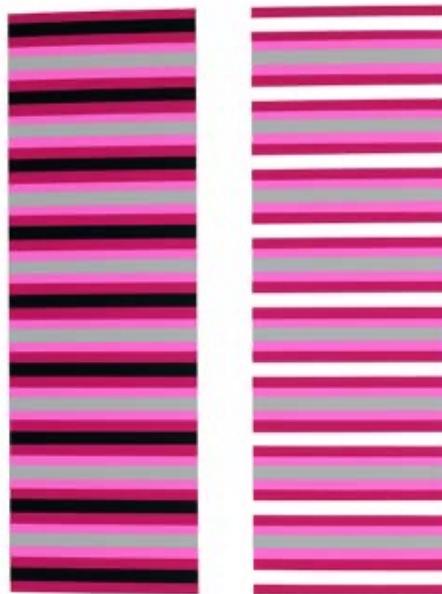
¹¹ Malloy, V. (2015). *Interacting Colour, Josef Albers and his Contemporizes*. The Amherst College Press.

What about the study of color, however? Color is an unavoidable phenomenon in both worlds. In science as in art, it defines and differentiates; it secures meanings and significances. Color is complicated to produce and reproduce but familiar to specialists and nonspecialists alike. Its long and tangled history is not controlled by either sciences or arts. Artistic descriptions must engage, at least on some level, with the quantified thought associated with scientific understanding. Any scientific uses of color must acknowledge the constraints involved in the interpretation of color information.

*In this essay I examine some mid-twentieth century conflicts and connections between the worlds of art and science through a consideration of two approaches to teaching and learning about color. The monumental *Interaction of Color* (1963) by the artist Josef Albers is a systematic and nonacademic tool designed to guide art students in the use of color.*

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In the review, Hanes also objects to Albers' statement about the relativity of color, claiming that "this approach can lead only to a poor understanding of the phenomenon" that scientists call color adjacency (visual variability owing to placement). Hanes complained about Albers' general reliance on analogy (it looks like this, rather than it is this) to support his statements, calling this a form of argument that does little to advance general knowledge about the phenomena of color.²⁴



"Optical Mixture—The Bezold Effect." Josef Albers, *Interaction of Color*

Hanes' position reflected significant differences between science and art in both expectations and approach. Analogy was in fact a basis of Albers' teaching method; for him, such connections between personal experience and the larger world were a useful pedagogical approach.²⁵ Yet for exactly this reason—reliance on the unquantifiably personal—explanation by analogy has no place in the modern, nonspeculative physical sciences. To Hanes—and

probably to many readers of the ISCC Newsletter—teaching such misconceptions as those found in *Interaction of Color* would not lead to discovery, flexible imagination, or invention. While the publication, Hanes acknowledges, might represent a monument to the career of the author, its instructional value for those students interested in color was less certain. Perhaps more important, Hanes did not judge it to be a scientifically dynamic work.

Before the review was published, either Hanes himself, or perhaps the editors of the ISCC Newsletter, requested further comments from Deane B. Judd (1900–1972; no relation to Donald Judd), an acclaimed and versatile color expert. Judd's comments were published in the same issue. Throughout his professional life Judd, a physicist by training, wrote extensively about color vision and the industrial applications of color science. In 1963 he was chairperson of the ISCC Problems Committee as well as chairperson of its subcommittee on color nomenclature. He was also known to have a broad familiarity with historical explanations of color perception and nonempirical explanation of color phenomena." - Sarah Lowengard¹²

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"Like Hanes, Judd highlights confusions and errors in Albers' s book, including what Hanes had called "a fundamental difference between a technical and a non-technical approach." 26 He focuses particularly on Albers' s section about the Weber–Fechner Law, which explains that the strength of a visual sensation (i.e., perception) varies logarithmically as the strength of the stimulus increases in intensity—a number-based description of a visual phenomenon well known to artists. For the purpose of his inquiry, Albers, in *Interaction of Color*, interprets the underlying question as: "What is necessary to produce a visually even progression in mixture?" To derive the answer, Albers instructs the student to build up two rectangles from layers of a single color ink or transparent colored paper, gradually decreasing the portion overlaid with new color. One sample should rely on an arithmetic (1-2-3-4) increase in the number of layers applied, the other on a geometric (1-2-4-8) increase (fig. 11). In the first, arithmetic example (on the left), Albers explains, the layers of color added will appear to have decreased, as there is little visual difference between the two deeper shades at the bottom of that column. In the right-hand, geometrically calculated image, the colors appear to maintain an even separation throughout.

Without specifically remarking on the analogic basis of Albers' s presentation, Judd makes clear that he finds both the explanation and examples problematic ..

¹² Lowengard, S. (2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.



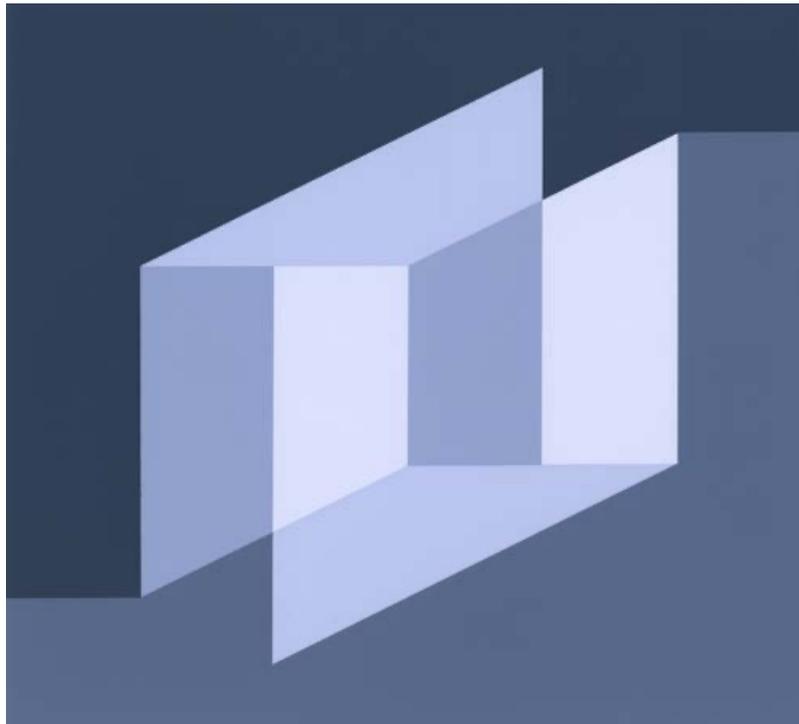
“The Weber-Fechner Law.” Josef Albers, *Interaction of Color*, Plate XX-1.

Albers’ s experimental study is not related to the Weber–Fechner law, Judd emphasizes, because he describes a progression taking place in light absorption when, in fact, the law refers to progression in luminance (brightness). While Albers correctly notes that the color scale in the image on the left is perceived as having smaller gradations between the colors of the darker end and those of the lighter end, Judd insists that this is not an example of the law he references. The Weber–Fechner law offers no guidance about the behavior of ordinary grounds such as dyes or pigments; the law concerns light alone, and Judd adds that Albers “is as ignorant” of the studies of gray scales made since Fechner’ s time “as he is of the meaning of the Weber–Fechner law that he cites.” Judd also points to other statements made by Albers which, if not exactly wrong as descriptions of visual impressions, lack the technical basis to qualify as valuable, scientifically based description.¹³” - Sarah Lowengard

The text, *Interaction of Colour, Josef Albers and his Contemporaries*¹⁴, is always interesting to show an alternative academic standpoint towards Albers observations.

¹³ Lowengard, S. (2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.

¹⁴ Malloy, V. (2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.



(Sections taken from my reading of the text which have notable interested.)

Juxtapositions and Constellations: Albers and Op Art¹⁵

Jeffrey Saletnik

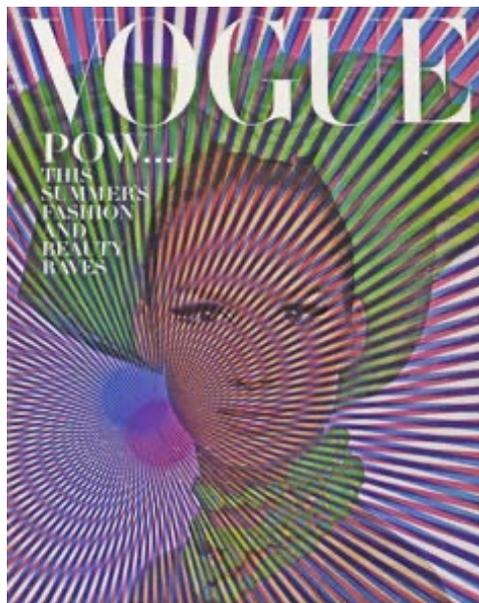
This section talks in depth about the selected forms by Josef Albers and the nature they have together. When thinking about my work, I have developed a particular way I like the works to come together, and more so now am I see the really benefit to which forms I chose to select. So, this chapter I found really usefully when thinking more about the relationship different lines/forms/marks have with one another.

"In the mid-1960s, the positioning of a painter' s work in relation to the rapidly changing understanding of the artist-object-viewer nexus would prove crucial as discursive trends developed. The terms of this discourse were elaborated in a number of important exhibitions. Along with Clement Greenberg' s 1964 exhibition "Post Painterly Abstraction" at the Los Angeles County Museum of Art, and Lawrence Alloway' s "Systemic Painting" exhibition at the Guggenheim Museum in 1966, "The Responsive Eye," held at the Museum of Modern Art in 1965, helped establish the stakes of abstract painting in the wake of Abstract Expressionism and in opposition to pop art. Although there was significant overlap among artists included in these exhibitions (Ellsworth Kelly, Thomas Downing, Kenneth Noland, and Frank Stella were shown in each), the critical frameworks in which the respective exhibitions operated differed significantly.

¹⁵ Saletnik.J.(2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.

Seitz, who curated “The Responsive Eye” and objected to the term “op art,” cast the objects included in the exhibition as devices that affect viewer perception and thereby viewer psychology. Their historical significance was measured by their relation to a tradition of art-making informed by physiological and psychological understandings of perception developed since the late nineteenth century, yet the exhibited works also engaged issues relevant to contemporary aesthetics. In Seitz’s view, the lack of personal marks on the surfaces of the works, as well as the materials out of which many were made, constituted a visual economy that drew attention away from artistic subjectivity and/or the objects’ form, and toward the perceptual—and psychophysical—response of the viewers: some found the show literally nauseating.

This ran counter to Greenberg’s assertion that work from some of the very same artists indicated an evolution from Painterly Abstraction (which, to Greenberg, had become an aesthetic habit by the 1960s) to Post Painterly Abstraction—work that favored “openness of design,” “linear clarity,” and “contrasts of pure hue.” These recent formal trends constituted a style in keeping with the modernist ontology of painting as hermetic and bound to the essential flatness of the painting surface.¹¹ They also emphasized opticality as the primary condition of painting. Whereas Seitz prioritized viewer response and Greenberg pointed out how aspects of recent work corresponded to the integral nature of painting, Alloway was interested in the artist as conceiver of the “syntax” for his or her painting. In the essay that accompanied his “Systemic Painting” exhibition, Alloway stressed that one ought to attend to the organization of a painting as the result of an artist’s human effort—its system, which could “occur off the canvas”—and thereby view it as both a personal and a “factual display” rather than merely as a work that exists in service of aesthetic ideals.”

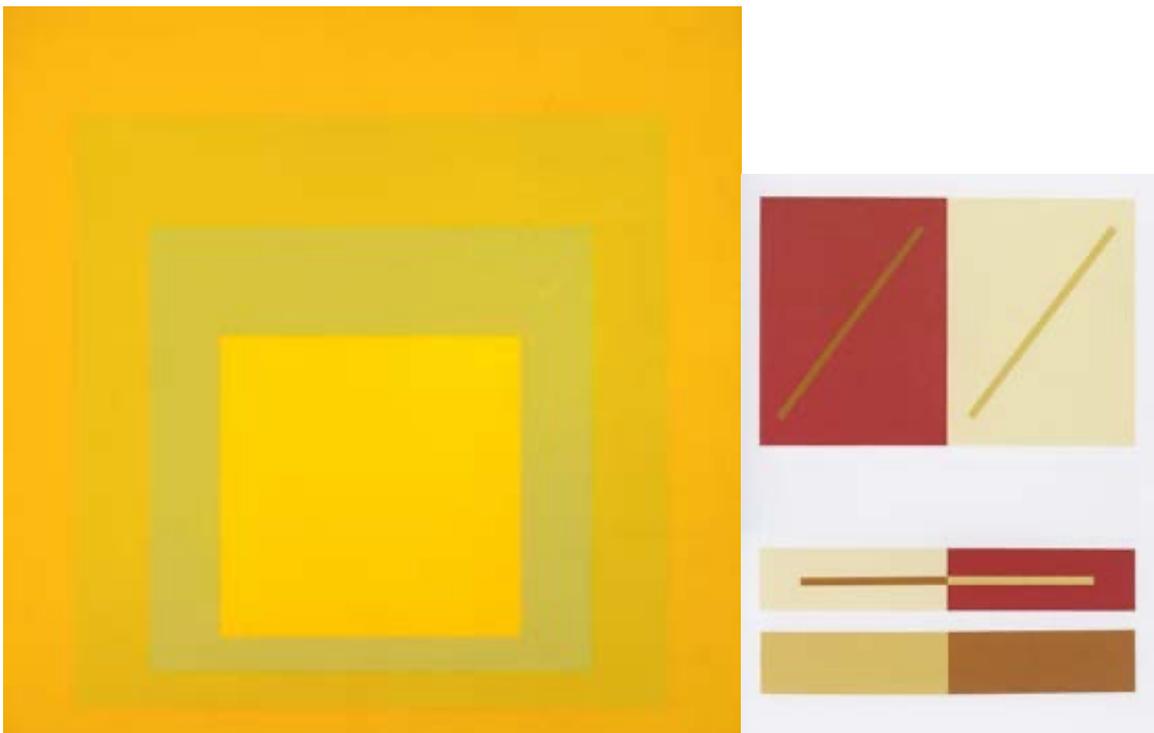


Cover, *Vogue* (U.S.), June 1965. Montage with photograph by Irene Penn and serigraph construction by Gerald Oster.¹⁶

¹⁶ Saletnik, J. (2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.

"In 1971 Josef Albers wrote to the philosopher and art historian Cyril Barrett in response to the publication of Barrett's book *Op Art*, a 191-page critical survey of the optical effects employed by artists associated with the genre. "Seeing again, how unimportant you have treated me [sic] in your 'Op Art,' " he wrote, "particularly in chapters 7 and 8, I feel obliged to send you enclosed an article of the Oct. 15 issue of 'Vogue' magazine...." 2 Barrett's almost complete omission of Albers from the chapters titled "Principal figures in the European movement" and "British and American Op" represented, to Albers, yet another tacit dismissal of his work: hence his need to point out the author's seeming oversight."

"Despite being met with disapproval by most art critics, op art's prominence confirmed the currency of Albers's unyielding belief that art existed in a state of tension between "physical fact and psychic effect." It also encouraged his long-held interest in Gestalt psychology (explored in Karen Koehler's contribution to this volume) and Rudolf Arnheim, and his desire that those viewing his canvases regard the activity of seeing as itself a creative act. For Albers, op art—or his preferred descriptor, "perceptual art"—brought the dynamic functioning of the medium of color to the fore of discourse on painting. Indeed, the demonstration of color's relativity had been a central tenet of his painting practice and color instruction, which was published as *Interaction of Color* in 1963.

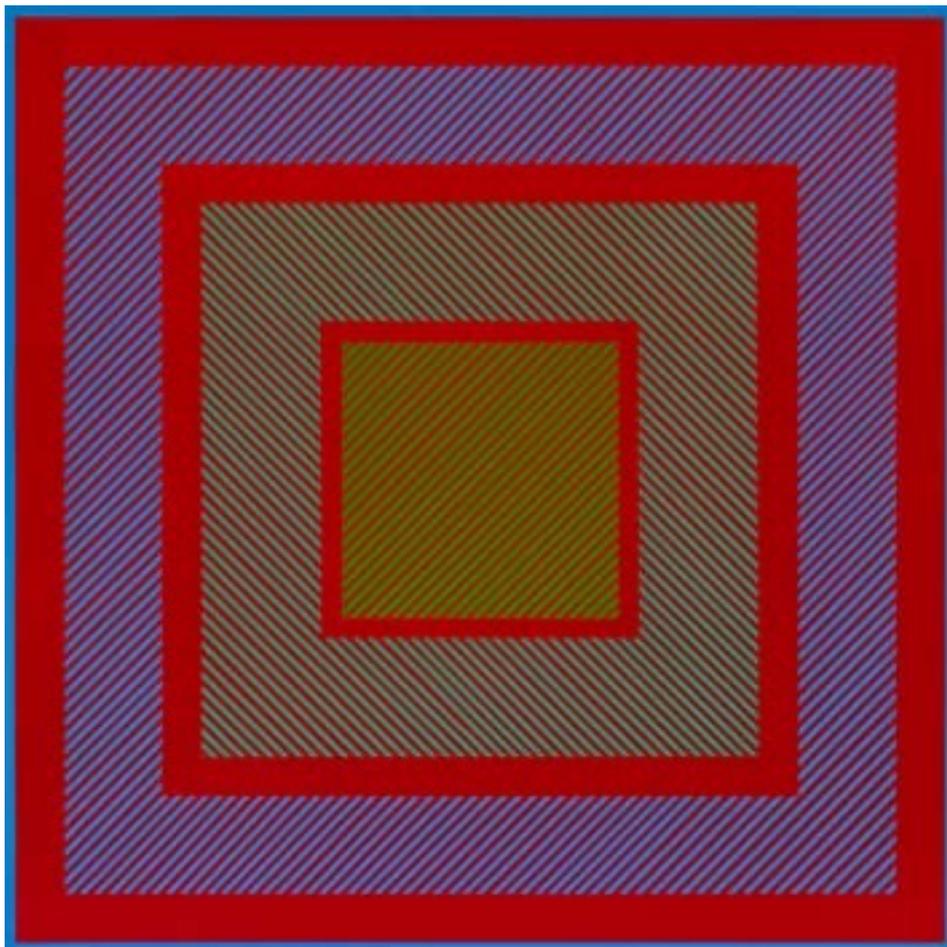


Josef Albers, *Homage to the Square: Wondering*, 1964. Oil on Masonite, 48 x 48 in. (121.9 x 121.9 cm).

One can see, for example, how color dynamics are essential to his *Homage to the Square: Wondering* (fig), which was shown in "The Responsive Eye." Upon prolonged viewing it becomes apparent how the four nested squares of unmixed color are held in visual tension with one another. The deep cadmium yellow along the outer edge of the painting and the innermost light cadmium yellow square remain stable, holding the interstitial deep and light

Naples yellow squares in place as they register degrees of chartreuse in competition with one another to assert chromatic dominance.

Of course, the pigments that Albers Juxtapositions and Constellations: Josef Albers and Op Art applied to the surface directly from the manufacturer's tubes are materially fixed; that they appear to shift hues despite our knowing this detail is the point, insofar as Albers draws our attention to the picture plane as an unresolvable situation. The crafting of such images was key to the color studies he asked students to complete.



Richard J. Anuszkiewicz, The Sounding of the Bell, 1964. Polymer on Masonite, 48 x 48 in. (121.9 x 121.9 cm). Yale University Art Gallery (1964.16).

For example, Plate VII-5b from Interaction of Color (fig. 25) shows how the ground upon which a color is placed can radically affect the way in which it is perceived. In the uppermost pair of rectangles, the diagonal stripes (from left to right) are ochre and Naples yellow, but they appear to be nearly the same hue when placed, respectively, upon deep red and off-white grounds. (The "factual" colors are indicated in the lowermost rectangles on the page.) By

exchanging the ground colors the image draws attention to the relativity of color perception, bringing the stripes closer to, yet still not in perfect consonance with, their "factual" hues." ¹⁷

"Irwin's *Excursus: Homage to the Square*"¹⁸ (fig. below) made this explicit. The installation, according to Irwin, "approach[ed] color as a kind of infinite possibility, as Albers did," yet in lived space. For the first showing of the work, originally conceived for the Dia Center for the Arts exhibition space in New York City (now named Dia:Chelsea), Irwin used a floor-to-ceiling translucent scrim to divide one floor of the building into a double-walled grid of eighteen interconnected rooms of equal size. He mounted two vertical fluorescent light fixtures at the midpoint of walls throughout the space, covering the midsections of these fixtures with differently colored theatrical gels. As one wandered from room to room, the delicate mixture of colored light shifted subtly, while the silhouettes of bodies elsewhere in the installation registered with varying degrees of clarity through layers of scrim and light, all of which made the viewer aware of him- or herself as but one of several shadowy forms moving in space. Thus, in unbinding his thinking from problems of painting and the making of discrete objects—as Albers, his critics, and Anuszkiewicz seemed unable to do—Irwin brought the lessons of Albers' perceptual practice to light.¹⁹



Irwin's *Excursus: Homage to the Square* Installation

This section in the text, *Interacting Colour, Josef Albers and his Contemporaries*²⁰, I feel really unpacks and shows how, when done correctly the balance and conversation between colour and form can have. I find it insightful and interesting to see the way the

¹⁷ Saletnik.J.(2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.

¹⁸ Irwin's painting *Untitled* (1963) was included in the exhibition. Larry Bell also was included in the show, exhibiting *Glass Sculpture Number 10* (1964)

¹⁹ Saletnik.J.(2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.

²⁰ Malloy, V. (2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.

both Saletnik and Ablers talk about this relationship. The question is now how that can be seen through the works.



Josef Albers, Color study (Homage to the Square/White Line Square), n.d. Oil on blotting paper, 13 1/8 x 4 13/16 in. (33.3 x 12.2 cm). The Josef and Anni Albers Foundation (1976.2.1394).

(Sections taken from my reading of the text which have notable interested.)

Josef Albers and the Science of Seeing²¹

Susan R. Barry

*In 1972, when Josef Albers was in his eighties, he published *Formulation : Articulation*, a set of two boxed portfolios of silkscreen prints. With these pieces, Albers continued his lifelong exploration of the basic elements that make up an image—line, contour, lightness, and color. He aimed for simplicity, discipline, and efficiency, and wrote,*

*In my own work
I am content to compete
with myself*

²¹Barry, S.R. (2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.

*and to search with simple palette
and with simple color for manifold instrumentation.*

At the time Josef Albers composed Formulation : Articulation, scientists were using microelectrodes to eavesdrop on the behavior of individual neurons in the visual brain. In a striking confluence of science and art, they discovered that neurons early on in the visual pathway attend specifically to the very same elements—line, contour, lightness, and color—that had preoccupied Albers for more than forty years.

Lines and Contours

Consider, for example, Albers' s lyrical abstract work In the Water (fig. below). Although In the Water contains only straight lines, the viewer perceives many curvy lines sculpting vase-like figures running from top to bottom. In an analogous way, we see lines in nature where there are none, a phenomenon that is reflected in even the simplest drawing. While an artist may draw an oval to represent a person' s face, no such outline exists in real life. Is there something about our visual wiring that causes us to seek out such lines?

Light from the sun or reflected off objects is absorbed by the rod and cone cells in the retina at the back of the eye. Although rods and cones absorb the light Figure (left);



*Formulation : Articulation, Folio 1 / Folder 2 ["In the Water"], 1972. Screenprint, 15 x 20 in. (38.1 x 50.8 cm), Mead Art Museum, Amherst College, gift of the Alan M. Sternlieb Study Collection (1979.103.1.2.a).
Cat. 11.*

Figure 29 (right): Author-created grayscale version of figure 28.

Josef Albers directly, we do not see with these cells. Before we have a conscious sensation of sight, information from rods and cones must make its way over several synaptic connections to the visual cortex located in the back of the brain and then to additional visual processing areas. With cats as their experimental animals, David Hubel and Torsten Wiesel made some of the first recordings of neurons in the primary visual cortex, the first area of the visual cortex to receive input from the eyes and a major gateway to higher visual areas. Initially, they attempted to stimulate these cells by projecting small spots of light, but with little success. After hours of recordings, they finally discovered that an individual cell responds not to spots, but to bars of light or dark in a particular small region of the visual field. Indeed, each neuron is sensitive to a narrow range of orientations, some preferring horizontal bars, others vertical bars, and still

others bars at various oblique angles. For every point in our visual field there are cells that are sensitive to each orientation.³ As light information is communicated from one cell to another along the visual pathway, we first detect a border or contour, then its orientation, and then the changes in orientation in order to perceive corners and curves.

Although Albers had no knowledge of Hubel and Wiesel's study, he came to the same conclusion about the tendency of our visual system to seek out lines and contours. In his drawing classes he gave his students exercises in line control and measurement and taught them to represent objects "first and mainly by using lines, not shading."⁵ Regarding *In the Water*, he wrote, "All lines exist only mathematically, that is, not by themselves but only as boundaries between different color areas."⁶ Thus, when we gaze at the print and follow its sinuous curves, we are witnessing a particularly beautiful example of our own visual processes at work.



Sketchbook Pages looking into line and form with regards to the figure

Lightness (Value)

The borders between the different horizontal lines in *In the Water* are defined by differences in both color and lightness. When the color is removed (fig.), the grayscale image allows us to see only the light and dark borders between the horizontal lines. However, we still see the curvy lines and figures.

Hence, in this image (though not in all cases), borders can be distinguished by lightness alone. Artists use the term “value” to define this sense of light and dark.”²²

The way the research is unpacking colour and its effects on the human brain is really interesting to my practice, also the ideas around what we *actually* are seeing but are brain makes the colours possible to see, is really curious to me.

“Much more of our visual circuitry is devoted to signaling lightness than to signaling color, so we can easily distinguish levels of lightness in a picture made up of different shades of gray. However, most of us have a much harder time judging levels of lightness in a colored image. As Albers was well aware, sensitivity to lightness must be trained. In his now legendary art classes, he would confront his students with several pairs of colors, as in the figure below (fig. 30), and ask them to judge which color of the pair was darker and which was lighter.

According to his report, 60 percent of his students answered incorrectly! They would have had more success if they had looked at the same image in grayscale (fig. 31).⁹ In each of the pairs, the upper member is easily seen as darker.

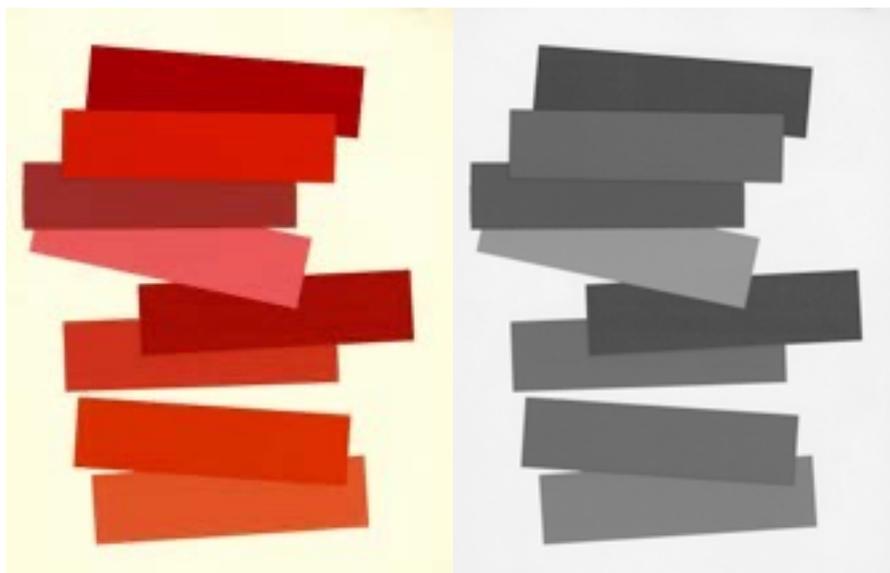


Plate V-3 from Josef Albers, *Interaction of Color* (1963). Image courtesy the Josef and Anni Albers Foundation/Yale University Press.

Intriguingly, scientists have uncovered neurons in the primary visual cortex that fire most actively not in response to a single color, but to the juxtaposition of two colors, particularly red next to cyan (a greenish blue), yellow next to blue, and black next to white. Although these neurophysiological discoveries were made after Albers taught and painted, he was well aware of these inter- actions of color. In his color classes, for example, he would distribute papers of different colors and instruct his students to place a small patch of one color against a background of another. With the right choice of two different back- ground colors, the identical central color could appear as two very different hues. Conversely, two different colors against different backgrounds could be made to look like one. He wrote, “Color, in my

²² Barry. S.R. (2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.

opinion, behaves like man—in two distinct ways: first in self-realization and then in the realizations of relationships with others....”

*In his remarkable series *Homage to the Square*, Albers, using a palette knife and paint directly from the tube, placed one square immediately adjacent to the next with no gaps in between so that one color had its strongest effect upon its neighbor. In the two versions of *Homage to the Square* shown above, the same four colors are used in the same proportions, but the arrangement of the colors is reversed, changing the appearance and weight of the colors in the two images. The two prints also produce different effects on different viewers. In one version, the color of the central square may appear to come forward for some people but not for others. Even the way the pictures are scanned may differ from one individual to the next.*

The response of the visual system to adjacent colors illustrates a general property of perception. Under many circumstances, our brain does not care about absolutes, such as the exact wavelength of a given light ray. What it cares about is contrast, particularly contrast across local boundaries. By highlighting what is different between one area and another, like the Xs against the differently colored backgrounds, we are better able to pick out an object from its surroundings, to distinguish figure from ground.

For Albers, the importance of the relationship between colors, as opposed to the color itself, took on a moral character. When Albers wrote that colors exist in terms of “relationships with others” he was not only making a statement about perception or aesthetics. He thought of color, he said, as both “an individual” and “a member of society” ; “I’ ve handled color as man should behave.... And from all this, you may conclude that I consider ethics and aesthetics as one.”

Seeing the Whole Picture

However, vision depends upon far more than the piecemeal construction of a scene from the basic elements of line, lightness, and color. This, too, was a concept that Albers demonstrated in his artwork and classes. Albers was intrigued, for example, by the phenomenon of transparency. In one exercise, he would challenge his students to take a piece of paper that was opaque, and by placing it next to other colored papers, make it appear transparent or translucent. One example is shown in figure below:

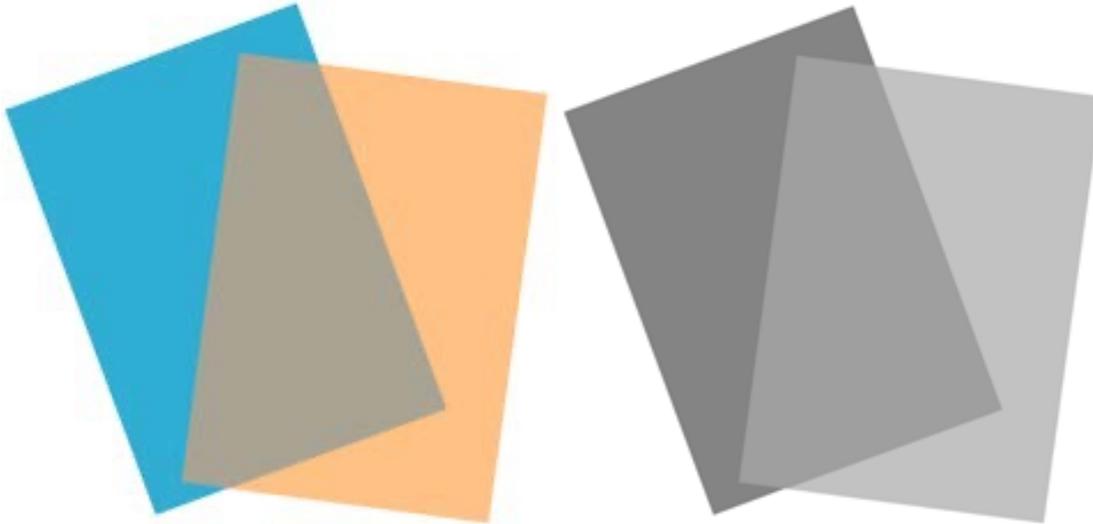


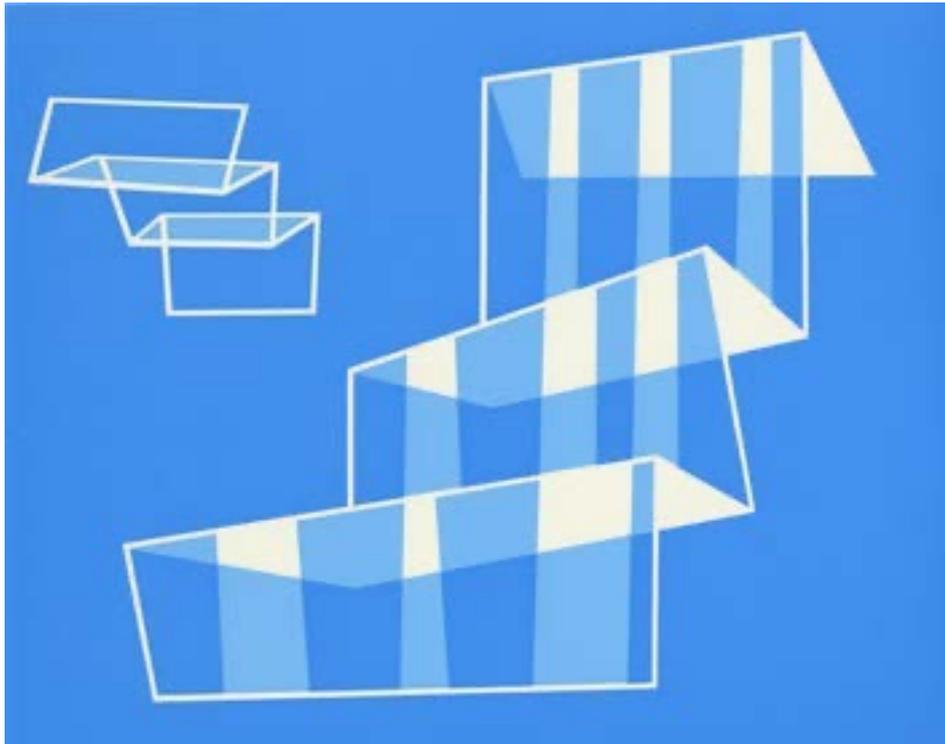
Figure (left): Transparency color exercise made with the App version of Josef Albers, *Interaction of Color* (2013).

Figure (right): Author-created grayscale version of figure 36.

In this figure, a piece of opaque brown paper has been placed between the blue and orange ones. This juxtaposition makes the brown paper appear translucent, as if it is the part of the orange paper that is overlapping with and partially blocking our view of the blue paper below it. A grayscale version of this image shows that the lightness or value of the brown paper is at an intermediate level between that of the other two. This lightness arrangement follows a general rule for transparency: the transparent region must be of intermediate lightness with the regions that it borders.²² If the brown paper had been darker or lighter than both of its neighbors, the illusion of transparency would disappear.

In addition, the illusion of transparency is maintained only if we look at the picture as a whole. If the view of either the orange or blue paper is obscured so that the brown paper is viewed next to only one of its neighbors, it appears opaque. Thus a scene cannot be perceived correctly in terms of a piecemeal examination of its individual parts but must be viewed as an integrated whole.

Art, Albers felt, much more than nature, could provide such challenges to our visual perception. Although all visual stimuli are potentially ambiguous, we are usually able to exploit a great number of clues in order to make sense of the real objects around us. While looking at an actual staircase, for example, we exploit information from shadows, size, perspective, stereo vision, and its changing appearance as we move. By removing such clues in the small figure in *Steps*, Albers forces us to pay attention to the basic elements of the drawing—the lines and their interactions.



Formulation : Articulation, Folio I / Folder I ["Steps"], 1972. Screenprint, 15 x 20 in. (38.1 x 50.8 cm).

Brain imaging reveals that far more of the brain is involved in viewing an ambiguous figure than in viewing a stable, unambiguous one. Both types of images will excite the entire visual system, but the ambiguous figure, such as the smaller image in Steps, will cause greater activation of areas toward the front of the brain, including regions of the frontoparietal and frontal cortices. Taking into account factors such as experience, expectations, and even our mood, these brain areas then provide high-level hypotheses about what we are viewing, entering into a dialogue with the visual areas of the brain to confirm or reject these hypotheses.

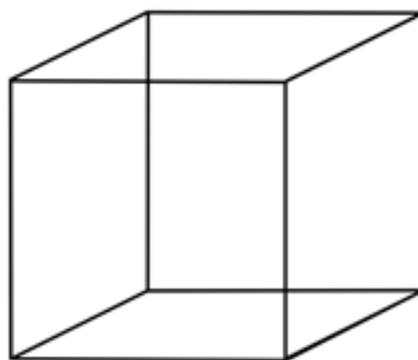
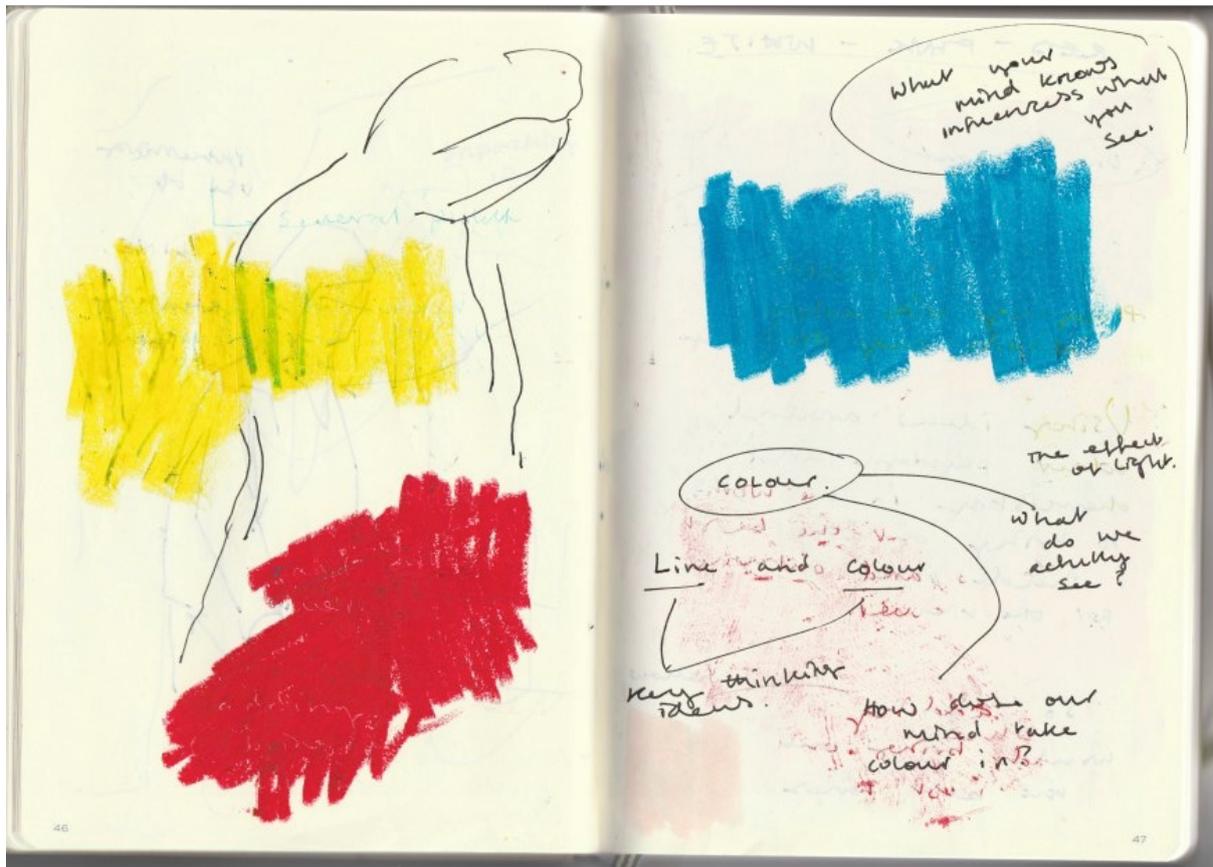


Figure 40: Example of the iconic Necker cube.

For an image that can be interpreted in many different ways, this dialogue will be sustained for the entire time we view the image. Thus Albers' s Formulation: Articulation portfolio, like his Graphic Tectonic series as a whole and indeed, like all his art and teaching, achieves "manifold

instrumentation" with only a "simple palette," enlightening us all about visual perception and providing rich stimulation for the brain."²³



Sketchbook Pages looking into line and form with regards to the primary colours and the form

Overall this text has given not only another viewpoint towards colour, form, and light. But also inspired ideas around how I can work with colour in the coming works to get the best result and really challenge myself and the viewer.

²³ Barry. S.R. (2015). *Interacting Colour, Josef Albers and his Contemporaries*. The Amherst College Press.



The image shows a YouTube video player interface. At the top left is the YouTube logo with a 'GB' indicator. To its right is a search bar containing the word 'Search'. Below this is a video player showing a person's hands pointing to various color swatches on a white surface. The swatches include a light blue square, a purple square, an orange rectangle, a yellow rectangle, a dark blue rectangle, and a light blue rectangle. The video player has a progress bar at the bottom showing 7:09 / 1:07:07. Below the video player, the title 'Albers' Color Class' is displayed, followed by '2,416 views · 4 May 2020'. To the right of the title are icons for likes (60), comments (0), share, save, and a menu icon. Below the video player, the channel name 'Creative Arts Workshop' is shown with a logo and '70 subscribers'. A red 'SUBSCRIBE' button is located to the right of the channel information.

Albers' Color Class.

Creative Arts Workshop (2020), YouTube Talk²⁴.

This video was really useful to see the visual understandings behind Josef Albers colour theories that define the ideas in *Interaction of Colour*.

²⁴ YouTube Talk, *Albers' Color Class*. Creative Arts Workshop (2020)

ARTISTS

Olafur Eliasson (Artist & Designer)

The work of Olafur Eliasson has been a never-ending stream of inspiration for my practice. His use of form, colour, light and figure has been thought-provoking to my practice. When referencing Eliasson' s practice I look into all the various sections of how he works, to the installations, images, online archive of works, or even how his talks about his practice.

Olafur Eliasson

Artworks • Menu



Meteorological rainbow circles

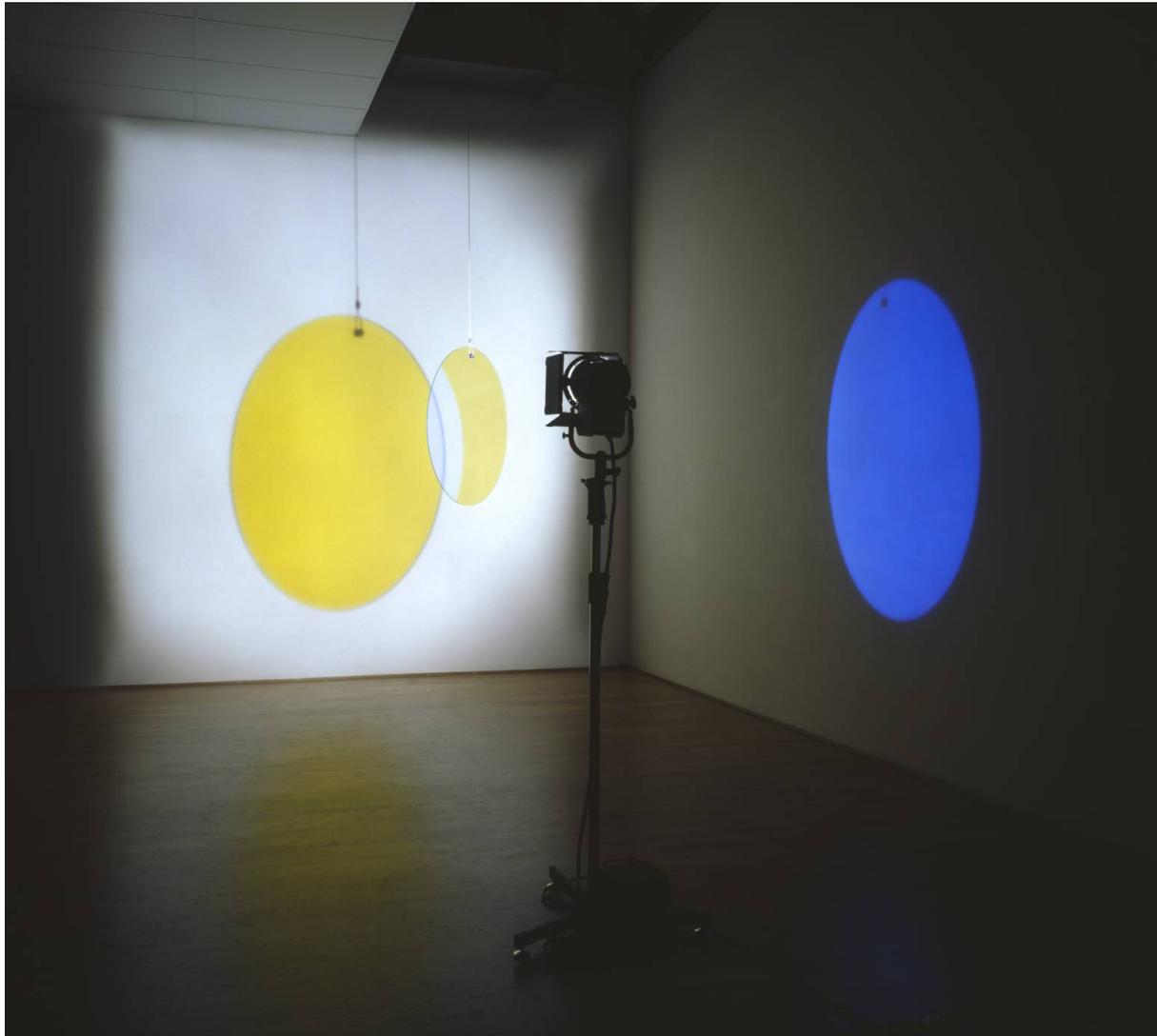


Moonlight lifetime



No symmetry in the ocean

Share

(Various Referenced Artworks)***Yellow versus Purple, Olafur Eliasson 2003***

Tate Article by Richard Martin 2014

“Installed in a darkened room, Yellow versus Purple 2003 comprises a transparent yellow disc of colour-effect glass (750 mm in diameter), which is suspended from a steel cable linked to a motor attached to the ceiling, and a floodlight mounted on a tripod that shines a wide beam of light directly at the disc and onto a white wall behind. The disc and the floodlight are both positioned 140 cm off the floor so that as the light passes through the glass it creates a yellow shadow on the wall behind that changes shape, from a circle to an ellipse and back again, as the disc rotates. At the same time, the particular properties of the glass also serve to reflect the light, producing a purple form that moves along the walls of the room as though orbiting the space. Like the yellow shadow, this purple light changes shape in accordance with the angle of the disc, but it also changes size depending on the distance between the disc and the wall. Viewers are able to walk through the installation so that the shapes and colours cover their

bodies. The choice of colours for Yellow versus Purple, and the title's playful suggestion of competition between them, reflects the fact that they occupy opposite positions on a colour wheel.

Yellow versus Purple was made in Berlin, where Danish-Icelandic artist Olafur Eliasson moved in 1995. At the time he made this work he was sharing a studio in an old train depot with other artists including Thomas Demand and Tacita Dean. The disc of colour-effect glass was a ready-made product that Eliasson bought from a company in Germany.

Eliasson began making works that explored the artistic and scientific characteristics of light and colour while he was a student at the Royal Academy of Arts in Copenhagen, where he studied between 1989 and 1995. An early precursor to *Yellow versus Purple* is *Room for One Colour* 1997, which comprises a bank of lights (installed in different formations on the ceiling according to the dimensions of the location) that flood the gallery space in yellow, and create an after-image effect, as viewers' eyes attempt to compensate for the lack of other colours, which makes the adjacent rooms appear to be coloured purple. In a short essay published in 2002 Eliasson wrote:

'Colour has in its abstraction enormous psychological and associative potential, and even though this has been collectively cultivated to the extreme, individual differences in experiencing colours are extreme. Colour doesn't exist in itself, only when looked at. The fact that 'colour', uniquely, only materializes when light bounces off it into our retina indicates that analyzing colours is in fact about analyzing ourselves.'
(Olafur Eliasson, '447 Words on Colour, 2001', in Grynstejn, Birnbaum and Speaks 2002, p.130.)

From 2003 onwards Eliasson's work became more concerned with the psychological and physical effects of light and colour. For *The Weather Project* 2003, the artist installed a giant 'sun' composed of around 200 yellow mono-frequency lamps in Tate Modern's Turbine Hall. After *Yellow versus Purple* Eliasson created a series of works in 2004 and 2005 also featuring colour-effect glass, including *Your Yellow versus Red versus Blue* 2004 (reproduced in *Kunstmuseum Wolfsburg*, p.173), in which beams of light from a projector pass through and are reflected by three revolving glass discs (moving at different speeds) to create an interplay of colours and shapes on the gallery walls.

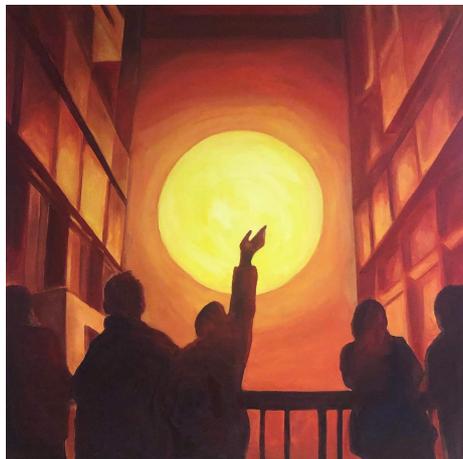
Further to Eliasson's suggestion that 'analyzing colours is in fact about analyzing ourselves', curator and critic Holger Broecker has emphasised the importance of understanding a viewer's encounter with Eliasson's work when considering its potential meanings. Broecker claims that visitors experiencing works like *Yellow versus Purple* 'not only take part in the work as viewers, but also become projection surfaces themselves as they move around the room, which means they are simultaneously both subject and object' (Holger Broecker, 'Light – Space – Color: Olafur Eliasson's Experiment Set-ups with Light', in *Kunstmuseum Wolfsburg* 2004, p.50).

A precedent for Eliasson's installations may be found in the kinetic sculptures created by the Hungarian modernist László Moholy-Nagy (1895–1946). Moholy-Nagy's *Light Prop for an Electric Stage* 1930 (a replica of which was commissioned by Tate for a 2006 exhibition at Tate

*Modern of the work of Moholy-Nagy and Josef Albers, and is now owned by Harvard Art Museums) used a series of discs and screens on pivoting rods, powered by an electric motor, to produce intricate patterns of light and colour. Eliasson's work might also be considered in relation to the immersive colour environments that the American artist James Turrell began creating in the late 1960s, and to the interplay of lights and shapes in works by Anthony McCall, such as *Line Describing a Cone* 1973 (Tate T12031).*

*Yellow versus Purple was shown in the major exhibition *Take Your Time: Olafur Eliasson, the first comprehensive survey of Eliasson's work staged in the United States, which began at the San Francisco Museum of Modern Art in September 2007.*" - Richard Martin March 2014*

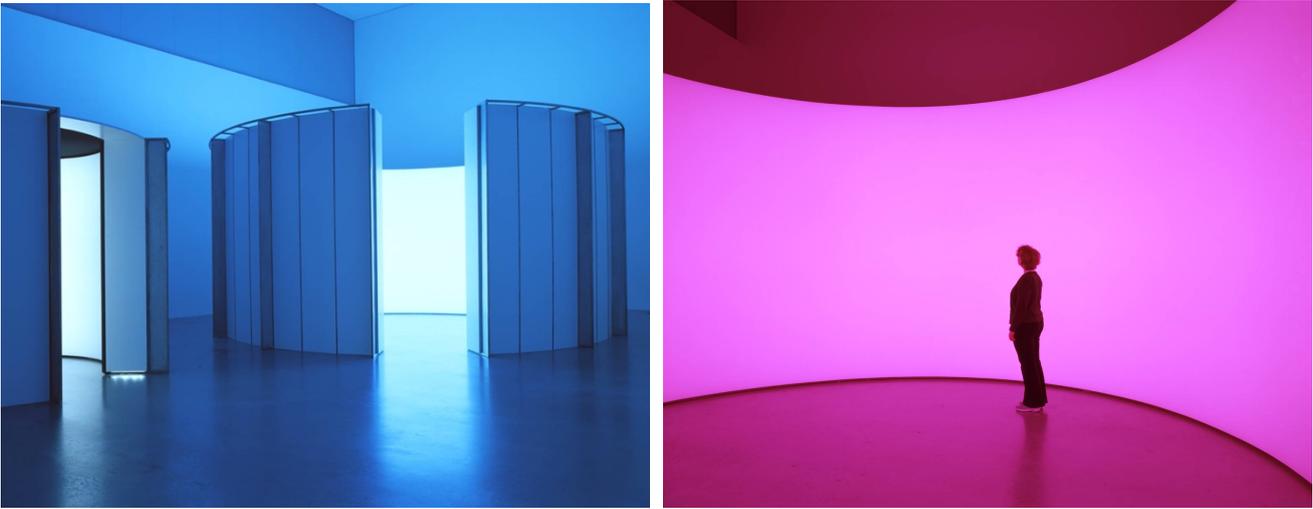
This article and exhibition links into the previous ideas around colour theory and the relationship between different colours. It is notable that the imagery of the works in the space often inspires different piece within my practice, for example:



Large scale Oil Painting inspired from Olafur Eliasson's *Weather Project*



The pieces and installations created by Olafur Eliasson have imagery which I find really stimulating and interesting. In previous years I created a large body work following on from Eliasson's and other artist creating iterative installations. Now, the work Olafur Eliasson is a interesting starting point to other pieces, as they show ways colour, light and form iterative with one another.



Your Double-Lighthouse Projection, Olafur Eliasson 2004

Tate Article, Christopher Griffin July 2012

“Your Double-Lighthouse Projection consists of two large, free-standing, circular chambers made of out stainless steel and wooden panels. Installed in close proximity to each other in a gallery, the chambers are of slightly different sizes – one is taller and wider than the other – but each one has a thin gap in its otherwise 360 degree wall that serves as an entrance into its interior. From the outside, the chambers appear plain, their flat-pack fabrication alluded to by the vertical panelling. On the inside, however, the walls of both chambers are lined top to bottom and all the way around with a seamless reflective projection panel behind which is a matrix of coloured lights controlled by a computerised light board. As the chambers do not have ceilings, the coloured light projected from the walls escapes out into the darkened gallery.

Attracted by the colourful glow emanating from the chambers, viewers enter the circular spaces and experience a slowly changing display of pink, purple and blue light. The reflective panel serves to intensify the light to the extent that it dissolves the wall into an ungraspable glow. In that it surrounds the viewer and therefore occupies their entire field of vision, the light has the effect of disorientating spatial awareness by erasing the perceptual distinction between foreground and background. Only the floor beneath the viewer’s feet can be perceived to be entirely solid. Space is therefore registered more accurately by bodily movement than by vision, which entails that the perceptual disorientation is magnified in the smaller chamber where movement is more restricted.

Focusing attention on the visual and physical processes that determine how light and space are experienced and understood, Your Double-Lighthouse Projection underscores the subjectivity of perception, while the agency of the viewer is asserted by the possessive adjective ‘Your’

in the title, which seems to invite the viewer to seize or somehow own the experience offered by the work.

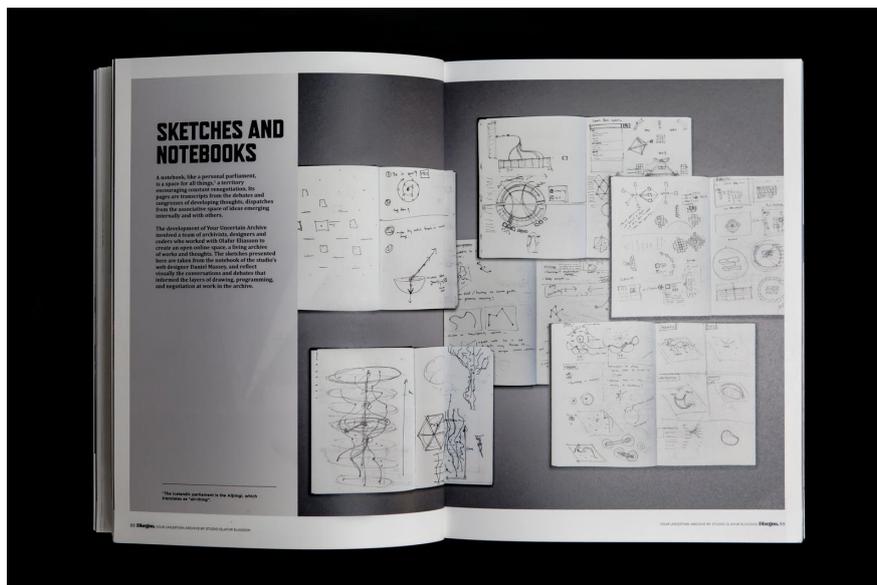
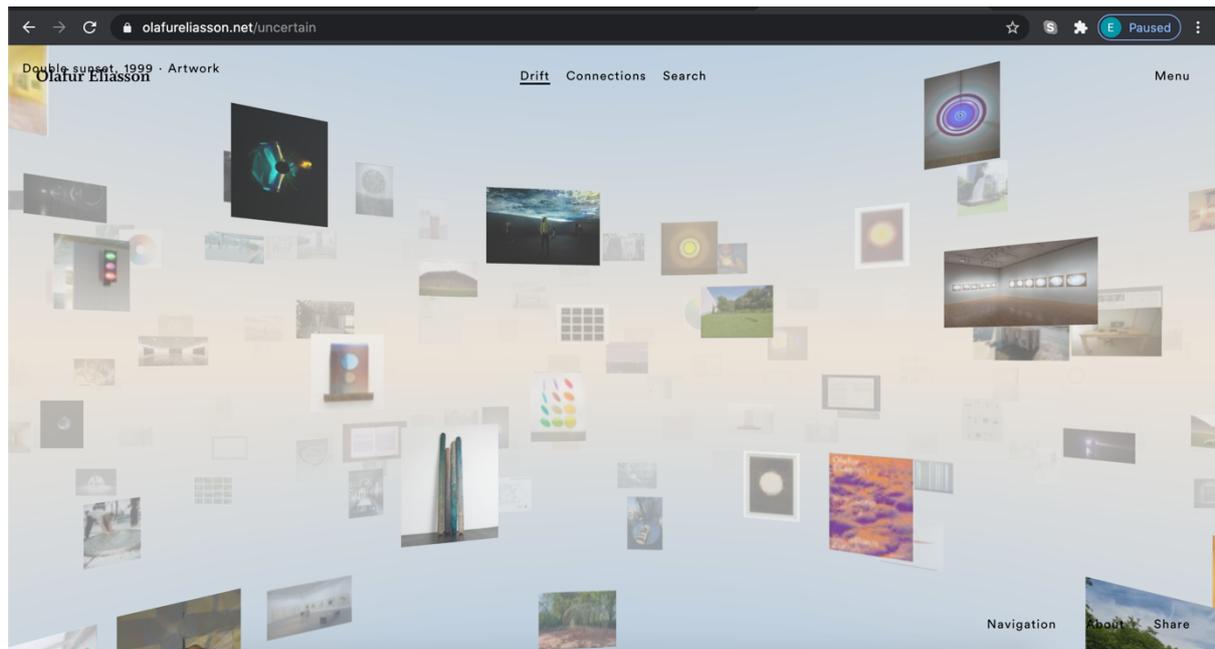
*As is the case with much of Olafur Eliasson's work, **Your Double-Lighthouse Projection tests the nature of perception.** Referring to his light works as 'experiment set-ups', Eliasson, who since 1995 has worked with a team of artists, designers and technicians in a studio in Berlin described as a 'laboratory of mediating space' (Studio Olafur Eliasson (ed.), *Olafur Eliasson: A Laboratory of Mediating Space, Berlin 2006*), has explained how he came to be interested in the scientific and phenomenological properties of light:*

'I was interested in light from the very beginning because it negotiates strongly with the spatial conditions, which means that it can be an independent object on the one hand, a projection such as a form on a wall, a light projection; yet it can also be the source of light in general, the lighting for the entire room. That means we have a situation where an object and a phenomenon exist simultaneously. There is also no separation between the transition from the phenomenon to the space. One could say that the space and the phenomenon become one. It was ideas like this that sparked off my interest in light at the beginning of the nineties.'
(*Olafur Eliasson in conversation with Holger Broecker, 2 January 2004, quoted in Kunstmuseum Wolfsburg 2004, p.45.*)

*Since the early twentieth century, when artists such as László Moholy-Nagy (1895–1946) combined light projections with sculptural forms, light art has developed in tandem with artists' interests in space and perception. During the late 1960s the Californian artists Robert Irwin (born 1928), Douglas Wheeler (born 1939) and James Turrell (born 1943) began investigating the material and immaterial properties of light and its potential to obliterate spatial boundaries. In this respect, works such as Turrell's *Raemar Blue* 1968 (Tate L03012), an immersive environment in which blue light envelops the viewer, and Wheeler's *RM 669* 1969 (Museum of Contemporary Art Los Angeles), an installation in which a square of neon light causes the space to appear as though it is receding as the viewer moves through it, can be seen as precedents for Eliasson's exploration of light and space.*

*Your Double-Lighthouse Projection takes the exact same form as *360° Room For All Colours* (private collection), which Eliasson made at the same time. However the latter work consists of just one chamber and emits a greater variety of colours." - Christopher Griffin, July 2012*

Your Double-Lighthouse Projection puts into practice the nature of colour and light and how it can be tested. The work is interesting as it ties in around of colour theory and interaction of colour, but actually putting the ideas into practice to see how the human brains perception will response.



Your Uncertain Archive, By Studio Olafur Eliasson

Not only is Olafur Eliasson's art practice an insightful reference for my practice, but also how he displays work virtually is way like no other I have come across. When thinking about the creation of my online platform, *Your Uncertain Archive* on Studio Olafur Eliasson has opened my mind up the various ways virtual showcases can take place. **See link below to access:**

➤ <https://olafureliasson.net/uncertain>

The scale of this virtual space truly amazed me. In an interview (see below) Eliasson unpacks his ideas and how they designed this virtual showcase.

"Your Uncertain Archive connects you to the artworks, texts, sketches, interests and ideas that make up Olafur Eliasson's practice"

"The studio is like a laboratory, with daily experiments taking place. For example, the day after Eliasson's surgery he decided to try an experiment focusing on weightlessness, and asked his assistants to rig up a crane with a meteorite on one end and a harness on the other.

It turns out that we have quite a lot of people passing through our website homepage. It also turns out that more people are familiar with my work through the homepage than from seeing it in exhibitions. As far as I can tell, a lot of the visitors are in parts of the world where I haven't exhibited much. So I grew to respect these people, because they were making the effort to look it up. I thought this was very precious and that I should invest more artistic focus into it. So rather than creating a more conventional archival search facility, we started getting more ideologically involved. The studio has an archive department that works as a research and development team and is closely involved with the creation of the artworks. It researches relevant scientific processes, both spatially and psychologically. At the same time, we are also following different types of media and how critical media evolves. So, when we were reconsidering what an archive is, we already had a lot of internal resources that fuelled the discussion, but essentially we wanted to present something that was closer to the principle of an exhibition and more remote from the conventional archive.

I find this section particularly though-provoking when thinking about the nature of communication that can be gained through online spaces.

The question is if an archive is something retroactive, which, informally or not, tends to suggest an objective view of the past; or if it's more of a subjective facilitator, which actually nurtures a proactive approach and suggests that is also about writing a narrative that's more concerned with the future than the past. There is a very robust discussion within museology and art history about reconsidering the notion of historiography, the role of authorship, the place of the subject with regards to attempting to be truthful or not, the illusion of truth and the illusion of reality. There is also a general need to find a systematic way to make use of archives, which are collections of knowledge. Instead of archives turning into dust-collecting heaps of knowledge, they can be proactive reality machines. One has to see these in the context of the internet being increasingly thin: it becomes hard to find substance. Internet archives form a much-needed qualitative muscle. I think a lot of places are turning archives, from a passive box waiting for you to go and look through, into something proactive. For example, we like to make short films and gifs and we use them when making artworks, but also for documenting the making of those works. It creates this small window into the studio that we didn't have before.

This for me has to do with developing a more direct relationship with the people who would normally go to a museum, and gives them a better impression of what goes on inside an artist's studio. Now I have a direct feed that bypasses the institutional layer.

This direct relationship with a viewer is a prominent part of your work – specifically the experiments you offer online, such as Your Exhibition Guide, an app where you challenge how

we experience and interact with art. You make a collaborator of the viewer and you see them as a co-producer of both real and virtual space. I try to think of a viewer as somebody who is not just viewing something with their eyes.

I also want to encourage the body to be a viewing machine, one that uses all the senses. But the commodification of our senses within the market economy has led to the senses becoming passive consumers. This means you, as the subject, take in your surroundings like a consumer driven by greed and laziness. I think we underestimate the significance of the impact this idea of the consuming, passive user has had on how art is experienced. So, my interest in the viewer has been to see if we can turn around that role in the context of the museum. In a museum you would want people to not only experience the artwork but also to reconsider the rules under which we are experiencing the world. That's why I think we owe it to a person who visits the homepage or an exhibition to show we trust them, that we do not patronise them, we do not systematise them. We take them for what they are and we respect them. We involve ourselves in a dialogue and we see where that will take us.

Your Uncertain Archive contains everything I have in terms of prints, pictures, sketches, artworks. It's the complete bulk, the heap of everything. It's disregarding importance and disregarding quality, it's just an unbelievable mass of material. To say the archive is uncertain is of course

to suggest that the user is important, because the archive is just a whole lot of zeros and ones. The uncertainty lies in how we have worked very hard to build an associative search system, which means that should you not know exactly what you are looking for, this presents you with a perfect area in which you can drift and sail around. This idea of drifting – of searching, essentially, for the sake of searching – is something that is relevant when it comes to exhibitions, for instance.

How do you build uncertainty into a system that still has to be extremely structured in order to work?

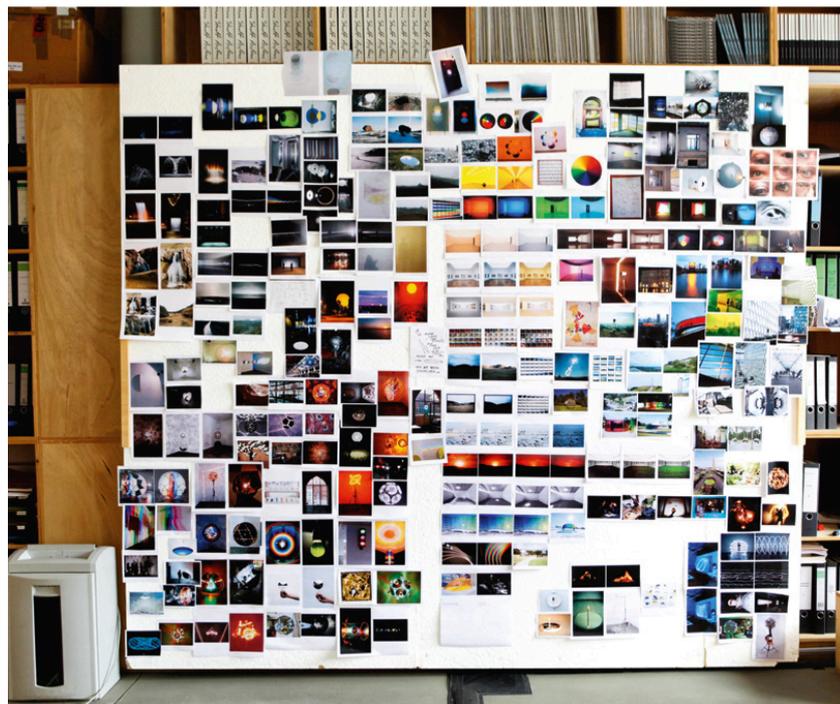
Well, this is why we started to do a lot of associative stuff. It seems that the internet is still in its infancy. The more you look at it, the more you realise it's relatively clumsy, barely capable of walking, holding on to anything solid to prevent it from falling over, just like a baby. But once you have a closer look, it has a lot of amazing associative potential. That has to do with the use of the interface and the fantasy and creativity through which one can design and build architecture online,

so what might come across as a little bit obscure at the start actually has a large, very soft skeleton in it. I think we have taken inspiration from cosmology, physics and science on one side, and the more innovative computer games on the other. There is a game called Flower, like a non-purpose floating game, you just kind of surf, very nonviolent and also a bit esoteric. There's another one called Mountain, which I also like. We looked into Oculus Rift, but we haven't fully engaged with it. So, basically, there were a number of inspirational sources. But there was also a need to give people the confidence that their involvement actually has a structural impact. Both with the text, but also with the actual hand-mouse interface. We made

an effort with that, but we will see whether it will actually work. We worked very hard on the tangibility; I am interested in how something feels in your hand.

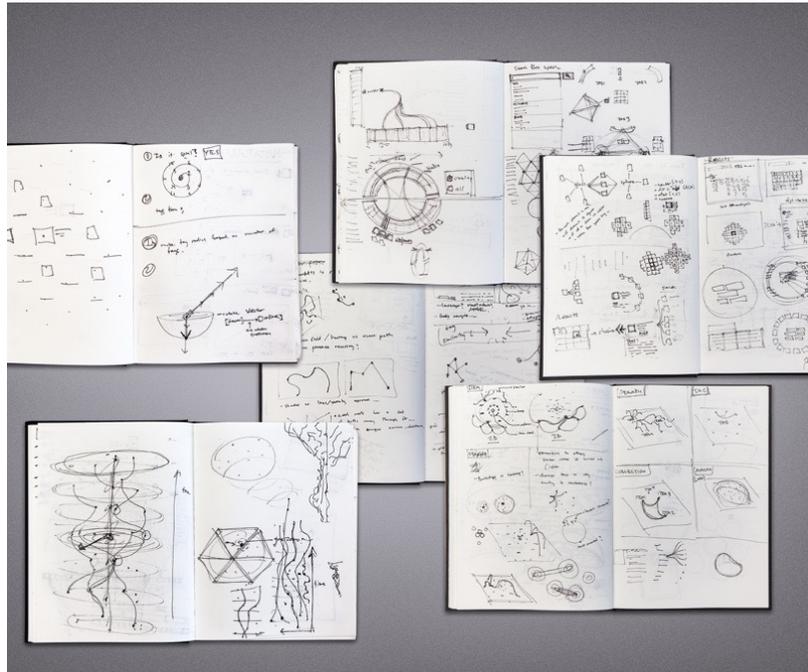
You mentioned that you did a lot of associative stuff. What exactly did you do?

As a studio we often do experiments and workshops. One of the things we looked at was how it feels to hold a meteorite in your hand. There was, of course, the reaction that it was very heavy. But besides that, you start to realise that you are, for the first time, holding something in your hand that is not from this planet. Obviously there is no way of detecting that in the homepage, but it was an interesting exercise nonetheless.



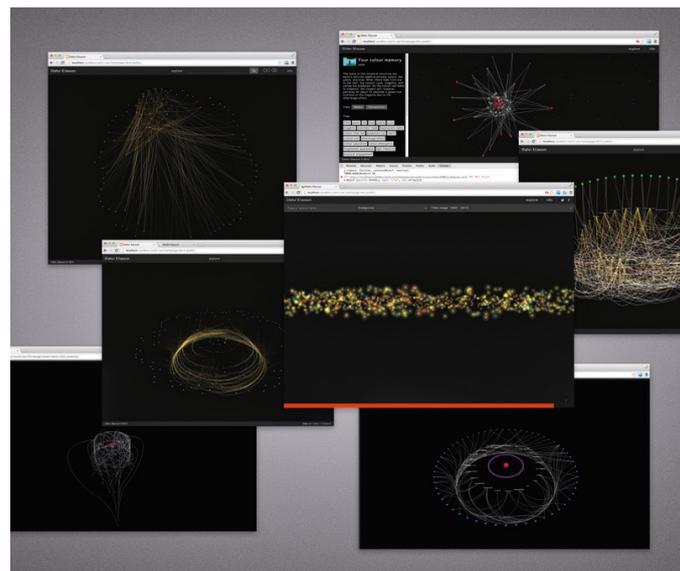
Mapping ideas is like travelling through the landscape of one' s own mind. But when ideas crystallise in a map, it isn' t the first spatial form they' ve taken. As we frame an idea and work to give it a communicable shape, it transitions from a (neuro)spatial process within us to an empathic, shared space outside us.

Tracing the course of emerging ideas is central to Your Uncertain Archive. It reflects the thinking and doing that takes place at the studio, whether for artworks, exhibitions, transmissions or publications. Upon entering the site, visitors take part in mapping and become co-producers of an ongoing collective spatial process.



A notebook, like a **personal parliament**, is a space for all things,¹ a territory encouraging constant renegotiation. Its pages are transcripts from the debates and congresses of developing thoughts, dispatches from the associative space of ideas emerging internally and with others.

The development of *Your Uncertain Archive* involved a team of archivists, designers and coders who worked with Olafur Eliasson to create an open online space, a living archive of works and thoughts. The sketches presented here are taken from the notebook of the studio's web designer Daniel Massey, and reflect visually the conversations and debates that informed the layers of drawing, programming, and negotiation at work in the archive.



Various attempts were made to visualise the complex clusters of associations surrounding an archival object. **In the process of finding a visual language to communicate the relationships**

and connections between artworks and ideas, the hand-drawn sketches were translated into the language of the web.



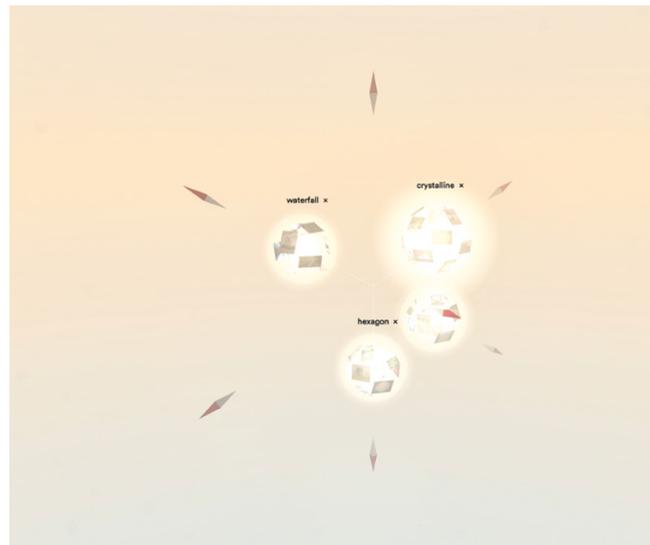
The language of a visual artist is usually nonverbal, and the artist's reaction to an experience is frequently a spatial proposition, making explicit some space. An idea or an experience can often be expressed better in a spatial context than verbally.

Models are not rationalised stations on the way to some perfected object, but fully real in their instability. The studio's model room – an archive of intricately constructed prototypes, mock-ups and studies – is a laboratory for geometric investigations, a lexicon of space.



Watercolours layer time. Thin washes of contrasting colours create density and disclose the paintings' gradual creation. The transparency and layers of Eliasson's watercolours skirt representation, allowing us to explore our perception of depth and duration. The arrangement of similar shapes and related shades triggers our tendency to read three-dimensionality and motion into two-dimensional compositions. Colours and shapes overlay, and we think, for an instant, that we see time frozen and processes unfold in synchronicity.

In Your Uncertain Archive, ideas and objects slowly float and align in layers of synchronicity and coincidence, creating new contexts and unforeseen meanings.



Your Uncertain Archive connects you to the artworks, texts, sketches, interests and ideas that make up Olafur Eliasson's practice. Visitors to the page receive various tools for navigating the site, yet rather than organise the material into predictable patterns or groups, these tools lead users to unorthodox topographies. Straight-line chronologies are replaced by molecules of thematic connection. The list disappears as the standard of organisation, and visitors instead drift through an endlessly rearranging sea of thoughts and works. Neither a simple webpage nor a mere container for facts and dates, the work is a reality-producing machine, built to generate new content through proximity and contact. Your Uncertain Archive is a living artwork exhibited in the landscape of the web.

Article / Interview Link here: https://s3-eu-west-1.amazonaws.com/olafureliasson.net/texts/Your_Uncertain_Archive_By_Studio_Olafur_Eliasson_115730.pdf

This article has truly reenforced, developed and sparked new ideas around how I am presenting my work on my Online Studio. The way that *Your Uncertain Archive* works and aims to work, is really thought-provoking to me. It shows the very fresh way that the Online World can work through thinking and seeing from a completely different perspective;

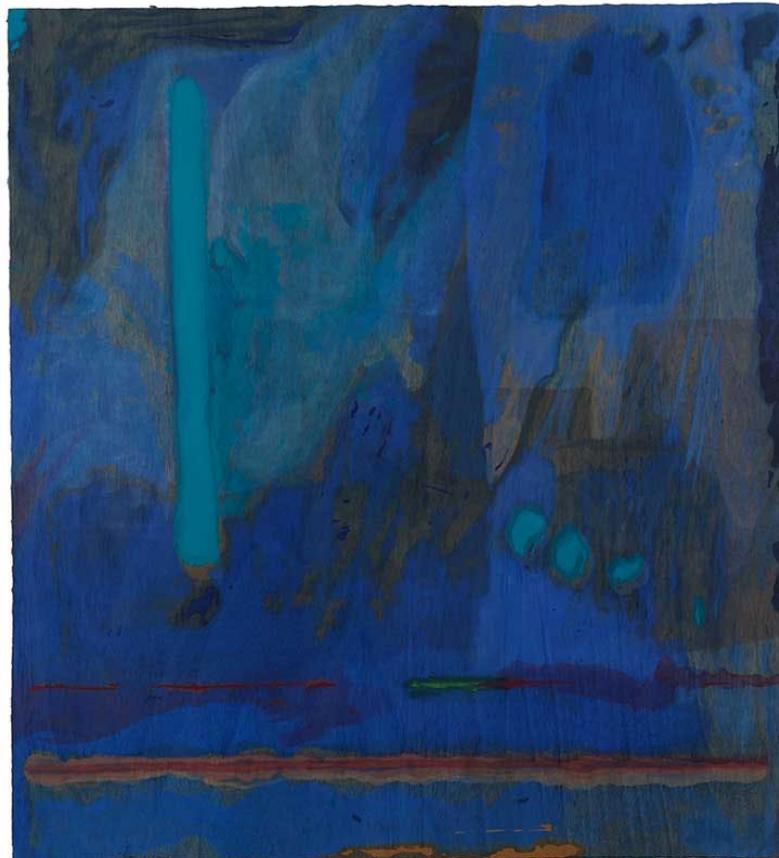
"finding a visual language to communicate the relationships and connections between artworks and ideas, the hand-drawn sketches were translated into the language of the web." - Olafur Eliasson



Helen Frankenthaler (Artist)

Helen Frankenthaler work has been an interesting example of how to use colour, line, and form in paint. The way she uses the painting is particularly notable, the sections of saturation which feel like they come almost naturally from the paint is thought-provoking when thinking of how I apply the paint.

The overall composition of the work also has parallels with how I am thinking through my work currently. Helen Frankenthaler pulls ideas from her mind to build into the work, this is then added to by her knowledge of colour, line and form. In this way it is possible to see the parallels in how imagination can come together with that of line and colour.





Line into Colour into Line, Helen Frankenthaler.

Beverly Hills (2016), Gagosain Article.

"A line, color, shapes, spaces, all do one thing for and within themselves, and yet do something else, in relation to everything that is going on within the four sides [of the canvas]. A line is a line, but [also] is a color. . . . It does this here, but that there. The canvas surface is flat and yet the space extends for miles. What a lie, what trickery—how beautiful is the very idea of painting."²⁵ — Helen Frankenthaler

Helen Frankenthaler (1928–2011), whose career spanned six decades, has long been recognized as one of the great American artists of the twentieth century. A member of the second generation of postwar American abstract painters, she is widely credited with playing a pivotal role in the transition from Abstract Expressionism to Color Field painting. Through her invention of the soak-stain technique, she expanded the possibilities of abstraction, while at times referencing figuration and landscape in highly personal ways. She produced a body of work whose impact on contemporary art has been profound and continues to grow.

The exhibition (below) comprises seventeen canvases by Frankenthaler from a twenty-five-year time span, selected to reveal how the renowned abstract painter articulated the relationship between drawing and color during this period. In her pioneering work of the 1950s,

²⁵ Hills, B. (2016), *Line into Colour into Line, Helen Frankenthaler*. Gagosain Article.

< <https://gagosian.com/exhibitions/2016/line-into-color-color-into-line-helen-frankenthaler-paintings-1962-1987/> >

inspired by Jackson Pollock, Frankenthaler had poured both linear tracks and spreading areas of thinned paint onto unprimed canvas. She continued with this approach in the early 1960s, but with a difference: in paintings like *Pink Field* (1962), broad areas of color combine with linear elements so narrow as to seem drawn, resulting in canvases with no sense of division between the drawn and the painted. In such works as *Parade* (1965), she set aside the landscape association that had aided the cohesion of her earlier compositions in favor of an abstract parade of colored lines and areas. The contours of these areas, vividly contrasted against white canvas, look as much drawn as do the narrow, cursively shaped lines of paint.

In 1970, Frankenthaler reintroduced individual elements of drawing into her work. In paintings such as *Mornings and Barbizon*, she began by setting down large areas with drawn contours, before running slender graphic filaments across them. In later works of that decade, such as *Rapunzel* (1974), she carried this further by pre-painting the entire canvas with one color before setting down the drawing, together with color patches, on top. Then, in a group of paintings from 1976, which includes *Blue Bellows* and *Sentry*, she created the drawn elements by masking out strips of bare canvas close to the vertical edges of the works before applying a single color over them in a looser, more painterly fashion. Later that decade, in works like *Mineral Kingdom* (1976), she gave prominence to richly varied applications of paint, drawn over the surface with a variety of spreading tools. By the early 1980s, this led to the extraordinarily complex, visually stunning surfaces of *Grey Fireworks* (1982) and *Brother Angel* (1983), composed of swathes, areas, and clumps of paint, with drawn elements snaking among them.

The final section of the exhibition presents work from the mid-1980s in which Frankenthaler brought together several of the themes that she had been exploring over the preceding two decades: pre-painted, single-colored grounds, sometimes flatly painted, sometimes varied in application; filaments and broader tracks of drawing juxtaposed with discrete areas, some with cursively drawn contours; clumps of heavier and sometimes very heavy paint; and vertical formats with drawing that echoed the framing edges of the paintings. The exhibition concludes with five paintings from 1985 to 1987 that reflect these themes, conveying the sense of an artist at the height of her powers, consolidating her resources to create extremely original canvases that are both rigorous and sensuous.



YouTube GB Search

Line into Color, Color into Line
Helen Frankenthaler
 Paintings from 1962–1987 | Gagosian Gallery, Beverly Hills
 September 16–October 29, 2016

NOW: HELEN FRANKENTHALER: Line into Color, Color into Line
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NOW: HELEN FRANKENTHALER: Line into Color, Color into Line

Beverly Hills (2016), Gagosian YouTube Interview²⁶.

This was really interesting to me in how Helen Frankenthaler *spoke about* the way she moved paint around her canvases. Further to this point, it makes it easier to better understand how she creates the marks she does in her works. Moreover, this makes me think of the **ease** that comes with painting, and when this is captured in a work, I feel it really brings the composition together.

²⁶ YouTube Interview, *NOW: HELEN FRANKENTHALER: Line into Color, Color into Line*. Gagosian (2016)



HELEN FRANKENTHALER, Composing with Color: Paintings 1962–1963

September 11–October 18, 2014. Gagosian Article²⁷.

Gagosian is pleased to present its first exhibition of Helen Frankenthaler's work organized in collaboration with the newly established Helen Frankenthaler Foundation. This follows the gallery's critically acclaimed 2013 exhibition, *Painted on 21st Street: Helen Frankenthaler from 1950 to 1959*, which was organized with the artist's estate.

The exhibition focuses on a brief but critical period in Frankenthaler's career—in 1962 and 1963—when she “composed with color” rather than with line, resulting in the freer compositions that came to exemplify her long and prolific career. Transitioning from the sparer, more graphic works of 1960 and 1961, Frankenthaler made paintings that more readily filled the space of the canvas, moving toward what critic B. H. Friedman described as the “total color image” that would become a hallmark of her later work. Included in the exhibition are *Cloud Bank*, *Hommage à M.L.*, and *Cool Summer* (all 1962), in which she employed a limited number of linear elements, linking them to her innovative stain paintings of the 1950s while marking a new direction with the use of spreading areas of color and a reassessment of the properties of painting materials.

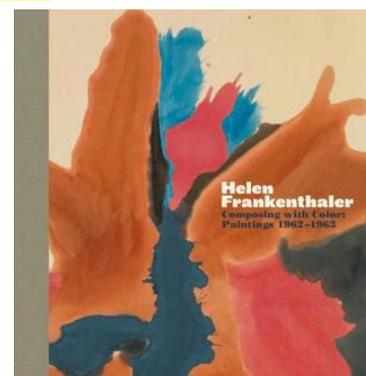
²⁷ Gagosian Article, (2014). *HELEN FRANKENTHALER, Composing with Color: Paintings 1962–1963*. Gagosian Article.

Three paintings in the exhibition—Filter, Gulf Stream, and Moat (all 1963)—belong to a series of works that include imprints of the floorboards of Frankenthaler's studio. As she recalled of this technique, "*I did a whole series of pictures . . . that I reversed; in other words they stained through and then I worked on them again from the other side.*" During this period, Frankenthaler also began experimenting with acrylic paint, sometimes **employing both acrylic and oil in a single canvas.** Gulf Stream, one example of this method, features delicately layered passages of oil paint surrounded by **denser expanses of vivid acrylic paint, a framing device that she would continue to explore the following year.**



The culmination of Frankenthaler's experimentation with acrylic paint is represented by two large-scale paintings, *Pink Lady* and *Sun Shapes* (both 1963). **With their large expanses of intense hues that nearly fill the canvas, both paintings anticipate the development of her abstract vocabulary throughout the remaining years of the 1960s.**

The exhibition, curated by John Elderfield, is accompanied by a fully illustrated catalogue with an introductory essay by Elizabeth Smith, executive director of the Helen Frankenthaler Foundation. The essay provides an in-depth examination of Frankenthaler's development during this critical two-year period and places these works within the context of American art in the early 1960s.



This article highlights the areas of Frankenthaler's practice which really defined her style as an Artist. The bold colour sections which build up one of her paintings show real marks of her artistry and it is interesting to see here how that came about.

HELEN FRANKENTHALER, Selected Works.

I enjoy these selected paintings due to the relationship the bold sections of colour that define and bring together the work. In some ways it could be said to think that this is what I have been trying to look into.



Figure 1. Red Shifts, 1999.



Figure 2. Royal Fireworks, 1928.

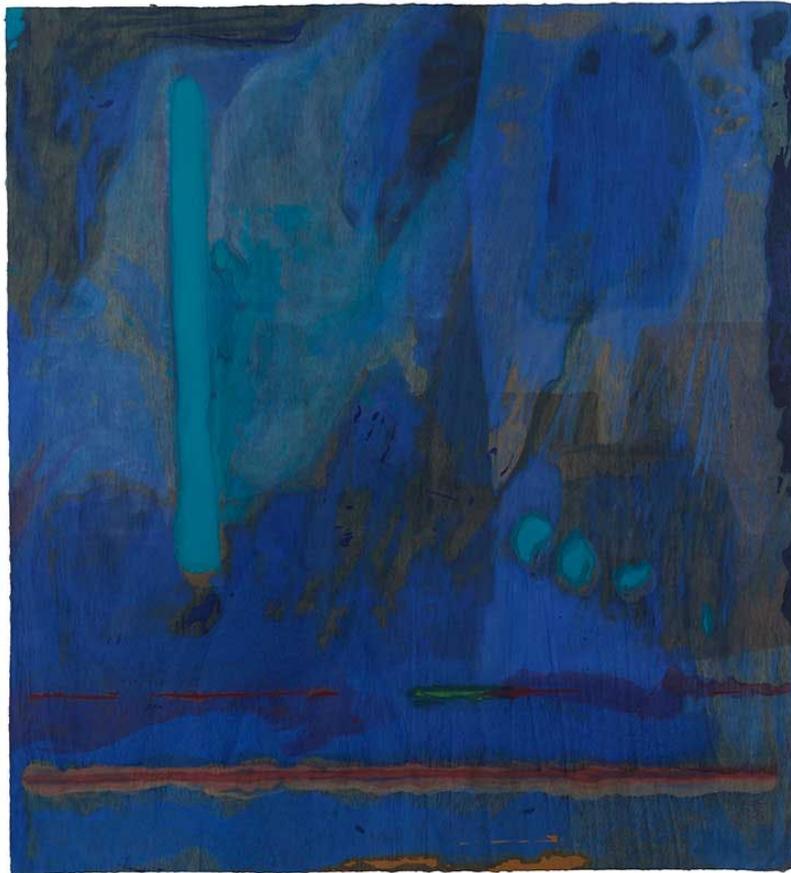


Figure 3. *Tales of Genji II*, 1928 – 2011.



Figure 4. *The Bay*, 1963.

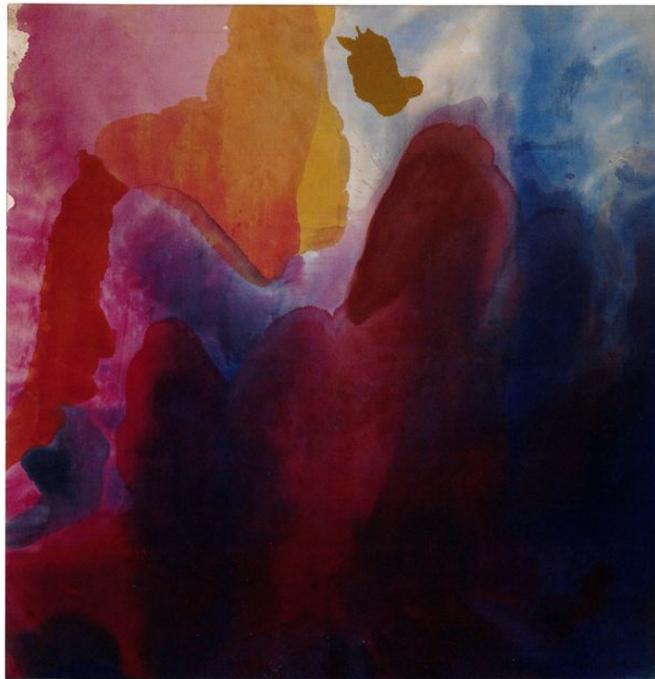


Figure 5. Blue Atmosphere II, 1963.



Figure 6. Orange Mood, 1960.

I enjoy these selected paintings due to the relationship the bold sections of colour that define and bring together the work. In some ways it could be said to think that this is what I have been trying to look into. These paintings make feel inspired to painting and work into the material of a surface to be able to show colours to their best format.

Mark Rothko (Artist)

One of the most, if not the most, renowned colour field painters, would be Mark Rothko. His skilled use of colour and knowledge of their relationship to each other, comes across in his works to create these large scale paintings which display colours to their best standard.

Recently I have been think back to Rothko' s works in how the colours come together on the canvas. This thinking links into Josef' s Albers *Interaction of Colour* . I have been exploring with ideas of broken down colour which is the background to the figure situated in it.





Mark Rothko, *Untitled (Red, Orange)*, 1968.

***How Mark Rothko Unlocked the Emotional Power of Color*²⁸**

Alina Cohen

The name Mark Rothko is synonymous with sensitive canvases that feature arrangements of rectangular panes in vivid hues. The artist was a skilled colorist. The great joy of experiencing his paintings is looking at how **the colors, shapes, and backgrounds interact with one another, particularly around the edges**. The soft, brushy borders that surround his color fields create one mood, while the sharper, straighter lines of the central forms elicit another. Alternate juxtapositions of similar or divergent tones—shades of deep blue against dark purple or bright red against brown—elicit disparate emotional responses. In employing a signature structure, Rothko found infinite variation.

Despite his devotion to this modern, abstract mode, Rothko derived significant inspiration from ancient, medieval, and Renaissance art and architecture. An erudite researcher, the artist transformed his scholarly understanding of art history into pared-down paintings. If they can at first feel opaque to the viewer searching for reference points, Rothko didn't mind. "*My*

²⁸ Cohen, A. *How Mark Rothko Unlocked the Emotional Power of Color*. Artsy Article (2019).

pictures are indeed façades (as they have been called),” he once said. “Sometimes I open one door and one window or two doors and two windows. I do this only through shrewdness. There is more power in telling little than in telling all.” That mystery and complexity have given him one of the most enduring and esteemed reputations in 20th-century art.



Mark Rothko, *No. 7 (Dark Brown, Gray, Orange)*, 1963.

Mark Rothko was an American painter known for his abstract canvases featuring blocks of glowing color. Orange and Yellow (1956) is a hallmark example of Rothko's method of employing thin washes of oil paint to create luminosity. "Art to me is an anecdote of the spirit," he once mused. "And the only means of making concrete the purpose of its varied quickness and stillness." Born Marcus Yakovlevich Rothkowitz on September 25, 1903 in Daugavpils, Latvia, in 1913 he and his family immigrated to the United States to escape persecution. Rothko attended Yale University on a scholarship for only a year before dropping out and relocating to New York.

There, he studied under Max Weber and adopted the flattened volumes and rich colors he saw in the paintings of Milton Avery. During this period, Rothko produced a number of figure paintings and interiors. By the late 1940s, Rothko had shifted into nonobjective abstraction, creating masses of pure color instead of figures in space. Commissioned in 1964 by the Houston art collectors John and Dominique de Menil, Rothko created the Rothko Chapel, a non-denominational chapel filled with many of his paintings. Deeply depressed throughout much of his life, the artist committed suicide at the age of 66, on February 25, 1970 in New York, NY. Today, Rothko's works can be found in the collections of The Museum of Modern

Art in New York, the Tate Gallery in London, the Albright-Knox Art Gallery in Buffalo, and the National Gallery of Art in Washington, D.C., among others.

During this period, he regularly visited the Metropolitan Museum of Art. Rothko particularly enjoyed Rembrandt's emotive use of light. "Reality was not so much depicted from without as illuminated from within," writes the artist's son, Christopher Rothko, in a catalogue essay for a retrospective at Vienna's Kunsthistorisches Museum, on view through June 30th. "If this is a quality we see frequently in Rothko's work, it served not simply as a sensory lure but also as an expression of philosophically driven ideas about the essence of painting and how it can speak to universal truths."

Early in his career, though, Rothko worked in a Surrealist, figurative vein. Inspired by urban life and mythology, he painted subjects that ranged from the subway to mystical birds to reconsiderations of the Last Supper and the Crucifixion. While taking a break from painting, he studied philosophy and classical drama. Rothko even wrote his own philosophical treatise on artmaking, titled *The Artist's Reality*. Chapters explored such topics as "generalization since the Renaissance," "primitive civilizations' influence on modern art," and "indigenous art," further demonstrating that while Rothko was trying to push art forward, he was often looking to the past.



Mark Rothko, *Underground Fantasy*, c. 1940.

Rothko's practice gradually built towards abstraction. In a 1943 letter to the art editor of the *New York Times*, he and Gottlieb established a program for their nascent Abstract Expressionist styles. "We favor the simple expression of the complex thought," they wrote. "We are for

the large shape because it has the impact of the unequivocal. We wish to reassert the picture plane. We are for flat forms because they destroy illusion and reveal truth.” Three years later, Rothko’s practice took a crucial turn when he started painting “multiforms” —busy, colorful compositions of fuzzy shapes and blots hovering against an often single-hued background. Over the next few years, he honed his technique until settling on his now-famous pared-down style. Yet, as Rothko’s son reminds us in the *Kunsthistorisches* catalogue, “anyone who thinks Rothko found a formula in 1949, which he simply applied and reapplied for the next twenty years, has not looked very closely at the work, or listened to the distinct accent with which each painting speaks.”



Mark Rothko, *Self-Portrait*, 1936.



Mark Rothko, *No. 2*, 1947.

Meanwhile, Rothko’s career was soaring. In 1952, the Museum of Modern Art included his abstract works in the era-defining exhibition “15 Americans.” Major dealers of the day, including Betty Parsons and Sidney Janis, were showing his work in their galleries (to be fair, Peggy Guggenheim had already given him a solo show in 1945). Another important honor arrived in 1958 when Rothko represented the United States at the Venice Biennale. A 1961 retrospective at MoMA cemented his place in the modern-art pantheon.



Mark Rothko, *Untitled*, 1969.

Throughout the 1960s, Rothko worked on two of his most famous site-specific commissions. The first, a series of paintings for Harvard University, features red, black, purple, and brown tones. He described the works as “scenes from the Easter cycle” —from Christ’ s death to his resurrection. The subject matter, of course, inspired innumerable Renaissance paintings and frescoes. To adapt the story to his own abstract mode, Rothko created a vertical motif in shades of orange, purple, and black. According to art historians Jeffrey S. Weiss and John Gage, the somber-hued canvases signify Christ’ s suffering on Good Friday, while the brighter ones represent Easter and the resurrection.

In 1964, collectors John and Dominique de Menil commissioned Rothko to make canvases for a chapel in Houston. Given the artist’ s adoration for ecclesiastical architecture, he was a perfect fit. He made 14 large-scale paintings in shades of purple and black, now mounted along the walls of the octagonal sanctuary. “They’ re sort of a window to beyond,” chapel historian Suna Umari once explained to NPR. Rothko “said the bright colors sort of stop your vision at

the canvas, where dark colors go beyond. And definitely you' re looking at the beyond. You' re looking at the infinite.”

Rothko' s spirit **lives on in his moving, reflective paintings**. He left behind hundreds of canvases, testifying to both his devotion to the studio and to his unwavering commitment to advancing modern art.

This article shows a really interesting background to how Rothko began to think through colour and its relationship. The way Rothko went through different phases of art is also interesting to take note of and how they play into his works now.

MARK ROTHKO, Selected Works.

I enjoy these selected paintings due to the relationship the bold sections of colour that define and bring together the work. In some ways it could be said to think that this is what I have been trying to look into.

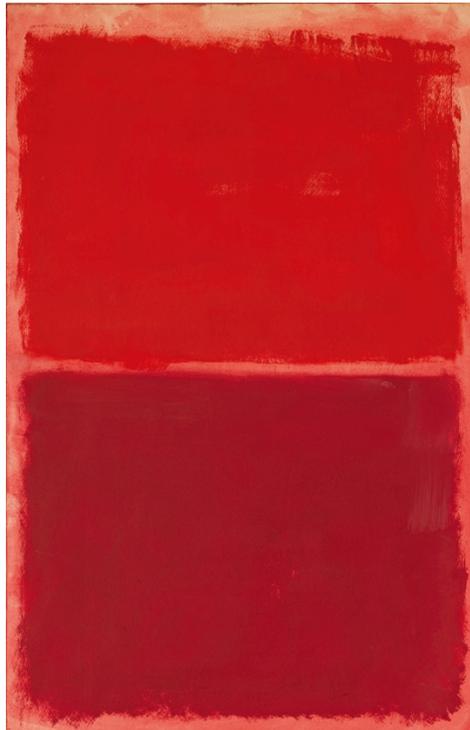


Figure 7. Red Abstracts



,1943. Figure 8. Untitled, 1952.



Figure 9. No. 7 or No. 11, 1949.

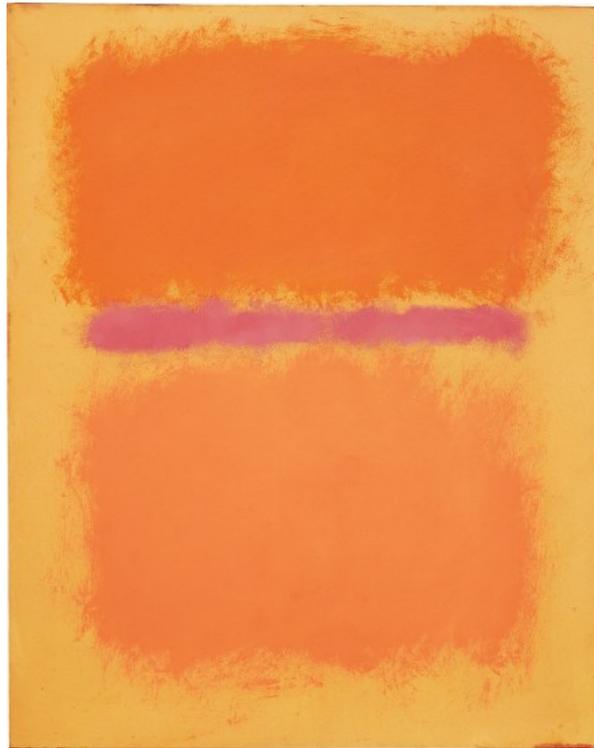


Figure 10. Untitled, 1959.



Figure 11. No. 1 (Royal Red & Blue)

ANIMATION AND PAINTING

What is the relationship between Animation and Painting like? What have other Artist done with these tow mediums and how does the narrative change when thinking about this.

Recently I have been making a selection of works which all follow on along the same images but are in different mediums. This has lead me to question the relationship between animation and painting.





'Old-school painting meets cutting-edge animation: Loving Vincent is a rich visual feast' . (Loving Vincent Film Study)²⁹

Stuart Messinger, *The Conversation*. (2017).

The cinematic experience continues to be dominated by digitally led projects and audiences who increasingly expect more and more technical innovation. So it is refreshing when a mainstream cinema release consciously chooses to place traditional, artist-led techniques at its very heart. Hailed as the first “fully painted feature film” *Loving Vincent* – the story of Dutch post-impressionist Vincent Van Gogh – does just that.

Recreating Van Gogh’s vivid impasto brushstrokes (where the paint is applied thickly to create texture and convey feeling), the film resembles the struggling artist’s paintings come to life – and to mesmerising effect. **But hidden beneath the beautifully painted flowing surface of animated oil paint and canvas, lie a number of sophisticated digital processes that helped bring**

²⁹ Messinger, S. (2017). *Old-school painting meets cutting-edge animation: Loving Vincent is a rich visual feast*. *The Conversation*, Loving Vincent Film Study.

this project to the screen. The result is a groundbreaking hybrid that perfectly bridges the space between a traditional artform and cutting-edge animation technology.

Loving Vincent was co-directed and co-written by husband-and-wife team Dorota Kobiela and Hugh Welchman – the Academy Award-winning producer of the 2006 stop-motion animated short Peter and the Wolf – and was produced jointly by Breakthru Films and Trademark Films.



The genesis of the film came from a very human place when, during a time of personal crisis, Kobiela, a trained painter and filmmaker, turned to the letters of Vincent van Gogh for comfort. It was in response to these letters that she developed the idea, originally intended to be a short film that would be a personal project.

Evolving Loving Vincent into a feature film was a six-year journey that allowed Kobiela to combine her passions for filmmaking, painting and the art of Van Gogh – bringing Van Gogh's tragic story and his distinctive art to life.

The story is visually interpreted through his paintings, including many of Van Gogh's most iconic portraits and landscapes, told in his own words and those of the people who knew him, from his brother Theo to his friend and fellow painter Paul Gauguin.

Naturally in this digital age, it was assumed that the film would be made using computer-generated techniques. But Kobiela and Welchman felt strongly that painting was the only way of bringing Van Gogh's work to life, remaining faithful to the essence of the original works and to Vincent himself. It would be a labour of love.

Bringing art to life



In 2014 following a year-long phase of painting design, computer generated layout and “previsualisation” – a method used in live-action and animated film making to get an idea of complex scenes before filming starts – the film was then shot with real actors. The cast included Robert Gulaczyk, Douglas Booth, Chris O’ Dowd, Helen McCrory, Saoirse Ronan and Aidan Turner performing in a combination of green-screen studio stages and sets built in Van Gogh’ s style to replicate elements of the painted scenes.

Real actors, dressed as subjects from Van Gogh’ s paintings, were filmed on green screen, each frame traced and then painted. Breakthru Films, Author provided
This live-action footage was then combined with computer-generated visual effects such as digital backgrounds, buildings, clouds and animals, which would serve as key reference material for the animators. This footage, merging the actors and their surroundings was “rotoscoped” – a traditional method of projecting individual film images that are then traced frame-by-frame – by the painting animators in oil paint on canvas. It was a painstaking and meticulous process and a true testament to all the artists involved. The finished film has 65,000 frames and used more than 1,000 canvases and 4,500 litres of oil paint.



But it is one thing to paint a still image – a single moment frozen in time – like Van Gogh, it is quite another to animate in his style for a 94-minute feature-length film. So the production team set out to recruit a crew of artists – painter-animators – who could transform the live-action footage into painted form and yet remain faithful to Van Gogh's distinctive style. This meant capturing the same technique and spirit of the original work.

Sophisticated **painter-animators** workstation technology was patented specially for the film. Breakthru Films, Author provided **These painter-animators also required an essential understanding and feeling for the movement required – the ability to literally animate every brushstroke.** Following applications from more than 600 artists, painting auditions were held and the successful artists received six weeks of training delivered by Kobiela herself. A total of 125 painter animators worked on the final film.

Based in the production's three studios at Gdansk and Wroclaw in Poland, and one in Athens, the painter-animators worked on PAWS (painting animation workstations) a new technology devised and patented specifically for the project by Breakthru Films.

These special workstations allowed the artists to **focus on the creative processes of recreating the reference footage in painted form and then digitally capture the completed frames.** Each PAWS unit housed a painting desk, a projector that allowed the live-action reference footage to be beamed on to canvas for rotoscoping, a customised lighting rig and a 6K resolution digital camera to capture and record each frame.

Loving Vincent used 125 painter-animators who spent months recreating Van Gogh's trademark brushstroke style for every frame. Breakthru Films, Author provided

The end product is an exceptional, ground-breaking film. You cannot help but wonder how Van Gogh himself would have felt to see his extraordinary visceral paintings recreated as a moving film. For us lesser mortals, Loving Vincent is a rich visual feast that captures the spirit of a great artist who burned to receive recognition for his talent while he was alive.

The film *Loving Vincent* is a really notable example of painting and animation coming together that creates a “*hybrid that perfectly bridges the space between a traditional artform and cutting-edge animation technology*”. The film unpacks the nature of the how an amination combined into painting comes across, asking questions then such as, what this then shows the viewer? What does this do to the induvial stills?



Matt Bollinger (Animator)

I have been teaching myself animation for a couple of months now and since which I have been thinking of how these ties into my paintings and other mediums. I have found that the animations create a much more developed narrative around the work, I can't say that an all-round positive or not yet, but it has made me think towards the way an idea is conversed to its viewer.

Moreover, I have recently been looking into different moving image artists and exploring how they show their narratives in their work. Matt Bollinger combines both animation and painting together in an interesting way.





'Matt Bollinger uses hand-painted stop motion animation to create this hypnotic thriller'³⁰

Rebecca Fulley, *Its Nice That.* (2017)

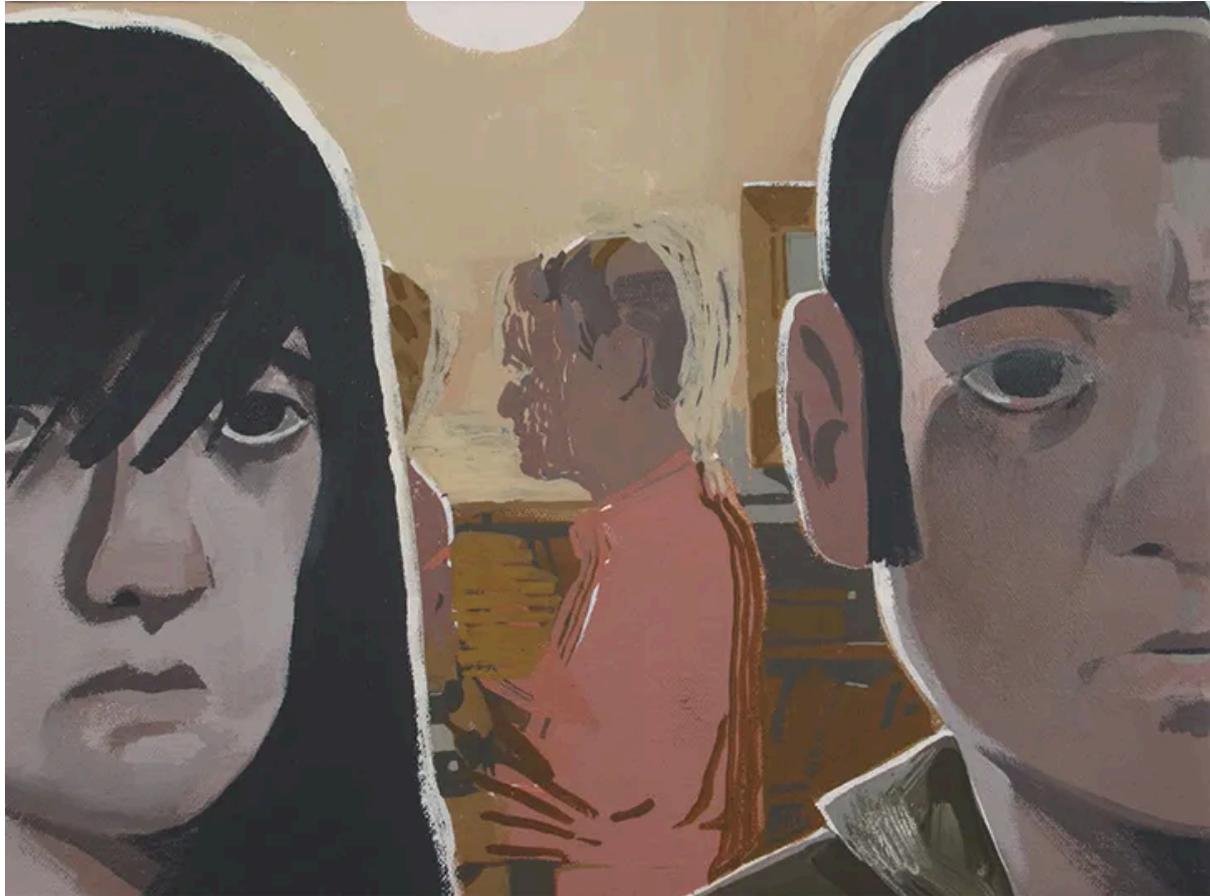
Matt Bollinger' s animation *Apartment 6F* takes inspiration from the artist' s own life and his interest in 60s horror films like *Rosemary' s Baby*. Using his own apartment to paint from, **Matt uses hand-painted stop motion animation to tell his story.**

"I wanted to combine the mundane everyday with something heightened that seemed to burst through from the character' s imagination," explains Brooklyn-based Matt. In the animation, a freelance web designer in New York is invited to a housewarming by a neighbour, after his wife goes on a trip. Matt adds: *"After drinking too much, social anxiety and possibly unnatural occult influences cause him to spiral into dark visions, which are suspended only when his wife returns."*

The project took three months for Matt to complete, and his process was long and detailed, which started with making 54 small paintings on canvas. *"Each of these was the*

³⁰ Messenger, S. (2017). *Old-school painting meets cutting-edge animation: Loving Vincent is a rich visual feast.* The Conversation, Loving Vincent Film Study.

opening frame of a shot in the video. Then, with the painting on a copy stand, I modified each one a small amount and took a photograph,” says Matt. “I would repeat this process sometimes hundreds of times per canvas.”



The transition between scenes is beautiful, Matt’s **mark makings are visible and full of texture, adding another layer to the narrative.** As a painter originally, Matt felt comfortable using these hands-on materials, as he found them easier to manipulate. *“I made my earlier animations using relatively dry drawing materials (ball point pen, felt-tipped marker, and correction fluid). **This new process allowed me to animate the liquid qualities of the paint in ways that took on a personified dimension,**”* he explains.

Matt has also created the score, which plays alongside the hypnotic visuals and it took him several weeks to record the sounds and make the final mix. “Many of the diegetic sounds were created with instruments, which gives me the impression that I’m drawing the auditory scene just as I’m painting the visuals,” says Matt. “As things move around in my videos, they leave trails and obscure imagery that was there previously. In a way, movement is traumatic to the image. Each painting contains its history tattooed across the picture plane.”

See Video Here –

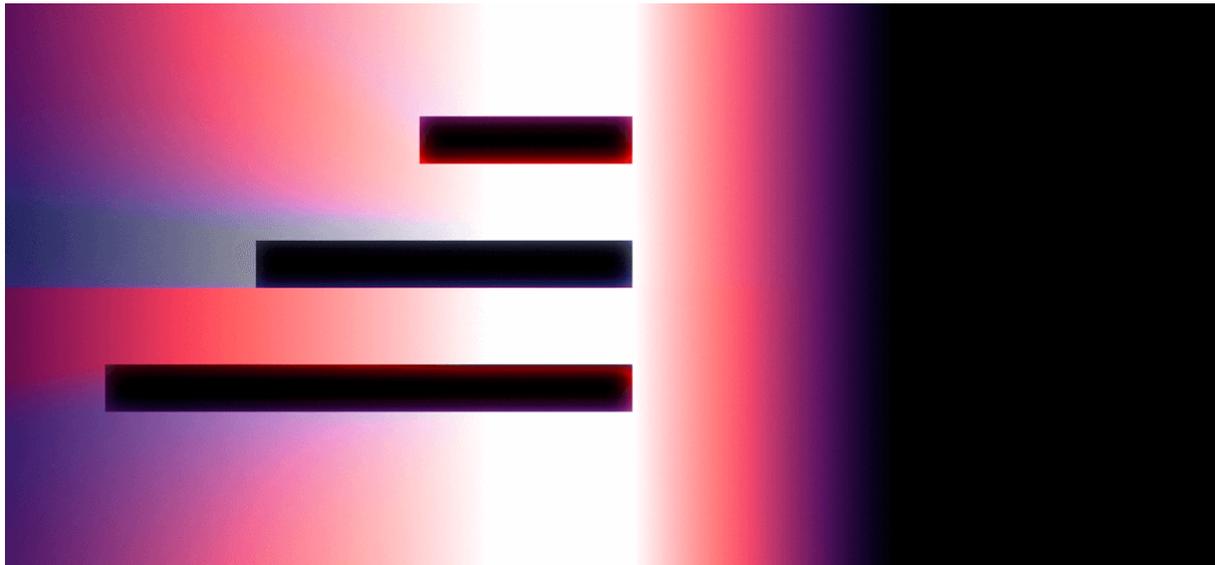
<https://www.itsnicethat.com/articles/matt-bollinger-apartment-6f-210317>

Max Hattler (Animator)

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Moreover, I have recently been looking into different moving image artists and exploring how they show their narratives in their work. **Max Hattler combines both animation and painting together in a really interesting way.**

The image is a screenshot of a Vimeo profile page for Max Hattler. At the top, the Vimeo logo is on the left, and navigation links for 'Join', 'Log in', 'Watch', 'Pricing', 'Product', and 'Solutions' are in the center. A search bar with the text 'Search videos, people, and more' and a magnifying glass icon is on the right, next to a 'New video' button. Below the navigation is a large video thumbnail showing a modern apartment building facade. On the left side of the profile, there is a circular profile picture of a man with glasses, a share icon, and the name 'Max Hattler' with the handle 'he/him'. Below the name is a bio: 'Max Hattler is an artist interested in the space between abstraction and figuration in the movi...Read more'. Under the bio are three social media links: 'Max Hattler', 'Facebook Page', and 'Twitter'. To the right of the profile information, it says '58 videos' above another large video thumbnail of the same apartment building facade.



'Five Artists Creating New Visions of What Animation Can Be'³¹

Max Hattler

Max Hattler is an artist interested in the space between abstraction and figuration in the moving image, where storytelling is freed from the constraints of traditional narrative. He works across the fields of experimental animation, video installation and audiovisual performance. Max has presented his work in exhibitions and festivals around the world. He holds a Doctorate in Fine Art from the University of East London and an MA in Animation from the Royal College of Art. He is an Assistant Professor at the School of Creative Media, City University of Hong Kong.

Max Hattler, a German video artist and experimental filmmaker, uses a wide variety of techniques: stop-motion, motion graphics, 2D and 3D computer animation and everything in between to create stunning abstract films. Some are handsome experiments in design, while others touch on serious themes. In the case of RE:AX (2011) the film evokes wartime experiences (the suggestion of bombs sailing through a night sky and exploding) and ominous feelings (rays of light coming from the eyes of a skull).

³¹ Cohen, K (2012). *Five Artists Creating New Visions of What Animation Can Be*. Animation World Network Article.

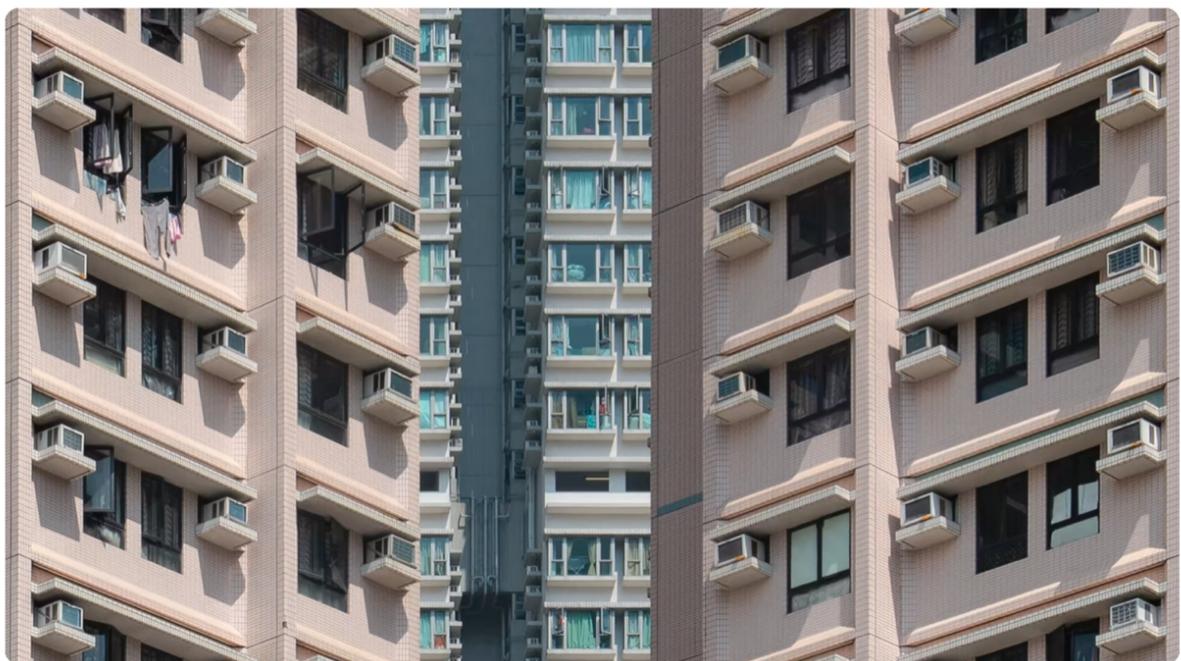
In *Collision* (2005) the work has an abstract symbolic narrative with bold, colorful American quilt patterns and Islamic symbols meeting each other and hopefully existing in harmony.

His *1923 aka Heaven* (2010) is an award winning psychedelic short which zooms in on a series of complex patterns of moving dots and shapes

Another side of Max is his public performance art. One of his commissioned pieces, *X* (2012) was projected outdoors onto a curtain of fine mist. www.maxhattler.com/x/ There are also audiovisual performances he creates for concert situations at www.maxhattler.com/live/. Have a wonderful time discovering the many facets of Max's art.

Max says, "I am interested in the space between abstraction and figuration, where storytelling is freed from the constraints of traditional narrative. My work contemplates microcosms, moments, atmospheres: Close-ups as reflections on the big picture. While my films tend to be without dialogue, they explore the relationship between sound, music and the moving image."



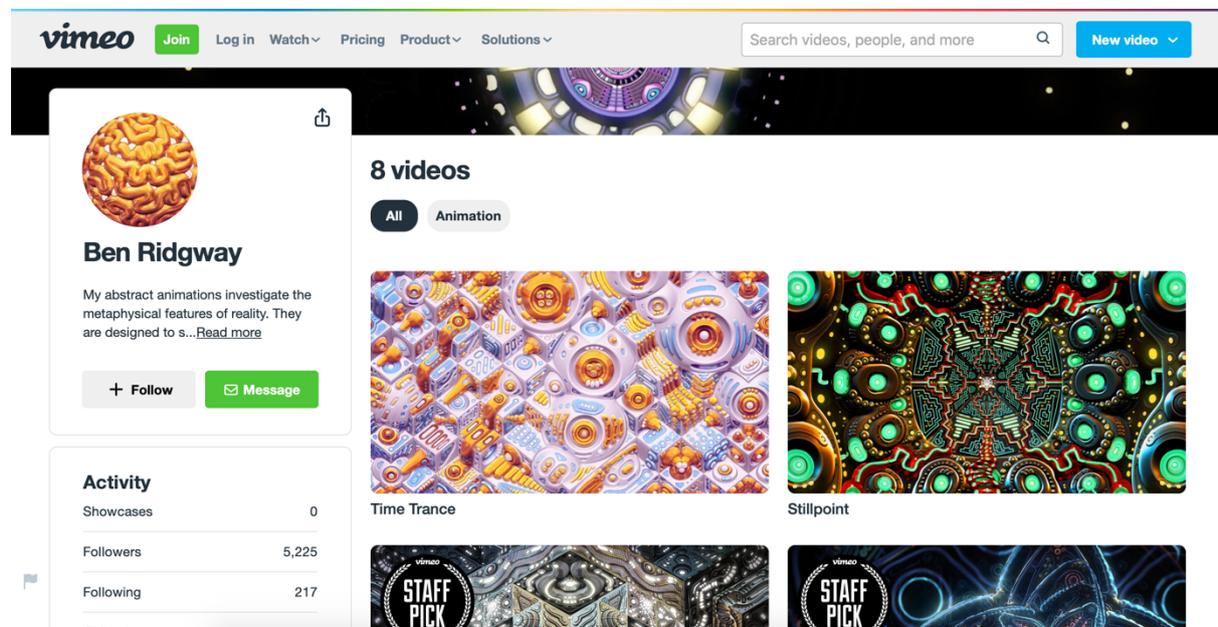


[Serial Parallels \(2019\) trailer](#)

Ben Ridgway (Animator)

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Moreover, I have recently been looking into different moving image artists and exploring how they show their narratives in their work. Ben Ridgway combines both animation and painting together in a really interesting way.



The image shows a screenshot of Ben Ridgway's profile on the Vimeo website. The profile includes a circular profile picture of a brain-like structure, the name 'Ben Ridgway', and a bio: 'My abstract animations investigate the metaphysical features of reality. They are designed to s...Read more'. There are buttons for '+ Follow' and 'Message'. Below the bio is an 'Activity' section with statistics: Showcases (0), Followers (5,225), Following (217), and Collections (99). The main content area displays '8 videos' with filters for 'All' and 'Animation'. Two video thumbnails are visible: 'Time Trance' and 'Stillpoint', both featuring complex, colorful, abstract patterns. Below these are two 'STAFF PICK' badges over more video thumbnails.

*Five Artists Creating New Visions of What Animation Can Be*³²

Ben Ridgway

Ben Ridgway's recent works breathe life into inorganic matter. He showed *Triboluminescence* (2010), a remarkable looking work where shapes glow, pulsate and seemingly dance about to form complex, intricate mandala patterns. Seeing the film was a meditative experience in which I was transfixed on the beautiful forms as they subtly changed.

At a faculty exhibit a few weeks later he showed *Cellular Circuitry* (2011), in which his organic forms seem more cellular/plant-like. They form logical looking patterns found in nature that rotate in circular patterns.



Ben has been creating experimental animated films since 1992 and it appears his art has constantly been evolving in form, content and technique. In *Tic Toc Continuum* (2005) dozens of clock faces exist in a black and white landscape that might have been inspired by Salvador Dali. In *Xenomycology* (1998) alien plants and creatures live in an extraterrestrial world. In *Olive Shower* (1997) olives rain down in a hand-drawn world.

³² Cohen, K (2012). *Five Artists Creating New Visions of What Animation Can Be*. Animation World Network Article.

Ben' s films have been showcased in film festivals around the world including Annecy. Besides being a fine artist he has over a decade of experience working both as a 3D artist in the video game industry and as a professor.

Ben Ridgway' s Website: www.benridgway.wordpress.com/

Frank Bowling (Painter)

Frank Bowling is an artist who believes that colour is as important in telling a story as the subject he paints. Bowling layers colours and uses splashes, drips and smudges to create different effects. He mainly uses colours, as opposed to objects and figures, to create emotion.

In his painting *Whose Afraid of Barney Newman* Bowling uses bright colours and blurred edges. Does his painting look like anything to you? Did you know these are the colours of the Guyanese flag?





Artist Frank Bowling³³

Hauser and Wirth Article

Over the course of six decades, Frank Bowling has relentlessly pursued a practice which boldly expands the possibilities and properties of paint. Ambitious in scale and scope,

³³ No Author, (2019). *Frank Bowling Artists*.

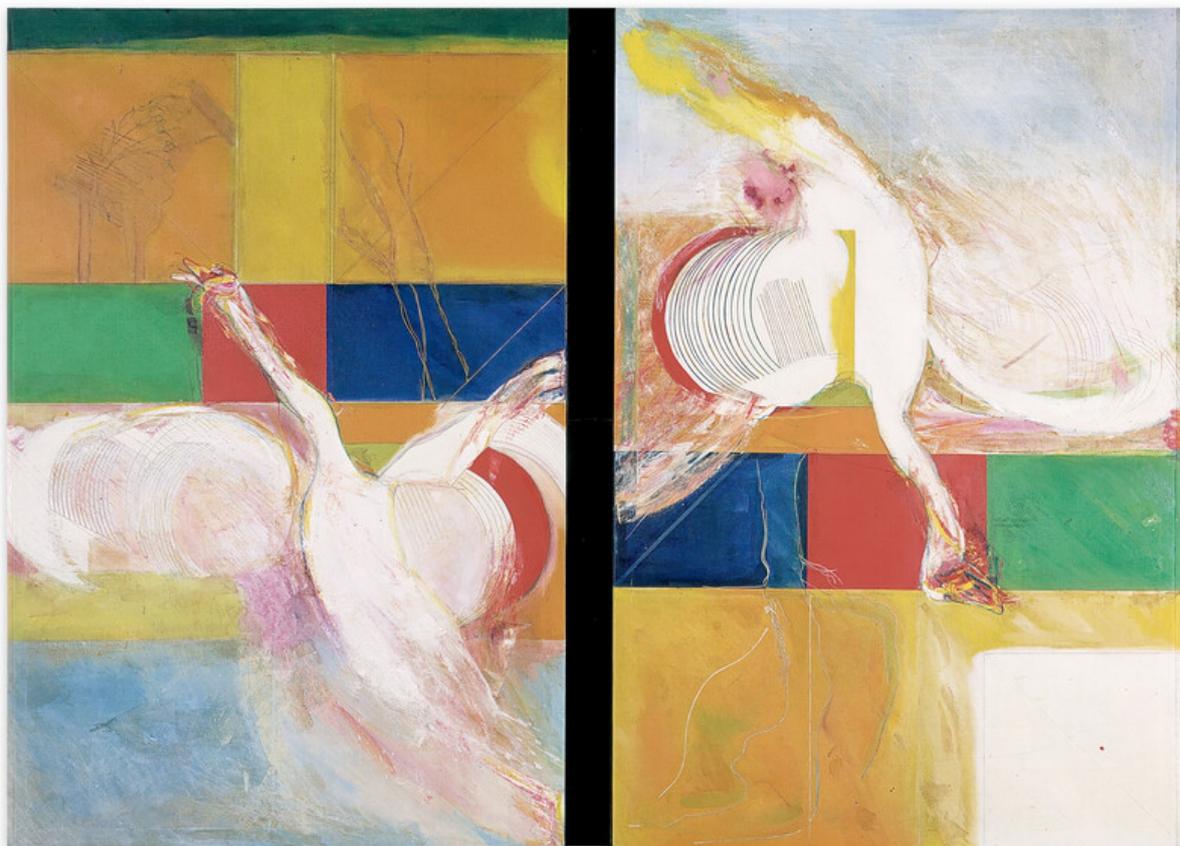
Hauser and Wirth Article

< <https://www.hauserwirth.com/artists/30000-frank-bowling> >

[Accessed 16.11.20]

his dynamic engagement with the materiality of his chosen medium, and its evolution in the broad sweep of art history, has resulted in paintings of unparalleled originality and power. Bowling has been hailed as one of the foremost British artists of his generation. Born in Guyana (then British Guiana) in 1934, he arrived in London in 1953, graduating from the Royal College of Art with the silver medal for painting in 1962. By the early 1960s, he was recognized as an assured force in London's art scene. During this period, his highly individual language of painting, which emerged from expressionistic figuration and pop art, encompassed autobiographical elements and the artist's socio-political concerns.

Bowling went on to divide his time between the art scenes in London and New York, maintaining studios in both cities. This transatlantic orientation was to see his early engagement with expressive figuration and pop art shift to an immersion in abstraction which continues in his practice today. Visible in his work are the legacies of both the English landscape tradition and American abstraction from which Bowling honed a distinctive vocabulary, combining figurative, abstract and symbolic elements. As Bowling has explained, 'I was always very conscious of scratching out and of new interpretations replacing the old; updating traditions.'



A major reorientation in Bowling's practice came in 1966 when he relocated from London to New York, at a time when the artistic scene was divided along lines of formalism and politics. In New York, Bowling pushed his work in new directions. He met Jasper Johns and engaged in dialogue with his contemporaries, such as Jack Whitten, Mel Edwards, Al Loving, and Daniel Johnson. In 1969, Bowling organized, curated, and wrote the catalogue essay for the notable exhibition, '5+1', at the State University of New York, Stony Brook, and Princeton University, which showcased the work of five African American abstract artists as well as his own recent paintings. He expressed frustration at the critical invisibility of Black artists and the narrow parameters by which his art and that of his peers was being assessed. Through his writings, as a contributing editor of *Arts Magazine* (1969-1972), he resisted what he saw as the reductive categorization of 'Black Art' as purely political in subject matter, **staking a claim for abstraction.**



By 1971 Bowling's visionary approach to painting fused abstraction with personal memories. Concerns of color, surface and process gained in prominence resulting in his iconic series of 'Map Paintings', which include the stenciled landmasses of South America, Africa and Australia. Over the years, the points of reference in his work reflect Bowling's interest in a wide scope of art history, from Constable and Turner, to Barnett Newman and Mark Rothko. From 1973 to 1978, Bowling experimented with ideas of chance and 'controlled accidents', pouring paint from a two-meter height to create his visually arresting 'Poured Paintings', an expansion from color field painting.

Bowling returned to London in 1975 but continued to spend significant periods in New York. His sculptural paintings of the 1980s include embedded objects and thickly textured canvases, and have been described as evoking landscape, riverbeds and geological strata. Bowling shares Turner and Constable's preoccupation with light, which is never more evident than in his expansive 'Great Thames' paintings of the late 1980s.

Today Bowling's mastery of the painted medium and explorations of light, color, and geometry incorporate the use of ammonia and multilayered washes. His restless reinvention of the painted plane endures in his current bodies of work which continue to break new ground through his use of thick impasto textures, acrylic gels, collage, stitched canvas and metallic and pearlescent pigments. At the age of 86, Bowling works every day in his South London studio, accompanied by his wife, Rachel, other family members and friends, forever driven by his fascination with exploring the vast and radiant possibilities of paint.

Frank Bowling's work is interesting to me. The way he uses colour, form and light in his work is really thought-provoking this is then enhanced through how he applies the paint. The forms which are in a selection of his works often depict 'moments and memories' around his everyday life. Moving forward, Bowling's work links into recent areas of interest in my practice with how I am making the composition and how the narrative then comes across from it.

COLOUR³⁴

How is colour used in art? Frank Bowling is an artist who believes that colour is as important in telling a story as the subject he paints. Bowling layers colours and uses splashes, drips and smudges to create different effects. He mainly uses colours, as opposed to objects and figures, to create emotion.

In his painting *Whose Afraid of Barney Newman* Bowling uses bright colours and blurred edges. Does his painting look like anything to you? Did you know these are the colours of the Guyanese flag?

Arthur Hughes, who was part of the Pre-Raphaelite Brotherhood, used colour in a different way to Bowling. The Pre-Raphaelites believed the object was as important as colour. They used colour to reflect the world around them as closely as possible.

In the Tate article referenced there is a really interesting visual breakdown of the ideas about colour and form and its effect. I think the particular distinguishment of the artist and their works put together in through colour and shape, shows some interesting insights into how colour and form can play to effect in a work.

³⁴ No Author, (2019). *Colour and Shape*

Tate Article

< <https://www.tate.org.uk/art/teaching-resource/colour-and-shape> >

[Accessed 18.11.20]

RED



Kim Lim
Red Aquatint 1972

Red



Sam Taylor-Johnson OBE
Red 2000



Michael Craig-Martin
Knowing 1996

GREEN



Sandra Blow
Green and White 1969



Pauline Boty
The Only Blonde in the World 1963



Nicholas Monro
Green Figures 1970

BLUE



Saloua Raouda Choucair
Composition in Blue Module 1947–51



Paula Rego
The Dance 1988



Roger Hiorns
Untitled 2006

YELLOW



Patrick Heron

Yellow Painting : October 1958 May/June 1959 1958–9



Catherine Yass

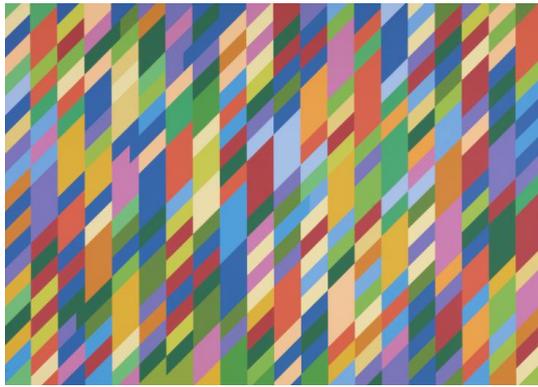
Corridors 1994



John Piper

Petit Palais: Yellow and Yellow 1972

MULTI-COLOUR



Bridget Riley
Nataraja 1993



Liam Gillick
Returning to an Abandoned Plant 2007



Sir Eduardo Paolozzi
Bash 1971

SHAPE³⁵

From sharp corners, curved edges and towering sculptures, shape is used throughout art. Geometric shapes, like squares and triangles, are mainly found in objects made by humans, like houses, cars and factories. Irregular shapes are more likely to come from nature. Imagine a leaf or a shell.

Frank Stella's Hyena Stomp (below) uses sharp edges and corners. He even became known as a 'hard edged artist'. Gillian Aryes used layers of different shapes on top of another. In her artwork The Colour That Was There (in the slideshow above) she uses a rough square as a background. She then mixes circles, rectangles, curved lines and bright colours to give her work depth. Below are more examples of different shapes in artwork.

In the Tate article referenced there is a really interesting visual breakdown of the ideas about colour and form and its effect. I think the particular distinguishment of the artist and their works put together in through colour and shape, shows some interesting insights into how colour and form can play to effect in a work.

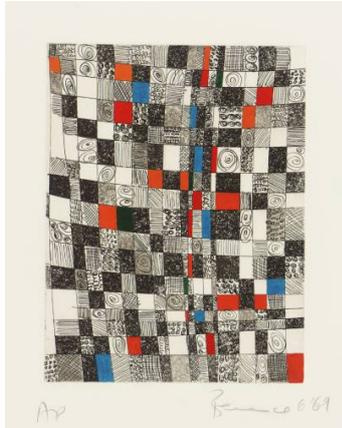
³⁵ No Author, (2019). *Colour and Shape*

Tate Article

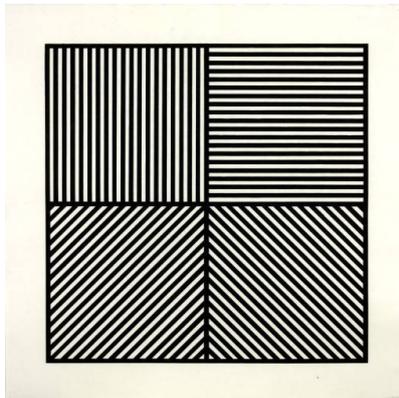
< <https://www.tate.org.uk/art/teaching-resource/colour-and-shape> >

[Accessed 18.11.20]

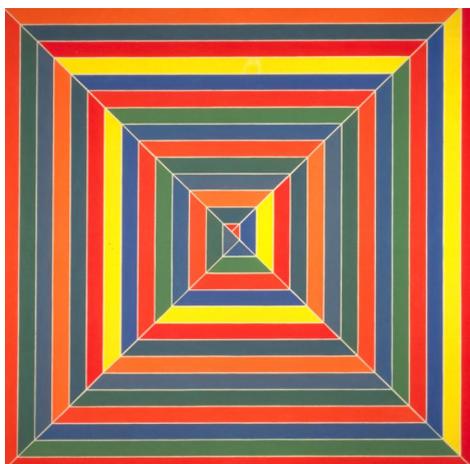
SQUARES



Berenice Sydney
Little Squares 1969



Sol LeWitt
A Square Divided Horizontally and Vertically into Four Equal Parts, Each with a Different Direction of Alternating Parallel Bands of Lines 1982



Frank Stella
Hyena Stomp 1962

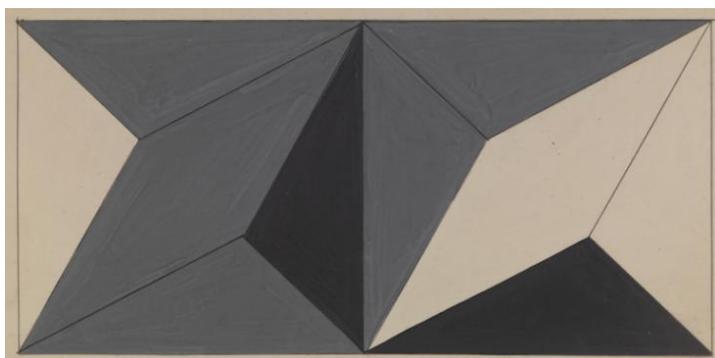
TRIANGLES



Richard Smith
Triangles 1978



Benode Behari Mukherjee
Two Triangles 1957



Lygia Clark
Planes on Modulated Surface (Study) (61) 1957

CIRCLES



Richard Long
Small White Pebble Circles 1987

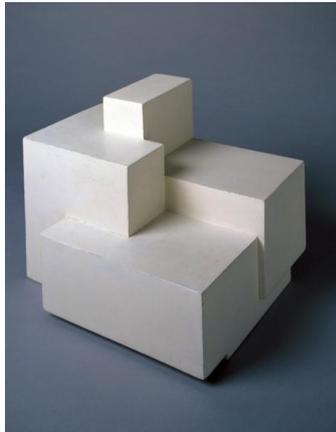


Dame Barbara Hepworth
Two Forms (Divided Circle) 1969



Herbert Bayer
Four Segmented Circles 1970

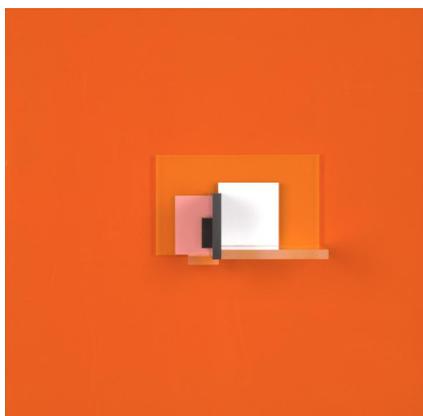
THREE-DIMENSIONAL SHAPES



Ben Nicholson OM
circa 1936 (sculpture) c.1936



Rebecca Horn
In the Triangle 1973-4



Mary Martin
Perspex Group on Orange (B) 1969



*COLOUR INSTALLATIONS – feel colour with your entire body*³⁶

Bevil Conway, Mind the Interior Article

“My fascination with colour started at a very early age. Colour is an incredibly expressive medium, but at the same time incredibly subjective. For me, it has an intangible, almost magical quality. It all started with searching for the rainbow in the sky, then colour coordinating my books and clothes, fighting with my friend over the fact if her t-shirt was orange or red. Of course, it was red, I was so certain about that.

If you draw a line on your canvas, it will be the same shape now, later, tomorrow, and forever. But make that line red and suddenly everything changes.

³⁶ Conway, B, (2019). *COLOUR INSTALLATIONS – feel colour with your entire body*

Article by Mind the Interior

<<https://mindtheinterior.com/colour-installations-feel-colour-with-your-entire-body/>>

[Accessed 18.11.20]

This quote is so on point! The red you put on the canvas will not be the same red once it dries. It will not be the same red in a different light, it will not be the same red if you put a green line next to it, and, most importantly, it will not be the same red to everyone else. It is this striking ambiguity in colour that always caught my interest.

For this month's Curated by M.T.I. section I will present you some inspiring colour installations, made by artists who explore colour in very interesting ways. I will end up with showing you a fun university project, where I got to be the creator of my own colour experiment.

Whether site-specific or designed with a venue in mind, installation art has the ability to transform its surroundings and invite viewers to observe art from new perspectives. This colour installations create an immersive experience for the viewer and invite them to feel colour with their entire body.

1. CHROMASATURATION BY CARLOS CRUZ-DIEZ

Carlos Cruz-Diez (b. 1923) is a Franco-Venezuelan artist who has been active within the field of Kinetic and Optical Art since the 1960s. His body of work has established him as one of the key twentieth-century thinkers in the realm of colour.

Cruz-Diez has been experimenting with vision and colour since that time, dedicating himself to an almost scientific exploration of chromatic experience in order create a method for showing colour in what he calls 'its permanent mutation'.

"We have made colour a certainty over the centuries, but it isn't. Colour is just a circumstance created instantaneously before our eyes." - Carlos Cruz – Diez



2. THE COLOR FACTORY

Color Factory is a collaborative, pop-up, interactive art exhibit that debuted in San Francisco in August 2017. What was intended as a month-long run, unexpectedly flourished as a celebration of color and creativity that lasted for another eight sold-out months.

In August 2018, a whole new palette came to New York City in SoHo's Hudson Square neighbourhood. In 20,000 square feet, they feature brand-new participatory colour installations— **hues that invite curiosity, discovery and play by engaging all of your senses in unexpected ways.**

It has soon become an Instagram sensation and has commonly been cited as part of a trend of "Instagram museums", temporary art exhibitions catered towards younger millennials which are designed to be photographed and shared on social media. Co-founder Jordan Ferney (the creator of the popular blog Oh Happy Day) has publicly pushed back against descriptions of Color Factory as an Instagram museum, stating that her goal "had always been to make something that was beautiful to experience, not photograph". **I personally think that art that becomes instagrammable doesn't lose its core message. It just has that something more that is worth sharing with the rest of the world.**

COLOUR INSTALLATIONS – CONCLUSION

All the immersive colour art installations give space for a very personal interaction with colour. They create spaces for a full body, sensorial experience, where the viewer can feel/play/interact/experiment with this amazing medium. **Most of all, they make us realise that colour is subjective, but it always makes us feel something, it effects our wellbeing.**

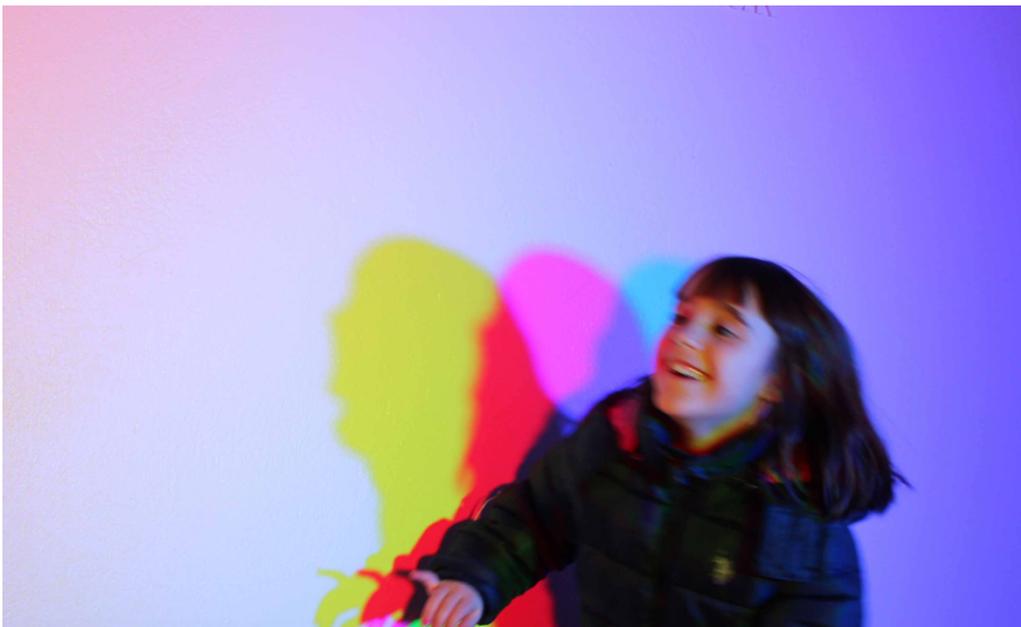
Why designers should embrace the fact we all see the world of colors differently, interpret and experience them in our own subjective way?

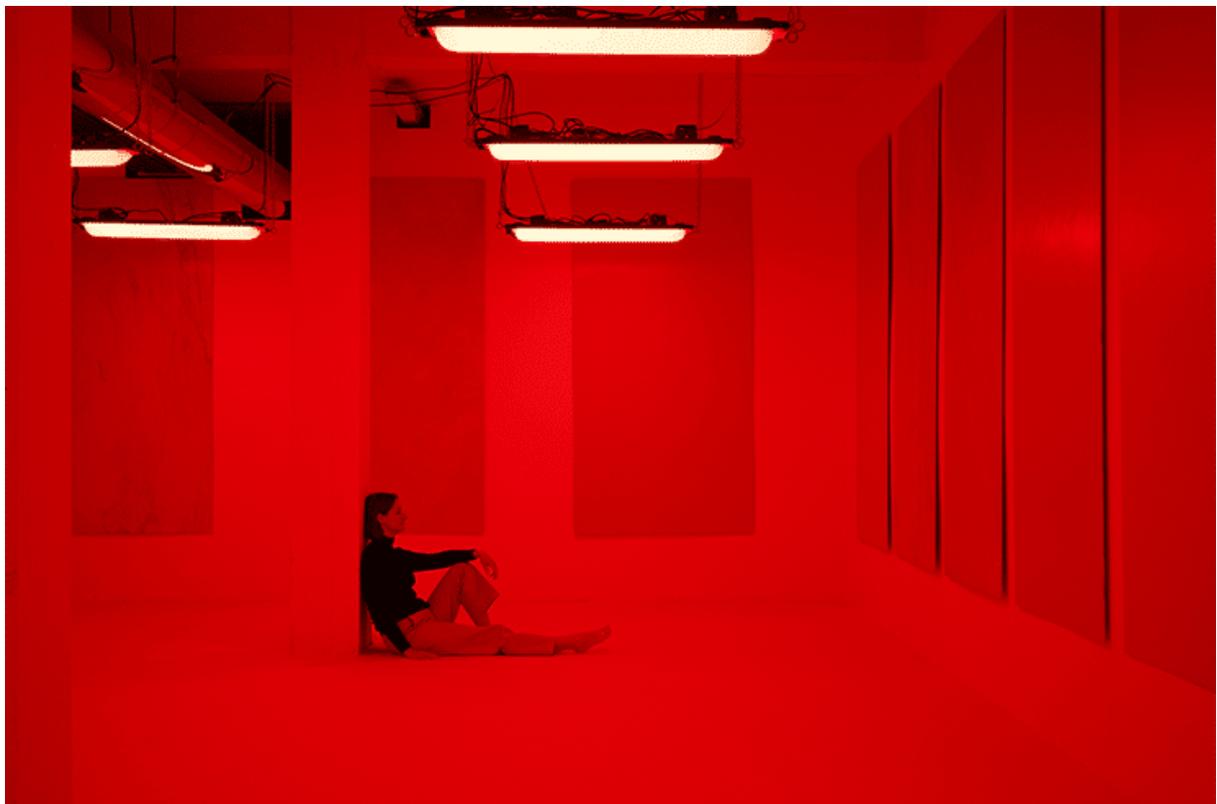
If you have spent hours selecting just the right shade of green for your poster, then to suddenly realise that no one else will see that green in exactly the same way could cause a bit of chaos in our controlling design minds. I can give you a simple way out of this struggle: just embrace the fact, that colour is not a universal language. From a purely artistic point of view, it means that your art and design are fresh and new at

every viewing. Every individual, in every type of lighting, whether you are presenting something on a screen, in print, or live, will see a unique piece of art. You can be standing next to someone looking at the same canvas and be having two completely different experiences.

I love colour, because it can make people smile, give energy, joy, and most importantly, it makes people happy. When people have happier minds, the world will be a better place.”

The way this article talks about colour and the narratives around it, is really interesting when thinking of the recent piece. I will often refer back to installations to gain inspirations for the figure submerged with colour, and it is in this exhibition that ideas behind my work are really echoed in the artist ideas here.





**Project** Live Colour³⁷**Location** London, UK**Lighting Design** Liz West Studio, UK

British visual artist Liz West presented her mesmerising light installation Live Colour in partnership with The Domus Group during Clerkenwell Design Week 2019 – London’s annual design festival showcasing emerging designs from leading industry professionals. West is known for creating vivid environments that mix luminous colour and radiant light, having presented works both nationally and internationally.

West’s multi-sensory art explores how light and colour can stimulate the senses to invoke physical and psychological responses. Working against a minimal backdrop of white porcelain slabs at Domus, West imagined a space with changing blue, pink, green, red and orange washes of colour, against a white floor and walls, with ‘pure’ white light as part of the cycle to normalise the overall colour intensity.

Using numerous DMG Lumière SL1 MIX LED fixtures to create accurate Rosco gel matches, Liz created a vast and immersive colour environment that provided a unique

³⁷ Exhibition, Information Live Colour (2019)

eye-popping opportunity for thousands of visitors to experience what it feels like to be immersed in pure colour.

This work asked: **How does colour make you feel? What is your favourite colour? Did you feel as you expected you would when immersed in a pure colour? How does white feel once having experienced other bright colours?** West commented, “Live Colour plays with people’s individual perception of colour, challenging how they feel when immersed totally in one colour, then quickly drowned in another in deep contrast. Colour is a universal language that is understood by all, although **we each bring to the work our individual memories and lived experiences of colour.**”

Live Colour was made using the DMG Lumière MIX LED technology. Ten SL1 MIX fixtures were mounted close to the ceiling of a purpose-built white space to produce an even coverage of intense coloured light. The fixtures worked seamlessly to project six vivid colours – green, red, blue, pink, orange and white – in sequence. Each colour lasted 22 seconds, the time it takes the eyes to adjust to each hue, before it transitioned to the next.

Liz created her own colours using the Colour Mode on the SL1 MIX fixtures. **“I set my own colours for Live Colour, I spent time tweaking and mixing the palette to achieve the desired effect on the viewer – an eye-popping experiential encounter.”** Liz highlighted that the MIX’s selection of saturated colours and its diffused, even light output made it the ideal choice for this project: “The fixtures allowed for a wide and uniform spread of saturated coloured light in a large space, they also produced the desired luminosity and intensity of light.”



I will often refer back to installations to gain inspirations for the figure submerged with colour, and it is in this exhibition that ideas behind my work are really echoed in the artist ideas here.

WORKING FROM IMAGINATION

Over the course of this semester, I have been making working completely from my imagination. As someone who has often relied on using images to help digitate an outcome, it has been and is really interesting to just make pieces from my imagination. I have noticed that this makes it possible for the works to be more open and less confided to the laminations of an image. Below is an article which talks about this as well as referencing the artist **Helen Garrett**.





Imagination and Art³⁸

Interalia Magazine

An artist with a deep sense of working with the 'poetic imagination, Helen Garrett discusses her work and the 'conversation' she has with her work during its creation. She asks "do these expressions of creativity come from the imagination or is the imagination a portal that opens this space and allows the conversation to occur?"

³⁸ Unknown Author, (2014). *Imagination in Art*, INTERALIA MAGAZINE, 2014.
< <https://www.interaliomag.org/articles/imagination-and-art/> >
[Accessed 25th Nov]



Approaching Storm. Oil on Panel

The Opening of the Imagination

It is a challenge to try to capture with painted brushstrokes, something that is moving and changing all the time; the shifting clouds, reflections and colours; every second the landscape is changing and made new by subtle transformations

The experience of making something from raw materials is a simple and fundamental one. The coldness of clay, the smell of linseed oil, the familiar feel of wooden tools or brushes connect you to the elements. Over time the process of choosing the right colour and quality of paint becomes **unconscious and instinctive**. During painting hundreds of decisions are made – from minute changes to complete destruction of previous work.

The painting **becomes a vehicle for ideas and feelings that are explored on an unconscious level during the building of layers**. Painting helps to bring 'feeling' into a deeper and more universal realm.

When painting, I look for suggestions of shape and form within the background, almost like an archaeological dig, pulling the images out that emerge and then create a scene. This is an exciting way of working. Somehow you have to give yourself up to the process... and then the painting reveals itself.

Facing the edge, the necessity of facing oneself

Whilst painting I observe the strengths and weaknesses of the image. Part of the process is to look for weak areas in the painting that need to be brought up to hold strong with the others. I can see my passion, laziness, excitement and weariness as the painting develops. There is no place to hide. Sometimes mistakes and dramatic decisions can result in really interesting results and keep the life of the painting fresh.

Working with purpose and yet allowing the natural flow of the painting holds deep symbolism for me.

I hope to keep a strong will and purpose in life but not at the cost of closing out the 'great unknowns' that life brings. I want to be open enough to learn from life and trust it, even though it cracks you right open. It is like being on the edge.

It is this edge that interests me – the in between, the energy between things, the potential for change. There is something about committing to a painting that is committing yourself to being open to the unknown, which involves the chance of failure as well as of joy. It is a powerful place.

You have to face the edge of your deepest questioning Always starting with a question... and then peeling back the layers to uncover one's own truthful experience of reality. Life unfolds in ways we cannot imagine; paying close attention to our longings, what is inviting and calling us can help us to understand where we fit, can create a natural flow of meaning and authenticity in our lives.

Being True

'Am I being true to myself, therefore am I being true to the world?'

Some days I can return home and feel like my consciousness has completely shifted and changed and other days I feel stuck in old patterns and self-doubt.

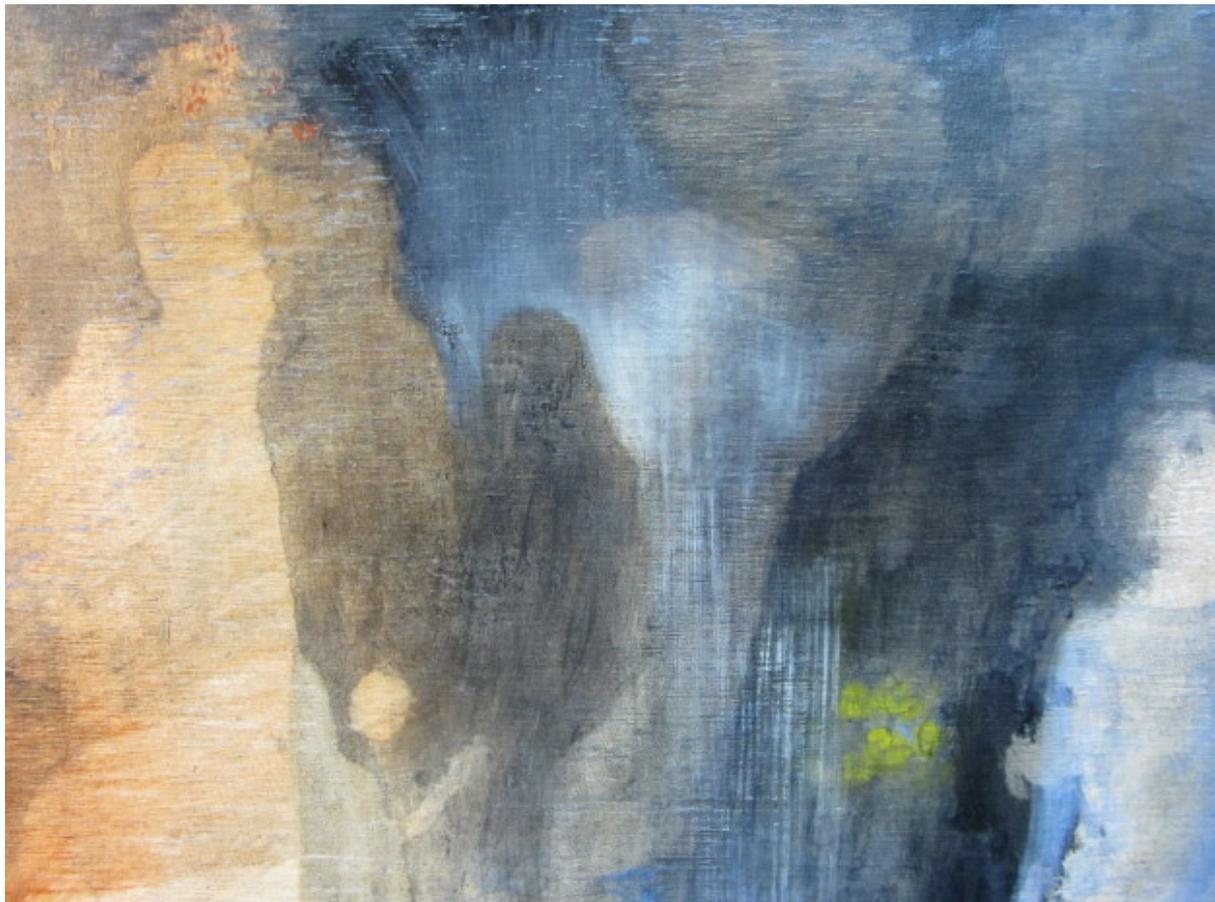
I notice a stillness that lies beneath each tempestuous painting – like a writer who witnesses the same kind of character entering the story again and again. This sense of stillness can be incredibly powerful because of what lies beneath. It is the tension between stillness on surface waters and the deep currents underneath.

What are these aspects that emerge so mysteriously.

As a child the imagination felt like a pool of chaotic and tempestuous imagery in which to explore, a place of ultimate freedom but slightly out of control. The imagination was discussed in rather derogatory terms as being 'overactive' or as things being 'all in your imagination' .

Loved ones do their best to try to keep us safe but lucky for us, the imagination comes in to play so that we can ask our *own* questions essential for our own very unique journey through life.

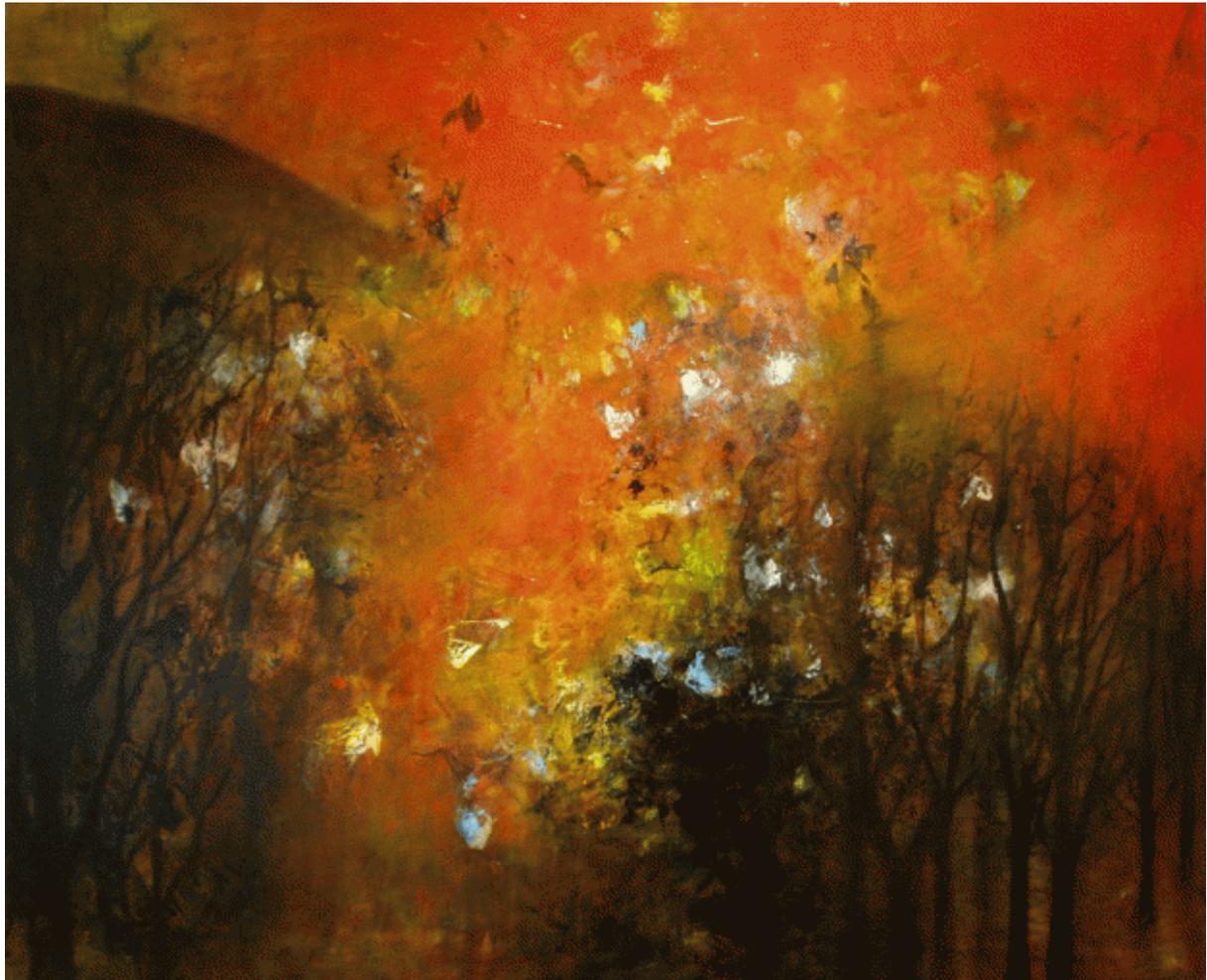
This is the ultimate freedom of the human spirit. As a young artist I became fascinated by the images and characters that were appearing and re-appearing in drawings and I realized they were of a deep symbolism that I didn't understand, but knew was a part of me also.



Detail. Unfinished Work

I remember thinking... there is no language for this much feeling...

The imaginative world stood with equal weight as my reality – with its endless mystery and revelation. My body couldn't seem to cope with the amount of feeling being experienced, whether it was feelings of power, nervousness, shyness, being loved or being afraid. I was happy and surprised to start working with the imagination and see the beautiful help that came my way when I committed to being true to it.



Enchantment. Oil on Panel

As a painter, you engage with a relationship. You face the painting and the painting faces you, things happen and you witness them. We have to take risks and trust what emerges. Cecil Collins the Artist and Visionary once stated that:

“The paintings are already inside me – like seeds in a garden…”

Often Sculptors say that they feel that the form of their finished piece has been waiting inside the stone all along and that they have just revealed it.

We enter into conversation with works of art whether it is a poem, painting or piece of music. We enter into that world that is created for us and it can offer huge personal meaning.

Do these expressions of creativity come *from* the imagination or is the imagination a *portal* that opens this space and allows the conversation to occur?

When we witness an experienced dancer, we are moved by the beauty and confidence of her movements. We use terms like ‘gifted’ or ‘god given talent’ but actually we are responding to her close relationship with what her body already knows.

She has engaged with a flow or deeper wisdom that lies within her. Her commitment and practice increases her power as an artist and we feel a sense of awe when we witness the fluidity of her art.

For me, the imagination opens us to deep wisdom. Of course sometimes we can't always understand our dreams and desires but they are held I feel, by a supporting platform of innate presence.

It is this presence or steady light that seems to carry into life outside of the studio and taken the place of existential questioning from my younger days.

I think a good question to ask oneself is: When do I feel most alive? For me, when in the 'flow' of artistic practice, unaware of time and belonging to some other rhythm.

Falling in and out of time.

When there is an understanding, and true acceptance through friendship. Where there is true connection – there is ecstasy. When the breeze touches your face and you witness nature throughout your whole being, this to me is ecstasy.

This open channel – somehow it is like death. So perhaps death is a form of sublime ecstasy. Then there is despair when there is no connection felt, no dance, no union – some existential void. An artist friend in crisis recently told me “I can't paint, therefore I have lost my connection to God” .

Learning to be free

When we walk through into the imaginative space we start to experience concepts such as eternity and we meet with a completely different feeling about the priorities that are expected in everyday Western society.



A World of Possibilities. Oil on Panel

The imaginative world opens our sense of possibility, which can also bring fear, hence the warnings of our close ones. We are worried perhaps about 'losing our minds' or being out of touch with the real world. We fear offering a different view to that may be mocked or won't fit in with 'the norm' Shakespeare said of the Imagination:

"It is the prophetic soul of the whole world dreaming on things to come"

And most of all I believe we lack trust in ourselves that we can create our own moral codes and boundaries from a deep lived experience of being human.

We can feel utterly lost in the abyss of timelessness and yet also find strength enough to appear and be counted in our own unique way.

Trusting that my imagery could teach me something set me on a path of discovery that gave me a direct relationship with life.

The Poetic Imagination

On discovering the idea of 'The Poetic Imagination' I felt like I was coming home. At last something settled and I knew this was the way I experienced life.

Opening to the poetic imagination can be incredibly isolating and deeply blissful when you recognize that connections made with others can be of the highest truest kind.

However it is challenging to sustain the openness and vulnerability that this life demands. It can be exhausting to sustain amidst a 'normal' family and work environment – rather like currents streaming against each other at times.

Making art doesn't stop and start in the studio. The revelations and despairs change you and are carried into your whole life; the **desperate need for aloneness**, the taking stock – where am I now? Trying to follow the soulful flow that our spirit invites us into.

Disruptions can prove very tiring because of how much investment goes into getting there in the first place.

As we live our lives open to the imagination our relationship with it strengthens. The imagination creates a **spacious narrative for our past and for the present**. It is a place where we can be absolutely free.



The Great Mystery. Oil on Panel

Valuing our creative imaginations is essential to our society. Artists offer **Vision, Invention, Imagination and Original thinking, all the aspects of human beings that help us evolve.**

As the years go I have sensed a shift where the imagination has a supporting role in my life. I do not fear the spaciousness of it. The Imagination for me is still a resource and yet there is something more deep and profound taking place. The imaginative powers have a serious and steady role now in the way life moves through me.

It seems that painting and poetry amongst other things strengthen my relationship with it and therefore my relationship to all things.

The creative process I am involved with grounds my whole life. The notebooks and images offer a view of 'soul' and it's unique place in this world as we all have. Images express a deeper Universal 'human condition.' when you become aware of this it teaches you humility. Art, for me is a form of prayer.



Seascape. Oil on Panel

The imagination is infinite. It is opened and closed by our levels of protective and defensive layering. It is beside us, within us, outside of us, it is perception; it is energetic meeting points between people. It is prophecy and timeless travel and empathy and nothingness all at once.

This article³⁹ really resonates with ideas I have been working around this semester, so it is interesting to see this come into form by how Helen Garrett talks about the imagination in her practice, it more than anything puts the ideas I have been experiencing into perspective.

³⁹ Unknown Author, (2014). *Imagination in Art*, INTERALIA MAGAZINE, 2014.

< <https://www.interaliomag.org/articles/imagination-and-art/> >

[Accessed 25th Nov]

INTERACTIVE INSTERTATIONS

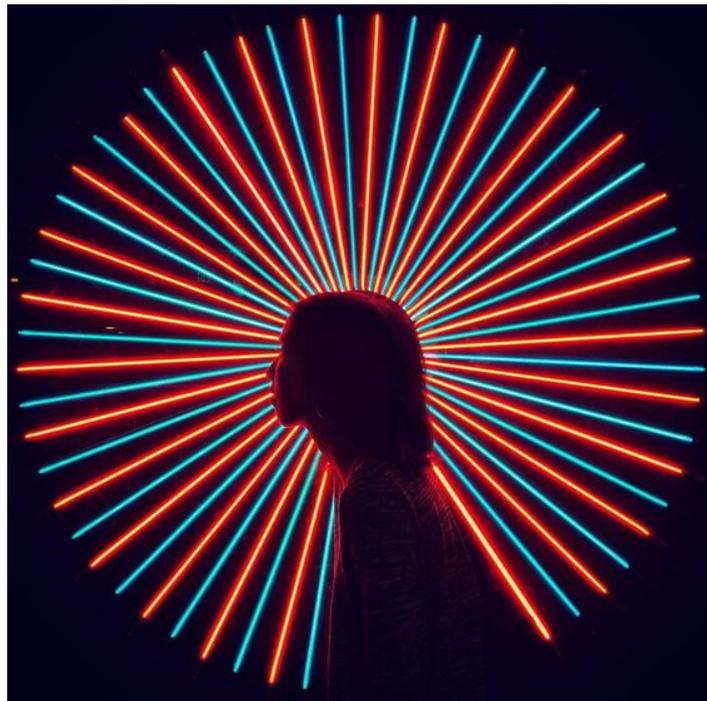
In the previous years I have been looking into areas of art such as interactive installations for inspirations for pieces. Artists such Olafur Elision have been instrumental in helping pin down ideas for work when I have been experiencing a lack of inspiration. The images below are from a selection of different light installations seen around the world made by various different artists. The images are selected on the light, figure interaction and composition.



Studio Nick Verstand has created an immersive audio-visual installation that reinterprets people's emotions as pulsing light compositions



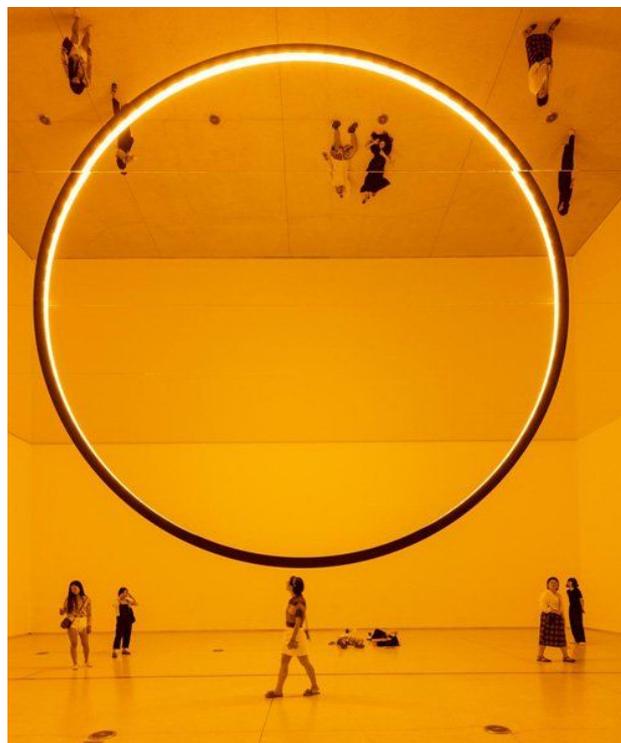
The artist's project in Las Vegas admits only six people at a time, making for an exclusive experience of pure light and color. Supported by Louis Vuitton.



This image caught my attention by the halo effect of the form around the head which creates a soft light of the face. There is a level of intimacy in the piece which I think is really interesting when considering its most black.



Artist James Turrell has transformed the Guggenheim Museum into a jaw-dropping, neck-cranking, ever-shifting experience with light and space.



Olafur Elision, Tate Modern exhibition 2019. The round sphere in the centres of the room comes together really nicely with the tones of the piece and figures in it.

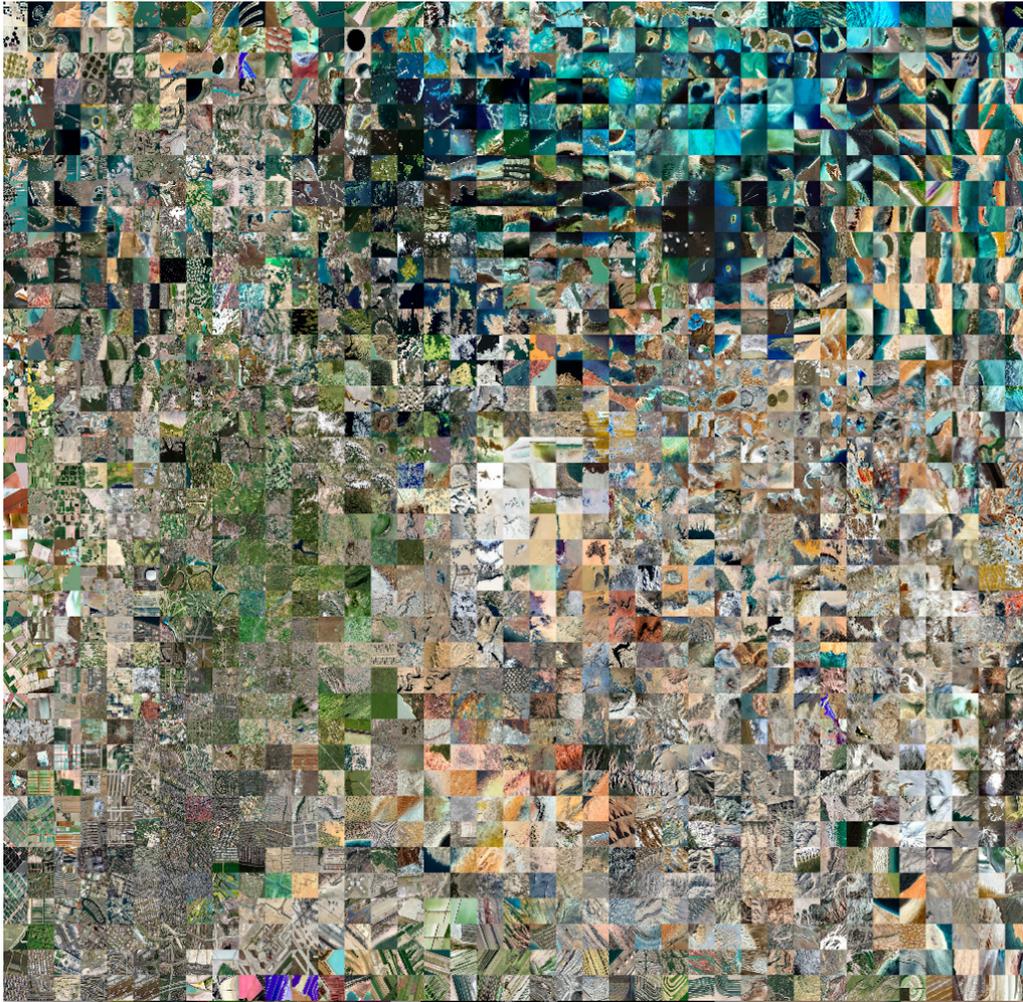


This exhibition highlights the effects of colour. The light in the room interacting with the figures is really interesting to me as I look into how colour and form plays into the same narrative.



The monochromatic tones seen in this installation broken up by the long wall shapes remind me of some of my more recent digital sketches

These types of installations trigger different ideas for future piece in f=how I could potentially use colour, light, form and narrative.



Land Lines

zach lieberman, Dec, 6016

Land Lines overview

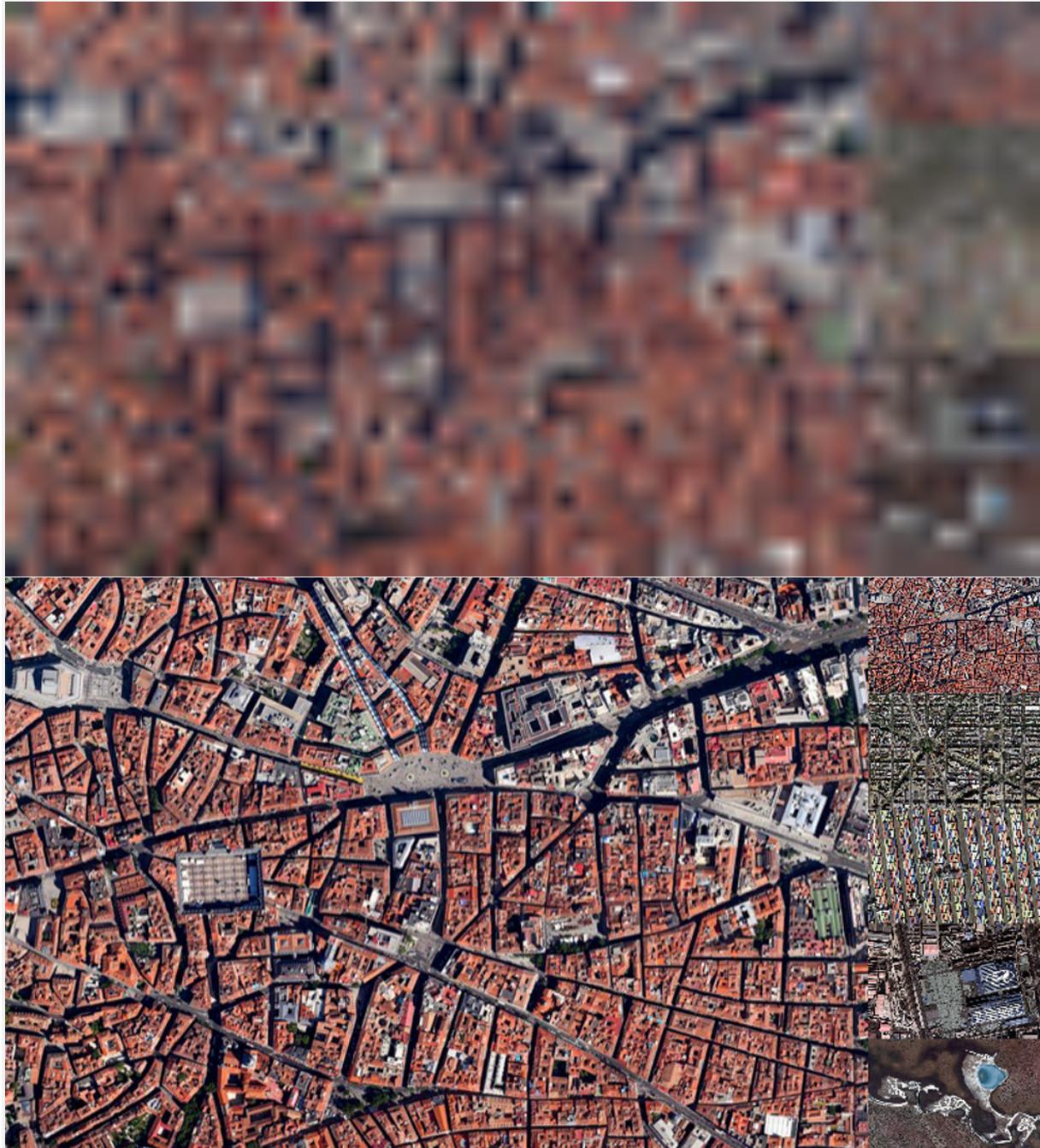
Project URL : <https://lines.chromeexperiments.com/>

(cross post of: <https://developers.google.com/web/showcase/2016/land-lines>)

When the **Data Arts** team approached me about exploring a data set of earth images I was quite excited — the **images** were beautiful, revealing all different kinds of structures and textures, both human made and natural, and I was **intrigued with how to connect this data set**. I did a variety of **initial experiments looking at image similarity and different ways of filtering and organizing them**.

t-sne similarity layout, [high res 50 mb](#)

We also looked finding similarities between images:







As a group we kept coming back to the beautiful and dominant lines in the images. These lines were easy to spot — highways, rivers, edges of mountains and plots of land — and we designed a few projects to explore these. As an artist I was inspired by the beautiful things you can do with collections of lines — see for example [Cassandra C Jones' s work with lightning](#) — and I was excited to work with this data set.

LINE DETECTION

One of the initial challenges was how to detect lines in the images. It's easy to take out a piece of tracing paper, throw it on top of a printout of one of these photos, and draw the lines that your eye sees but in general computer vision algorithms for finding lines tend to not work well across very diverse images.

I developed a previous version of the search by drawing algorithm on a project with [Local Projects](#) and for that we hand annotated the lines to search for. It was fun to draw on top of artworks but tedious as you move from dozens of images to thousands. I wanted to try to automate the process of finding lines.

With these aerial images I tried traditional line detection algorithms like openCV's [canny edge detection](#) algorithm but found they gave either very discontinuous line segments or if the threshold were too relaxed, tons of spurious lines. Also, the thresholds to get good results were different across different image sets and I wanted an algorithm for finding a consistent set of good lines without supervision.

I experimented with a variety of line detection algorithms including recent ones like [gPb \(PDF\)](#) which although producing amazing results, required minutes to run per image. In the end I settled with [Structured Forest edge detection](#), an algorithm that ships with [openCV](#).

Once I had a good "line image", I still had the problem of actually getting the lines and identifying individual lines from each other — i.e., how do I take this raster data and make it vector. Often times when I'm looking at computer vision problems, I investigate [imageJ](#), an open source java based image processing environment used by scientists and researchers which has a healthy ecosystem of [plugins](#). I found a plugin called [ridge detection](#), which helps take an intensity image and turn that into a set of line segments. (As a side note, I also found this [edge detection and labeling](#) code from Matlab useful)

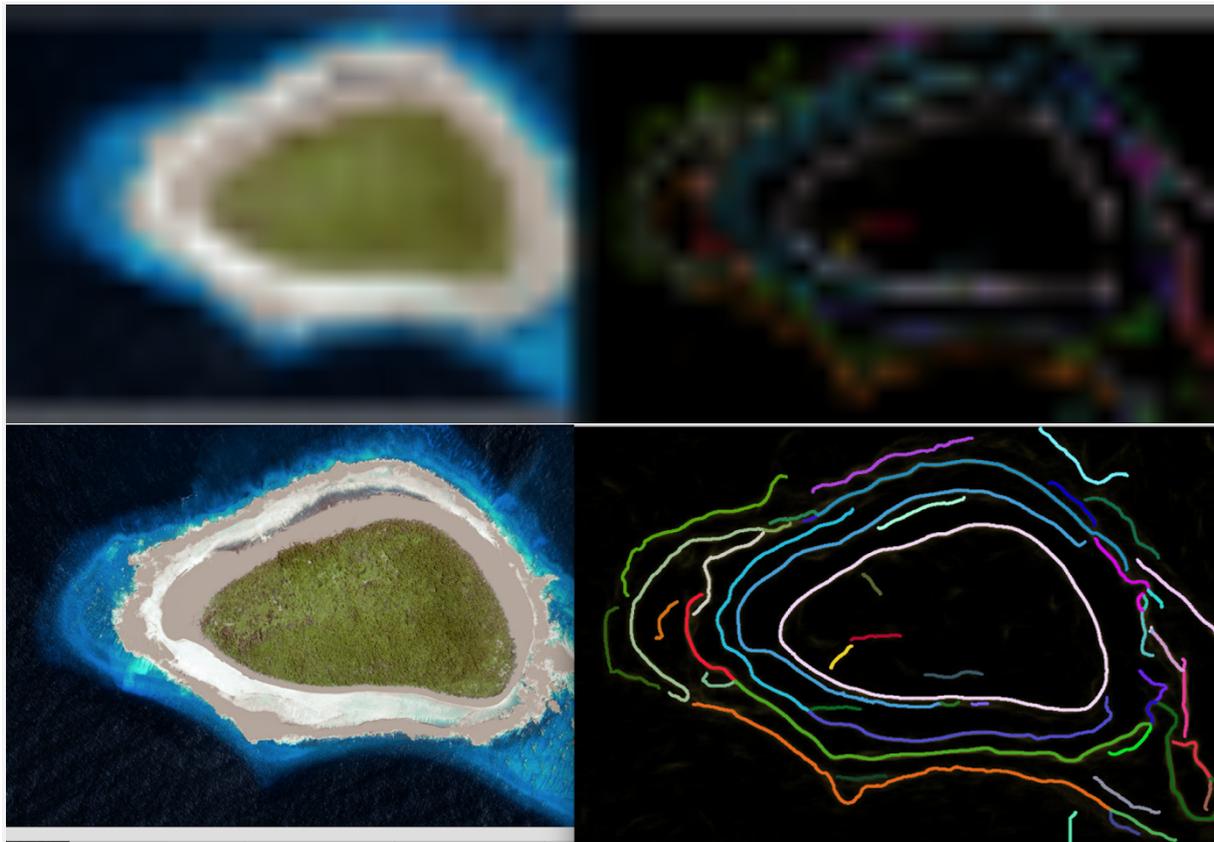


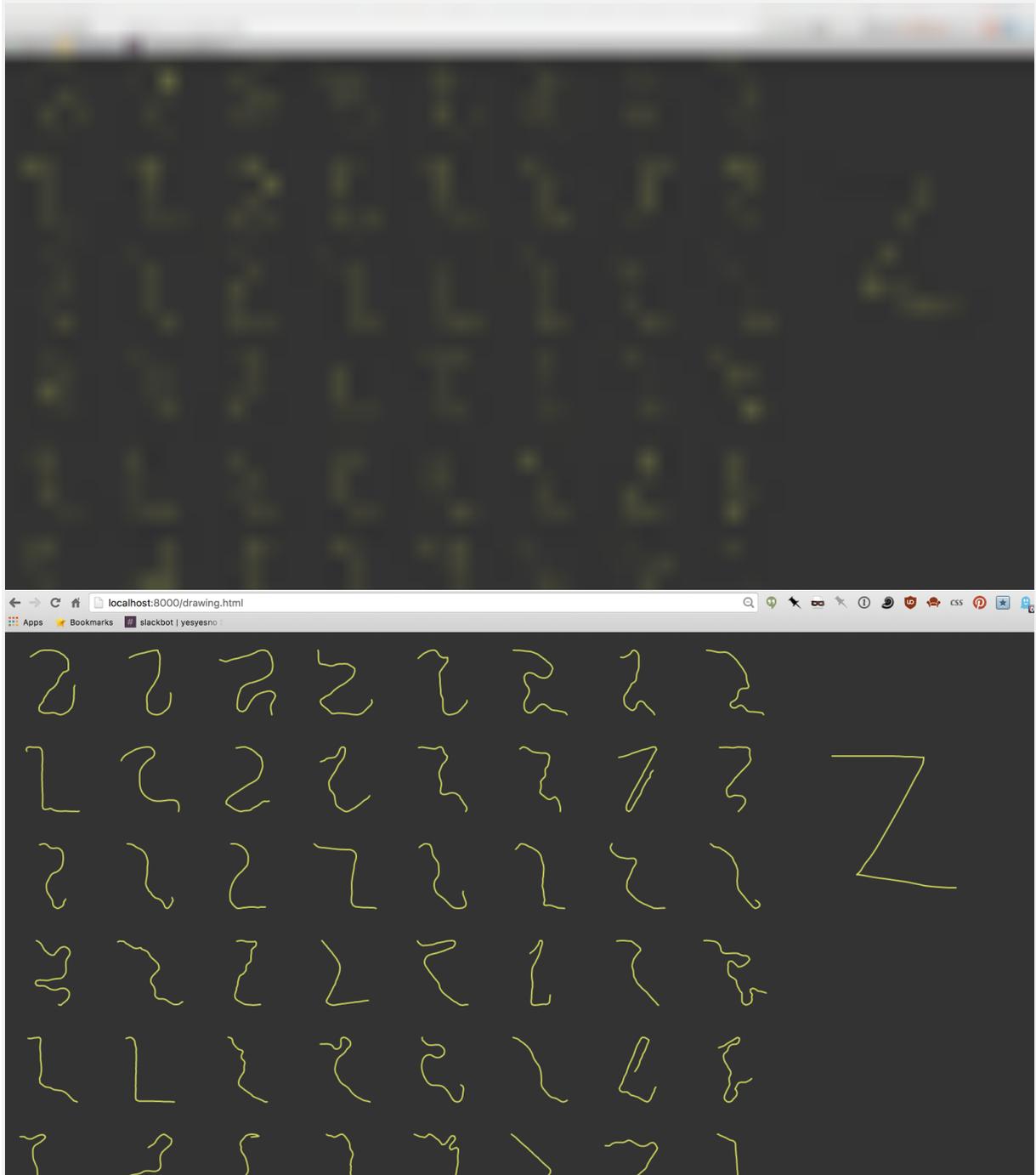
Image with detected line segments

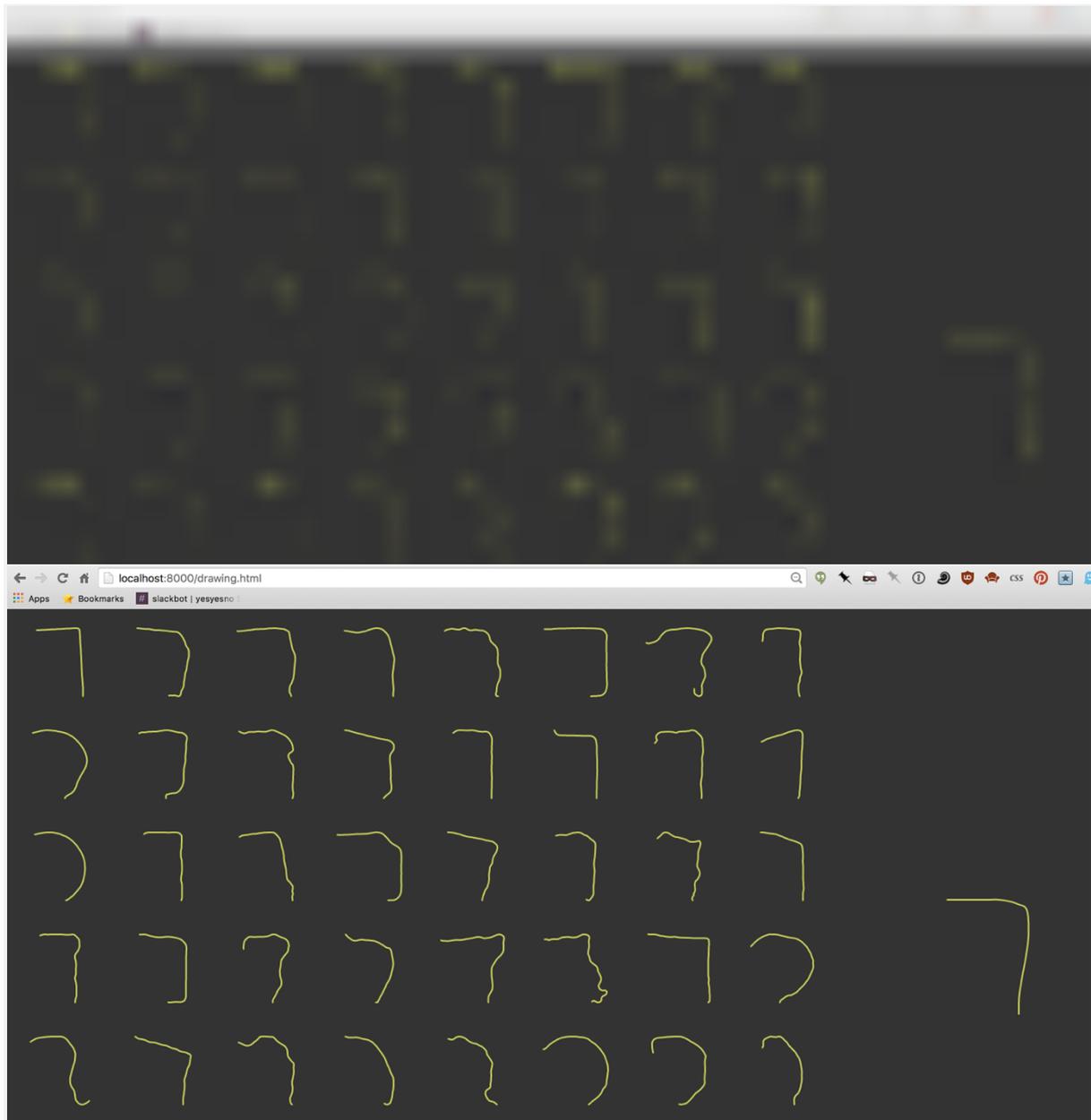
SERVERLESS

I also wanted to see if it's possible to do a data visualization app that's essentially serverless, where the hard work of matching and connecting happens client side. I usually work in [openFrameworks](#), a c++ framework for creative coding and besides the occasional [node](#) project I haven't done a lot of server side coding. I was curious if it's possible to do all of the calculation client side and to only use the server just for serving json and image data.

For the draw application, the matching is a very heavy operation. When you draw a line, we need to find the closest match among over tens of thousands of line segments. To calculate the distance of one drawing to another we use a metric from [dollar gesture recognizer](#) which itself involves many distance calculations. In the past, I've used threading and other tricks but in order to make it work in real time on a client device (including mobile phones) I needed something better. I looked into [metric trees](#) for finding closest / nearest neighbors and I settled on [vantage point](#)

[trees \(javascript implementation\)](#). The vantage point tree basically gets built off a set of data and a distance metric and when you put in a new piece of data it gives you quite quickly a list of the closest values. The first time I saw this work on a mobile phone instantly I was floored. One of the great benefits of this particular vantage point tree implementation is that you can save out the tree after it's computed and save on the costs of computing this tree.





examples of results from the vantage point tree, drawn input is on the right side and the closest results are on the left

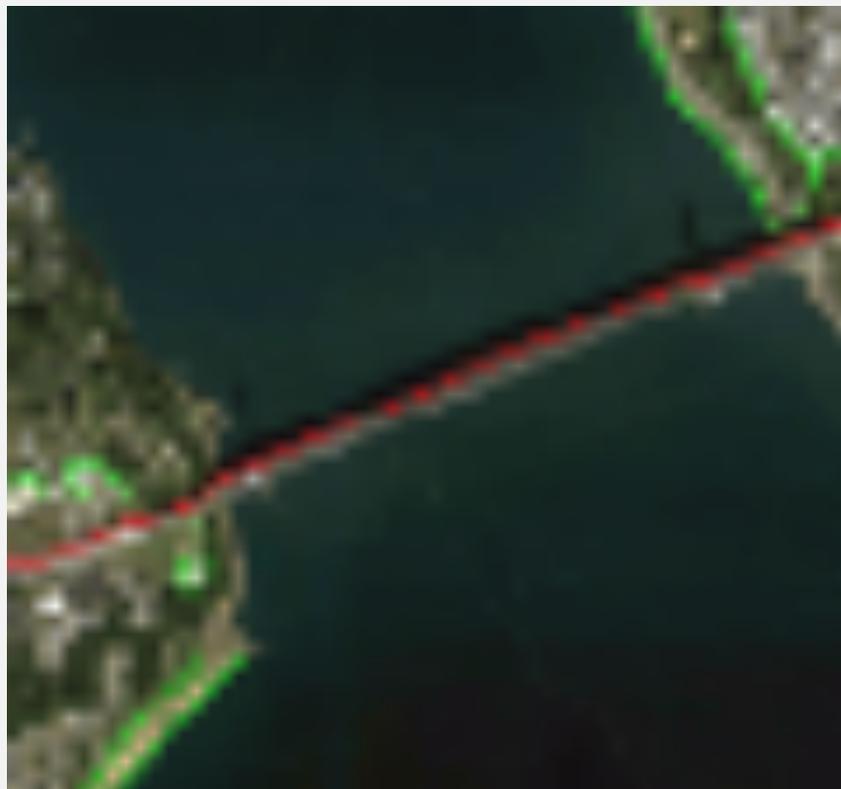
Another challenge of making it work without a server is getting the data loaded onto a mobile device — For draw, the tree and line segment data was over 12mb and the images are quite large, we wanted the experience to feel quick and responsive and the goal is to was try to keep the download small. Our solution was to progressively load data. In the draw app we split the vantage point tree data set into 5 pieces and when the app loads it only loads the first chunk and then every 10 seconds it loads another chunk of data in the background, so essentially the app gets

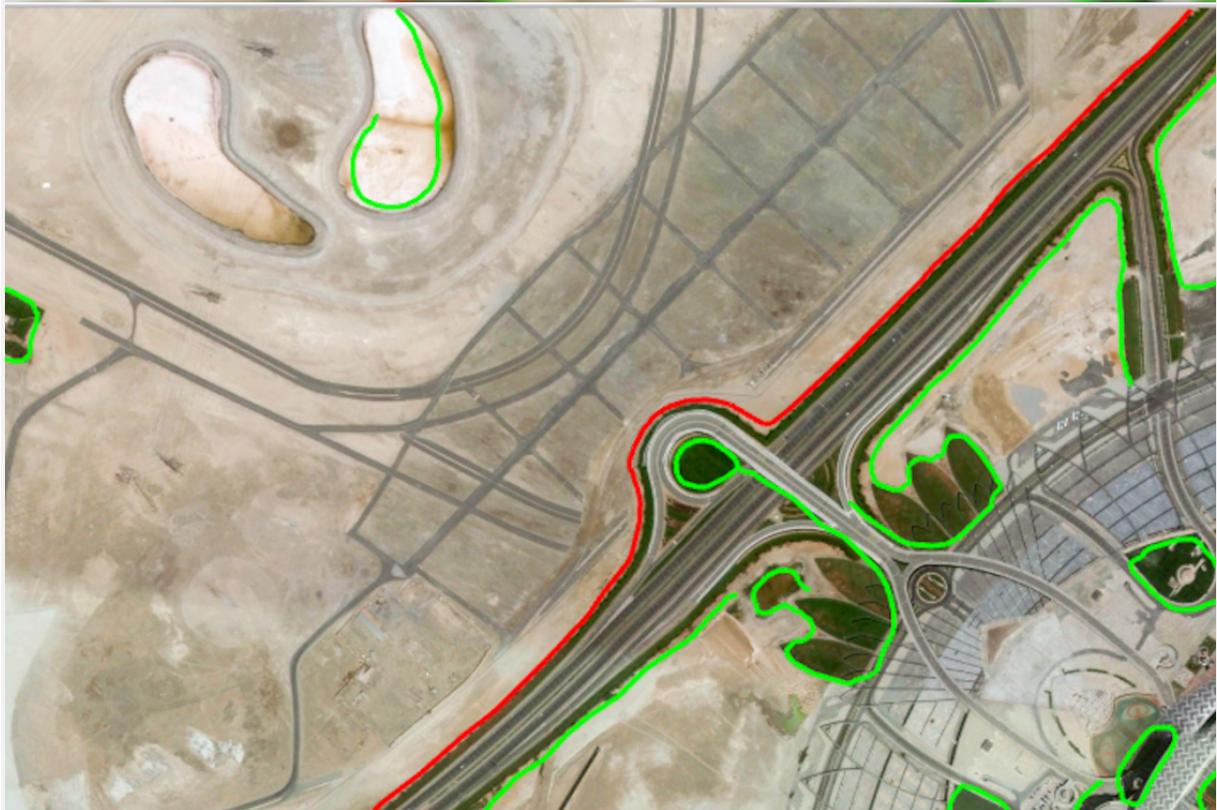
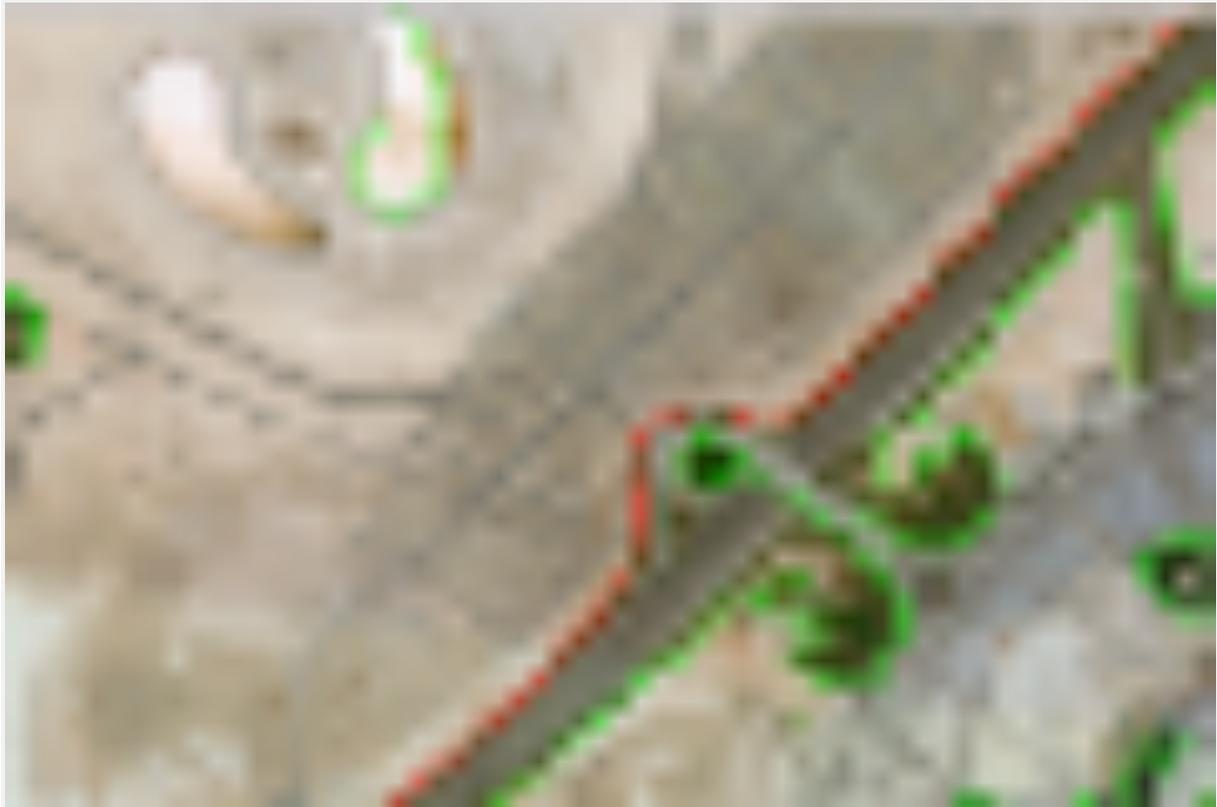
better and better for the first minute of being used. In the drag app was also worked hard to cache images so that as you drag, new images are loaded in the background.

Finally, one thing I found harder than expected was making a pre-loader for both apps, so you the initial delay as data loads would be understandable. I used the [progress callback](#) on the ajax requests and on the pixi.js side, checked images that were loading asynchronously had actually loaded and use that to drive the preload message.

CONNECTED LINE

For drag, I wanted to create an endless line from the lines we found in the edge detection. The first step was to filter lines from the line detection algorithm and identify long lines that start on one edge and end on one of the three other edges.





good lines for connecting marked in red

Once I had a set of long lines (or to use a more accurate term, polylines, a collection of connected points) in order to connect them I converted these lines into a set of angle changes. Usually when

you think of a polyline you imagine it as a set of points: point a is connected to point b which is connected to point c. Instead, you can treat the line as a set of angle changes: Move forward and rotate some amount, move forward and rotate some amount. A good way to visualize this is to think about [wire bending machines](#), which take a piece of wire and as it's being extruded perform rotations. The shape of the drawing comes from turning.

If you consider the line as angle changes and not points, it becomes easier to combine lines into one larger line with less discontinuities — rather than stitching points you are essentially adding relative angle changes. In order to add a line, you take the current angle of the main line and add to it the relative changes of the line you want to add.

As a side note, I've used this technique of converting a line into a set of angle changes for artistic exploitation — you can make drawings “uncurl” similar to how wire can curl and uncurl. Some examples: [one](#), [two](#), [three](#)

This angle calculation is what allows us to steer the line as you drag — we calculate how off the main angle is from where we want to be and we look for a picture that will help the most getting the line going in the right direction. It's all a matter of thinking relatively.

Finally, I just want to say that this was a really fun project to be involved with. It's exciting as an artist to be asked to use a data set as lovely as these images and I'm honored the Data Arts team reached out. I hope you have fun experimenting with it!

Zaiba Jabbar

Zaiba Jabbar is a **moving image artist**, award-winning director, curator, commissioner and founder of Hervisons, “i’m interested in **the democratisation of art and the new accessibility by how we experience art outside the white cube**. My curatorial project Hervisons is an investigation into how people in the margins are using technology to create art outside of traditional formats, making space for themselves through the experience of expanded moving image. I am a leader in **augmented reality and digital art exhibitions online** and offline working with clients and institutes that include Tate Modern, Tate Britain, Art Night, LUX, The London College of Fashion, Mira Festival and The Mosaic Room. I love making things happen.”

Zaiba Jabbar work in moving image and her digital constructs of exhibitions, fascinate me and help me see cross over in this new areas I am working in, virtual reality.



ZAIBA JABBAR, the mind behind the multidisciplinary platform HERVISIONS

Curators, Digital Culture, Interviews

TwitterFacebookPinterestWhatsAppEmail

A collection of objs, 360 video, Jazmin Morris (2019)

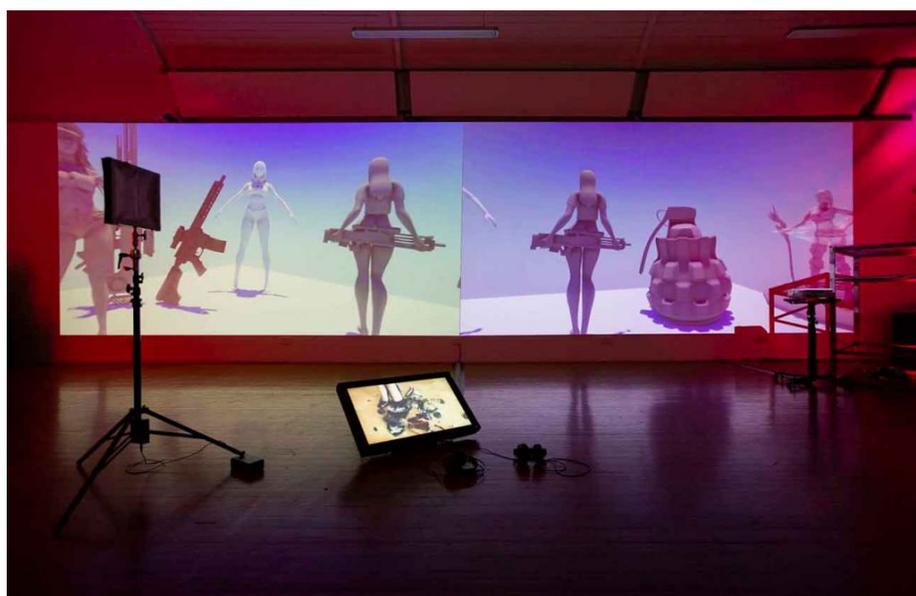
Zaiba Jabbar is an award-winning director, independent curator and founder of HERVISIONS (est. 2015). With over a decade of experience in the film and media sectors, her curatorial practice with HERVISIONS is an investigation into how people in the margins are using technology to create art outside of traditional contexts and making space for themselves in the digital environment. Jabbar was curator in residence at LUX in 2018 and is a board member of Abandon Normal Devices.

Jabbar studied graphic design at Central Saint Martins in London and was soon drawn to the magic of moving image. After graduating, she started working as a director for music videos and commercials. It was the frustrations that she experienced working in a white male-dominated industry, together with the art that she was discovering in solitude

through social media, that led her to look into post-internet art and post-internet aesthetics, wanting to explore more femme focused moving image practices. That culminated in her founding HERVISIONS, a multidisciplinary platform that supports and promotes non-binary and female-identifying artists working in new media. She is particularly interested in the intersections of art, technology and culture. Very distant is now the promise of the internet as a genuinely democratic space. Still, Jabbar's work looks into how people in the margins use the tools that they have access to create and imagine new possibilities. Her project Face-Up, a pop-up exhibition part of the Tate's "The Lives of Net Art" showcase, was an exploration on face filters, visual bias and "new beauty" that highlighted how accessible Augmented Reality has become, thanks to the big techno capitalist companies.

She's been keeping busy during this lockdown period, working with Arebyte Gallery on a project titled The Art of no Likes, which, as many of the other things she does, is interdisciplinary and very experimental. It will be a year-long shapeshifting research project that tries to understand the economy of like and the standardisation of popularity that we have been conditioned to look at through social media platforms. It's a critique to the systems that she and all of us have been inhabiting while trying to understand what the alternatives are. At the same time, exploring whether we can exist in or out of this system and how that would look like.

The freedom to create spaces, narratives and imagined scenarios outside of our realities are an intrinsic part of the redefinition of our future. Jabbar believes digital art is a promising tool for this, as it allows for independence and control over one's expression, and it has the potential to go viral quickly. Therefore distribution and giving it the correct exposure plays a significant role in it and why the work of platforms like HERVISIONS is so important.



Error! Filename not specified.Suspended Power, Digital Installation, (2019). Photo: Katy DaviesOnly in Sanctuary Can Transformation Be Envisioned, Taina Cruz (2019)

As a curator, your work lays at the intersection of art, technology and culture; could you tell us a bit about your background and what inspires you?

As a curator my background is pretty atypical, I studied graphic design at art school, and I was one of the youngest people in my year on the prestigious Graphic Design BA course at Central Saint Martins (London). A class that changed my life! It changed how I saw the world because it was very concept-driven, and it made me realise I was alienated in some ways and made me feel a bit different from others. It was there where I discovered animation, advertising, design, photography, and illustration as career-building mediums of artistic expression. I also loved the rotoscope cameras and experimenting with film.

The manipulation of feelings and moods that could be created through sound and image colliding in an entirely constructed process is something I find deeply compelling and empowering. I still love graphic imagery very much, but after graduating, I got into directing videos. My approach to filmmaking (looking back now) I would describe it as expanded graphic design. It was also kind of the natural progression or evolution to shift from a discipline like graphic design to directing because software and cheaper equipment to make moving images were more accessible. The equivalent now is artists working in sculpture, filmmaking or painting and then transitioning into VR, augmented reality or coding, for example. This shape-shifting in response to our surrounding has never been easier for the likes of the millennials, and Z generations and technology is informing these shifts. I was always drawn to animation and experimental film which filtered through to my work as a film director specialising in music videos, fashion and commercial video content, I was always trying to blur words and definitions to create new forms of storytelling. I'm a bit of format rebel, and I'm inspired by all things intersecting. One of the first films I was obsessed with was *La Jette* by Chris Marker – a film made entirely of photographs (and the inspiration for Terry Gilliam's film *12 Monkeys*). In perspective, it was this combination of stills making moving images with sci-fi themes that are still prevalent to inspire my work today.

My earliest memory of "art" inspiration was the most profound because you wouldn't call it art; it was a device, a "zoetrope", I discovered on a school visit to London's Museum of Moving Image. I found the mechanics utterly compelling and fascinating. From there, I was forever drawn to the magic of a still image morphing into a moving image. It's magic and speaks to the inner child in me. My love of experimentation fuels the methodology of my practice as a facilitator, thinker and maker.

How and when does the interest in the crossover of these different disciplines come about?

My formative professional career as a filmmaker and director in London played a huge part in these interests. I'm always putting things together from disparate worlds I experience and my life observations. When I was working as a director, I always wanted to draw on a wide range of references and resources informing my filmmaking. Through directing, I

developed this interdisciplinary practice that was still trying to blur the boundaries of space and time by universe-building using installation, art direction, animation, styling, CGI and collaboration as methods and skills to make stuff and the development of my visual language and taste and has massively influenced my practice. Throughout my career, I've witnessed different aptitudes of the accessibility of technology democratising art-making.

My art school and filmmaking background have seen the shift from shooting on film to affordable professional digital recording. That happened around 2014, which spearheaded a whole influx of DSLR self-shooting communities, then cameras on our phones, then HD video and apps on smartphones enabling social media meta culture to reach new audiences instantly. The ability of accessible filmmaking on phones to augmented reality and the access to 5G things will move faster now. It's a testament to the importance of the evolution of accessibility of creative tools. However, controversial techno-capitalist endeavours are enabling creative means for people otherwise who would not have the means of self-expression. Take Facebook's Spark AR or Snapchat lens studio both software programmes developed to make augmented reality filters. It's controversial because they own everything you publish and through this facade of creativity is a much sinister data capture colony occurring.

But as a self-taught director physically owning a camera and editing my projects gave me the independence to create and make what I wanted too. I think this is when these ideas of making, documenting, creating and adapting through shifting socio-political landscapes are why these crossovers must happen, and I am a product of those shifts, I guess!. I think things triggered in my head when I gained my residency at LUX, I understood the significance of what I was doing as womxn moving from directing to curating work in art tech, and culture and its intersections.

You are the founder and curator of HERVISIONS, a multidisciplinary platform supporting digital experiences and contemporary short-form moving image made by non-binary artists and artists that identify as women. What are your main aims behind HERVISIONS?

To democratise the experience of art by helping to reform, inform and re-define a new language of communication through digital practices. As a working-class WOC, I try to disrupt and innovate cultural spaces and give exposure to people in the margins and gender minorities. The speed and process we experience art and information, in general, has changed, and HERVISIONS is an evolving response to the tools of the trade and artistic practices out there. I started HERVISIONS because of the art I discovered through social media was made by emerging artists using technology outside of traditional methods of filmmaking to blur digital and physical realities. My background as a video director working for nearly a decade with moving image in media sectors continues to inform my practice now.

I'm fascinated by the explosion of a short-form moving image like gifs/video loops that power our attention economy online. And obsessed with how we experience visual fodder

as a digital organism with its micro-climate and how it simultaneously exists as a bi-product of social platforms. This passion fuelled my investigation into why I was following so many women in this sphere; I felt a duty to find a way to celebrate the support and promote these artists who often don't have the privilege to call themselves artists.

My directing career pre #metoo movement taught me how important and powerful this independent artistic expression is in guiding our digital viewfinders often through self-publishing. My vision of taking this art from the small screen to wider audiences, and has been at the core of my belief system: A personal mission.

The story of HERVISIONS began with the aim to democratise the way art is experienced and viewed; moving away, but not eliminating, the white cube space and white male-dominated spaces by making it more accessible through the lens of marginalised people. This was achieved through a host of exhibitions, events, pop-ups workshops, panels and meet-ups and discussions exploring the physical and digital and how those worlds become interactive and entwine. Because access -without a doubt- brings new possibilities to those that wouldn't usually have the opportunity to gain insight into new ideas and new ways of seeing the world that go beyond their usual parameters.

I try to connect things that don't belong together as an investigation to understand the world that exists amongst this activism. There's something very democratic about the materiality of digital but also very undervalued. I saw how photographers were always paid more than video directors; it's an exciting value system I'm compelled to explore.

What are your main achievements so far, and what are you planning to pursue further?

It depends on how you scale achievement. I'm incredibly grateful for all the support I've had from a variety of institutes, people and breadth of projects and opportunities that I've been lucky to pursue.

Since launching HERVISIONS, I made a visual podcast to coincide with the rooftop launch of HERVISIONS in Downtown LA at the standard. I commissioned a series of looping video works on female intuition for i-Ds Fifth Sense x Chanel platform the "Making you" with an exhibition and immersive VR installation at Second Home in London. I also gained a curatorial residency at LUX in 2018, and I commissioned a 360 moving image work for Mira Festival adidas 360 dome. In 2019, I curated the online exhibition Slipstream for Isthisit?, a printed series of works for Important magazine's Advance or Remain issue and participated in the first-ever augmented reality face filter exhibition at the Tate Modern as part of the LIVES OF NET ART programme.

For Tate, I devised and conceptualised the format of using Facebook spark Augmented Reality, with a workshop where curated digital artefacts and OBJ FILES were donated by artists to be recycled in the workshop. During its duration, we created unique AR face filters for visitors alongside the exhibition of pre-published face filters activated by QR codes and moving image exploring visual bias and new beauty.

Last year Hervisions took over ART NIGHT London with digital artworks exploring unrequited love and “searching” for self and love. The artworks showed as small installations with works displayed on devices and pre-existing screens that lived in the technology shops and continued to be the first-ever take over of GOOGLE HQ in Kings Cross. Suspended Power, the three-day takeover, brought together international artists to advocate for a diversified representation of identities across digital platforms with an accompanying exhibition devised for London College of Fashion politics and design season. For Boiler Room London I collaborated with Gloria (Gaika’s new signing) on an installation and AR filter called ‘skin’ to digital power consciousness and explore re-birth and a new mantra to enable shedding one’s skin. And in late December last year, I curated an installation about connectivity in the digital world for CADA Miami during Art Basel.

I recently had an online residency at arebyte gallery working on a project called The Art Of No Likes, which looks at the economy of likes. I’m also back at LUX with a three-part programme called Out of Touch, questioning touch in a post-touch world, where you can try untouchable realities via your mobile devices. We can suggest we might find auditory cues of kinship in a bird song or sensory potential in a quantum computer’s entanglement probes ways in which screen-based dialogues remediate the lack of touching in the absence of physical connection.

What are, in your opinion, the challenges of redefining gender we are facing nowadays and how digital interfaces and altered realities can play a role in it?

Gender minorities are not fully represented in digital spaces. Most tech giants still support biased infrastructures. We need more awareness of intersectionality; it’s easy to be romanced and assume that technology has shown a light on new forms of redefining power in a post-modern world because social media, new tools of communications and access to more shared space of information online, have enabled a larger dialogue to occur. However we know that a lot of facial recognition can’t register a black womxn’s face for example and google translate is inherently sexist, automating sexist biases.

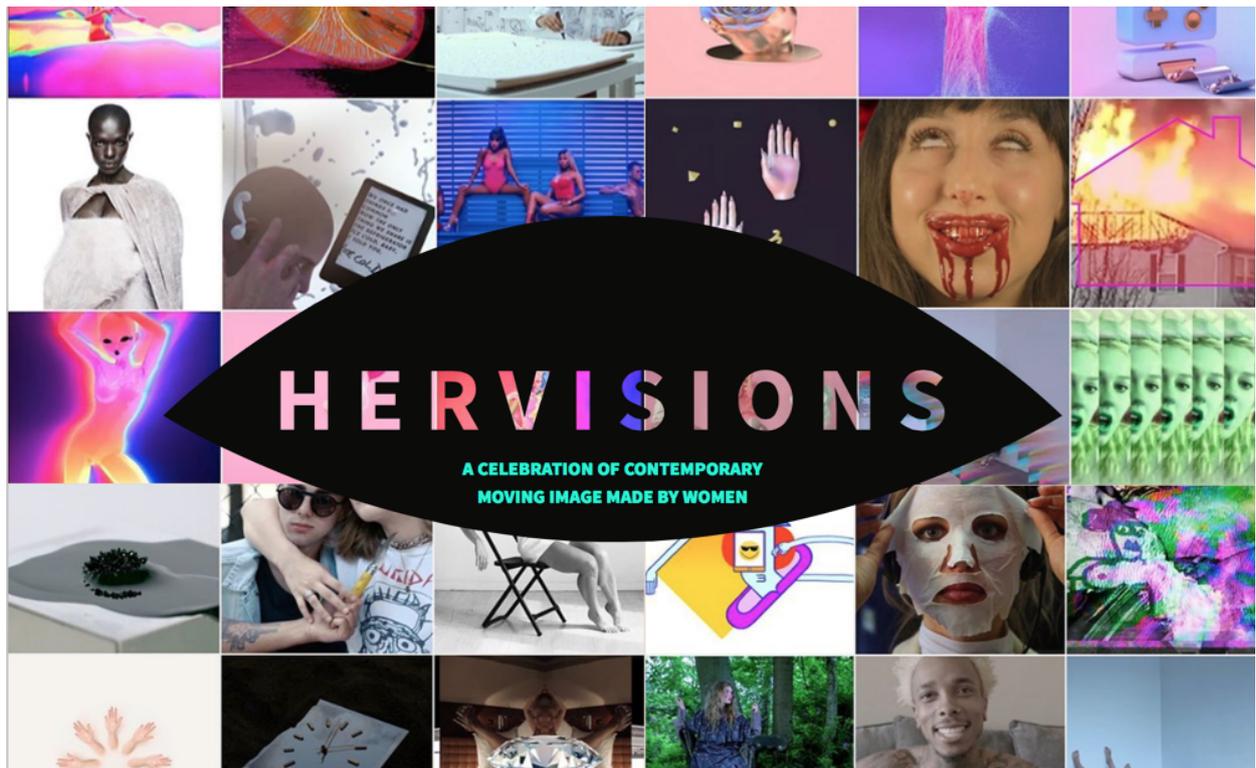
The real challenges we face are looking to the top of the pyramid, who are the gatekeepers and the policyholders. How can we empower these obfuscations? Until recently, master and slave was the terminology used in computing and other technical contexts. There are huge challenges ahead of re-wiring these subjugated systems within globalisation. Ideally, we need to create space for ourselves outside of techno-capitalist data sets. Focus on the IRL. Recontextualising the format of how we are viewed outside of corporate constructs. Skeuomorphs of the future will no longer be on our computers, phones or any type of screen. We will be breathing them in and feeling them as the tech becomes more entwined. Obviously, education and access to skill-building need to support how we engage in the new mediums as this will play a vital role in redefining our awareness of gender minorities. I think homemade code and apps are the future for pioneering and queering these systems to create safe spaces. Then hopefully, truer representations that are

genuine will ensue in these hybrid digital spaces.

What would it be your biggest curating extravaganza?

That' s a fun question! That would be telling! Well, it' s hard to know what will come, especially now with COVID.

I embrace problem-solving! So the bigger the problem, the bigger the extravaganza. I enjoy working closely with teams of practitioners and artists, so I think anything like on an international level, I guess!



Exhibition **HERVISIONS** by Zaiba Jabbar

SELECTED HIGHLIGHTS:

HERVISIONS is a femme-focused curatorial agency facilitating online and offline experiences and collaborations with partners to research and **produce innovative commissions, exhibitions and events with a strong focus on the intersection of art, technology and culture**. Previous exhibitions and partners include, Art Night, Tate Modern, Tate Britain, arebyte Gallery, -D x Chanel, Adidas, Selfridges, Boiler Room, LN-CC, BFI, Gossamer Fog, The London College of Fashion, isthisit?, Mira Festival, LOOM Festival and Google Arts and Culture.

Zaiba Jabbar is an award winning director, independent curator and founder of HERVISIONS (2015). With over a decade of experience in the film and media sectors, her curatorial practice is an investigation into how people in the margins are using technology to create art outside of traditional formats, making space for themselves through the experience of expanded digital environments. Jabbar was curator in residence at LUX in 2018 and is a board member of Abandon Normal Devices.

+The Art Of No Likes
portal constellation (reviving the webring)

Imagine a cyberspace where we could surf the net between handmade sites rather than constantly being shuffled back through the megastore nodes. Webrings were an interesting early method of creating community between homepage builders through the construction of intentional navigational infrastructure. With this history and fantasy in mind, we are experimenting with methods of linking between each other's pages as a way of building our own pathways through the net.

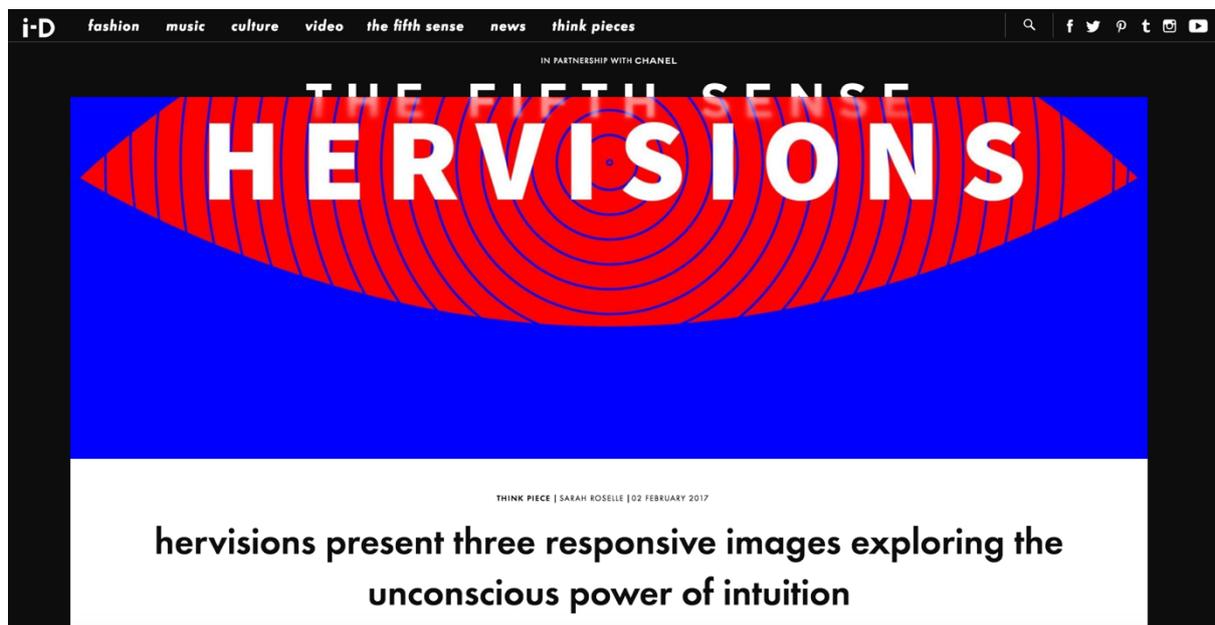


- Brenna Murphy

If you'd like to join our webring you can sign up here and/or add a portal to any of your own websites by adding the code. here

The Art Of No Likes is an ongoing critical investigation into systems of curating and a reflection on the implications of standardisations within social media infrastructures that harvest, manifest and intertwine the production of exhibitions in time-based media. The project shines a critical gaze on the gatekeepers of these infrastructures and associated "economies of like" and related systems of value judgments inherent to capitalist social media platforms. Moving through industries and across interdisciplinary practices the The Art of No Likes offers up an analysis of the "economy of like" across communication formats, experience and environment.

+FACE-UP AR face filter exhibition and spark AR workshop, TATE Modern, London
 Hervisions proudly devised the FIRST EVER Augmented reality workshop using Facebook's programme Spark AR and a face filter exhibition at the TATE Modern called Face Up as part of the LIVES OF NET ART programme last MAY 2019, which subsequently the format traveled to TATE Britain for LATE AT TATE and to the BFI, as part of the Women with A Movie Camera summit. Hervisions conceptualised the format of a spark **Augmented Reality workshop, curated digital artifacts/ OBJ FILES** which were donated by artists to be recycled in the workshop to create unique AR face filters for visitors alongside an exhibition of pre published face filters activated by **QR codes** and exhibition of moving images exploring visual bias and new beauty.



+FIRST DATE Event, exhibition, panel and film screening, LN-CC Concept Store, London
 A virtual date between physical and virtual border between London and Tbilisi, connecting physical and virtual borders creating discourse and awareness around the themes of digital intimacy, sexuality, sex positivity and the gamification of sex through virtual discussions amplified within offline peripatetic realities with Crosslucid and their ongoing project first date with Virtual Reality performances by @hydra and music by @gloria @aisha @nooodle at concept store @LN-CC. plus AIISA X CROSSLUCID x ELPOPOSANGRE condoms will be available on donation for some new sensations. The London event @theIncc coincided with the official premiere of the film First Date by artist duo @crosslucid screened at their exhibition at @artareagallery, Tbilisi. Simultaneously and in response Hervisions presents a two-way live stream virtual date between London and Tbilisi with an evening of panel discussions, First Date film premiere, artworks and performances by @agf_hydra and @glori___a followed by a DJ set by @aishazoex hosted at @theIncc supported by @absolutvodka

+FAST LINE at June 2019 INSTALLATION ART NIGHT, London in collaboration with local technology focussed shops/internet cafes and Google Arts and Culture HQ. Digital artworks were viewed as small installations where work was displayed on devices and pre-existing screens that live in the technology shops and the first ever large scale take over of GOOGLE HQ in Kings Cross.



+ SUSPENDED POWER Exhibition and 3 day programme August 2019, London at London College of Fashion - Arcade East Gallery

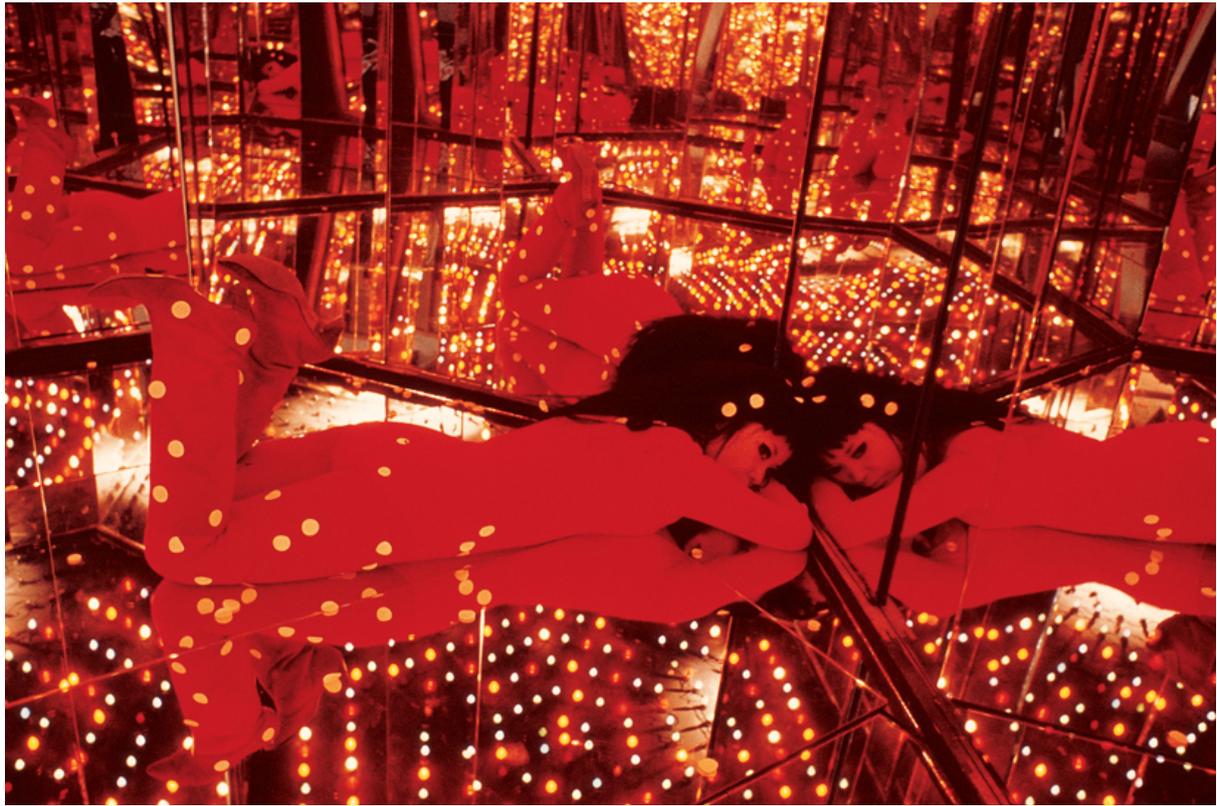
3 day hervisions programme and accompanying exhibition devised for LCF politics and design season addresses the current political moment within relational aesthetics, feminism, social sculpture, socio-parasitology and sonic journalism within technology based works and expanded broadcasting. Through installation, moving image, performance, and multidisciplinary interventions the three day takeover will bring together international artists to advocate for a diversified representation of identities across digital platforms.

Through technology-based works and encounters, Suspended Power addressed different ways of broadcasting the constraints of marginalised groups of people tackling liminal spaces juxtaposed by invisible forces and powers within relational aesthetics, social sculpture, and sonic journalism. A mix of established and emerging artists, the works addressed the

suspension of borders and trad systems of power, allowing for space to be reclaimed and refined – ultimately providing a platform for new activism through networks of practice.

+Gloria EP music performance with AR face filter event at Boiler Room, London
@hervisions_ collaborated with Gaika's new signing to create on an installation and AR filter called skin to power digital consciousness further and exploring re-birth and a new mantra of shedding one's skin.

+The Salon of Disobedience: Algorithmic Intimacies The Mosaic Rooms, London
Hervisions immersive experience, interactive video wall and reading event with @noufling The Salon of Disobedience: Algorithmic Intimacies is an interactive and immersive evening which alongside Nouf Alhimiary composes a temporary site, a third space of sorts, where the spectres of our multiple disembodied selves are invited to collectivise within a physical territory of the dangers of these blurred states. These materials will be shared in the performative and participatory workshop, acting as prompts for collective discussion.



When Yayoi Kusama created her first ever Infinity Room

Relating the nature of and phenomena of infinities.

Article by PHAIDON 2017

In 1968, in a press release issued to promote an Alice in Wonderland-themed nude happening in Central Park, the Japanese-born artist Yayoi Kusama wrote, "Like Alice, who went through the looking-glass, I, Kusama, (who have lived for years in my famous, specially-built room entirely covered by mirrors), have opened up a world of fantasy and freedom."

It's hard to verify this claim, as with many of the provocative public statements Kusama made around this time. However, the artist had certainly been building mirrored environments in her Manhattan studio since at least 1965.

"In her first installation incorporating mirrors, her 1965 work Infinity Mirror Room: Phalli's Field, Kusama arranged hundreds of soft, phallic forms in a roughly 25 square-metre mirrored room," writes author and curator Catherine Taft in our newly updated Kusama monograph. "Meant to be engaged with, the stuffed protuberances – which were multiplied

through infinite reflection – enveloped the viewer, creating an almost psychosexual encounter with one's own body and image."

Indeed, this idea of an infinite, all-encompassing artwork was something that Kusama had explored before, in her large-scale Infinity Net paintings of the late 1950s and early 1960s. She had also kitted out rooms with similarly repetitive motifs, including polka dots and penises. However, it was with her following room work that Kusama streamlined her mirror and light works, in a 1966 work called Peep Show or Endless Love Show.

"A mirrored hexagonal room with coloured lights that flashed in time to piped-in rock and roll, Peep Show, like its bawdy namesake, was experienced by viewers through slots located at eye level," writes Taft. "In an onanistic twist, rather than ogling an anonymous 'star' on the Peep Show's stage, the only image one saw was one's own – reflected ad infinitum in the mirrored walls, surrounded by blinking lights, for all the world like a kinetic marquee."



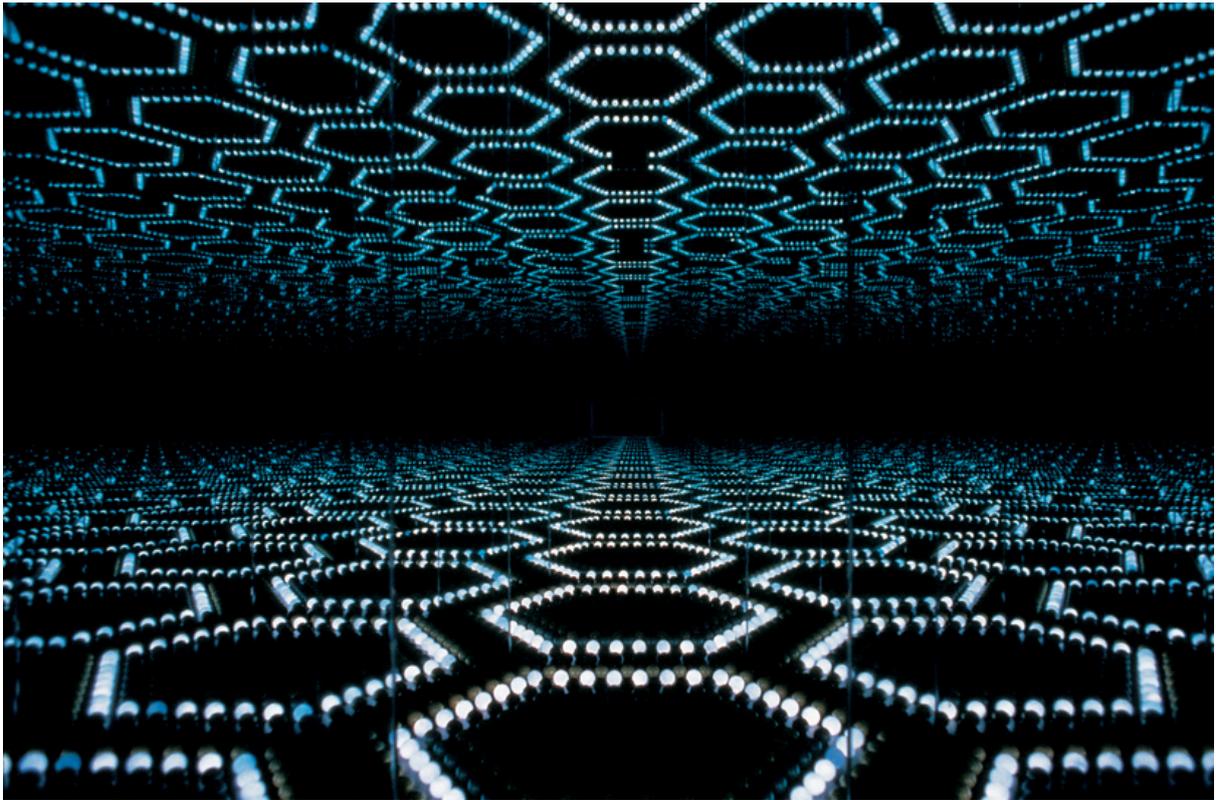
The work was in keeping with the psychedelic light shows of the period, as well as the seamier side of the sexual revolution; a similarly mirrored environment appears in *Self Obliteration*, the 1968 film Kusama made with Jud Yalkut. Look out for some deeply groovy

body painting, which takes place inside Kusama's mirrored environment, towards the end of this short movie, below.

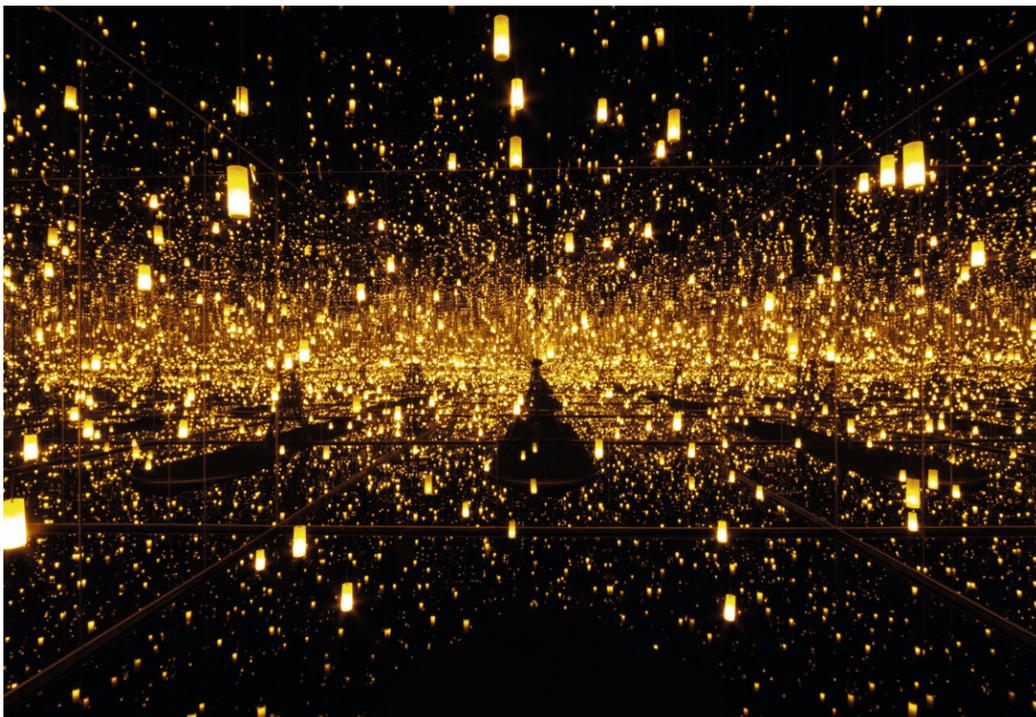


Infinity Rooms became a less-prominent aspect of Kusama's work following her return to Japan in 1977 and it wasn't until 1993, when she was chosen to represent Japan at the Venice Biennale, that the art world got a good look into one of her Infinity Rooms again, this time decorated with a polka-dot theme, and with Ms Kusama herself in attendance at points, handing out miniature pumpkins.

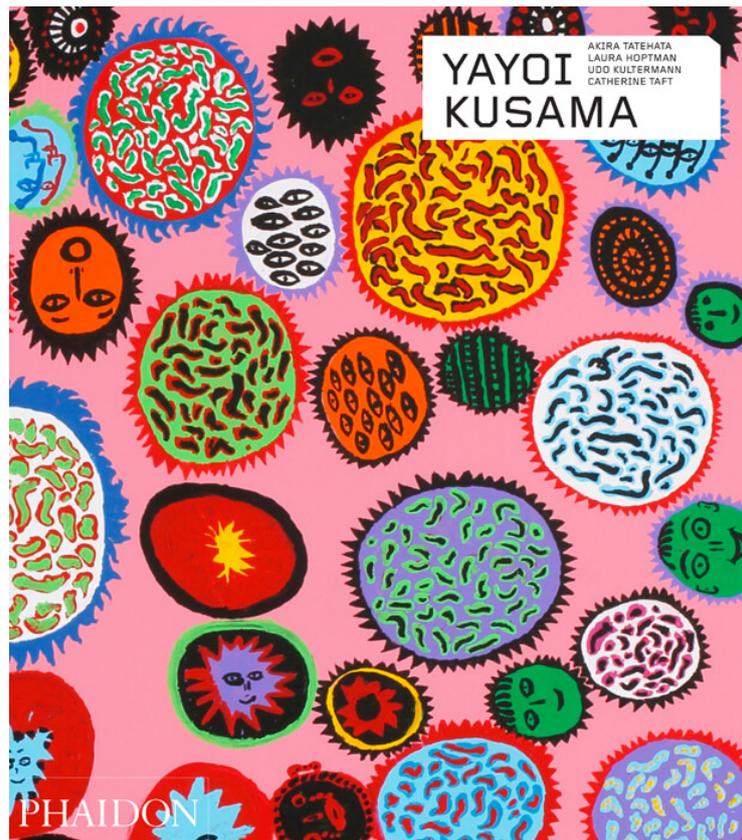
Since then, she has recreated different Infinity Rooms at various sites around the world, to critical and popular acclaim. A show of six Infinity Rooms opens at the Broad in LA this weekend, and advance tickets have sold out already; while big crowds are bound to greet the installation of two new Infinity Rooms at David Zwirner's Chelsea gallery next month. Once highly avant-garde, these newer infinity rooms have proven to be remarkably popular with pop stars such as Adele and Katy Perry, as well as ordinary gallerygoers, who will queue for hours to spend a few minutes inside these environments.



Why? Well, perhaps because, unlike the earlier versions, these later Infinity Rooms are less places of **mind-blowing self-obliteration**, and more sites for **quiet contemplation** which, in a push and pull world even Kusama could never have imagined is something everyone - art lover or simple aesthete - can do with now and again.



"Mirrored rooms like *Fireflies on the Water* (2000) and *Infinity Mirrored Room: The Souls of Millions of Light Years Away* (2013) are comprised of tiny points of cool-hued LED lights floating in the dark like a city seen from space or a galaxy viewed from earth," Taft writes. "*Love is Calling* (2013), on the other hand, is a cavernous environment employing shifting coloured light that fills the interiors of soft, dotted, stalagmite and stalactite forms. *Aftermath of Obliteration of Eternity* (2009) is a mirrored chamber of golden-glowing lantern shapes that appear to float on their own like ceremonial luminarias.



These installations typically have a low platform on which the viewer stands while alone in the room with the mirrored door shut, surrounded by infinity. The floor is sometimes filled with a shallow pool of water that further reflects the lights and adds a natural element to the space, separating the viewer from the infinite walls and lights beyond. These are introspective spaces for perceiving, listening and feeling."

Ontology

Ontology is the study of the kinds of things there are in the world. The ontology of art considers the matter, form, and mode in which art exists. Works of art are social constructs in the sense that they are not natural kinds but human creations. The way we categorize them depends on our interests, and to that extent ontology is not easily separated from sociology and ideology. Nevertheless, some classifications and interests are likely to be more revealing of why and how art is created and appreciated. There are a number of traditional classifications of the arts, for instance in terms of their media (stone, words, sounds, paint, etc.), their species (sculpture, literature, music, drama, ballet, etc.), or their styles or contents (tragedy, comedy, surrealism, impressionism, etc.).

Ontology of Art

Ontological questions are questions about existence: Which things are truly existent? Into which fundamental categories do they fall? One seeks, not just an inventory of reality, but a map of it, one that could help to structure and navigate one's other philosophical concerns. In the case of art ontology, we seek to understand where artworks fit into this wider organization of reality. We might wish to know, for example, whether they are just material things, or mental in some way, or even abstract entities of some sort. Such questions have a clear bearing on the epistemology of their appreciation, which is often our central aesthetic-philosophical concern.

The category of art is, however, wildly heterogeneous. It includes paintings, musical theater, films, improvisations, earth-works, novels, poems, pottery, dance, videos, installations, conceptual art of various stripes, and much more besides. It appears that art is not itself an ontology category, but a status achieved by items from a variety of ontological categories. Definitions of "art" attempt to clarify this status, but are not a properly ontological investigation. The work left to ontologists involves characterizing those items that achieve this status, identifying commonalities and differences in the kinds of objects that form the media of different arts.

There is interest both in finding whether all artworks belong to one, two, or more fundamental categories, and in identifying what makes the objects of the individual arts different from one another. The former, "fundamental" question has centered on the phenomenon of repeatability. While works in some arts, like painting, appear to be particular individuals, work in other arts, those like classical music, theater, and printmaking, involve multiple performances or prints or, more generally, occurrences. Since each occurrence cannot be the work, a real puzzle about the ontological character of the work itself emerges. Perhaps for idiosyncratic reasons, Western classic music has been the central case of this sort

under discussion. Musical examples have also driven the latter, applied investigations, although here attention has often been drawn to musical practices that differ, in some important regard, from the classical cases so often found at the middle of disputes about the fundamental ontology.

Oxford Bibliographies - <https://www.oxfordbibliographies.com/view/document/obo-9780195396577/obo-9780195396577-0319.xml>

AMIE L. THOMASSON

The Ontology of Art and Knowledge in Aesthetics

The ontology of art has provided one of the richest areas of discussion in recent aesthetics, yielding a variety of carefully articulated and well-argued positions about the ontological status of works of music, literature, even painting and sculpture. In some ways the variety of positions seems to be an embarrassment of riches, for it is not clear how we are to decide among these apparently mutually incompatible and often surprising views about whether works of art of some or all kinds are physical objects, abstract objects, action types, and so on. In other respects, work on the ontology of art seems to be embarrassingly impoverished, for there seems to be no natural and nonarbitrary way of answering other questions in the ontology of art, such as how many mistakes a performer may make and yet still perform a work of music; how much restoration a work of painting or sculpture may survive; or even what the exact criteria are for creating a work of literature.

If we hope to resolve these questions and decide among the competing theories, we must step back from the particular debates about the status or identity conditions of a given kind of work to address issues in meta-ontology, particularly as applied to issues in the ontology of art. What are we doing when we argue about the ontological status of works of art? What are the proper methods and criteria of success to be used in answering and evaluating answers to these questions? What kinds of answers can we legitimately expect and demand in questions about the ontology of art?

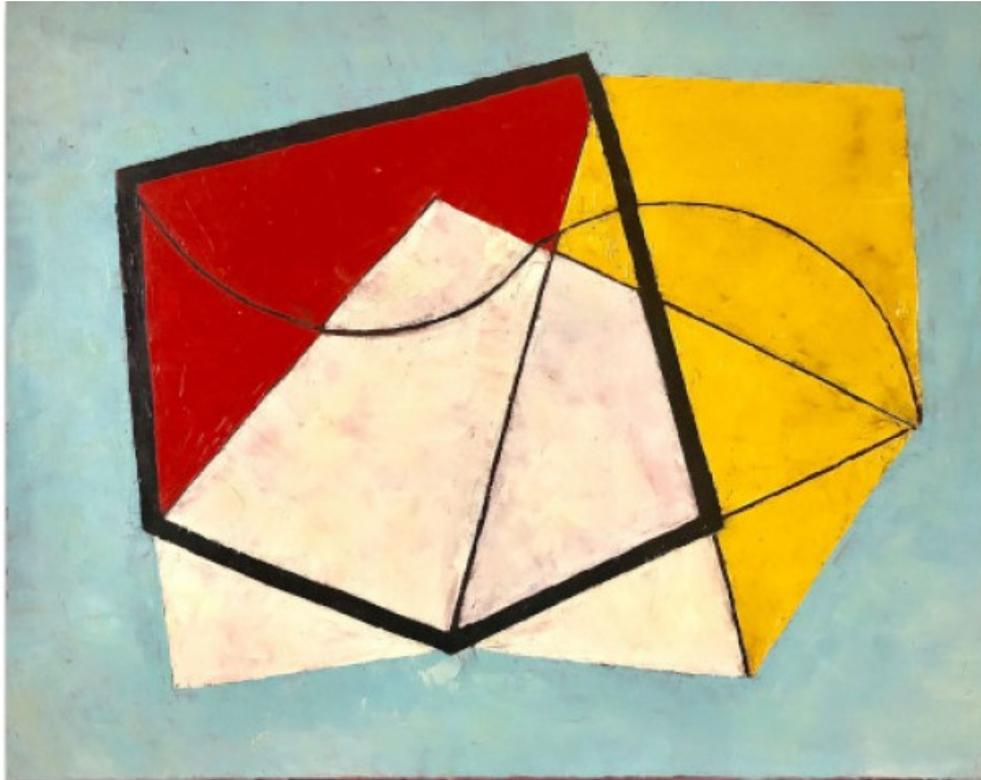
An influential paradigm of what it is to acquire knowledge has come from a certain (perhaps naïve) view of how the natural sciences and other empirical investigations work. According to this paradigm—call it the discovery view—

the world contains a broad range of fully determinate, mind-independent facts about which everyone may be ignorant or in error, but (some of) which the scientist seeks to discover by substantive empirical investigations. Thus, one acquires knowledge about, say, the biological nature of whales by ostensibly applying the term ‘whale’ to *this kind of thing* and undertaking substantive empirical investigations about them (their internal structure, genetics, etc.) in order to discover the real truth about whales’ biological nature, which may overturn our common-sense views about them. Moreover, on this view, there is a *complete* range of mind-independent facts to be discovered, so that, for any empirical proposition P we could formulate about whales, either P or not-P is the case; the only challenge lies in discovering which.

So, similarly, knowledge claims in the ontology of art are often presented as discoveries of fully determinate, mind-independent facts about the ontological status of works of art of various kinds, about which everyone may be ignorant or in error—so that we should not be surprised if the “right” view turns out to be that works of art are discovered rather than created, action-types rather than objects, and so on, and so that we may rightly demand that theories provide precise answers to any questions we care to invent about, for example, the creation, survival, and identity of works of art. I am not concerned here to either defend or attack this discovery view of knowledge, but rather to argue that—whatever its merits as an understanding of scientific or other empirical investigations—thinking of the process of acquiring knowledge about the ontology of art on that model (as, I think, many have been inclined to do) leads us badly astray.

The Journal of Aesthetics and Art Criticism 63:3 Summer 2005

Text fragment from *The Ontology of Art and Knowledge in Aesthetics*.



What Is **Abstraction in Art** - Definition and Examples

Mar 13, 2015

The concept of Abstraction tends to divide opinion and has done for many years. What does it mean? How is it art? Something so apparently difficult to understand has naturally prompted many misconceptions over the years, but why? What actually is Abstraction? We've launched a series of articles on the subject, written by our abstract artists and other qualified contributors. They talk about their own interpretation of Abstraction, their vision and why they favor it. Here's our introductory feature.

A Simple Explanation of Abstraction in Art

Abstraction isn't a style or movement; it can exist in all art to a certain degree. Various dictionaries define Abstraction as 'freedom from representational qualities in art' and 'not representing things pictorially'. The Tate describes it as when an artist has either 'removed (abstracted) elements from an object to create a more simplified form' or produced something which 'has no source at all in external reality'.

While an artist may have a real object in mind when painting, that object might be **stylized**, **distorted** or **exaggerated using colors and textures to communicate a feeling, rather than produce a replica**. It's more about how the beauty of shapes and colors can override representational accuracy. Abstraction is a 'continuum'. Many art movements have been influenced by and employ abstract principles to a varying extent; **the more removed from reality a painting or sculpture is, the more abstract it could be considered**. Cubism, for example, with its distorted subjects, is highly abstract, whereas an Impressionist painting might be more conservatively so.



Kyong Lee - Prayed for 02, 2018. Acrylic on canvas. 90.9 x 72.7 cm.

An Abstract Background

Abstract art has been around since the **Stone Age** in the form of prehistoric cave drawings of dots and symbols. **Yet it wasn't until the late 19th Century that artists began to break away from dominant Classical Realism** (depicting a recognisable subject), with artists like Monet spearheading the Impressionist movement. However, this style still had its roots firmly in reality, as opposed to the ensuing Abstraction scene. That's not to say **that Post-Impressionism** didn't influence it, though.

The dawn of the 20th Century brought many new developments, conflicts and progressive ways of thinking that required a different artistic response. Artists like Picasso, Cezanne and Matisse were already using non-traditional techniques, but it is the Russian artist Wassily Kandinsky who is widely credited with establishing Abstraction, publishing 'On the Spiritual in Art' in 1911; a book which is still considered a foundation text to abstract art. Kandinsky, an art theorist with synaesthesia – a colour sensitivity that allowed him to hear and see colour - believed that different shades provoked a range of emotions and sounds, and that paintings should be able to touch the 'parts of the brain that connected with music'. This need to push boundaries persisted throughout the decades, with Abstraction the perfect vehicle for expressing both World Wars and the Great Depression among other events.



Arvid Boecker - #1276, 2019. Oil on canvas. 50 x 40 x 5.5 cm.

Famous Abstract Artists

Kandinsky opened the door for many abstract artists, notably French painter, Robert Delaunay, a former theatrical designer who used pure colors, circular discs and color rhythms in his paintings – 1934's *Endless Rhythm* being a good example. Some of Abstract art's other recognizable names include Piet Mondrian, Mark Rothko and Jackson Pollock. Most people will have seen their paintings probably without realizing, with prints appearing everywhere from Ikea to the greetings card shelves in the supermarket.

Mondrian's Cubist style is iconic and typically comprises grids of colored blocks, like *Composition II* in *Red, Blue, and Yellow*, and remains popular today. Rothko, too, favored large blocks of color with blurred borders. He never disclosed the subject of his paintings,

instead of allowing the viewer to interpret it in their own way. Pollock, meanwhile, was best known for his exciting drip style of painting (as seen in No.5, 1948), where the paint would run across the usually large canvas and earning him the nickname, 'Jack the Dripper' . Their legacy continues to inspire numerous artists today, many of whom have become well-established in abstract art circles and whose work is showcased on IdeelArt.



Pierre Muckensturm - 17p23091, 2014. Acrylic on canvas. 222.5 x 183 cm.

IdeelArt and Abstraction

IdeelArt is an online curated gallery like no other, where the work on display has been carefully selected from among thousands of contemporary abstract artists and comes directly from their studios – guaranteeing both authenticity and originality. It is also an innovative gallerist; representing, supporting and promoting abstract artists online, improving their e-reputation, and displaying and distributing their work through the web globally.

At IdeelArt, we like the idea that words cannot easily depict an art whose very essence is precisely to be beyond any kind of representation, but we position ourselves very much in the 'non-figurative' side of the Abstraction continuum, featuring works by some of the best international abstract artists.



Featured image: Janise Yntema. 1962. (BELGIUM) AMERICAN

Abstract vs. Figurative Art

Questions over the meaning, origin, and necessity of abstract art have formed some of the central riddles of modern art. The answers to them can seem even more remote now that contemporary painting encompasses veins of both abstraction and figuration. This wasn't always the case: during the years when Abstract Expressionism flourished, figuration was shunned by the most advanced artists, and for reasons which date back to the late 1930s. Below we examine all the terms in this debate: abstraction; figuration (abstraction's opposite for much of the twentieth century); and the concept of 'representation,' which critics have come to use more often since the 1970s, which acknowledges that abstract and figurative art are not as different as they might seem.



ABSTRACT ART DEFINITION FIGURATIVE ART

Almost all art is abstract art, if we take abstraction to be a process of drawing inspiration from the shape, color and texture of objects. Artists have "abstracted" from the world around them since prehistoric times. But it was not until the early twentieth century that abstraction began to be explored as an end in itself.

Abstract art tends to rely on the associations of form to suggest meaning, rather than employing recognizable motifs to point to particular themes and content. It ranges from the easily comprehensible, quasi-figurative, landscape-based imagery of Kandinsky, to the obscure, mystical monochromes of Malevich.

Imitation, or realistic representation, has been one of the goals of visual art since the earliest times - the ancients called it mimesis. During some periods artists have striven to create the effect of an illusion, with images that seem to extend the real, 3D space of the viewer. At other times they have striven for realism - an impression of social reality. In the twentieth century, the opposite of abstraction is best thought of in the widest sense, as "figuration," though some Abstract Expressionists considered any residual presence of the figure (such as is seen in Miró, or early Rothko), no matter how abstracted, to constitute figuration.

ABSTRACT ART EXAMPLES FIGURATIVE ART

									
<i>Composition No.10</i>	<i>1947-J</i>	<i>Autumn Rhythm</i>	<i>Painting</i>	<i>Equinox</i>	<i>The Problem We All Live With</i>	<i>Les Femmes d'Avignon</i>	<i>Bad Boy</i>	<i>Christina's World</i>	<i>Island Farmhouse</i>
Piet Mondrian	Clyfford Still	Jackson Pollock	Philip Guston	Hans Hofmann	Norman Rockwell	Pablo Picasso	Eric Fischl	Andrew Wyeth	Fairfield Porter

Key example: *1947-J* by Clyfford Still
 In the mid 1940s, in his effort to dramatise what he saw as man's elemental confrontation with nature, he moved to banish the figure entirely from his semi-abstract pictures. His solution, as it would also later be for Rothko and Newman, was to conceive the canvas as a field occupied only by areas of flat color which could not be read as figures of any kind.

Key example: *Christina's World* (1948) by Andrew Wyeth
 This painting depicts his neighbour in Maine who, although crippled by polio, possessed what the artist believed was a soaring spirit. While painting in an era dominated by abstraction, Wyeth stuck steadfastly to a highly finished and detailed style of figurative realism, and went on to be one of the most popular American painters of the twentieth century. It might be noted, however, that although *Christina's World* is very realistic, it concerns the same theme of spiritual transcendence which preoccupied so many of the

ABSTRACT ART

THE EARLY TWENTIETH CENTURY

FIGURATIVE ART

The idea of abstract art was present to some degree throughout the art of the late nineteenth century, from Post-Impressionism to Symbolism. But pure abstraction was finally achieved around 1913 - those most often said to have created the first abstract paintings are Kandinsky, Malevich, Mondrian and Robert Delaunay. Some consider Cubism to be an abstract style, yet Picasso was opposed to pure abstraction, and actually changed course when he felt his work was verging on pure abstraction.

Experiments in abstract art throughout the century have always aimed at disrupting the traditional understandings of easel painting, and this disruption has tended towards two logical conclusions, the grid and the monochrome. The grid - typically seen in Cubism, and in Piet Mondrian - is hostile to narrative, and also confuses the conventional oppositions between line and color, figure and ground, motif and frame. The monochrome runs counter to the traditional understanding of painting as either a window or a mirror: an opening through which we see another world, or a surface on which some version of ourselves (physical, spiritual, social, cultural etc) is reflected back at us.

Hans Hofmann's presence in Paris at the time of these early developments was important in bringing ideas about abstraction to the United States, though others such as Arshile Gorky and John Graham would also play a role.

Although photography is often blamed for the disappearance of figures in modern painting, the real reason has more to do with the experimental, self-expressive, and avant-garde urges of artists. The Impressionists were only the first to allow the figure to fade in importance beside a new stress on surface effects. It is perhaps significant that the term 'Impressionism' was first applied to these artists as a form of criticism, because their paintings only left an impression of the actual forms being depicted, and did not render them precisely.

Although the figure did not have the dominant presence in twentieth century art that it did in previous times, it has been particularly important to two styles - social realism and Expressionism. Social realists have deployed the figure in their attempt to accurately record contemporary social life. And Expressionists have put the human figure at the centre of a style devoted to celebrating human yearnings and anxieties.

ABSTRACT ART

DURING ABSTRACT EXPRESSIONISM

FIGURATIVE ART

Although the Abstract Expressionists spoke more of content than of form, abstraction was central to their means. Rothko, Newman, and Still all consciously strove to remove from their pictures any motifs which might carry associations. Instead they employed purely abstract form and expressive color to communicate directly with the viewer in the most immediate way.

Critics, however, were more alert to the importance of abstraction. For **Harold Rosenberg**, the painters' abstraction was a product of their Existential encounter with the canvas - the abstract mark was a cry in the wilderness. And for **Clement Greenberg**, abstraction was central to the goal of all modernist artists, to rid art of all that was extraneous to it.

The example of Jackson Pollock has come to be a particularly controversial test case of the significance of abstraction and figuration in Abstract Expressionism - particularly since figures began to remerge in his late work, when the artist seemed to become frustrated with trying to develop his abstraction. For some such as Clement Greenberg, abstraction was central to Pollock's success.

The lack of figuration in Abstract Expressionism is typical of the post-war period, when distaste for leftist politics eroded the position of social realism, and world war shook the humanism at the heart of the Expressionist style. Few realists - other than Andrew Wyeth - gained prominence in this period.

However, although many Abstract Expressionist paintings are indeed abstract, some artists reintroduced the figure. De Kooning is famous for the series of *Women*, that he began in the early 1950s. For him, the use of the figure was central to his engagement with the history of Western art. His example would be hugely influential, but as color field abstraction gained more support in the 1950s, de Kooning's recourse to figuration began to be held against him.

ABSTRACT ART

AFTER ABSTRACT EXPRESSIONISM

FIGURATIVE ART

Many have come to question the possibility of abstraction as Clement Greenberg and others saw it. Some argue that Pollock was trying to represent his unconscious, and that memory images and motifs from his psychoanalysis slipped through. Others go further, maintaining that, although Pollock may have attempted to repress all forms of reference in his work, he could never escape them entirely, as abstraction is a language like any other, and carries metaphors like any other. Most critics now agree that Pollock's abstraction was a language of sorts, and, therefore, that it is more connected to conventional imagery than had been hitherto imagined. Today they argue that abstract and figurative paintings both do the work of *representation*, and in that sense are closely related.

Although the decline of Abstract Expressionism did not result in an immediate return to figuration, some artists began to explore this direction in the 1960s.

Philip Guston is particularly famous for having returned to the figure in the late 1960s, when he began to feel that his abstraction made it difficult to respond to the social and political upheavals of the period. And others might be noted, including Alex Katz and Philip Pearlstein, who were termed "New Perceptual Realists," and "Super-realists" such as Chuck Close and Richard Estes (though their work was often more preoccupied by the photograph than by the figure).



New Media Art and the Gallery in the Digital Age

CHARLIE GERE

This paper examines some the changes that digital technology has wrought upon conceptions of space, time and culture, and how 'new media art' has historically reflected upon these. It suggests that such art might be better represented in institutions such as Tate, which in turn might help them engage with the question of what their own role might be in the digital age.

At work we are surrounded by technology, whether in offices or in supermarkets and factories, where almost every aspect of planning, design, marketing, production and distribution is monitored or controlled digitally. Galleries and museums are far from exempt from the effects of these technological transformations. Indeed, it might be suggested that museums and galleries are profoundly affected and that the increasing ubiquity of systems of information manipulation and communication presents particular challenges to the art gallery as an institution. At one level these challenges are practical: how to take advantage of the new means

of dissemination and communication these technologies make possible; how to compete as a medium for cultural practice in an increasingly media-saturated world; how to engage with new artistic practices made possible by such technologies, many of which present their own particular challenges in terms of acquisition, curation and interpretation.

Arguably, at another level the challenges are far more profound: they concern the status of institutions such as art galleries in a world where such technologies radically bring into question the way museums operate. This is particularly true of 'real-time' technologies with the capacity to process and present data at such a speed that the user feels the machine's responses to be more or less immediate. Real-time computing underpins the whole apparatus of communication and data processing by which our contemporary techno-culture operates. Without it we would have no e-mail, word processing, Internet or World Wide Web, no computer-aided industrial production and none of the invisible 'smart' systems with which we are surrounded. 'Real time' also stands for the more general trend towards instantaneity in contemporary culture, involving increasing demand for instant feedback and response, one result of which is that technologies themselves are beginning to evolve ever faster. The increasing complexity and speed of contemporary technology is the cause of both euphoria and anxiety.

'In this age of contemporary technics, it might be thought that technological power risks sweeping the human away. Work, family and traditional forms of communities would be swept away by the deterritorialisation (that is, by destruction) of ethnic groups, and also of nature and politics (not only by the delegation of decision making but by the 'marketisation' of democracy), the economy (by the electronisation of the financial activity that now completely dominates it), the alteration of space and time (not only inter-individual spaces and times, by the globalisation of interactions through the deployment of telecommunication networks, the instantaneity of the processes, the 'real time' and the 'live', but also the space and time of the 'body proper' itself, by tele-aesthesia or 'tele-presence' .

Friedrich Kittler suggests that the digitisation and circulation of information made possible by the installation of optical fibre networks is driven by Pentagon plans to construct a communications network that would not be disrupted by the electro-magnetic pulse that accompanies a nuclear explosion. This, in turn, is fundamentally altering our experiences of the media:

Before the end, something is coming to an end. The general digitisation of channels and information erases the differences among individual media. Sound and image, voice and text are reduced to surface effects, known to consumers as interface. Sense and the senses turn into eyewash. Their media-produced glamour will survive for an interim as a by-product of strategic programs. Inside the computers themselves everything becomes a number: quantity without image, sound, or voice. And once optical fiber networks turn formerly distinct data flows into a standardised series of digitised numbers, any medium can be translated into any other. With numbers, everything goes. Modulation, transformation, synchronisation: delay, storage, transposition; scrambling, scanning, mapping – a total media link on a digital base will erase the very concept of medium. Instead of wiring people and technologies, absolute knowledge will run as an absolute loop.

Kittler does at least concede that 'there still are media; there is still entertainment' .

Meanwhile Andreas Huyssen suggests that one response to the ever-greater ubiquity of real-time systems is an increasing interest in memory. Writing about the building of Holocaust memorials Huyssen observes that:

Our obsession with memory functions as a reaction formation against the accelerating technical processes that are transforming our Lebenswelt (lifeworld) in quite distinct ways. [Memory] represents the attempt to slow down information processing, to resist the dissolution of time in the synchronicity of the archive, to recover a mode of contemplation outside the universe of simulation, and fast-speed information and cable networks, to claim some anchoring space in a world of puzzling and often threatening heterogeneity, non-synchronicity, and information overload.

Huyssen thus suggests one idea about what the role of the museum or gallery might be in our current technological conditions; a 'place of resistance to' and 'contemplation outside' of the effects of 'accelerating technical processes' . Indeed museums and galleries deal with things, objects, whose very materiality would seem to make them resistant to the transformations wrought on other discourses by electronic and digital media. Indeed, it would seem from visiting a gallery such as Tate Modern that art is still very much a matter of producing such objects, paintings, sculptures and so on.

But the status of the museum or gallery in relation to 'the accelerating technical processes that are transforming our life-world' is more complex. As an archive, a form of artificial, external, memory, the museum or gallery cannot stand outside of, separate and resistant to the technical means that structure our memories. In the mid 1980s Jacques Derrida flags for urgent attention:

[W]e should not close our eyes to the unlimited upheaval under way in archival technology. It should above all remind us that the said archival technology no longer determines, will never have determined, merely the moment of the conservational recording, but rather the very institution of the archivable event this archival technique has commanded that which in the past even instituted and constituted whatever there was as anticipation of the future.¹¹ The gallery is as performative as it is constative. It creates the past it supposedly simply shows by what it chooses to accept as a donation, to buy, to curate, conserve, and display. Thus it affects not just our understanding of and access to the past, but also our relation to the future by choosing the legacies that are available to us and to future generations. And this is not just a question of taste, fashion, finances and so on. It is fundamentally bound up with the structure of the gallery as an institution, in terms of its understanding of its role, its intentions and duties, and even its physical embodiment. For example, the most cursory comparison between the history of post-war art and the Tate's holdings will demonstrate that, for all its intentions to represent, as best it is able, art of that period, there are many forms of practice it has failed to engage with completely or at best only partially or belatedly. These include: Cybernetic Art, Robotic Art, Kinetic Art, Telematic Art, Computer Art and net.art

It is far from coincidental that all these and others I have not mentioned are practices that emerged either in reaction against or in response to the increasing importance and ubiquity of information and communications technologies, such as telephony, television, computing, networking and so on. It is not, of course, that Tate is deliberately following a policy of exclusion in terms of the above. It is rather that an institution founded in and for the very different conditions of art production and reception of the late nineteenth century, simply is not properly equipped to show such work, or at least not as it is presently constituted.

In the United States the 1950s also saw some of the first electronic artworks, made by, among others, Ben Laposky and John Whitney Sr, as well as some of the first experiments in computer-generated music, by Max Mathews at Bell Labs. Meanwhile, in Europe, composers such as Pierre Boulez, Edgar Varese and Karlheinz Stockhausen were also experimenting with electronics, while artists such as Jean Tinguely, Pol Bury, Nicolas Schöffer, Takis, Otto Piene, Julio le Parc, Tsai Wen-Ying, and Len Lye (also known as a filmmaker), and groups such as Le Mouvement, The 'New Tendency', ZERO and the Groupe de Recherche d'Art Visuel, started to explore the possibilities of Kineticism and cybernetics for art. This work was accompanied and encouraged by the work of theorists such as Abraham Moles in France and Max Bense in Germany, both of whom wrote works in which information theory and cybernetics were applied to art. Bense was able to put his ideas into practice through his founding of the Stuttgart University Art Gallery. During his two-decade long tenure as head of the Gallery it held some of the very first exhibitions of computer art.

The needs of nuclear defence in particular, and military funding more generally, had led to the development of the computer as an interactive visual medium, rather than simply a 'number cruncher'. Along with other technological developments this produced an increased interest in the possibilities of such technology as a tool for art. In 1965 and 1966 the first exhibitions of computer art were held at the Stuttgart University Art Gallery and the Howard Wise Art Gallery in New York. In the late 1960s the increasing sophistication and availability of technologies such as computers and video and the ideas of theorists such as Buckminster Fuller and Marshall McLuhan gave further impetus to the development of art practices involving both the technologies themselves and related concepts. It is possible to discern the emergence of a utopian 'systems aesthetic', in which the combination of new technologies and ideas about systems, interaction and process would produce a better world. Artists, composers, filmmakers, scientists, architects and designers all seized upon the possibilities of new technologies and ideas to produce work that either involved such technology or alluded to the world it was helping to bring about.

Some of the most important work was undertaken under the aegis of 'Experiments in Art and Technology' (EAT), a group founded by Billy Klüver and Robert Rauschenberg and dedicated to fostering collaborations between artists and engineers. In 1966 EAT held its famous show 9 Evenings at the Armory in New York. Over the eponymous nine evenings a series of collaborative happenings were staged, involving both artists and engineers. In the years that followed a number of major exhibitions involving new technologies were held, including The Machine as Seen at the End of the Mechanical Age at MOMA, New York in 1968, which was accompanied by a show of work commissioned by EAT, Some More Beginnings at the Brooklyn Museum. In the same year the legendary exhibition Cybernetic Serendipity, curated by Jasia

Reichardt, was held at the ICA in London. A year later there was Art by Telephone in Chicago and Event One in London (the latter organised by the Computer Arts Society, the British equivalent of EAT). In 1970 critic and theorist Jack Burnham organised Software: Information Technology, its meaning for art at the Jewish Museum in New York. Like Cybernetic Serendipity this show mixed the work of scientists, computer theorists and artists with little regard for any disciplinary demarcations. In 1971 the results of Maurice Tuchman's five-year Art and Technology programme were shown at the Los Angeles County Museum.

Jack Burnham and Jasia Reichardt were also among those who produced critical works on the subject of art, science and technology. Burnham published his magnum opus *Beyond Modern Sculpture* in 1968. At around the same time Reichardt published a number of works, including a special issue of *Studio International* to accompany her exhibition, while Gene Youngblood published *Expanded Cinema*, an extraordinarily prescient vision of experimental video and multimedia. How important this area was then considered is demonstrated by the fact that Thames and Hudson published two books on art and technology within two years of each other, *Science in Art and Technology Today* by Jonathan Benthall in 1972 and *Art and the Future* by Douglas Davis in 1973, the same year in which Stewart Kranz produced his monumental work *Science & Technology in the Arts: a Tour Through the Realm of Science / Art*.

It is around this time that discourses such as Poststructuralism and Postmodernism began to emerge, partly as a critical response to the ubiquity and power of information technologies and communications networks. The writings of Derrida, Baudrillard, Jameson, Deleuze and Guattari and Lyotard, whatever the differences in their approaches and their ostensible subject matter, always imply a critique of systems and communications theories. It was possibly the space opened up by this critical approach that began to make systems art of interest to the mainstream art world again. In 1979 the first Ars Electronica festival was held in Linz, Austria, which aimed to look at the application of computers and electronic technologies. In 1985 the philosopher Jean-François Lyotard curated a massive exhibition at the Beaubourg, Les Immatériaux, which aimed to show the cultural effects of new technologies and communication and information. It was also around this time that the Tate put on its first show of computer-generated art, the 1983 exhibition of work produced by Harold Cohen's 'Aaron', an artificial-intelligence program which drives a drawing machine.

But it was really at the end of the 1980s and the beginning of the 1990s that systems art began to re-emerge. This period also saw the beginnings of the World Wide Web (WWW), though it would take a few years for it to become widely available. In Liverpool in 1988 Moviola, an agency for the commissioning, promotion, presentation and distribution of electronic media art was founded, under whose aegis Videopositive, an annual festival of such art was held. (Moviola later transmogrified into the Foundation for Art and Creative Technology or FACT). In the same year the first International Symposium on the Electronic Arts (ISEA) was held. A year later the Zentrum für Kunst und Medientechnologie (ZKM) was founded in Karlsruhe, Germany, which remains a major centre for media and technology arts.

In 1990 a similar institution was opened in Japan, the NTT InterCommunication Centre, Tokyo, while the San Francisco Museum of Modern Art held its first show of new media art.

Perhaps the most important event in terms of digital art practice at this time was the development of the first user-friendly web browser in 1994. The World Wide Web had been developed as a result of the pioneering ideas of Tim Berners-Lee, a British scientist at the European Nuclear Research Centre (CERN) in Switzerland. Berners-Lee was interested in using the Internet to allow access to digital documents. To this end he developed a version of the Standard Generalised Markup Language (SGML) used in publishing, which he called Hypertext Markup Language or HTML. This would allow users to make texts and, later on, pictures, available to viewers with appropriate software, and to embed links from one document to another. The emergence of the Web coincided almost exactly with the collapse of the Soviet Union and it was the new-found sense of freedom and the possibilities of cross-border exchange, as well as funding from the European Unions and NGOs such as the Soros Foundation that helped foster the beginnings of net art in Eastern Europe, where much of the early work was done.

When 'user-friendly' browsers such as Mosaic and Netscape came out in the early to mid 1990s the possibilities of the Web as a medium were seized upon by a number of artists, who, in the mid 1990s, starting producing work under the banner of 'net.art'. This meant work that was at least partly made on and for the Web and could only be viewed on-line. The term 'net.art' was supposedly coined by Vuk Cosic in the early 1990s to refer to artistic practices involving the World Wide Web, after he had received an email composed of ASCII gibberish, in which the only readable element was the words 'net' and 'art' separated by a full stop. Since then there has been an extraordinary efflorescence of work done under the banners of network art, net.art or net art, from Vuk Cosic, Olia Lialina, Alexei Shulgin, Rachel Baker, Heath Bunting, Paul Sermon, 0100101110101101.org, Natalie Bookchin, Lisa Levbratt, Paul Sermon, Radioqualia, @Tark, Matt Fuller, Thomson and Craighead, and many others.

At the same time, discussions and commentary about technology and art have proliferated through email lists such as Rhizome, Nettime and CRUMB (Beryl Graham and Sarah Cook's digital curation list based at Sunderland University), as well as publications such as Mute. As in the late 1960s and early 1970s there have been a number of important publications on this area by, among others, Lev Manovich, Christiane Paul, Oliver Grau, Stephen Wilson, Edward Shanken, and Michael Rush, as well as PhDs in Art History departments on, for example, net.art (Josephine Berry, Manchester) and Computer Art (Nick Lambert, Oxford). Art history departments here and abroad are now starting to look seriously at this area, as shown by the Arts and Humanities Research Board's recent decision to award Birkbeck College, University of London, a large research grant to study early British computer art, as well as many similar projects elsewhere. As the above suggests, there is a great deal of interesting and important work going on in this area, in terms of actual art practice as well as of institutional and academic engagement.

Such work reflects the fact that our lives are now so bound up with what Donna Haraway calls the 'integrated circuit' of hi-tech capital. It would be hard to overstate the extent to which the reality of our lives is entirely governed by technologically advanced processes and systems, from ubiquitous and increasingly invisible computer networks to mobile telephony to genetic manipulation, nanotechnology, artificial intelligence and artificial life. These technologies are

intimately bound up with broader issues of globalisation, surveillance, terrorism, pornography and so on. The work undertaken in the 1960s and 1970s now looks remarkably prescient in its attention to the meaning and potential of new technologies, networks and paradigms of representation and engagement.

Yet, despite this and the proliferation of current practice in this area, such work is still under-represented in Tate. Obviously there have been welcome developments, including the net.art commissions and the Art and Money Online show, as well as the increasing interest in film, video and photography. But, welcome as these moves to encompass various forms of new media practice are, they mostly fail to encompass or engage with the kind of work mentioned previously. In particular, work that is interactive, process-based or that involve networks, systems and feedback, are generally not catered for. The new media works now being collected and displayed by Tate are almost entirely static, even if they are time-based, in that they do not alter in response to interaction or their environment. This is true even for the net.art commissions.

Furthermore such practice, both in its historical and current manifestations, is of great importance in its capacity to engage with and reflect upon our current technological condition. This is one of the reasons why there are such a large number of artists working in this area. It is also why any move to collect and display such work is likely to prove very popular, especially among younger people. New technologies affect almost everybody, whatever their age, at work, at home or elsewhere. For most people in Britain under twenty-five or even thirty years of age, a world without video games, computer special effects, the Internet, the World Wide Web, mobile phones and so on, is almost unimaginable. The ubiquity of such technologies is symptomatic of deeper issues such as globalisation, genetic manipulation, and bio-terrorism, that are the concern of many people, young or old.

Net art, then, is seen as an archaeology of the future, drawing on the past (especially of modernism), and producing a complex interaction of unrealised past potential and Utopian futures in a synthesis that is close to the ideal of Walter Benjamin.¹⁴ [my emphasis]

'Archaeology' is of course cognate with 'archive', and both are concerned with the preservation of the material remains of the past. Net art delineates the conditions of archiving in our current regime of telecommunications. Derrida reminds us that the question of the archive is:

[A] question of the future, the promise of the future itself, the question of a response, of a promise and a responsibility for tomorrow. The archive: if we want to know what that meant, we will only know in times to come. Perhaps.