

Altered States: transformations of perception, place, and performance

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Title: **Visual indeterminacy and the paradoxes of consciousness**

*Abstract: This paper discusses the impact of certain artworks (paintings, drawings, collages) upon the subjective experience of the viewer. I will suggest that images displaying a high degree of perceptual indeterminacy can alter habitual cognitive states. Taking a paradoxical metaphysical stance in which universal reality is at once inherently unbounded but at the same time bounded by the cognitive activity of the conscious subject, I explore the potential for representing, and perhaps even evoking, this contradiction with indeterminate images. Using examples from my own practice and some contemporary ideas from consciousness studies, this paper outlines my research in this area. .*

Key words: Visual indeterminacy, paradox, drawing, painting, consciousness, dialethics.

### **Indeterminate images**

As an art student in 1984 I was watching Robert Wiene's expressionist masterpiece, *The Cabinet of Dr Caligari* (1919) when I experienced something extraordinary. Towards the end of the film there is a long still of a hand-written letter that then wipes to a shot of an interior. At this point for a few moments I found myself utterly lost in the presence of a scene that defied recognition. It was not until some two seconds later, when the figure of Caligari stood up from the table where he had been bent in anguish, that the whole scene rushed back into conceptual coherence. Figure 1 shows two frames from this sequence, the first at the moment of non-recognition, the second at the moment of recognition.



## Figure 1. Stills from *The Cabinet of Dr Caligari*

It turned out that what I had experienced was an example of what the art historian Dario Gamboni (2002) calls a 'potential' or 'indeterminate' image. By this he means an image that is not abstract, in the sense of being 'representation-less', but full of detail and clues suggesting many possible forms and meanings whilst at the same time denying the viewer immediate access to what the specific meanings might be. By demanding what Ernst Gombrich (1960) refers to in *Art & Illusion* as the 'beholder's share', such images require that the viewer 'reaches out', probing and picking, projecting one possible interpretation after another, so that the state of potentiality might be collapsed into actuality. One might even say that indeterminate images are barely images at all (in the sense of being 'of' something) but more like sources of raw, untreated sensation.

### **The perception of objects**

After some 20 years of contemplating indeterminate images, investigating them philosophically and trying to construct them practically, I have been led to the following conclusion: *The world itself contains no objects*. Which is to say that the world 'out there' is simply a unitary mass of *potential* objects that, with the right apparatus, can be perceived as separate, bounded things [1]. The right apparatus in this case is the human perceptual system, which absorbs sensory data and organises it into specific forms, colours, patterns, and then categories of distinct objects we are able to recognise.

Instantaneous and natural as perceptual recognition seems it is not an innate capacity but one that we have to actively learn. When, in the late-nineteenth century, surgical techniques allowed the removal of congenital cataracts from children who had been born blind it was an opportunity to resolve a long-standing philosophical question: Could a person blind at birth but later given sight be able to see? The rather disappointing answer, reported by the surgeon Moreau and cited by neurobiologist Semir Zeki (1999), was no. For those who lack the right visual apparatus during the crucial early years of development visual objects as such are not recognizable. With the benefit of nearly a century of further experimentation, Semir Zeki was able to confirm the surgeon Moreau's original hypothesis:

...an observer deprived of vision during a critical period after birth cannot recognize even a small number of objects by sight... (p. 94)

What I witnessed for those brief seconds during the cognitive lacunae in *The Cabinet of Caligari* must be something like what it is for the person born blind to see for the first time. The world is vivid and detailed but meaningless, void of *anything* but itself. What we habitually imagine to be objects present outside in the world are in fact cognitive objects inhabiting our minds alone. It seems that the recognition of objects is the consequence of a process of active interpretation

of world-derived data, which draws on the neurophysiological adaptations we make during the exploratory phase of early development.

Vision researchers tend to regard visual perception as occurring in distinct stages, starting with simple discriminations of shape and colour and ending with higher cognitive functions of memory, association and meaning. Cognitive psychologist Robert L. Solso (2003) makes a separation between 'nativistic' and 'directed' perception. Nativistic, or 'bottom-up', processing presents the raw material of vision in its most basic form where distinct colours, shapes and patterns are formed. Directed, or 'top-down', processing organises that raw material according to the personal disposition of the subject by imposing cognitive categories to facilitate recognition, the activation of memories, and semantic interpretations that feed into the ongoing experience of consciousness. In normal circumstances these distinct stages of perception are so seamlessly integrated that we do not notice any distinction. In rare cases and in certain neurological conditions, however, the process is disrupted so that the raw visual data, for whatever reason, is not synchronized with the higher-level cognitive functions. The result is that our attention, or active conscious frame, is drawn to the nativistic rather than the directed perception, and we are confronted with an unrecognized, unarticulated image. The fact that these stages can operate quite separately is revealed through clinical evidence from patients suffering 'visual object agnosia'. In this condition, caused by lesions in the brain, the primary visual system operates normally so that the patient perceives shapes, colours and other visual characteristics in a scene but the capacity for recognition is severely impaired, and they can't supply meaningful associations for any object they see.

### **The paradox of distinction**

The claim that distinct and recognizable objects are not an inherent feature of the natural world but come into being only through the processing of raw sensation and higher cognitive interpretation seems to be consistent with the current thinking in science. But it leads us, I would argue, towards some strange logical territory involving circularity, contradiction and paradox: If distinctions and objects are perceived only by human minds then it follows that there are no distinctions or objects in the world beyond the mind [2]. In other words, it is not the world in itself that contains inherently distinct objects, but the human visual apparatus that generates them from the raw data it receives, and it is these generated objects that are then perceived in the mind. Because minds alone contain these distinctions, therefore, human minds are distinct from everything else in the world [3]. But since human minds also exist in the world, then so do the distinctions they contain, one of which is the distinction between mind and world (a circularity). Ergo distinctions do not exist and do exist in the world (a contradiction).

Arguably, René Descartes strays into similar problematic logical territory when he asserts a distinction between mind and body, as he does famously in the *Meditations* (see note 2). In order to claim the mind is (in Descartes' words)

“really distinct” from the body he has to hold two conceptual categories, namely ‘mind’ and ‘body’. Since both categories are bound together in a single thought concerning the relation between the two, they are both part of the mind and so not really divisible or distinct. The notion of ‘body’, then, is ultimately mental. So, to make the distinction between mind and body Descartes has to deny the possibility of making the distinction; the body cannot be conceived separately from the mind that conceives it. What’s more, if the notion of ‘mind’ is a conceptual category attributable the mind, how can it be a distinction of itself? [4].

Questions about the nature of mind seem to lead unavoidably to circularity, contradiction and paradox. Like some other recent thinkers, such as Stéphane Lupasco (1987), George Melhuish (1973), and more recently Graham Priest (2002), I suggest that instead of treating contradictions and paradoxes as logical aberrations to be discarded or resolved, we should recognise their full dynamic potential. Just as Heraclitus proclaimed the generative and destructive power of cosmic conflict [5], so we should acknowledge the essential contradictions inherent in the nature of consciousness and reality, which cannot be accounted for within the scope of classical non-contradictory logic.

### **Altered perceptions**

The experience I had when watching *The Cabinet of Dr Caligari* alerted me to the possibility of an alternate state of perception and a consequently changed state of being. I became aware of a kind of consciousness that was (albeit briefly) ‘semantically neutral’, i.e. free of specific referent or meaning. I remember at the time this was accompanied by a mild sense of panic, and a struggle to repair the chain of meaning at its moment of fracture, but also a subtle elation at being freed from that very same chain. Suddenly I was no longer a passive consumer of meaning, but an active producer, drawing on all my latent cognitive resources to recover the lost sense of coherence I had enjoyed just before.

I realised there are very few instances (in our culture at least) where we are deliberately presented with images that withhold their meaning. Among the most brilliant examples in fine art are the paintings by Braque and Picasso made during the so-called ‘analytic’ phase of cubism around 1910-1914. These paintings confound, tease and frustrate the very act of pictorial recognition. One of the few cases I know of in popular culture was a regular segment that featured in a 1970s TV quiz show in the UK called *Ask The Family*. Each week panellists were presented with an object, shown in close detail or from an unfamiliar angle, which they had to name as the rostrum camera slowly pulled back to reveal the object in full view. Just about everyone I’ve asked who saw this at the time seems to remember it. One reason may well have to do with the nature of the challenge presented by unrecognizable forms and the resulting increase in intensity of visual experience. This intensity was described by Aldous Huxley (1969) in *The Doors of Perception*, talking of how the world appeared to him under the influence of mescaline:

Visual perceptions are greatly intensified and the eye recovers some of the perceptual innocence of childhood, when the sensum was not immediately and automatically subordinated to the concept. p. 23

The reference to the insubordination of the sensum links to the disjuncture between the two stages of visual processing mentioned above. But Huxley's reference to the innocence of childhood perception, although not substantiated in his text, could also be an important factor in the phenomenon discussed here, since it is in childhood where perceptual engagement with a largely unknown world presents more of a challenge than is ordinarily the case in adulthood. During the vital early stages of adaptation and learning we are continually confronted with sensory data for which we have only rudimentary cognitive models, and therefore limited capacity for recognition. It is the impulse to attain comprehension of a novel world that is manifest in the child's intensive questioning, exploration and testing of reality.

There is some evidence from recent studies of macaque monkeys that seeing indeterminate images stimulates substantial neural reorganisation and learning, and promotes overall coherence in brain activity. In a study conducted by Gregor Rainer (2004) and his colleagues at the Max Plank Institute for Biological Cybernetics in Germany, monkeys presented with indeterminate, i.e. hard to decipher, images showed significantly increased neural activity in both primary and higher cortical areas of the brain as compared to familiar or recognizable stimuli. From this Rainer et al drew the conclusion that not only are particular loci in the brain recruited in response to indeterminate stimuli, but that the deciphering of such stimuli leads to enhanced overall brain activity and pronounced adaptation and learning. The suggestion is that a specific group of neurons is geared to convert indeterminate stimuli into recognisable objects by co-ordinating disparate parts of the brain.

Another study, conducted on humans, shows how the perception of indeterminate stimuli leads to more intense neural activity. A team of psychologists and neurobiologists led by Gernot Supp (2005) presented subjects with both recognisable and unrecognisable images, and then measured the patterns of neural response, with particular reference to the time delay between stimulus and semantic retrieval. They found that subjects presented with indeterminate or unrecognizable images showed a marked increase in activity in certain parts of the brain, with a greater degree of overall coherence between different regions. This, they concluded, reflected the greater demands made on the viewer's perceptual and cognitive resources by undecipherable images. They summarize:

... the greater number of coherence increases for meaningless object processing suggests enhanced recruitment of more distributed left and right areas during unsuccessful memory search. p. 1143

## **Practical experiments**



Figure 2. *Uncertainty 12. Collage on board (1991)*

As well as the theoretical investigation, my fascination with indeterminate images has led to a long period of practical experimentation. When trying to construct such images I soon realised the difficulties inherent in balancing the right amount of meaningfulness and meaninglessness so as to create the desired indeterminate effect. If it was too 'meaningless' then it attracted no interest at all; if it was too 'meaningful' then there was no anxiety about the depiction and, hence, no effect of the kind I was seeking. After trying several techniques, including photography, drawing, filmmaking, and collage (see figure 2) I attempted, in collaboration with Miles Visman, to generate indeterminate images using randomly generated arrays of pixels. We hoped that this process would produce images that did not 'represent' anything (for how could the computer know what to represent?) yet would be sufficiently complex to suggest to the viewer the presence of some object or scene as yet unidentified. But like many random data generators the result was largely noisy, with very little in the way of compelling form emerging to attract the viewers' eye. Gradually, we introduced more rules to constrain the random behaviour and encourage a greater ratio of information to noise, and the results improved. In 1990 we set up a basic video sampler to grab frames live off-air via a UHF aerial and instructed the computer to randomly cut-up and rearrange the images into a new composition — a piece we called *Automatic Television* (see Figure 3). The results were immediately

more interesting than the autonomously generated random images we had previously created as there were significant hints of residual forms and features detectable in the mangled video captures. In a sense we were 'importing' meaningfulness (in the shape of complex data from TV images) in order to create less probable arrangements of pixels in the computer image, similar to the way organisms on Earth import the ordered energy of the Sun in order to sustain the improbable organisation of complex living tissue.

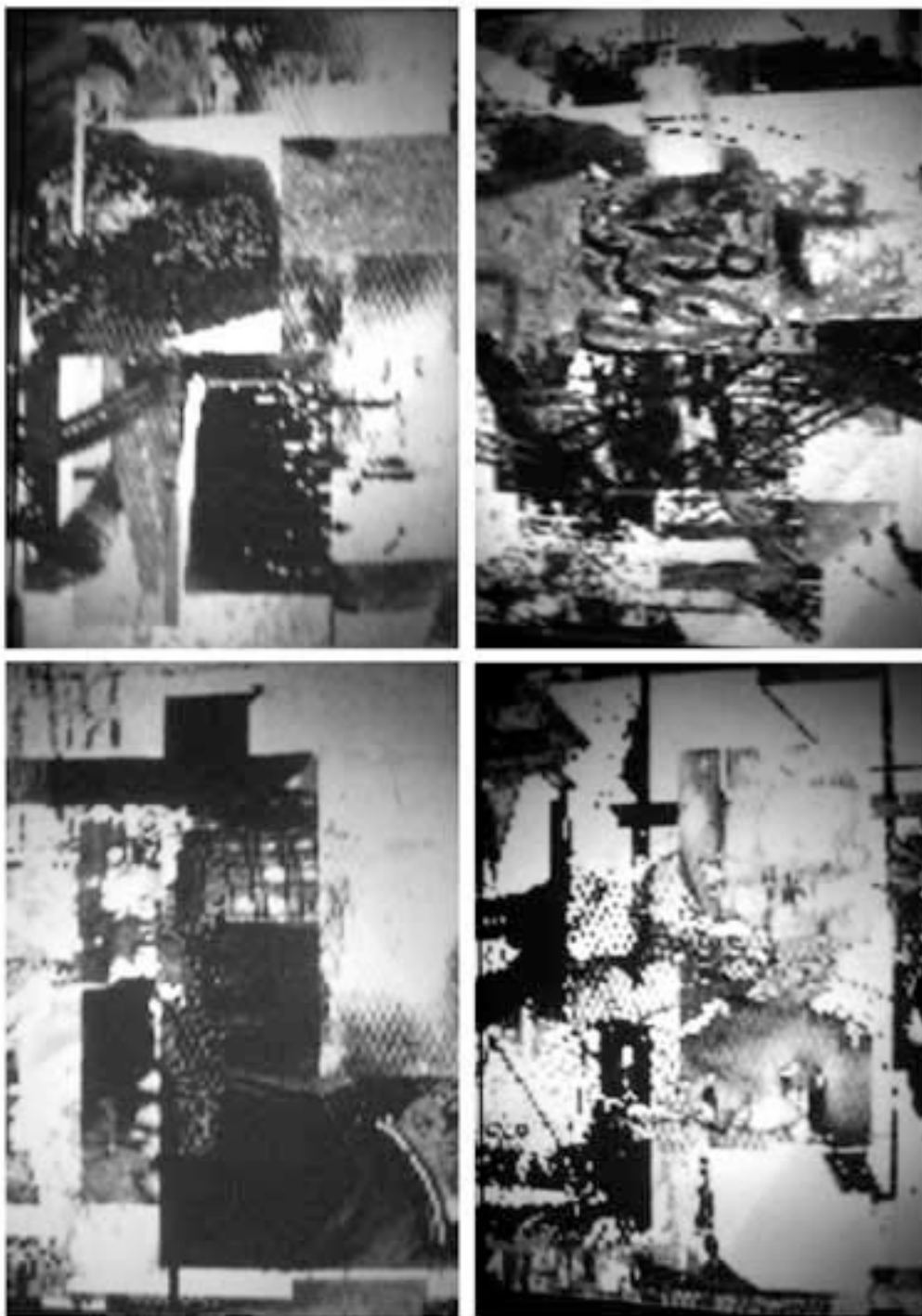


Figure 3. Four stills from *Automatic Television* (1990)

The longer-term hope of this research was for a computer system that would continuously generate high quality indeterminate, or ambiguous, images that would engender the sensation I had experienced during the scene in *The Cabinet of Dr Caligari*. Although this hope was never realised, the research did

lead on to the production of a number of works in a variety of media that formed part of a larger investigation into the nature of human perception, creativity and the function of images.

By far the greatest part of this work has been produced in the form of drawings and paintings, executed over a period of some fifteen years in which I have sought, in many different ways, to give visual form to the philosophical conviction outlined here, namely that the world both contains and does not contain discrete objects, both is and is not comprised of distinctions. My early attempts to fashion this 'paradoxical indeterminacy' were, in retrospect, rather clumsy and too much in the thrall of cubism to be taken as more than pastiche. However, I slowly developed a technique that has bears closer approximation to the kind of automatic drawing practised by some surrealists, with its spiritualist associations. In its most current form this involves working on the paper from top left to bottom right in a detached frame of mind, and allowing the marker to glide across the surface with varying degrees of pressure, leaving patches of greater or lesser density. The resulting drawing arises from no preconception about what it should 'be', nor does it arrive at any definitive representation of something other than itself (an example is offered in figure 4 and 5). But somehow in the process of making it becomes 'clear' or 'complete', despite in fact being neither clearly 'of' something nor finite in meaning. Once the picture is finished I can judge its quality according to the richness of possible associations and degree of resistance to specific interpretation. This involves an extended period of reflection and contemplation, which I also try to encourage in the viewer. Those drawings suggesting the most potential images but fewest actual images I regard as most successful. I do have to say, however, that even after years of concentration and development I have yet to produce one image that engenders the effect I want — although some have come closer than others.



Figure 4. *The Receiver*. Black chalk on textured paper (2005)



Figure 5. *The Seminary*. Pencil on paper (2003)

I'll discuss briefly the paintings, which in some ways are extensions of the drawings by other media but in other ways products of an entirely different working and thinking method requiring more space to consider fully than I have here. The issue of colour is particularly crucial, since indeterminate effects are easier to create in monochrome where the specificity of relative colour values is absent, leaving less for the viewer to grasp on to as they search for meaningful clues. A recent study conducted by Rossion et al (2004) demonstrated that in object recognition tests between monochrome and colour images, "the addition of color information unambiguously improved naming accuracy and speeded correct response times." (p. 217). A further complication is the difficulty of achieving the same kind of detached state of mind referred to in the description of the drawing method. The additional technical issues of preparation times, drying times, fluidity of medium, scale, aesthetic expectation, and even physical posture all conspire against the relaxed approach that seems so conducive to making the drawings. Nevertheless, I am driven by a strong vision of a large scale, rich and vivid image that strongly suggests the presence of places, objects and forms but at the same time apparently contains none (some examples are included in figures 6 and 7). Although there are other obvious routes, many of which I have tried, it still seems to me that making paintings is the most direct

and viable way to achieve this.



Figure 6. *Breakfast*. Oil on canvas (2005)



Figure 7. *Datum*. Oil on board (2004)

## Conclusion

Through occasional involuntary moments of non-recognition, such as the instance when watching *The Cabinet of Dr Caligari*, I have become more aware not only of the operation of the human visual system but also of the generative potential of indeterminate images. The practical explorations I have conducted through drawing and painting and the related philosophical investigations into the nature of mind, objects and distinctions are part of a larger ongoing inquiry into the operation of human consciousness. Of necessity this inquiry involves questions that are in varying proportions metaphysical, epistemological or

ontological, and such questions are by their nature open-ended and indefinite. Therefore, I don't expect to reach any absolute conclusion and am inclined to accept the implicit indeterminacy, uncertainty and paradox as an integral and dynamic constituent of reality and experience. The images I make, and the state of perception they are designed to engender in the viewer, are the nearest I can get to a practical expression of the philosophical position I hold, namely that the world is both boundless in itself and bounded by human cognition. This paradox, I believe, is expressed in the drawings and paintings insofar as they present the viewer with objects that resist objectification.

## Notes

[1] Friedrich Nietzsche (1984) writes in Aphorism 19 of *Human, All Too Human*: "The assumption of multiplicity always presumes that there is something, which occurs repeatedly. But this is just where error rules; even here, we invent entities, unities, that do not exist."

[2] This is not to deny the existence of external reality, just to claim it is not intrinsically subdivided or categorised in the way it appears to us. This, of course, turns Descartes' (1912) claim about the indivisibility of the mind on its head made in the *Meditations*: it is now the world that is indivisible while the mind is infinitely divisible by dint of the distinctions it holds.

[3] The possibility that animals, and even machines, have minds that make distinctions is noted. But since this only changes the argument in complexity and not in substance, it will be ignored here.

[4] The point here is not to undermine Descartes but to demonstrate that considerations of the mind-body problem quickly test the bounds of rational thought.

[5] "The counter-thrust brings together, and from tones at variance comes perfect attunement, and all things come to pass through conflict." In Kahn (1981).

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## **Biography**

Robert Pepperell is an artist and writer. He studied at the Slade School of Art and went on work with a number of influential multimedia collaborations including Hex, Coldcut and Hexstatic. As well as producing experimental computer art and computer games he has published several interactive CD-Roms and exhibited numerous digital installations including at the Glasgow Gallery of Modern Art, the ICA, London, the Barbican Gallery, London and the Millennium Dome, London. His book *The Post-Human Condition* was first published in 1995 and has recently been published in a new edition with the subtitle, *Consciousness beyond the brain*. His second book *The Postdigital Membrane* was a collaboration with Michael Punt and published in 2000. He has spoken and lectured widely on art, philosophy and new technology and currently teaches at the University of Plymouth and University of Wales, Newport.

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