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# HOW CAN WE THINK ABOUT ABSTRACT PAINTING? PT. 2: VISUAL PERCEPTION BY SIMON BILL

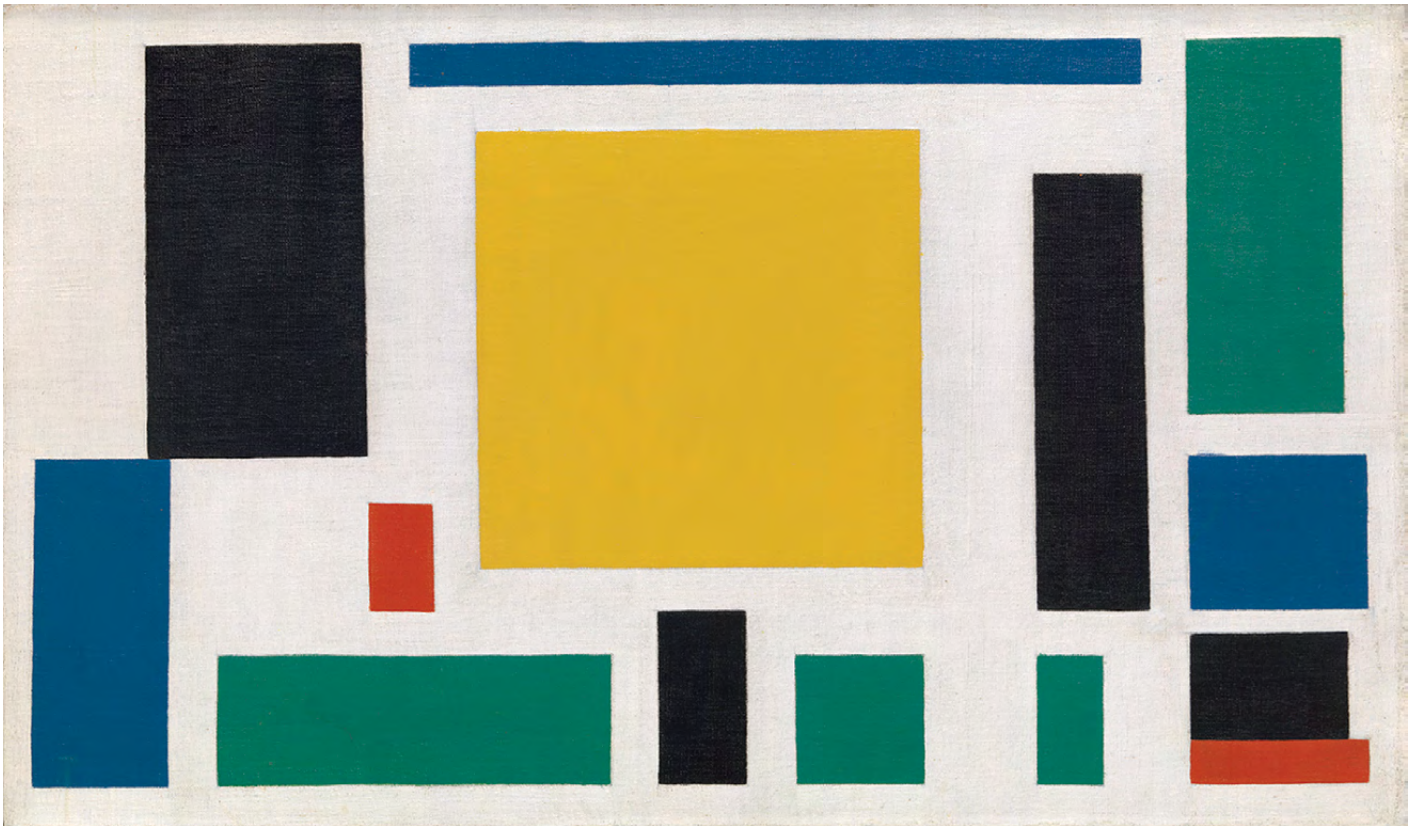
The form/content distinction, which seems clear enough in principle and which the first part of this essay investigated, is more problematic in reality than either the Formalist Clive Bell, or Peter Halley and the other NeoGeo culture critics, appreciated. There is a further level of analysis neither was aware of: the neuropsychology of visual perception.

If, by ‘abstraction’, we mean the separation of individual qualities from the object of which they are characteristics, then abstraction is something which occurs in nature, in the physiology of visual perception. A great deal of the human brain is dedicated to vision (some estimates put it at more than half, distributed across about thirty distinct brain regions). This might seem like an awful lot to devote to a task we seem to be able to cope with effortlessly, until you realise what all that brain power is doing. Our eyes are surprisingly inefficient at collecting information from the world; they do not actually collect images, only scraps and fragments that can then be made into images. And everything that is in an image, every shade and angle and glint and fade and face and movement has to be processed individually, before

being put together and presented to consciousness as the thing you are now seeing. So, to go back to Bishop Berkeley’s very simple example of a single cherry, the red has to be processed along one pathway, the roundness along another, its smallness along another still, and so on, then those elements are (somehow) added together and identified as ‘a cherry’ – then, all that is offered to consciousness as the visual experience of seeing a cherry. It’s like thousands of converging assembly lines.

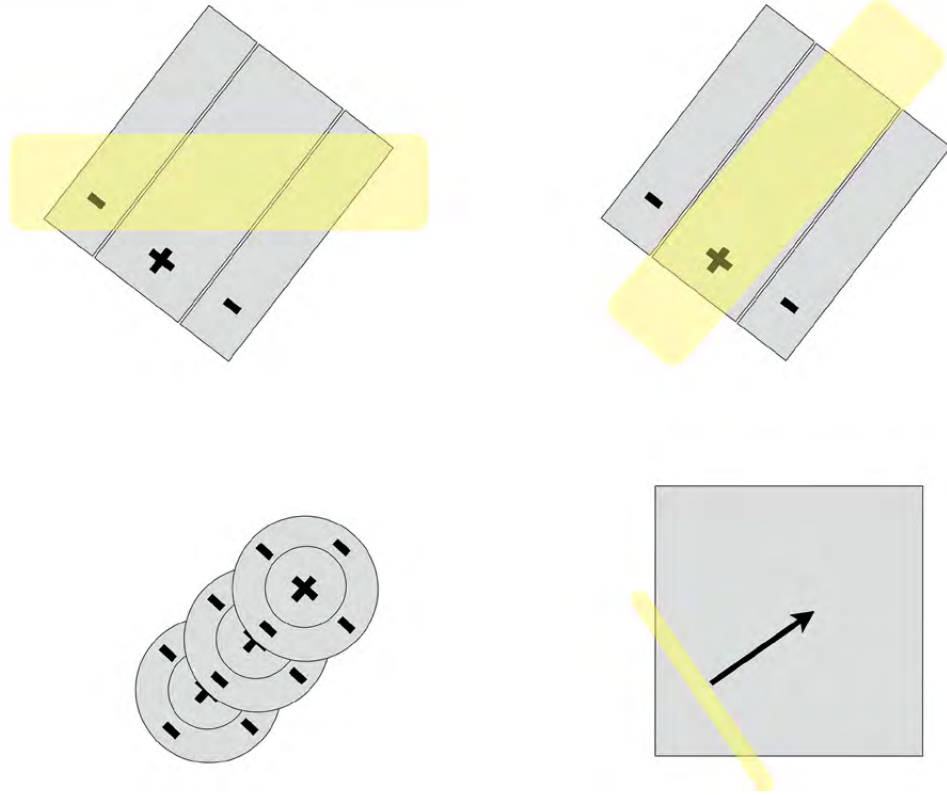
The fact of this natural abstraction might seem to support a version of Formalism, and it has been used in just that way by an exponent of the hybrid discipline called neuroaesthetics. Semir Zeki offers an aesthetic theory of abstract art based on the neurophysiology of the ‘receptive field’. He says that if you measure the responses of single cells in the visual pathways in the brain to stimuli on the patch of retina to which they connect, you find many cells responding only to very specific formal stimuli. Basic receptive fields will respond optimally only to edges, and some more specialised ones only to edges of a specific orientation, and so on. The building blocks of visual perception are these snippets of abstract information. Further along the processing pathways you can find cells which respond to rarer, more complex stimuli. Zeki gives the example of a cell responsive to blue squares. The next step of his argument is this: Some abstract paintings have blue squares (Zeki offers a Malevich as an example here) – and the pleasure and the universality of the viewer’s response to these paintings could be to do with its direct correspondence to something natural, and primal or foundational, in the biology of vision.

There are two problems here: First, Zeki’s argument is grounded in a value system where nature and universality are assumed to be good



**Composition VIII (the cow) – Theo Van Doesburg**  
circa 1918  
Collection MOMA

*Used as an example in 'Inner Vision: an exploration of art and the brain' by Semir Zeki*



#### Right: Simple and complex cells

Simple cells are sensitive to the orientation of a visual stimulus. A simple cell will fire weakly or not at all if both excitatory and inhibitory regions are activated (a), but will fire optimally if the stimulus is oriented within the excitatory region only (b). Orientation selectivity is produced by multiple centre-surround receptive fields aligned at a certain angle (c). A complex cell responds to moving stimuli and is sensitive to direction as well as orientation (d).

and therefore pleasurable. But that view is precisely what his argument from neurophysiology is advocating, so the argument's conclusion is also its premise. Second, the 'blue square' stage of perception is part of the cognitive, data-crunching process that constitutes vision. But seeing needs to seem immediate – becoming aware of any of that hard neural graft would be disastrous, like having to write the code every time you used a computer. The neuropsychology of vision can only work if it works unconsciously. Going back to Clive Bell's uncompromising Formalism, the semantic content he feels we should disregard is certainly, during the neural processing of vision, dealt with separately from all the other things that will go into the ultimate

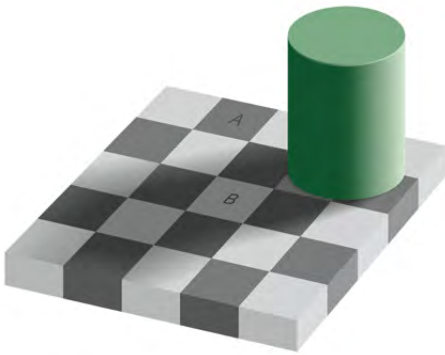
experience of seeing something, but when that experience occurs it is not separate at all. Semantic content is (probably) added in so-called 'higher-processing', just before the whole package is offered to consciousness. For example, seeing a wooden table you don't have the experience of sensing an object with a collection of properties which include being brownish, having many planes and angles, having a top that's level with the horizon, and so on, which, all things considered, is most likely to be a table. You just see a table. The inference that those properties most likely mean it's a table has been made unconsciously.

How the whole perception is delivered to consciousness in this seamless way, when we know its processing is modular or piecemeal, is a mystery;

Opposite: **Suprematist Composition – Kazimir Malevich**  
1915  
Stedelijk Museum

Used as an example in *'Inner Vision: an exploration of art and the brain'* by Semir Zeki





Adelson's checker board – Edward H. Adelson

in neuroscience it's called the binding problem. (The processing of the basic building blocks of visual perception, the edges and contrasts etc., is quite well understood, but the matching of that raw sense data to knowledge and experience such that that information can form part of the perception as experienced is not).

The idea that we can naturally see things in purely formal ways, and that assigning semantic content and identities to sensory experiences is an 'intellectual' process (thought about, consciously, that is) which you can choose either to do or not do, has a track record in art history. It's a belief that seems to have been behind a piece of advice Monet gave in a letter to a young painter. Following Ruskin, he recommended painting from life with an innocent eye, as (he imagined) a blind man would see if he suddenly recovered his sight. Monet believed that this newly-sighted man would see patches of colour, or 'taches'. In reality, though, you can't have 'pure' visual experience in quite that way, because visual perception is a sensory and cognitive event. To go back to the table example, knowing it's a table is part of seeing it.

A simple demonstration of the fusion of sensory information and knowledge that forms visual perception can be found in a well known optical illusion devised by the neuroscientist Edward H. Adelson – the checkerboard shadow illusion. This shows that even basic sensory things like tones of grey are conditioned by cognitive processes, or, in other words, by our knowledge. A and B are identical (refer to illustration). This illusion is an example of something in perception called 'constancy', which is the brain's tendency to make adjustments of values by extrapolating from the probabilities involved in anything it encounters. It knows very well that anything under shadow is bound to be darker than its tonal value in normal daylight, and

therefore it must really be lighter than its luminance levels would suggest. So it makes it lighter – which here causes a particular square to look lighter than another square of identical luminance which is not shown as being under shadow. Adelson's checkerboard is one of very many images from neuroscience demonstrating that visual perception involves conjecture, or informed guesswork.

In another, non-scientific, example of the interdependence of general formal properties and the particular characteristics that allow us to identify and name things (semantic cues), there is a bit in 'Father Ted' where Ted is teaching Dougal about seeing. Holding a plastic toy cow he points at it and says: 'This one is small, but that one...' and he points out the window at a cow in the field '...is far away.' Scale and distance are general and formal properties existing, in principle, independently of contingent facts; but usually you can't perceive scale without some knowledge of these facts. You have to know how big cows are generally to know how far away the cow outside is. Against Bell's view that we can disregard our knowledge of the world and appreciate only its general formal qualities, knowing it's a cow is essential if we are to notice the abstract spatial quantities in any picture that has cows in it.

Of course 'abstract' is also a verb. It's something you can do. The Critical Theorists and the Formalists have very different views on agency, each characterised by its relation to a version of the nature/nurture debate.

The Formalist position on the agency of the viewer in encounters with works of art is the more complex. The neuroaesthetic argument pictures the response to abstract art as something like a stimulus/response mechanism. According to this view, shapes and colours and so on cause you to feel a

certain way. The imperative is biological. The viewer is passive. But what complicates things is that Clive Bell argued that we should treat all paintings, whether they are still lifes, portraits or landscapes, as if they were all abstract paintings. This clears the way for the kind of experience both he and the neuroscientist Semir Zeki call ‘aesthetic experience’, which is a distinctive and elevated type of pleasure. The position on agency is that it is allowed, in discounting certain aspects of the visual experience so as to engineer a situation in which natural ‘aesthetic’ processes prevail, but it is also disallowed precisely because the whole thing is supposed to be going on ‘naturally’ i.e. without interference from the intellect.

With Critical Theory the situation is simpler – the imperatives are cultural, and it doesn’t allow any agency at all. Abstract paintings hypnotise us with prettiness whilst poisoning our minds with right-wing propaganda.

So, what is it to abstract? What are painters doing when they do it? Encounters with art are generally contractual and lawful – there are terms and conditions attached. Above all, it’s a certain kind of attention to what you’re looking at that is flagged-up by the special conditions of the gallery (or art book), and other contextual cues.

As I have shown, abstraction does exist in nature, as an unconscious part of the process of perceiving a thing, be that a table, a cow, a cherry or whatever. You can’t divide form and content in the full sense that Clive Bell thought you could because, as Adelson’s illusion demonstrates, abstract properties like tone and scale are not perceptible without some knowledge of the world those properties describe. But, in the special sense I’m going to offer here, it’s something you can choose to do with perceptions after they have been formed. It’s a further, deliberate process of teasing apart the components of what

you perceive.

Within the orthodoxy established by Theory about thirty years ago ‘abstract’ was a sort of old-fashioned nonsense. I’m going to offer a newer, and more nuanced, working definition. You do abstract. You do it in ordinary thought (thought would be impossible without it), but also you can do it when you look at things. Visual perception is both ‘bottom up’ (from the senses) and ‘top down’ (derived from stored knowledge). There is the unconscious ‘abstraction’ of the neurophysiology of vision, in which abstract properties are assembled along many neural pathways, interpreted or identified, and offered to consciousness as this or that object. But there can also be a consciously executed abstraction. There is discernment.

Monet recommended that a young painter should paint the world ‘as we really see it’, with an innocent eye, disregarding knowledge and the intellect. Where he got it wrong (and Clive Bell too) was in believing that this particular way of looking – not noticing what things are, or what they’re called – is natural. It’s not. You have to learn how to do it. We can consciously abstract. We can cultivate the ability to attend to some aspects of what we perceive and set others aside. In art, abstraction is agency at work upon perception. And Abstract Painting is painting that bids you to abstract. It proffers this invitation to notice some things and (temporarily) disregard others by doing some of that already for you. It leads by example.



**Dark Form – Simon Bill**  
Marker pen and foil emergency blanket on MDF  
127 x 97 cm

*Courtesy of the artist*