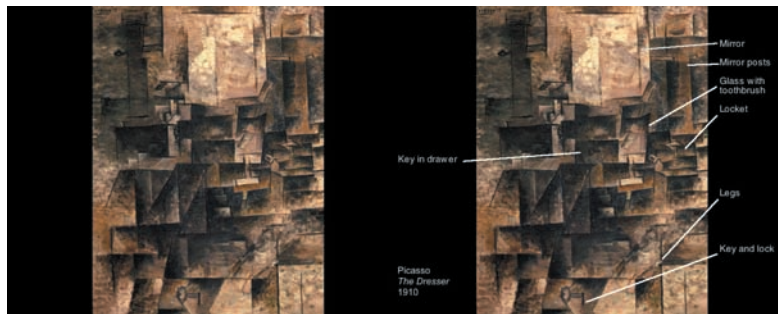


Introduction

Visual Indeterminacy occurs when viewers are presented with apparently detailed and vivid images that nevertheless resist identification. This invokes an unusual state of awareness in which the formal aspects of perception (form, colour, motion) become temporarily dissociated from the semantic aspects (meaning, memory, association). The resulting condition differs from our habitual mode of seeing, where visual sensation is accompanied by immediate recognition. Instead the viewer is presented with a perceptual conundrum - an apparently meaningful yet momentarily meaningless scene - which they struggle to resolve. Visual Indeterminacy is therefore an excellent model through which to investigate visual awareness.

Many artists have exploited visual indeterminacy to increase the degree of perceptual engagement with their work. Prominent examples are the cubist works of Picasso and Braque, in which objects are represented in a highly fragmented way that forces the viewer to work hard to disentangle the 'meaning' from the 'noise'. Although the image below (Picasso, 1910) represents a dressing table and various domestic objects, we only become aware of these after considerable cognitive effort.



In the work produced by Robert Pepperell over some 20 years, there is a deliberate attempt to evoke the appearance of objects or scenes whilst at the same time avoiding anything specifically recognisable. Part of the purpose of these paintings is to induce what might be called a 'heightened state of visual awareness' such as occurs when we are momentarily presented with an object or scene that we are unable to recognise. Art historians have hypothesised that the extra cognitive demands placed on the viewer by indeterminate images are associated with enhanced aesthetic affect (Gombrich 1960, Gamberoni 2002).

In this study we compared the behaviour of subjects presented with both Pepperell indeterminate images (RP), which contained no specific objects, and classical compositions by various Baroque, Rococo and Romantic artists (VA), which all contained recognisable objects. All the images were similar in terms of visual structure and colour palette. We hypothesized that, compared with representational paintings that depict meaningful content, the detection of recognizable objects in indeterminate images would be delayed, and tested the extent to which aesthetic impression depends on meaningful content.

Experimental Procedures

Subjects: Twenty-six right-handed subjects (13 females, mean age 29 years) with normal vision participated in the study.

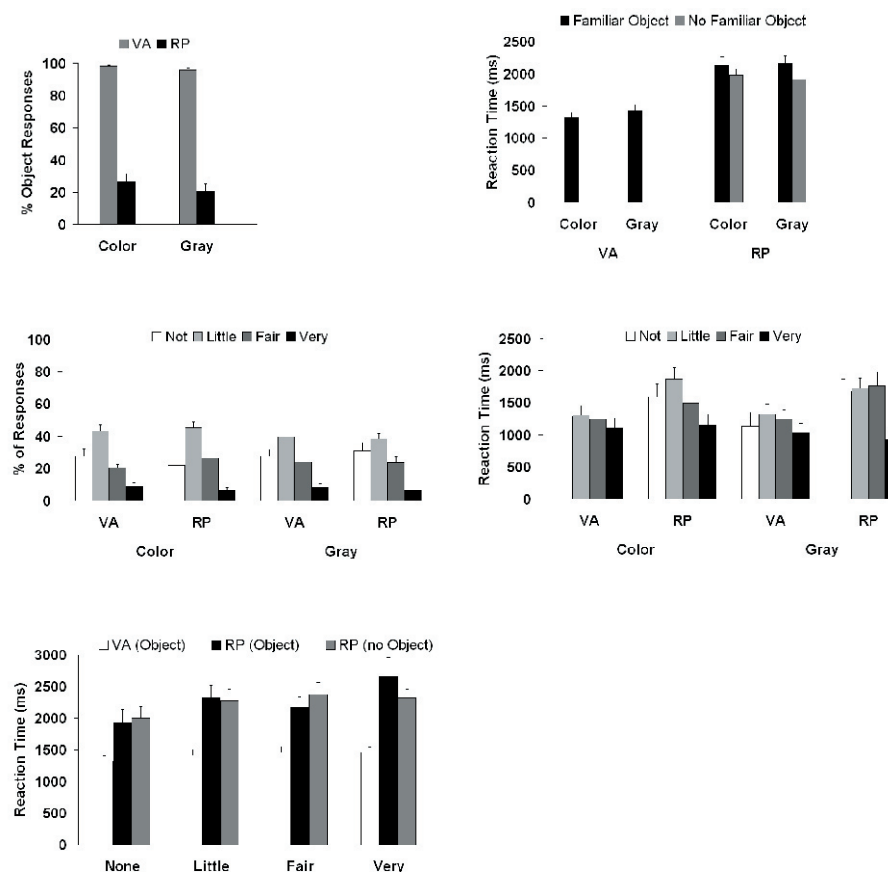
Stimuli: Sixty determinate paintings by various artists (VA) and sixty indeterminate paintings by Robert Pepperell (RP) were used. Each set included 30 color and 30 monochrome paintings, which subtended visual angles of 9° horizontally and 9° vertically. The paintings were displayed on a black background using Presentation (www.neurobs.com, version 9.13).

Tasks: Subjects performed an object recognition task followed by a judgment of aesthetic affect task. Each painting was presented for 4 sec and subjects were instructed to quickly respond, while the painting was still on the screen, indicating whether the image contained any familiar objects by pressing one of two buttons (1=yes; 2=no). The painting then disappeared and subjects had to answer the question "how strongly did this painting affect you?" by pressing one of four buttons (1=not at all; 2=a little; 3=a fair amount; 4=very).



Samples from the RP set and the VA set of stimuli.
 Left: Succulus by Robert Pepperell. Right: Sistine Chapel by Michelangelo

Results



Summary

- Subjects perceived recognizable objects in 24% of the RP paintings.
- Response latencies were significantly longer for indeterminate than representational paintings.
- The aesthetic affect rating of ALL paintings was similar.
- Response latencies for judgment of aesthetic affect were significantly longer in RP paintings.
- Increased object recognition latencies in RP images are correlated with higher aesthetic affect.

Conclusion

Our results suggest that perception of art depend on semantic aspects, whereas aesthetic affect depends on formal visual features. The longer latencies associated with indeterminate paintings reflect the underlying cognitive processes that mediate object resolution.