

Seeing Without Objects: Visual Indeterminacy and Art

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Abstract

This article discusses the perceptual phenomenon of visual indeterminacy in an art historical and scientific context and considers its role in certain heightened states of awareness. Further philosophical implications of the phenomenon are discussed, specifically the suggestion that visual indeterminacy may point to an inherent contradiction in the relationship between mind and world. This discussion is then related to a body of artwork produced by the author over some 20 years. The article concludes visual indeterminacy is a fruitful subject for further interdisciplinary research as it draws on ideas from the arts, sciences and humanities.

Introduction

For 20 years I have been intrigued by the perceptual phenomenon of visual indeterminacy and what it reveals about the way we look at art, how we see the world, and the nature of the relationship between conscious mind and reality. I believe most of us have experienced visual indeterminacy at sometime, though probably dismissed it as a momentary perceptual aberration. Trying to deliberately induce indeterminate visual experiences has driven me to produce a large body of work in a variety of media, but consisting mainly in paintings and drawings. This article describes the phenomenon, locates it in an art historical and scientific context, discusses some of its philosophical implications, and shows how these have been addressed in the body of work.

Visual Indeterminacy

In a well-known passage from his *Reminiscences*, Wassily Kandinsky recounts how he returned to his studio at dusk and was astonished to see "an indescribably beautiful picture, pervaded by an inner glow" standing against the wall [1]. In it he could discern "only forms and colours" and no comprehensible objects. It was in fact one of his own paintings turned on its side, which he had failed to recognize. At this pivotal moment in his career Kandinsky realised the potential of objectless images to evoke a remarkable perceptual response and subsequently spent many years refining a visual language through which this insight could be expressed.

As an art student in the mid-1980s I was watching *The Cabinet of Dr Caligari*, a masterpiece of Expressionist cinema noted for its stylised visual construction [2]. Towards the end of the film there is a prolonged still shot of a hand-written letter followed by a wipe to the next scene. At this moment I experienced something that profoundly impressed me. Despite the screen being full of clearly delineated forms I was momentarily lost, unable to recognise what I was seeing, Some two seconds later — as a human figure rose from a bending posture — a wave of recognition overcame me, even though the image had changed only marginally. Figure 1 shows two frames from this sequence, the left at the point of non-recognition and the right at the point of recognition. I remember the intervening period being marked by a mild sense of panic, mixed with a brief euphoria. Like Kandinsky, I had seen the world in a way that was at once detailed yet devoid of distinguishable objects.



Fig. 1. Stills from *The Cabinet of Dr Caligari* showing the moment of visual indeterminacy experienced by the author. (Photographs © Robert Pepperell)

The ways in which we see the world, depict it, and see the depictions have long fascinated artists, philosophers, and scientists. In his study of the psychology of pictorial representation, *Art & Illusion*, Ernst Gombrich refers to the 'beholder's share' as that part of the perceptual dialogue in which the viewer actively participates in the construction of meaning [3]. According to Gombrich, faced with images that are to varying degrees ambiguous, indistinct, or incomplete the viewer must deliberately work to arrive at an intelligible interpretation, supplying possible solutions from their own cognitive resources which are then projected

onto the original material. To some extent this describes my frame of mind during the moment of non-recognition described above where I became positively aware of the act of seeing in a way that ordinarily I am not. The art historian Dario Gamboni refers to this way of seeing in his major study of indeterminacy in modern western art, *Potential Images*, in which he identifies certain pictures that "...make the beholder aware — either painfully or enjoyably — of the active, subjective nature of seeing." [4]

Art historians like Gombrich and Gamboni have been interested primarily in the psychological and aesthetic impact of non-recognizable images, while scientists have recently been looking at their biological effects on the brain. In a study conducted by neurobiologist Gregor Rainer and his colleagues at the Max Plank Institute for Biological Cybernetics, monkeys presented with 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 attempt to decipher such stimuli leads to enhanced overall co-ordination in brain activity [5].

Another study, conducted on humans, also shows how the perception of indeterminate stimuli leads to intensified neural activity. A team of psychologists and neurobiologists led by Gernot Supp 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 cooperation in certain parts of the brain, and 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 stimuli [6].

In order to better understand the phenomena of visual indeterminacy it is necessary to make a broad distinction between two aspects of visual perception, distinguished as 'nativistic' and 'directed' by the cognitive psychologist Robert L. Solso, but more commonly termed 'formal' and 'semantic' in the scientific literature [7]. The nativistic or formal aspect of perception concerns the 'bottom up' properties of vision, where distinct edges, colours, shapes, motions and patterns are actualized. The directed or semantic aspect binds these formal properties to the personal disposition of the subject from the 'top down' by associating them with cognitive categories of recognition and memory.

Normally these two aspects of perception are seamlessly integrated and we don't notice any distinction. Occasionally in ordinary life and in certain rare neurological conditions, however, access to the semantic aspect is disrupted so we only register the formal aspect. The result is we are confronted with an unrecognized, unarticulated image — something many of us have momentarily experienced when seeing, say, a décollaged poster or upside-down picture we can't make sense of. Something analogous, but much more serious, occurs in

patients suffering 'associative visual agnosia'. In this clinical condition, caused by lesions in the brain, the earlier part of the visual system operates normally so that the patient perceives shapes, lines and colours but the capacity for semantic or lexical recognition is severely impaired, even obliterated. For such patients the visual world can be perpetually indeterminate [8].

Heightened awareness

The suppression of the semantic aspect of visual perception and accentuation of the formal aspect has sometimes been invoked in connection with innocent or unadulterated perceptual experience and 'heightened' states of awareness. Examples include descriptions of the effects of psychedelics and certain theories of aesthetics. Aldous Huxley, in *The Doors of Perception*, describes the appearance of the world modified by 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 [9].

Evidently for Huxley the heightening effect of the mescaline was to shift his conscious attention away from the conceptual or semantic aspect of perception and towards the more 'innocent' sensum. And in a 1966 interview for *Playboy*, Timothy Leary extolled the effect of LSD on vision, suggesting it gives one access to the very sense data itself:

You are really seeing for the first time — not static, symbolic perception of learned things, but patterns of light bouncing off the objects around you and hurtling at the speed of light into the mosaic of rods and cones in the retina of your eye [10].

This association between 'innocent' perception and heightened awareness in the psychedelic literature of the last century had a historical precedent in the development of aesthetic theory in the nineteenth. During this time one can trace a broad stylistic shift in the painted rendering of natural form, from neo-Classical precision to Romantic and Impressionistic indistinctness. To an extent this was attributable to the influence of John Ruskin and his exhortation that the artist intensify perception by recording the world not as it is conceived but 'as it is seen', i.e. as "nothing but flat colours." Ruskin argued that the power of the artist lay in suppressing cognitive preconceptions in order to recover "what might be called the *innocence of the eye*; that is to say, of a sort of childish perception of these flat stains of colour, merely as such, without consciousness of what they signify — as a blind man would see them if suddenly gifted with sight." [11]

The artist Ruskin most championed, J M W Turner, arguably exemplifies this approach in many of his more 'indistinct' paintings, particularly the series made in the mid 1830s at Petworth House, including *The Music Party* of 1835. As with the

later work of Claude Monet, who reportedly said “he wished he had been born blind and then had suddenly gained his sight so that he could have begun to paint ... without knowing what the objects were that he saw before him” [12], Turner deliberately seems to privilege the ‘sensum’ over the ‘concept’, to borrow Huxley’s terminology, rendering an image that is sensorially vivid yet with only vaguely recognisable content.

This is not to say Turner’s eye was innocent; on the contrary it was extraordinarily cultivated. And part of this cultivation, I would suggest, lay in his being able to suppress the object-recognising impulse of vision to arrive at an image which stresses instead the formal properties of appearance (as Ruskin had entreated). The result of this suppression, however, is a high degree of semantic uncertainty about what is being represented. As we saw earlier, the apprehension of indeterminate stimuli is associated with enhanced neural activity that might correlate with a heightened state of awareness. This in turn may help to account for the widely acknowledged aesthetic appeal of Turner’s works.

The appearance of objects

I have touched on the significance of visual indeterminacy in art history and neuropsychology. But I also believe the phenomenon has important philosophical, even metaphysical, implications, not least because of what it might reveal about the nature of the relationship between mind and world.

Few would deny the world is full of innumerable discrete objects — a fact confirmed by our everyday experience of the environment. Yet there is compelling evidence to suggest that the world itself is quite different from the way we perceive it, and the existence of discrete objects may be attributable to the way we consciously apprehend reality rather than being an intrinsic property of reality itself. Empiricist philosophers, such as John Locke, had argued our knowledge of reality is constructed through experience derived from our senses, and not by direct or innate apprehension of the world itself. This argument was given scientific force in the nineteenth century by the experimental work of the polymath, Hermann von Helmholtz, who declared in an essay on perception:

...the objects at hand in space seem to us clothed with the qualities of our sensations. They appear to us as red or green, cold or warm, to have smell or taste, etc., although these qualities of sensation belong to our nervous system alone and do not at all reach beyond into external space. Yet even when we know this, the appearance does not end, because this appearance is, in fact, the *original truth*... [13]

The extraordinary consequence of this ‘original truth’ is as hard to grasp today as it must have been when first formulated. Nothing is as it appears. The qualities of colour, sound, taste, odour and tactility that seem to belong so firmly to the objects carrying them actually belong to our own sensory apparatus and not to

the objects themselves. Even the properties that endow things with 'objecthood' — such as their perceptible boundaries or outlines — are given *by* us to the world rather than *to* us from the world.

In the seventeenth century, Locke famously debated whether a man born blind who later gained sight would be able to discern visual objects. Locke tended to the view that, having been deprived of the necessary visual experience in early life, he wouldn't — a view that was later supported when surgeons were able to remove cataracts from congenitally blind children in the early eighteenth century. A French surgeon, Moreau, who performed cataract removals on a child with congenital blindness in the early twentieth century, described how his young patient was unable to recognize anything by sight, though his optical system was functioning normally after the operation. Moreau concluded:

One would be mistaken to believe that a person born blind who regains his eyesight through surgery can see the world around him after the operation. The operation itself is of no other value than to prepare the basis for sight ... There is a difference between the ability to see and to recognize [14].

With the benefit of almost a century of further observation, the neurobiologist Semir Zeki confirms that: "...an observer deprived of vision during a critical period after birth cannot recognise even a small number of objects by sight..." [15]. There is no reason to believe the other sensory modalities are fundamentally different [16]. Imagine an unfortunate person born without any means of sensing the external world, but who then recovers all their senses after several years of life. On the basis of available evidence, we would infer that their immediate experience of reality would be sensorially abundant but altogether devoid of distinct, bounded objects — what William James famously called "one great blooming, buzzing confusion" [17].

If we follow the empiricist philosophers, Helmholtz, and much of contemporary scientific opinion in ascribing our knowledge of reality to sensorially-derived experience, then we can reasonably draw the conclusion that, like colours, sounds and smells, objects in themselves do not exist independently of human perception. Which is not to say that there is nothing at all 'out there'; one would not wish to deny the existence of material reality. But at the same time we cannot equate that reality with its appearance in our senses. The 'tree in the Quad', as the famous limerick attributed to Ronald Knox has it, remains (as far as we can tell) a mass of seething quantum activity whether we attend to it or not. But it only appears as a *tree* when we construct it as such from our particular sensory, perceptual and cognitive vantage point. The same quantum activity may be construed in an entirely different way by another creature or another kind of consciousness. Here then we face a real contradiction between our subjective experience of the world, which few would deny is full of innumerable distinct objects like trees, and the objective view in which there are no distinct objects prior to the act of perception — a contradiction succinctly expressed by William

Blake in his 1812 poem *The Ghost of Abel*: “Nature has no Outline, but Imagination has.”

The possible resolution of this contradiction and indeed the question of whether it can be resolved at all will not be fully addressed here. What is of immediate concern is the way those confronting an indeterminate image are placed in a momentary state of contradiction, struggling to reconcile a belief in the presence of recognisable external objects with the fact of their immediate disappearance, and so moving a step closer to seeing the world as it is (objectless) rather than as perceived (object-full). According to my own experience, and the evidence cited here, this experience engenders an intensified or heightened condition of awareness, and it is this I have sought to evoke through my own work.

Making indeterminate images

My attempts to make indeterminate images over the last 20 years or so have taken many forms, and here I will briefly survey some examples and some of the techniques I have used to generate them. The earliest works were experimental films, including *What is a Picture?* and *Black & White Sex Film* made in 1986. These were composed, edited and shown in such a way as to strongly suggest the presence of objects while simultaneously denying the viewer the opportunity for clear recognition.

During the late 1980s I collaborated with artist and coder Miles Visman to produce a series of unrecognisable computer-generated images using the mathematics of fractals and chaos theory. These culminated in a work entitled *ATV (Automatic Television)*, which sampled off-air television images with a randomised ‘cut and paste’ application and manipulated them to produce a stream of animated digital collage (figure 2).

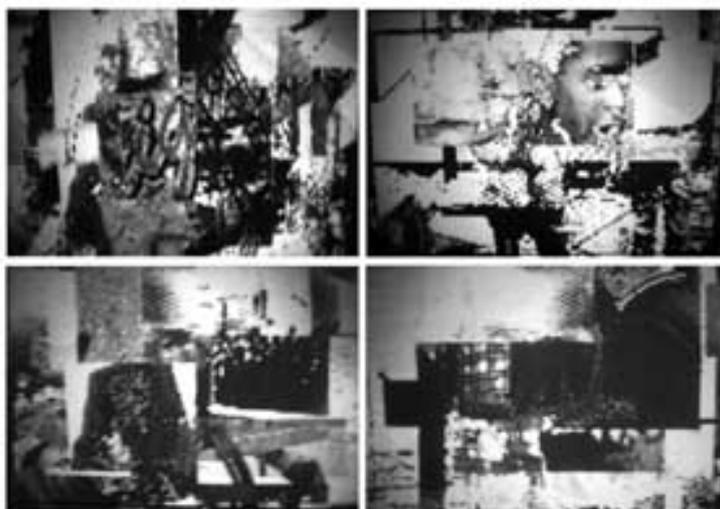


Fig. 2. Stills from *ATV (Automatic Television)*, 1989. A black and white animated digital collage designed to automatically generate indeterminate images by cutting-up and re-pasting a live video feed. (© Robert Pepperell & Miles Visman)

The arrival of the first version of Photoshop around 1990 allowed me to reorganise scanned images, usually works from the canon of art history, in such a way as to suppress traces of recognisable objects while leaving the overall visual structure intact. (figure 3) Photoshop also permitted a refined digital collage technique, mixing image parts from different sources to make indecipherable compositions, a process I experimented with in paper as well as virtual form. (figure 4)



Fig. 3. *Bunch O'Lard (After Rubens)*, 1991. A digital image generated with Photoshop 1.0 based on a scanned image from which recognisable details have been largely eradicated while leaving the overall structure intact. (© Robert Pepperell)



Fig. 4. *Uncertainty 12*, 1991. 13 x 22 cm. A paper collage made from monochrome photographs. (© Robert Pepperell)

Although working primarily in interactive and electronic media, sometime in the early 1990s I slowly turned to drawing as a medium for composing indeterminate images. This was partly because I was profoundly influenced at this time by pre-war Cubist paintings and drawings, and the realisation that Pablo Picasso and Georges Braque in the period around 1909-1914 had been making works imbued with unprecedented (and in some ways unsurpassed) degrees of visual uncertainty. But I also came to realise how the looseness and fluidity of hand-made marks could act in highly suggestive and ambiguous ways, conjuring up all kinds of ‘potential images’ for the attentive viewer.

Through the mid 1990s to early 2000s I gradually developed a drawing technique that proved quite effective at composing indeterminate images. It was a semi-deliberate method, almost like doodling, that involved moving from top left of the paper down to bottom right without any pre-conceived idea about what would emerge, working with the grain of the paper and the behaviour of the medium, and all the while capitalising on the suggestive forms that emerged. In his notebooks, Leonardo urged artists to seek figurative compositions in stained walls as a way of “arousing the mind to various inventions” [18]. But I found myself both exploiting and resisting the natural forms that materialized from the hazy chaos of the drawing. Tempting as it was to work up half-perceived figures or edges of structures, the moment a recognisable object appeared the indeterminate effect was undermined. For me, as for Kandinsky, “...it was the objects that were the problem” [19], a problem that was largely although not completely overcome by the use of a ‘fuzzy mesh’ of light and shade in which potential objects dissolved into soft, quasi-naturalistic forms (see figure 5).



Fig. 5. *The Seminary*, 2001. 50 x 70 cm. Graphite on paper. A drawing that struggles to balance the suggestion of objects with their obscurity, using a 'fuzzy mesh' through which potential objects emerge. (© Robert Pepperell)

The next challenge was to convert the process from drawing to painting, which I began around 2003, naïvely confident it would involve little more than the transfer of a compositional technique from one medium to another. I didn't anticipate the difficulties that entailed, mainly due to the medium itself (oil), which is notoriously complex to handle and so led to a loss of the detached frame of mind in which I had produced the drawings. It took a further two years to arrive at a way of mixing and applying paint with the necessary fluency such that I was no longer consciously trying to construct the image but allowing it to arise through numerous subtle accidents and suggestions. It is characteristic of the process that, in the case of successful paintings, I can remember them being done but can't remember doing them; my normal sense of 'self' presence is somehow absent during the periods of peak concentration.

The works made in the summer of 2005, of which three examples are reproduced here (figures 6, 7 and 8), represent the current state of my research into the possibility of creating indeterminate images in paint. They are intended to suggest tangible objects and scenes while at the same time denying precise identification, and so stirring the beholder into an process of dynamic visual engagement. I hope that in doing so they induce some heightened state of perceptual awareness in the viewer who cares to study them for more than a few moments.



Fig. 6. *Recover*, 2005. Oil on canvas. 40 x 55 cm. One of a series of indeterminate monochrome paintings by the author. (© Robert Pepperell)



Fig. 7. *Blossom*, 2005. Oil on board. 30 x 30 cm. A monochrome painting with dramatic overtones yet devoid of specific subject matter. (© Robert Pepperell)



Fig. 8. *Fragrance*, 2005. Oil on canvas. 32 x 42 cm. A painting suggesting but at the same time lacking figures and objects. (© Robert Pepperell)

Having reached a certain resolution with the work, I now feel ready to expose it to public scrutiny and solicit feedback about the extent to which the images induce the intended perceptual effect. As well as gathering informal reports from viewers, I am looking at ways in which their psycho-physiological responses might be more objectively measured, perhaps by using neurological scanning devices or biometric techniques. To that end I am seeking potential collaborations with those in the sciences and humanities who share an interest in the ideas discussed here, and who may offer ways of further extending the research. It is clear the problem of visual indeterminacy is one that crosses many disciplinary boundaries, including art history, psychology, neurology, philosophy, and consciousness studies, and an interdisciplinary approach is likely to be the most fruitful.

Closing remarks

Because my paintings and drawings are intended to be contradictory — in that they both suggest and deny the presence of objects — I would argue they embody the inherent contradiction in the relationship between imagination and nature that William Blake poetically described. But this may be deeply unsatisfying to anyone who regards contradictions as logical aberrations to be

negated by rational analysis. In response I would submit it is possible that certain contradictions, including those which can be expressed artistically and poetically, may always elude rational analysis. The long-running dispute about the mind-independence of reality, for instance, remains unsettled despite centuries of devotion by some of our greatest scientists and philosophers, and there are plausible but contradictory arguments on both sides. It may be better, as some logicians have recently argued, to simply accept certain contradictions as an inherent condition of experience [20] — a position I have implicitly supported here. In which case there both is and is not a mind-independent reality, just as there are and are not objects in the world.

Visual indeterminacy is a phenomenon most of us experience only briefly and infrequently, and perhaps even then only semi-consciously. But it raises some perplexing and far-reaching problems that no single discipline alone can solve. By investigating these problems through the practice of drawing and painting I believe it is possible to give them concrete form, and perhaps offer ways of experimentally testing theoretical responses. Although such problems have traditionally been the province of scientists, mathematicians and philosophers, this article is intended to show that artistic practice can make a contribution which complements and enriches the work being done elsewhere.

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References and Notes

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2. Directed by Robert Weine, 1919.
3. E. Gombrich, *Art & Illusion: A study in the psychology of pictorial representation* (London: Phaidon Press, 1960).
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5. G. Rainer et al, "The effect of learning on the function of monkey extrastriate visual cortex". *PLoS Biology*, Vol. 2, Issue 2, 275-283 (2004).

6. G. Supp et al, "Semantic memory retrieval: cortical couplings in object recognition in the N400 window" *European Journal of Neuroscience*, Vol. 21, 1139–1143 (2005).
7. R. Solso, *The Psychology of Art and the Evolution of the Conscious Brain*. (Cambridge, MA: MIT Press, 2003) pp. 2-14. I mention Solso's terminology because his account is very accessible and given in an art historical context. Opinion varies about how clearly these two aspects of visual experience can be distinguished. The arguments are complex, but there is considerable support for the distinction employed here. (see Z. Pylyshyn. 'Is vision continuous with cognition?: The case for cognitive impenetrability of visual perception'. *Behavioral and Brain Sciences*, Vol. 22, 341-365 (1999), and [8]).
8. G. Humphreys & M. Riddoch, *To See But Not to See: A Case Study of Visual Agnosia* (East Sussex: Psychology Press, 1998). Speaking of the case of John, a patient who suffered a form of visual agnosia in which he could see the world but not recognise objects, Humphreys and Riddoch write: "In general, his case supports the view that 'perceptual' and 'recognition' processes are separable, because his stored knowledge required for recognition is intact". p. 104. The frustration for John was to match what he knew to what he saw.
9. A. Huxley, *The Doors of Perception* (London: Penguin Books, 1969) p. 23.
10. The interview was originally titled "She Comes in Colours", and reprinted in T. Leary, *The Politics of Ecstasy* (London: Paladin, 1970) p. 104-105.
11. Ruskin quoted in Gombrich [3] p. 250. What is naïve about Ruskin's (and to an extent Huxley's and Leary's) 'innocent eye', and what Gombrich goes on to point out, is that we have no access to unadulterated sensation in itself, but only to the way it is represented in our perceptual apparatus, by which time it is already highly processed, filtered and organised. See also D. Hodgson, "Ways of Seeing: The Innocent Eye, Individual View and Visual Realism in Art", *Journal of Consciousness Studies*, Vo. 11 No. 12 (2004) pp. 3-16.
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14. Cited in S. Zeki, *Inner Vision: An Exploration of Art and the Brain* (Oxford: Oxford University Press, 1999) p. 92.
15. Zeki [14] p. 94. Recent studies have shown that with correct training young patients can eventually recover some of their missing abilities. See Y. Ostrovsky

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17. W. James, *The Principles of Psychology* (Cambridge, MA: Harvard University Press, 1981). p. 462. Originally published in 1890. James was referring to the early experience of babies, whom it was widely assumed lacked the capacity for recognition. But recent evidence suggests very young, even prenatal, babies do have some 'inbuilt' capacity for recognition. However, this quickly decays if the sense organs are impaired during early development. See S. Gallagher, *How the Body Shapes The Mind* (Oxford: Oxford University Press, 2005). pp. 153-157.

18. M. Kemp, ed. *Leonardo on Painting: An Anthology of Writings by Leonardo da Vinci with a Selection of Documents Relating to his Career* (Yale: Yale University Press, 2001), p. 222.

19. As [1].

20. See G. Priest, *Beyond the Limits of Thought* (Oxford: Oxford University Press, 2002). See also the work of the surrealist artist René Magritte (1898-1967) who created many visual contradictions.

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