

Eyes, Lies and Illusions

Hayward Gallery, London, 7 October 2004 – 3 January 2005

The immensely successful Hayward Gallery exhibition *Eyes, Lies and Illusions* marked the provisional end of a whole series of shows centred on objects drawn from the collection of the German experimental film-maker, professor and curator Werner Nekes. Like *Devices of Wonder: From the World in a Box to Images on a Screen* at the Getty Museum in Los Angeles (2001/02), *Ich sehe was, was du nicht siehst! Sehmaschinen und Bilderwelten* at the Museum Ludwig Cologne (2002/03) and *Die Wunderkammer des Sehens: Aus der Sammlung Werner Nekes* at the Landesmuseum Joanneum in Graz (2003/04), *Eyes, Lies and Illusions* explored the history of optical invention and 'pre-cinematic' media, and at the same time examined the reliability of visual perception.¹ As the exhibition titles indicate and a closer look at the actual installations confirms, these shows encapsulate two main tendencies discernible in art history and in the art world more generally in recent years: on the one hand, the increasing interest in the relationship between art and science, and on the other hand, the ubiquitous references and allusions to the sixteenth- and seventeenth-century tradition of the cabinet of curiosities.

Compared to the former exhibitions, the London show went further and provided an additional, illuminating perspective by integrating the works of eight contemporary artists into the historic material. By taking up the theme of illusion and ambiguity of perception and thus reflecting on the objects of the Nekes Collection, the works of Christian Boltanski, Carsten Höller, Ann Veronica Janssens, Anthony McCall, Tony Oursler, Markus Raetz, Alfons Schilling and Ludwig Wilding – some of which had been exclusively commissioned, altered or renewed for the Hayward Gallery installation – contributed both a certain depth of reflection and a corrective to the exhibition. Whenever the visitor risked being overwhelmed by the experience of wonder and amazement at the sheer abundance of instruments and devices of visual deception, the interspersed installations of, say, Oursler or Janssens, even though no less stunning, reminded him or her of his twenty-first-century knowledge that the sense of sight is seldom a trustworthy partner of the mind.



In the small room reserved for the objects by Markus Raetz, the Swiss artist's sculpture *Groß und Klein – Ansichten A, B und C (Large and Small – Views A, B and C)* of 1992/93 for instance changed its appearance according to the position of the viewer. When we gradually moved around the table with the two objects on it – because walking around a sculpture is what we had learned as the appropriate way of grasping its quality to extend in space – we made a surprising discovery: we saw either a big bottle and a small glass, a big glass and a small glass, or a big glass and a small bottle. Which view is the 'right' one? Impressively illustrating that there is no single point of view, Raetz's sculptures entered into a dialogue with the various double pictures and *anamorphoses* on display in the 'Riddles of Perspective' and 'Deceiving the Mind' sections. Moreover, they made explicit the underlying principle of the whole show: the vital role of the spectator who, through his or her active intervention only, fully completes the work of art.

The visitor was encouraged to set out on an explorer's journey through a course displayed over two levels of the gallery and arranged around eight main themes such as 'Shadowplay,' 'Riddles of Perspective,' 'Enhancing the Eye,' 'Deceiving the Mind,' 'Persistence of Vision' and 'Moving in Time.' Any initial scepticism as to whether it would be possible – as claimed by the exhibition leaflet – to create a world of wonders and an atmosphere of magic inside what is agreed upon as the prototype of plain 1960s 'brutalist' concrete architecture, was instantly dispelled by the elaborate installation working with a subtle choreography of light and sound. In the 'Shadowplay' section, for example, daylight was completely blocked out in order to accentuate Christian Boltanski's shadows of ghosts and devils which, howling and moaning, were hovering across the walls. At the beginning of each section, short texts illustrated their respective scope and provided the viewer with a succinct historical outline, while avoiding the didactic trap of swamping us with information and thus depriving us of the opportunity to discover the objects at our own pace and according to our own backgrounds and motivations.





Christian Boltanski, *Les Ombres (Shadows)*, 1986, installation view, electric fan, light bulb, mixed media. © the artist.

'Come and play:' spectator participation²

The images, instruments, objects and devices on display demanded an active and alert viewer ready to investigate, to try out, to play. Whether we were watching ourselves in convex and concave distorting mirrors, or suddenly found ourselves pushed into the role of a voyeur when passing in front of a wall honeycombed with peepholes; whether we stepped into the 'Ames Room' where we appeared in turn shrunken and enlarged to fellow visitors who peered through the hole in the outer wall, or entered the *camera obscura* on the Hayward Gallery terrace; whether we looked at the various *anamorphoses*, forcing us to try out different positions in front of the picture, or at 'upside-down heads' and 'puzzle pictures' – almost every object, if not actively involving *all* our senses, at least challenged our *visual* sense in more than one way. Given the incredible number of over one thousand displayed objects which required active participation and questioned long-established viewing habits, the danger of exhausting the visitor's attention span was considerable. But what the sheer quantity of exhibits conveyed, aside from the overall, ambitious aim to explore the art and artifice of visual perception from the Renaissance to the present day, was the desire of a collector to amass objects like fetishes, led



by the practical purpose to assemble visual aids for his university lectures, but equally driven by an outright fascination – if not obsession – with accumulating curious objects. The connection between collecting and fetishism was impressively illuminated by a little performance Nekes gave during a round-table discussion introducing the show: asked why he collects, he wordlessly took a contoured stick out of his breast pocket. When he shone a torch onto it, the silhouette of a woman appeared on the wall.³

Delectare et prodesse: the Werner Nekes Collection

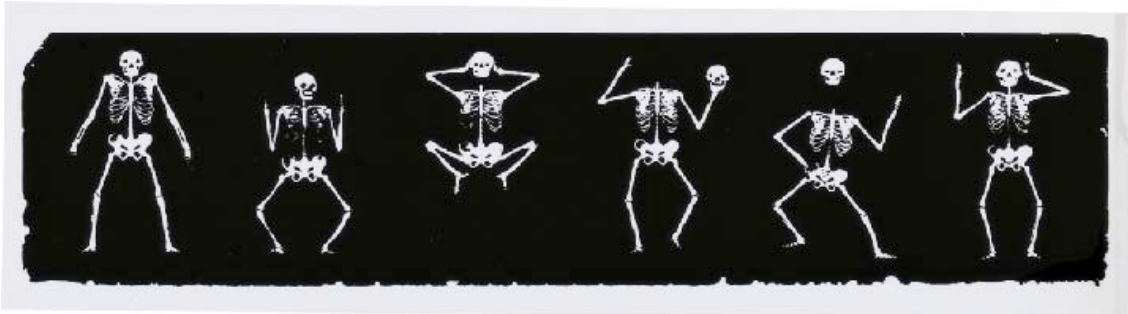
In the course of the last three decades, Werner Nekes has created an extraordinary collection of optical instruments, scientific treatises, illusionistic images and whimsical ephemera which is regarded as one of the most encyclopaedic in the world. The more than 25,000 objects not only demonstrate 500 years of optical inventions and trickery, but also display the prehistory of audio-visual media such as photography and film.

In the summer of 2004, the Nekes Collection persistently caught the attention of the German media and art world when, after months of tenacious negotiations, Nekes' hometown Mülheim/Ruhr in Northrhine-Westphalia suddenly decided not to purchase the collection. Instead of realising a project to give the collection a permanent home by building a media museum called 'Iris' in an unused water-tower – which already houses the biggest walk-in *camera obscura* in the world, created by Nekes between 1981 and 1991 – the local politicians chose to acquire the considerably smaller, less expensive collection of the Wuppertal-based collector Karl-Heinz W. Steckelings, which by no means reaches the quality of the Nekes Collection (celebrated in exhibitions in Japan, the United States and all over Europe). Ever since, the failed purchase of the Nekes Collection is commonly considered a paradigm of short-sighted, narrow-minded German local cultural politics.

It was when Nekes, the award-winning film-maker, professor, and guest lecturer at numerous international universities, colleges and academies, wrote an early text about *thaumatropes* – discs with complementary motifs depicted on either side which, as soon as the disc is manually



rotated at speed, are superimposed on each other so that they merge optically – that he first felt the urge to hold such a device in his own hands. Accordingly, his collection sprang both from the childlike pleasure of possessing objects in order to touch them and play with them and from his determination to use them as teaching aids. If the Hayward Gallery exhibition intended to enchant the visitor and enlighten him or her at the same time, the collector Werner Nekes perfectly exemplifies these principles, for throughout his career as a collector he was at no point satisfied with merely amassing objects, but constantly sought to reconstruct their history, to analyse their effects, and to search for interactions between them.⁴ In a truly creative approach to his collection, he produced a series of six films entitled *Media Magica* (1986-97), which might be regarded as a kind of alternative inventory. One of his most influential contributions to the field of film studies seems to be his 'Kine-Theorie' that he first presented at a 1976 UNESCO symposium in Paris. According to Nekes, a 'kine,' the smallest unit of filmic information, is created when the spectator blends two consecutive images into a third inside his or her mind – the very activity that enables us to perceive a series of single pictures in rapid succession as moving pictures, as a coherent, constant film.⁵



T. H. McAllister, Magic Lantern Slide, paint on glass, Philadelphia, c. 1880.
© Werner Nekes Collection.

Several stories at different levels: the art of deception

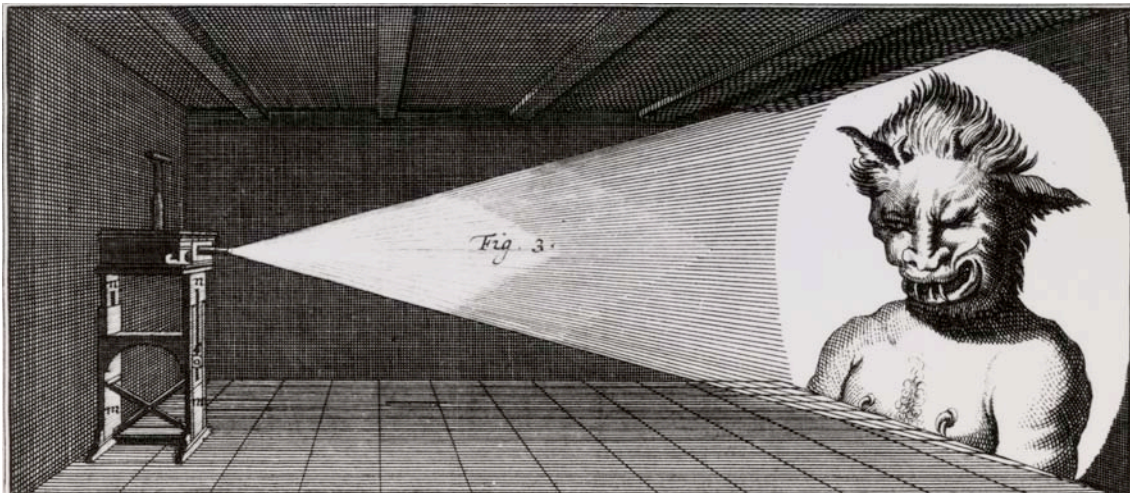
The particular fascination of the Nekes Collection is largely due to its versatility. The enormous variety of objects – ranging from a seditious French chess set of 1825 whose pawns and bishops cast the shadow profile of Napoleon on a wall when lit from behind, to a magic lantern slide of c.1880 showing a dance of death – allowed the Hayward Gallery show to cover a wide range of different aspects of optical illusions (scientific discovery versus popular entertainment, truth versus deception, philosophical enquiry versus magical trickery, the serious versus the



frivolous, to name but a few) and thus to appeal to both the visitor's wish to understand and his or her desire to plunge into 'Wonderland' alike.

By the same token, Werner Nekes' collection provides illustrative material for divergent strands of research. As Marina Warner, curatorial advisor on the exhibition, puts it in her essay 'Camera Ludica,' published in the exhibition catalogue: 'The profusion of instruments for sleight of hand and eye in Werner Nekes' collection tells several stories at different levels.'⁶ The story Warner unravels in her essay deals with the course the history of optical illusion has travelled, from religious belief in magic, to scientific scrutiny, to spectacle and entertainment. Referring to stages in the history and philosophy of perception and consciousness throughout (Aristotle, Descartes), she traces back the nature of illusion to the 'master of lies,' the Devil of medieval Christian tradition, who conjures visions and provokes illusions because he is denied the power to create. In the seventeenth century the Jesuit scholar Athanasius Kircher tried to demonstrate through experiments with lenses and mirrors that optical illusions are neither miracles performed by God nor mischievous pranks played by the Devil. Thereby, he initiated a wave of scientific research that, in the eighteenth and nineteenth centuries, led to an increase in the invention of optical instruments. As soon as their potential to entertain the masses had been discovered, public *camera obscuras*, magic lantern shows, panoramas and halls of mirrors began to spread all over Europe. Along with 'philosophical toys' such as *stereoscopes* or *thaumatropes*, they fuelled the quest to produce durable images of the world, to set them in motion and to project them, and thus inevitably resulted in the development of photography and animated pictures.





Lantern of Fear, from: Gulielmo Jacobo s'Gravesande 'Physices Elementa Mathematica', Geneva, 1748. © Werner Nekes Collection.

Laurent Mannoni, a collector like Werner Nekes and expert on the 'archaeology' of cinema employed at the Cinémathèque Française in Paris, focuses on the history of the latter in his catalogue essay 'The Art of Deception.' In the term 'art of deception' or, in the French original, 'art trompeur,' he subsumes the phenomena of:

...fixed and moving shadows; silhouettes; tricks with mirrors; *camera obscuras* and *lucidas*; anamorphoses; peep-shows; dioptrical paradoxes; magic lanterns; phantasmagorias; stroboscopic discs; zoetrope strips; seditious, faked, panoramic, dioramic or day-night transformation images; chronophotographic and cinematographic pictures, and so on ...⁷

Mannoni considers Etienne-Jules Marey a key figure in the process culminating in the development of cinematographic techniques: the French physiologist's 'graphical method' to record movements of the human body was paramount for the invention of chronophotography, the first photographic method to capture movement in time on a single plate through a special shutter technique. In an effective conclusion to his essay, Mannoni argues that 'deceptive' art not only brought cinema into existence, but also played a crucial role in the development of abstract art and vigorously reverberated in the art of the Italian futurists, Marcel Duchamp and the surrealists. To substantiate this point of view, he draws an interesting parallel between Marey's 'graphical method' and André Breton's definition of automatic writing in his *First*



Surrealist Manifesto of 1924 where he famously refers to the surrealist poets as 'recording instruments' transcribing the surreal elements embedded in reality.⁸



Marcel Duchamp, *Rotoreliefs*, 6 cardboard disks, Paris, 1935. Photograph: courtesy Rheinisches Bildarchiv Köln (A. Wagner). Werner Nekes Collection. © DACS.

The surrealist subtext: multiple imagery, *anamorphosis* and photography

Of the different stories the Hayward Gallery show told, it seems appropriate in this context to single out one that evokes between the lines the surrealist endeavour. For even though no surrealist works in a narrow sense were included in the installation – leaving aside reconstructions of Duchamp's *Rotorelief* discs of 1935 – the spirit of Breton, Max Ernst, René Magritte, and above all Salvador Dalí was omnipresent.⁹ Aspects of the surrealist subtext running through the exhibition range from the aforementioned partnership of art and science and the constant juxtaposition of heterogeneous objects in general, to the ludic element, the interactive challenges presented to the viewer and, on a somewhat obscurer level, the virtual picture gallery that automatically opened up in one's mind, containing works by Duchamp, Ernst and Dalí. The two Grandville drawings *First Dream: Crime and Expiation* and *Second Dream: a Promenade in the Sky* (both 1847), displayed in a show-case in the 'Persistence of Vision' section, looked like surrealist images *avant la lettre*; moreover, they triggered a whole chain of



associations, since the former not only had been reproduced in Georges Bataille's *Documents* (1:4, 1929) in order to illustrate the dictionary entry on the eye in which he also discussed Luis Buñuel's and Dalí's *An Andalusian Dog* but also had influenced Dalí's painting *One Second Before Awakening from a Dream Provoked by the Flight of a Bee Around a Pomegranate* (1944).

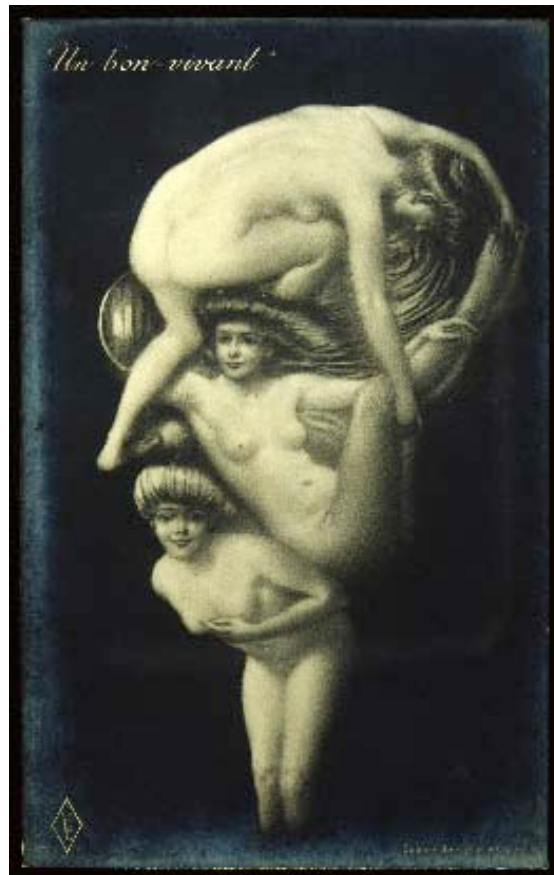
In their search for visual means adequate for seizing the internal and external components of reality, for capturing the irrational, the unconscious, the 'formless' and the invisible, the surrealists were increasingly attracted by optical effects and fascinated by technological inventions in the field of photography. This is especially true of Dalí who, regarding himself as swimming 'between two bodies of water, the cold water of art and the warm water of science,'¹⁰ was interested in the relations between eye and mind, vision and perception, thought and illusion.¹¹ Hence he began to carry out experiments with double images, hidden pictures and perspectival distortions which, from the 1930s onwards, laid the foundations for the development and perfection of his 'paranoiac-critical technique.' To demonstrate this concept, he reproduced the postcard photograph of an African village in *Le Surréalisme au service de la révolution* (1:3, 1931) – both horizontally and turned by 90 degrees. Seen vertically, he had spontaneously read it as a Picasso head, whereas Breton had seen a profile of the Marquis de Sade in it. What *Communication: Paranoiac Face* illustrated was that an alternative reading of a picture can reveal itself according to the viewer's personal obsessions and preoccupations. This discovery encouraged him consequently to produce a series of large canvases with dazzlingly complex double, triple and up to sixfold imagery. Well-known examples include *The Endless Enigma* and *Apparition of Face and Fruit Dish on a Beach* (both 1938); in both, a rocky beach scenery is composed of such elements as a fruit dish, a dog and a hallucinatory face.

A comparison of Dalí's multiple imagery with its early precursors displayed at the Hayward Gallery exhibition corroborates the disturbing effect of the former. The Nekes Collection contains a series of Italian copperplate engravings of c. 1700 showing so-called 'upside-down heads' which are accompanied by sometimes moralising or flippant couplets pointing to their 'secret' ('Son Gatto se mi guardi al primo aspetto ma Voltami, e vedrai un altro oggetto' – 'I'm a



cat at first sight, but turn me around and you will see another object'). Turned upside down, they read as cat or Turk, old man or young boy, philosopher or vanitas skull. Like the anthropomorphic and zoomorphic landscapes of the German copperplate engraver Johann Martin Will, in which a hunting scene taking place in a forest can be read as a hyena (*The Stag Hunt*, c. 1780), a hill surmounted by a ruin as a human head, or a projecting cliff as the head of a bearded old man (both c. 1780), 'upside-down heads' require an active, 'mechanical' effort in order to reveal their ambiguity to the viewer. The manual actions of turning the picture around or the bending of the head cause the alternative image to immediately congeal. Similarly unequivocal in their polyvalence are 'puzzle pictures,' such as the heads composed of female nudes depicted on a series of French postcards of c.1900 which recall the composite heads and figures of Arcimboldo: once the attentive viewer has detected the second reading, it remains stable. In counterpoint to this, a picture like Dalí's *The Endless Enigma*, offering no less than six alternative readings, is more likely to keep its secret, as the title already indicates. The associative psychic effort that causes the image to switch has to be continuously – *endlessly* – repeated; the image does not solidify but remains unsettled and thereby unsettles the viewer.





Le bon-vivant, maker unknown, postcard, France. © Werner Nekes Collection.

The objective of destabilising the position of the viewer runs like a silver thread through Dalí's oeuvre. Another technique he experimented with in this respect is *anamorphosis*, the severe distortion of linear perspective which makes a picture look odd and deformed when viewed head on, but resolves when seen from an oblique angle. The classic, most famous and certainly best-researched example of an *anamorphosis* occurs in Hans Holbein the Younger's *The Ambassadors* (1533): an obscure object stretching diagonally across the lower part of the otherwise 'conventional' picture that turns out to be a skull when viewed from a particular position to the right, at the level of the ambassador's heads. The visitor to the Hayward Gallery show was confronted with an abstrusely elongated, giraffe-like animal which, seen from below, transformed into a leopard (Joseph Friedrich Leopold, *Leopard*, c. 1700). Other examples of anamorphic pictures on display included circular distortions which, in order to decipher their (mostly gallant) meanings, had to be viewed in pyramidal, cylindrical or conical mirrors placed in their centres, as well as textual *anamorphoses* – among them a series of twentieth-century



French postcards containing 'hidden' messages like 'Je vous aime' or 'Toujours à toi.' While these objects play with the principle of concealment and revelation in a context of chivalry and pleasantry and therefore rather fall into the category of game and entertainment, most of the sixteenth- and seventeenth-century *anamorphoses* generate a feeling of severe disorientation. The invention, systematisation and application of linear perspective by Brunelleschi, Alberti and Massaccio in early fifteenth-century Italy had guaranteed the viewer a fixed position in front of the picture which he or she from that time on perceived as a *finestra aperta* opening up on a stable world in order. It is this very security in relation to the surrounding world that perspectival distortions such as *anamorphoses* all of a sudden radically called into question: the viewer's displacement vis-à-vis the picture tellingly mirrored his or her shifting standpoint in an increasingly complex and contingent world.

It is precisely this feeling of uncertainty that Dalí's manipulations of perspective produce, but with a slightly different implication: here, anamorphic shapes as well as incongruities of scale and proportion run counter to the dominance of visual perception Duchamp had uncovered as the main characteristic of modern painting since Courbet and particularly impressionism.¹² Duchamp and Dalí, both vehemently rejecting the idea that looking at a painting should only involve the eyes, explored techniques that undermine a purely 'retinal' reading of the image. As perception is an infinitely complex mechanism that depends upon vision located in a mind inside a body moving in time and space, painting had to address itself to *all* facets of human experience.

A third strand of optics and optical inventions Dalí was interested in and made use of as a pictorial means of expression throughout his career is photography. Even before he officially joined the surrealist group, he was deeply convinced of the poetic qualities of photography. Given its capacity to surprise and to lay bare the hitherto unseen and unimagined, he referred to it as 'THE MOST SECURE VEHICLE FOR POETRY and the most agile process for capturing the most delicate osmoses that are formed between reality and surreality.'¹³ The potential of photography to outdo real-time perception by focusing on and thus irreversibly fixing tiny details which would otherwise go unnoticed – in Dalí's own words: 'A simple change of scale provokes



unusual similarities, and brings out existing – though undreamt of – analogies¹⁴ – is exactly what Walter Benjamin later called ‘das Optisch-Unbewußte,’ its ‘optical unconscious.’¹⁵ Making use of photography as a poetic medium, Dalí began to incorporate photographs into his pictures and to develop a hyper-exact, photographic-realist style as the distinguishing feature of his paintings, which he significantly referred to as ‘instantaneous color photography done by hand.’¹⁶

To the same extent, Dalí was fascinated by the devices invented in the nineteenth century to generate the illusion of movement in time. Apart from his excursions into the genre of film, namely his collaborations with Buñuel in *An Andalusian Dog* (1929) and *The Golden Age* (1930), he was familiar with all the optical ‘toys’ the visitor of the Hayward Gallery show had the possibility to examine in depth: the *phenakistiscope*, the *zoetrope*, the *praxinoscope*, and the *stereoscope*. The *zoetrope*, a drum-like instrument with parallel vertical slits through which a sequence of single pictures painted on a strip could be seen ‘in movement’ when the cylinder was rotated, had also inspired a prominent image in Max Ernst’s collage novel *A Little Girl Dreams of Taking the Veil* (1930). Searching for an appropriate visualisation of the little girl’s dream, Ernst came across the picture of a *zoetrope* showing the different phases of a bird in flight reproduced in *La Nature* and placed his heroine at its centre (*In my Dovecote*).

Dalí, still exploring traditional optical technologies in order to find fresh and original means of expression, began to experiment with stereoscopic paintings towards the end of his career. *Stereoscopes*, binocular devices which cause two nearly identical pictures to merge and spring into three-dimensionality, had become one of the most popular pastimes in nineteenth-century homes. Duchamp, equally preoccupied with the possibilities the field of optics offered, had transformed a pair of found stereographic photographs into his rectified readymade *Handmade Stereopticon Slide* (1918/19).

The particular fascination of the Hayward Gallery show was largely due to the fact that it succeeded in opening up different avenues: the strikingly large number of children among the visitors were offered ‘toys’ to play with, those determined to learn about the history of



photography and film found documents and illustrative material to do so, others were invited to unravel a surrealist subtext. But what this kaleidoscope of optical illusions made obvious to every viewer regardless of age, education or intention, was that visual perception is a marvellous and – despite all scientific research and philosophical attempts to penetrate it – still mysterious mechanism. To quote Dalí:

I bear with me a precious apparatus which I invented two months ago and by means of which I will realise the major part of my new pictures. Rather than a horrible, hard and mechanical photographic apparatus, it resembles the minuscule and delicate apparatus of a colour television. But the most wonderful thing: It is entirely soft! ... Yes! An eye!¹⁷

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¹ The Cologne exhibition title alludes to a children's game the English equivalent of which is 'I spy with my little eye.' The literal translation would be: 'I can see something you can't. Optical devices and image worlds.' The Graz exhibition title, like *Devices of Wonder*, evokes the sixteenth- and seventeenth-century cabinet of curiosities (*The Optical Cabinet of Wonders: from the Werner Nekes Collection*).

² See the exhibition leaflet which addresses several invitations of this kind to the visitor.

³ For an account of this episode see Camelia Gupta, 'Seeing Isn't Always Believing At The Hayward Gallery,' www.24hourmuseum.org.uk/london/news/ART24467.html.

⁴ His publications include for example a useful dictionary of terms related to the field, an online version of which can be accessed at www.wernernekes.de/navigation_haupt.htm. Extracts were published as a glossary in the Cologne exhibition catalogue in German (Bodo von Dewitz and Werner Nekes (eds), *Ich Sehe Was, Was Du Nicht Siehst! Sehmaschinen und Bilderwelten. Die Sammlung Werner Nekes*, Cologne, Museum Ludwig, 2002) and translated into English for the London exhibition catalogue (Laurent Mannoni, Werner Nekes and Marina Warner, *Eyes, Lies and Illusions*, London, Hayward Gallery, 2004, 193-237).

⁵ Werner Nekes, 'Bilderwelten,' in Uta Brandes (ed.), *Sehsucht. Über die Veränderung der visuellen Wahrnehmung*, Göttingen, Schriftenreihe Forum, 4, 1995, 95-102.

⁶ Marina Warner, 'Camera Ludica,' in *Eyes, Lies and Illusions*, 21.

⁷ Laurent Mannoni, 'The Art of Deception,' in *Eyes, Lies and Illusions*, 43.

⁸ André Breton, *Manifestoes of Surrealism*, trans. Richard Seaver and Helen R. Lane, Ann Arbor, University of Michigan Press, 1974, 28 (italics in original). The exhibition catalogue as a whole unfortunately does not maintain the balance the show managed to keep between a desire for effects and scholarly expertise. Instead of countless 'puzzle pictures' or images dependent



upon effects of the light (which lose much of their fascination when reproduced), one would wish to find a greater range of essays, particularly providing in-depth information on the contemporary artists involved. In this respect, the Hayward Gallery publication cannot compare with the catalogue of the 2002/03 Cologne show which includes nine essays – thorough examinations of different phenomena and themes such as shadow images, the *camera obscura* and *lucida*, the *laterna magica*, hidden pictures, the mobile spectator, chronophotography, the panorama, and collecting visual media (*Ich Sehe Was, Was Du Nicht Siehst!*).

⁹ For a discussion of Duchamp's *Rotoreliefs* and his investigation into optics in general see Rosalind E. Krauss, *The Optical Unconscious*, Cambridge, Mass., MIT Press, 1993, 94-146.

¹⁰ Salvador Dalí, 'The Conquest of the Irrational' (1935), in *The Collected Writings of Salvador Dalí*, ed. and trans. Haim Finkelstein, Cambridge, Cambridge University Press, 1998, 264.

¹¹ For a comprehensive survey of Dalí's interest in the field of optics see Dawn Ades (ed.), *Dalí's Optical Illusions*, New Haven, Yale University Press, 2000. A useful examination of the influence of perspectival machines and photographic techniques on artistic creation at the time of their invention is provided by Martin Kemp in his study *The Science of Art. Optical Themes in Western Art from Brunelleschi to Seurat*, New Haven, Yale University Press, 1990, particularly 167-220 (chapter IV: 'Machines and marvels').

¹² See Pierre Cabanne, *Dialogues with Marcel Duchamp*, trans. Ron Padgett, London, Thames and Hudson, 1971, 43.

¹³ Dalí, 'The Photographic Data' (1929), in *The Collected Writings of Salvador Dalí*, 68 (capitals in original).

¹⁴ Dalí, 'Photography: Pure Creation of the Spirit' (1927), in *The Collected Writings of Salvador Dalí*, 47.

¹⁵ Walter Benjamin, 'Kleine Geschichte der Photographie,' in *Gesammelte Schriften*, vol. III/1, ed. Rolf Tiedemann and Hermann Schweppenhäuser, Frankfurt, Suhrkamp, 1977, 371.

¹⁶ Dalí, 'The Conquest of the Irrational,' in *The Collected Writings of Salvador Dalí*, 265.

¹⁷ Dalí (under the pseudonym of Felipe Jacinto), 'Le Dernier Scandale de Salvador Dalí,' in *OUI 2: L'archangélisme scientifique*, Paris: Denoël/Gonthier, 1971, 110 ('J'emporte avec moi un précieux appareil que j'ai inventé il y a deux mois et avec lequel je réaliserai la majeure partie de mes nouvelles peintures. Il ressemble davantage à un minuscule et fragile appareil de télévision en couleurs qu'à un affreux, rébarbatif et mécanique appareil photographique. Mais la chose la plus étonnante : il est entièrement mou! ... Oui! Un œil,' my translation).

