CHAPTER 4

ROBERT BREER AND
THE DIALECTIC OF EYE AND CAMERA

Like Stan Brakhage in the previous chapter, this analysis will illustrate how Robert Breer is another exemplar of an avant-garde filmmaker working as a practical psychologist who looked inwards to his own perceptual facilities. Taking sense as muse, Breer produced work that compelled viewers to attend to their perceptions in unique and enriching ways. While he was more casual than Brakhage about his creative goals and theoretical concerns in interviews, and did not provide theories on how to engage with his work in the way Brakhage did, the thresholds, abilities and limitations of visual perception were evidently a creative concern for Breer. His films once attracted the interest of a perceptual psychologist:

> I had a scientist following me around at one point. He got excited by my films because he hadn't thought of the consequences of this kind of rapid change. And *I* never thought about consequences; I just thought about how it looked to compose this way. (Breer, quoted in MacDonald 1992: 25–26)

Breer, then, did not need to understand the scientific basis for the perceptual capacities that he was challenging; he only needed to explore them for the purpose of aesthetic effect. Without needing to account for the capacities that he challenged, he took to exploring perceptual 'thresholds', a concept central to his aesthetic (Sitney 2002: 276), which is also important to psychologists, since identifying a perceptual threshold teaches us when one mode of experience ends and another one begins. This chapter will explore thresholds of cinematic motion and depth perception in the context of Breer's films, illustrating some of the unique perceptual experiences his films offer.

Since Breer is not discussed in detail as often as Brakhage, this chapter in part seeks to remedy this disparity by conducting a lengthier analysis of his work. The

context of his artistry will be set in place, and then the concept of the dialectic of eye and camera will be explained in light of his work before two visual capacities he challenged will be explored – cinematic motion and depth. Before Breer's perceptual challenges are discussed, then, the artistic context in which he emerged will be set in place, alongside an outline of his creative aesthetic.

Robert Breer in Context

In the years following World War II, Maya Deren, James Broughton, Sidney Peterson, Kenneth Anger, Gregory Markopoulos and Stan Brakhage drew inspiration from Greek mythology, Freudian symbolism, modernist poetry and Romanticism. Robert Breer did not draw from these same sources, nor did he attempt to evoke interior states in the same way. His early path was guided by twentieth-century painters: the abstractions of Russian constructivists and German Bauhaus, the absurdism of Dada, the collage art of cubism and Kurt Schwitters, Henri Matisse's spirituality and Piet Mondrian's grid-based minimalism (see Obrist 2001). Indeed, he began as a painter himself, becoming more interested in the aesthetic potential of motion after working as a canvas-based artist for several years.

Amongst filmmakers, Breer drew inspiration from European, geometric abstract filmmakers Hans Richter and Viking Eggeling. Contemporaries included John and James Whitney, who developed a machine that could simultaneously generate images and sound; Jordan Belson, who generated abstractions that were loosely suggestive of macrocosmic and microcosmic imagery while drawing inspiration from meditation and spiritual practises; and Harry Smith, who reportedly drew creative inspiration from his experiences on hallucinogenic drugs. As a filmmaker, Breer found a kindred spirit in Peter Kubelka, who also saw the frame rather than the shot as the fundamental building block of cinematic expression. Breer, however, remained closely tied to his heritage as a painter. Lois Mendelson comments on Breer's painterly approach to film:

> This relationship between the single frame and the moving image is especially important in Breer's work for it reflects his ability to work comfortably within both the pictorial and cinematic modes, and to use the one as a means of exploring the other. For Breer, work on each individual frame is essentially the work of a painter or draughtsman, and here he feels free to entertain himself with those options which are opened to pictorial artists. He considers the striving for a cinematic result another part of the work, involving a completely different set of options. (Mendelson 1981: 40)

Breer should not be understood exclusively as an animator, since he sometimes used live-action footage, and also produced paintings as well as mobile sculptures. Rather, he is a filmmaker for whom animation addressed many of his

creative needs. He used the tools of a painter to make his films, exploring the transformation of lines and brushworks when they are magnified and projected onto the screen. These included a self-sticking commercial plastic called 'Zippatone' (Figure 4.1), spray paint (Figure 4.2), crayon (Figure 4.3) and magic markers (Figure 4.4), alongside collage materials – treated photographs (Figure 4.5), home video footage (Figure 4.6), childhood pencil drawings (Figure 4.7) and magazines (Figure 4.8).

Formalistic concerns guide his aesthetic, and opposites are characteristically juxtaposed: soft and hard lines, figuration and abstraction, stasis and movement, left to right, top to bottom and vice versa. Objects occupy the frame, making fast and slow movements, sometimes in repetitions and other times in variations. Objects are often dislocated from one another rather than moving around in pairings, as they would often do in Oskar Fischinger's animated films, or symmetrically mirroring one another. Jennifer Burford astutely comments that Breer 'cultivated a fake clumsiness, giving his films a recognizable signature' (Burford 1999: 85).

In Breer's cinematic frame, one does not enter a surrogate space in the traditional sense. Objects typically appear to float on a blank picture plane, acknowledging (as with Brakhage's frame) the cinematic screen as a flat canvas. A modernist painters' strategy (as discussed in chapter three: Greenberg 1995 [1960]), this heightened awareness of the picture plane begins with his very first films, which closely resembled his formative canvas paintings. The white 'canvas' of the cinematic screen was usually built from 4" x 6" flipbooks, which began as a convenience, since they were quick and easy to draw on and lent themselves to 'riffling' in order to preview the movement, but their appearance became one of Breer's aesthetic tropes. He used relatively simple apparatus – a table with a camera above it, cards and drawing implements, and he did not use the traditional technique of cel animation; instead he worked frame by frame with card. While this may seem primitive (indeed, it is the same technique employed by Émile Cohl, one of the pioneers of animation), Breer's rationale for not training
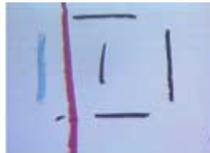
Fig. 4.1   Fig. 4.2   Fig. 4.3   Fig. 4.4

Fig. 4.5   Fig. 4.6   Fig. 4.7   Fig. 4.8

Figures 4.1–4.8.   Animation subjects in the films of Robert Breer. Screen captures by the author.

in traditional techniques was that he did not want to be 'contaminated' by conventional rules of animation (MacDonald 1992: 17).

Breer also did not make use of techniques employed by his avant-garde contemporaries such as direct film, in which the film strip is painted on directly (Len Lye, Harry Smith), or the optical printer, which allows filmmakers to re-photograph strips of film while adding visual effects (Ken Jacobs, Malcolm Le Grice). However, he developed an arsenal of techniques, several of which he would use in the same film, such as collage, rotoscope, treated photographs, flicker, tracing artworks and found footage. He would take techniques learned from one film and rechannel them into subsequent works. When observing his oeuvre as a whole, his career looks like an accumulation of techniques, which took confident form by the mid 1970s. From then until his final film in 2003, he produced a range of works that explored and further refined his distinctive style.

Instead of building his work from a linear series of scenes, Breer would create films where images and sounds 'skip around the way thoughts do' (Breer, quoted in Mekas 1962: 16). Figurative objects are as unstable and subject to transformation as the abstract images, and both are treated with equal levels of interest. No object seems more important than any other; images are treated in an 'egalitarian' fashion rather than hierarchically (Camper 1997).

Daily sights become re-energized under Breer's hand. Fred Camper comments:

> Breer argue[s] with the Idealism of painters like Mondrian. To the imagined unity of things in a realm beyond the visible that Mondrian's paintings aspire to evoke, Breer counterposes his 'kitchen sink' approach, all the messy physicality of things in the world. Yet just as Mondrian's grids seem to stretch way beyond the edges of the canvases, like pieces of some much larger unity, Breer's inclusive approach creates films that seem to try to reach out and embrace everything – both the world of objects and its opposite, the world of ideal forms. (Ibid.)

Amidst the flurry of objects, abstractions and movements, spectators are called upon to pay close attention to the kinetic and colour-saturated imagery in a way they do not typically need to in conventional cinema or everyday life. Instead of providing the viewer with a space for quiet contemplation, Breer opts to create 'sparks' off the screen by placing objects in 'strenuous opposition'. He comments, 'I like violent energy coming off the screen. I think it's temperamental. It's how I played football. I want impact' (Breer, quoted in Moore 1980: 9). His kinetic and jovial approach to the craft masks his sophistication, technical dexterity and knowledge of the medium, yet his works remain relatively accessible while retaining their integrity as experimental films.

The viewer is never far from being reminded that all cinema, including the film they are watching, is illusory. Filmmaking tools are never far from view. Sitney comments that '[t]he weight of his interests as an artist lies in the creation and breakdown of illusions. For Breer, this becomes clearest when the materials of the illusions are revealed' (Sitney 2002: 275). This reflexive self-

awareness, along with other aspects of his work, places Breer's films in the modernist tradition:

> with its pull towards abstraction and a corresponding rejection of the kind of illusionism which had dominated art since the Renaissance. [Modernist artists] were interested in the specificity of their media as well as in the concrete nature of art objects themselves. Thus they turned their energies to formal problems, creating works of art which revealed rather than camouflaged the materials and methods of construction. (Mendelson 1981: 3)

While Breer may have been working within the context of modernism, which liberated him to create art that reveals its own artifice, this chapter will advance the claim that his work also compels the viewer to pay attention to their own perceptual thresholds as a means of aesthetic interest, and attend to their visual perceptions in novel and unfamiliar ways. In the first part of this analysis, the concept of 'the dialectic of eye and camera' will be detailed. The rest of the discussion will explore two primary aspects of cinematic visual experience that Breer challenges: cinematic motion and illusions of visual depth. Both will be considered within the context of research on visual perception.

In addressing Breer's unique use of cinematic motion and depth, the unique characteristics of his work become apparent. Breer provides his spectators with perceptual experiences that they will not experience in naturalistic contexts, or from most other filmmakers.[1] Once his viewers become accustomed to Breer's unique visual style and arsenal of techniques, they will be sensitized to new possibilities for visual experience.

Aside from the thresholds between cinematic motion and stasis, and visual depth and flatness, other dichotomies that Breer creatively destabilized include high and low art; the screen as canvas and screen as surrogate environment; and abstraction and figuration. Rather than subscribing to the claim amongst 'purist' abstract artists that 'red is red', for Breer 'blood is red, and red is red, and the confusion is possible and right' (Camper 1997). Breer created an ambiguous interplay between both. This ambiguity is evident in *Swiss Army Knife with Rats and Pigeons* (1980), where Breer demonstrates how a Swiss army knife can look both like a Swiss army knife, but also like a red oblong (i.e. how an artist might see it) (Figure 4.9). In other words, the threshold is destabilized between J.J. Gibson's concept of the visual world, in which visual surroundings are engaged in light of their semantic content, and the visual field, in which surroundings are engaged

Figure 4.9. Destabilization of visual world and visual field in *Swiss Army Knife with Rats and Pigeons* (1980). Screen captures by the author.

as coloured patches and forms (as discussed in the previous chapter). With an outline of Breer's aesthetic in place, we can consider how his work will be explored within the context of this analysis.

The Dialectic of Eye and Camera

The discussions of Brakhage and Breer in this book have both been informed by William Wees' *Light Moving in Time: Studies in the Visual Aesthetics of Avant-Garde Film* (1992). Wees coins the phrase 'the dialectic of eye and camera' and uses it as his principal point of reference when discussing the visual aesthetics of avant-garde film. He begins by explaining that like the human eye, the film camera is fundamentally an instrument for analysing changes in light flux over time. As such, it provides some parallel with human vision. However, he also suggests that the camera risks being tailored to satisfy socially determined expectations about what an image of the world should look like, rather than capturing the full range of possible experiences:

> Any cinematic expression of vision must emerge from the optical, photochemical, and mechanical processes of making and showing films. Although these processes differ greatly from those of visual perception, they are designed to produce an image comparable to the world we see when we look around us. Hence the conventions of photographic realism accepted by the dominant film industry. Because of those conventions, most films offer a very limited and highly standardized version of 'visual life': focused, stable, unambiguous representations of familiar objects in three-dimensional space. (Wees 1992: 3)

Cinematic vision, in turn, can be erroneously understood as being synonymous with human vision. What the human eye is capable of seeing and what the camera is capable of sharing is alike in some respects, but they are also different in significant ways. While the visual experience of popular cinema bears some resemblance to everyday vision, it does not capture the full range of possibilities, and so exploring the 'dialectical relationship' between the camera and the eye means that you creatively explore the ways in which the two are both alike and divergent. Collectively, avant-garde filmmakers have turned that dialectical relationship between the camera and the eye into a positive, creative force, producing films that reveal and highlight the difference between the eye and the camera. The suggestion, then, is that when exploring the dialectic of eye and camera, the filmmaker as practical psychologist asks 'how is my own vision unlike cinematic vision?' How might cinema become a tool to visually attend to my perceptions in a way that I do not in the natural world? How is the camera eye unlike the human eye? We are presented with unique visual experiences we could not encounter in life, nor in commercial works of art.

Filmmakers who choose to ignore or subvert conventions of cinematic vision might confront the viewer with complex and dynamic experiences, with techniques like superimposition, kaleidoscopic vision, soft focus, unusual angles, disorientating camera movements, flicker effects, scratching and painting on film. In order to express some novel visual experiences, artists like Michael Snow and Paul Sharits expose the mechanical nature of the cinematic apparatus, while filmmakers Jordan Belson and John and James Whitney offer a range of visual experiences without making explicit reference to the cinematic machinery. Robert Breer is another filmmaker who was interested in exploring aesthetic experience by demonstrating the differences between human vision and the possibilities of cinematic vision. He addresses this dialectic in a way that Wees' other case studies – Stan Brakhage, Kenneth Anger, Jordan Belson, James Whitney, Paul Sharits and Michael Snow – do not. In the context of this discussion, artists who attempt to provide visual experiences that are explicitly unlike visual experiences encountered in the natural world expansively offer the spectator the opportunity to psychologically attend to visual stimuli in a way they might not otherwise. Breer's films, and this chapter, exemplify another unique way in which the visual system can be engaged.

Note, however, that while Breer is being read through a niche set of ideas from the study of visual perception, viewers do not need to know the science of perception in order to appreciate the visual experiences provided in his films – they only need ordinary human visual capacities to experience their effects. The perceptual research explains some of those capacities, and this chapter will illustrate how Breer exploits them. But knowledge of these perceptual mechanisms is not necessary to appreciate his work in the way that Brakhage is understood more clearly if the viewer has prior knowledge about Romanticism or abstract expressionism, for example. With this said, the explanations offered here may still heighten one's appreciation of Breer's artistry, even if they are not required to appreciate his work.

Now that the general framework for this analysis is in place, Breer's work will be explored in closer detail. This discussion will be split into two sections: the first will consider how Breer challenges motion perception; the second will explore depth perception.

Motion

With Breer's creative context in place along with an outline of his aesthetic and an explanation of the dialectic of eye and camera, the perceptual challenges presented in his films may be examined. The differences between cinematic and human vision will be considered, initially in relation to motion perception.

Breer's use of cinematic motion was unique because he never took it for granted. He used cinema to address his own creative concerns with movement,

which was as much an aesthetic concern as form, composition and colour, and not because he decided to be a filmmaker, which features movement by nature. More than the painters-turned-filmmakers who predated him such as Oskar Fischinger, Dwinell Grant and Walter Ruttmann, Breer did not rely on the smooth motion, which traditional animators exploited (or aimed to accomplish). Instead, in a dialectic of eye and camera, Breer explored the expressive potential of pulling and stretching between the perception of movement and still images, and balancing on the threshold between the two.

In his early career as a painter, Breer followed the 'neo-plasticians' Mondrian and Kandinsky, and practised a 'severe kind of abstraction' in which he would limit himself to three or four hard-edged forms per canvas, each with its own distinct colour. He comments:

> I was not entirely at home within the strict limits of neo-plasticism. . . I became interested in change itself and finally in cinema as a means of exploring this further. I wanted to see if I could possibly control a range of variations in a single composition. You can see that I sort of backed into cinema since my main concern was with static forms. In fact, I was even a bit annoyed at first when I ran into the problems of movement. (Breer, quoted in Sitney 2002: 272)

His interest in motion assumed the forms of several different types of media. His contribution to a Parisian exhibition in 1955 entitled *Le Mouvement* is marked as a turning point in his career, when he became more fully committed to the artistic exploration of motion. In that instance, he contributed a flipbook to the exhibition entitled *Image Par Images* – designed to demonstrate the process taken to arrive at a composition. A subsequent manifestation of his interest in movement was realized in his motorized sculptures known as 'floats', showcased in Tokyo in 1970, which would create an atmosphere rather than a spectacle by moving imperceptibly slowly (Pardey 2011: 100–4).

Breer also became interested in pre-cinematic optical toys. Aside from using flipbooks to chart the creative process of an abstract composition and placing them in a gallery context, he also built thaumatropes (two-sided panels that visually fuse when spun) and mutascopes – hand-cranked motion picture devices that worked on a similar principle to flipbooks. While the mutascope predates cinema, it exploits the visual system in a similar way. For Breer, it has the added appeal of making some of the ethereal elements of cinematic experience concrete through a tangible object that requires physical participation. Similarly, flipbooks, mutascopes and thaumatropes all have a material presence, and nothing is hidden from the spectator. Breer was conscious of the context in which his films were screened – the darkened room of a cinema hid the materiality of film, and he also considered the context to be somewhat 'melodramatic' (Breer 1973b: 57).

With his trademark sense of humour, Breer makes recurrent reference to the stillness of the individual frame, the fundamental building block of cinema, through the repeated use of still photographs in his films. Comparable to Michael Snow's photograph of the ocean that eventually overwhelms the frame in *Wavelength* (1967), there is an inherent paradox in filling the frame with a still photo within a 'moving' cinematic sequence, and a simultaneous acknowledgement that cinema is comprised wholly of still images. Cinema itself is built around creating the impression of motion with the rapid succession of still images, and Breer finds a variety of methods for doing so. In *Fist Fight* (1964), he simply shakes a photograph of himself in front of the camera to give it movement. A similar technique occurs later in *Bang!* (1986) to crudely give the impression that an aeroplane is flying across the screen. The images are accompanied by the sound of a plane engine (Figure 4.10).

Within this discussion of cinematic motion, the analysis will be divided into a series of subsections that describe some of the techniques Breer developed that challenge our visual capacities. These techniques will also be related back to existing knowledge about visual perception to demonstrate how they challenge our perceptual habits in unique ways.

Flicker Fusion and Phi Movement

To begin with, the basis of cinematic motion will be considered, and how it is different to motion perception in the natural environment. Before coming back round to Breer's formal and perceptual

Figure 4.10. Movement of a still photograph in *Bang!* (1986) Screen captures by the author.

challenges, a moment should be taken to understand the difference between cinematic and real-world motion. To do so, consider the story of a 48-year-old woman who, in 1983, had suffered a stroke five years previously and consulted her neurologist with an unusual complaint:

> The visual disorder complained of by the patient was a loss of movement vision in all three dimensions. She had difficulty, for example, in pouring tea or coffee into a cup because the fluid appeared to be frozen, like a glacier. In addition, she could not stop pouring at the right time since she was unable to perceive the movement in the cup (or a pot) when the fluid rose. Furthermore the patient complained of difficulties in following a dialogue because she could not see the movements of the face and, especially, the mouth of the speaker. In a room where more than two people were walking she felt very insecure and unwell, and usually left the room immediately, because 'people were suddenly here or there but I have not seen them moving'. (Zihl, quoted in Hoffman 2000: 140)

The subject had a condition known as akinetopsia. While she had good acuity perception (resolution), normal colour perception, could perceive depth and could easily recognize objects, she could not see motion. This motion deficit was limited to vision, however; she easily perceived the movements of objects on her skin, and the sound of objects moving around the room. The fact that her sense of motion perception was affected without the rest of her visual abilities such as colour or form changing tells us that there is a region of the visual cortex that is devoted specifically to motion, and that motion is reconstructed by your visual intelligence rather than passively received. While it may appear to be the same process, the way in which the visual cortex engages with natural-world and cinematic motion is different, even if they 'look' the same. The experience of cinematic motion is made possible by two visual phenomena – flicker fusion and phi movement. Both of these will be detailed.

In its early stages at Edison Films in 1895, film ran at approximately forty frames per second. This proved to be impractical because of the resulting expense and weight of the film stock. After further experimentation, the scientists at Edison Films discovered that images photographed slower than 16fps resulted in excessively jerky motion and a distracting flicker. Finally, experimentation at Western Electric led to 24fps becoming the industry standard, improving sound quality and making mild speed fluctuations tolerable (Anderson 1996: 55). If you look at a strobe light that blinks twenty-four times per second, you would see a discernible flicker. Accordingly, you would also notice twenty-four flashes of light per second in a traditional film projector unless each individual frame blinks multiple times. Flicker fusion occurs at about fifty flashes per second, when the retina is unable to discriminate between flashes and the luminosity appears consistent. If each cinematic frame flashes twice, it would flicker forty-eight times per second – which runs just short of the required fifty. Instead, a three-bladed

shutter is used to raise the flicker rate to seventy-two flashes per second – three times for each frame, which is well past the threshold for perceptual fusion.[2]

While flicker fusion explains why we do not perceive a flicker or black frames when viewing film projectors, even though the screen is blank for half of the time we view a film, the reason we perceive motion is because of the phi phenomenon. To create smooth movement in film, each frame should only vary a little bit from its neighbour. This is common knowledge, but the reason behind it is less widely known. Phi movement is an optical illusion that allows us to experience continual movement instead of a rapid sequence of pictures. If the distance between two objects in a frame is adequately close and the time interval between their transition is sufficiently brief, we perceive a single object. This does not only occur in cinema – flipbooks, mutascopes and other optical toys like the zoetrope and praxinoscope work on the same basis.

If we were to see the five frames in Figure 4.11 played out at standard speed (24fps), the transitions from frame to frame would be too dissimilar to perceive a consistent circle growing bigger and smaller. Instead we would see a rapid alternation between a large circle and a small one. In Figure 4.12, however, the visual transitions are minor enough that we would experience phi motion, and we would perceive a consistent circle growing rapidly.

The visual system is unable to detect the difference between the successive changes in the static frames of a motion picture and the continuous changes of natural movement. We supply information when perceiving cinematic motion that does not exist. Even though phi motion appears to be the same as the movement we experience in the natural world, the visual cortex constructs it differently. Psychologist Richard Gregory explains the foundation for this phenomenon:

> The simple notion that the image-retina system is tolerant of gaps explains phi movement. For vision needs tolerance, to cope with all manner of inadequacies. . . This use of tolerance is a basic engineering principle. Moving objects can momentarily disappear, as when a running animal for a moment is hidden behind a nearby tree; but it is useful for observers to see this as a continuous movement of the same object. The image-retina system tolerates gaps, provided the jumps in space and
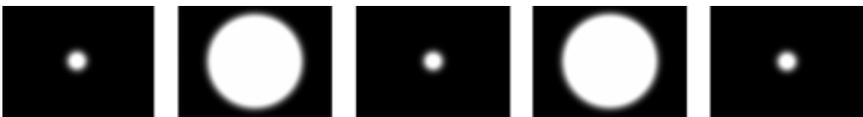

Fig. 4.11

Fig. 4.12

Figures 4.11–4.12. Comparison of flicker (4.11) and phi motion (4.12).

time are not too large. As a fortunate pay-off, this tolerance in space and time allows cinema and television to be economically possible. (Gregory 2004: 118)

As we shall see, both flicker fusion and phi movement become pertinent when considering Breer's unique use of cinematic motion. While he never altered the cinematic apparatus so as to expose the process of flicker fusion, he visibly and self-consciously used the frame rate of 24fps as a given structure within which to explore creative options – one may speculate whether he might have fluctuated the shutter speed as an extension of his aesthetic if he had the means to do so. He also found ways to challenge the illusion of phi motion, which will also be considered.

Thorough illustration is particularly valuable when discussing the work of Robert Breer. A string of consecutive frames from a Breer film elucidates the method by which he creates his effects, because an individual frame carries a small but vital unit of what is needed to create the overall experience. While perceptual ambiguity (balancing on the thresholds between stasis and motion, depth and flatness) serves as an expressive cornerstone of his films, the individual frame possesses a simple clarity when viewed on a page. Played in succession, however, a new ambiguity arises. Robert Breer commented: 'I think even in painting the clue to what I do has something to do with ambiguity and controlling ambiguity and making it dramatic . . . to get ambiguity as an expressive feature of the thing' (Breer, quoted in Cote 1962: 17). The various techniques that Breer developed to challenge the perception of cinematic motion will be schematized.

Flicker

The first technique to be considered that Breer utilized when exploring the camera-eye dialectic is the flicker effect. He is not the only artist to employ this technique, but he is closely associated with it. While the flickers of Peter Kubelka, Tony Conrad and Paul Sharits feel 'structural, turbulent, [and] sometimes violent' (Burford 1999: 100), Breer's flickers feel jovial, like flipping through a deck of cards. Discussing part of the rationale behind the flicker effect in his film, Peter Kubelka said the following:

> Cinema is not movement. This is the first thing . . . Cinema is a projection of stills – which means images which do not move – in a very quick rhythm. And you can give the illusion of movement, of course, but this is a very special case, and the film was originally invented for this special case . . . Where is, then, the articulation of cinema? Eisenstein, for example, said it's the collision of two shots. But it's very strange that nobody has ever said it's not between shots but between frames. It's between frames where cinema speaks. And then, when you have a roll of very weak collisions between frames – this is what I would call a shot, when one frame is very similar to the next frame. (Kubelka, quoted in Sitney 2002: 296)

Kubelka's distinction between weak and strong collisions is a pertinent one for the purposes of this discussion – a weak collision facilitates phi motion, while a strong collision does not. One reason Breer provides strong collisions, then, was for the purpose of revealing the artifices of cinema instead of concealing them. Drawing an analogy between the filmmaker and magician, he once suggested that 'The hat should be transparent and show the rabbit.' (Breer 1973a: 70). Exploring the dialectic of eye and camera by demonstrating how ordinary vision and cinematic vision are different, Breer chose to dispel the impression that we are looking at consistent objects in motion when viewing cinema. If each visual collision is sufficiently strong, the viewer will register each of the twenty-four frames per second, rather than relaxing the eye onto seemingly consistent objects through phi motion. His first film to exploit this technique was the ten second loop *Image by Images 1* (1954), which was composed entirely of dissociated shots lasting a single frame. This was followed by *Recreation* (1957), which also contained frames sufficiently different that they would be experienced as a string of strong collisions, rather than a smooth passage of time with consistent objects in motion (Figure 4.13).

While the use of single-frame sequences had been used previously (in Man Ray's *Retour á la Raison* (1923) and Fernand Léger's *Ballet Mécanique* (1924) for instance), Sitney accredits Breer as the pioneer of the 'flicker film' and discusses the implications of this style:

> conventionally, only tiny variations in the shape and position of images are permitted by animators to give the illusion of a continuous naturalistic motion. Breer's invention was to abolish all of the slight variations and to project a continuously repeating strip of film in which each frame was essentially independent of the others. Thus any sense of continuous movement would have to be replaced by a more

Fig 4.13

Fig. 4.14

Fig. 4.15

Figures 4.13–4.15.   Strong collisions in *Recreation* (1957; 4.13), *Rubber Cement* (1976; 4.14) and *What Goes Up* (2003; 4.15). Screen captures by the author.

general notion of rapid change, an affirmation of the static in the centre of the greatest speed that cinema affords. (Sitney 2002: 273)

Once visually accustomed to the visual speed of the flicker effect, the viewer may notice more details as the mind quickens and visually attends to the screen in an alert state. Viewers pay attention to minute scales of time (24th of a second) when encountering a flicker film – scales of time we do not typically pay attention to outside aesthetic contexts. Here, the mechanical apparatus of cinema is exposed in the flicker film. Wees comments:

> What projectors are designed to hide, the flicker effect restores to visibility. It prevents the smooth fusion of frames normally perceived during film projection. Through this rupture in the normal perception of the cinematic image, one can catch a glimpse of the discontinuous and mechanical processes that underlie the seemingly continuous and natural flow of images on the screen. (Wees 1992: 151–52)

Breer used this technique throughout his career. In *Eyewash* (1959) live-action frames collide, and in *Rubber Cement* (1976), sketched abstractions combine to produce a flicker effect (Figure 4.14). In *What Goes Up* (2003) Breer uses family photos of his daughter and grandson playing in a park in rapid succession to create a flicker sequence (Figure 4.15)

Fusion Flicker

The second technique that offers an unconventional perceptual experience resembles the flicker effect, but will be termed the 'fusion flicker'. Like the conventional flicker, each frame is radically different to the preceding one, creating a series of strong collisions. The difference is that in the fusion flicker, two or more frames rapidly alternate back and forth, visually fusing with one another. In both, the viewer pays attention to minute scales of time, but the effect is different.

There are two ways in which the fusion flicker is manifest. In the first, solid colours rapidly alternate, '[blending] together in the viewer's eye' to create 'a uniquely cinematic color fabric' (Mendelson 1981: 23). While the frames appear separate and distinct when observed as freeze-frames, they take on 'a third colour of electric intensity' (ibid.: 4), which exists only in the spectator's visual cortex and not on the screen. Colours become pulsating and ephemeral, assuming a 'shimmering opalescent quality' (ibid.) when experienced in rapid alternation. This occurs in *Eyewash* (Figure 4.16). Seven years later in 66, a bulb-shaped portion of the frame shimmers in black and white (Figure 4.17).

Alternation also occurs in Breer's films when two separate objects visually fuse – the same effect created by the thaumatrope, in which two objects visually superimpose by rapidly alternating (e.g. a bird in one image and a cage in another fusing together). Instead of an ordinary superimposition, the two images pulsate

and vibrate together. For instance, in *Rubber Cement*, a woman and a dog visually fuse to create the impression that they are running towards one another (Figure 4.18). Later in the same film, a lone bird fuses with a sketchy seashore, and appears to inhabit the landscape (Figure 4.19).

Some flicker fusions feature more than two alternating sequences. In *Bang!* Breer creates a unique and intricate visual experience in a three-way alternation (Figure 4.20). Using footage originally rotoscoped in *Fuji* (1974), a bespectacled face stares out of a window (A). This is layered on top of a forest (AB). The forest

Fig. 14.16

Fig. 4.17

Fig. 4.18

Fig. 4.19

Fig. 4.20

Fig. 4.21

Fig. 4.22

Figures 4.16–4.22. Flicker fusion in *Eyewash* (1959; 4.16), 66 (1966; 4.17), *Rubber Cement* (1976; 4.18–4.19), *Bang!* (1986; 4.20, 4.22) and *Gulls and Buoys* (1972; 4.21). Screen captures by the author.

is then seen on its own (B). Next, we see the face staring out of the window without the forest, but with the colours reversed (–A). Thus the alternation goes: A1, AB1, B1, –A2, AB2, B2, –A3, AB3 . . . The spectator experiences a flashing, shimmering scene in motion in which the background seems partially dislocated from the foreground. In *Gulls and Buoys* (1972), Breer 'segments' a cat into three parts: its front leg, its back leg and its body. Alternating rapidly between the three objects, they fuse to create a flickering, shimmering complete cat in motion (Figure 4.21). A similar segmentation occurs in *Bang!*, where portions of a scene from an American Football game visually fuse to create a complete scene (Figure 4.22).

Again, Breer offers a uniquely cinematic experience of movement, finding an alternative to ordinary phi motion and inviting the viewer to reflect on their own perceptions of cinematic movement.

Fluctuation

Fluctuation (as it will be named here) is a technique where the number of frames per drawing varies. Producing smooth movement in animation requires a small change in position with each frame, although moving objects and characters are often shot 'on twos' – meaning that each drawing is shown for two frames. By commercial standards, twelve drawings per second is the lowest possible number of images per second one can use without being considered objectionably jerky (Williams 2009: 75). For Breer, one drawing may appear for seven frames, the following might appear for three frames, the following for five frames, and so on. In *LMNO* (1978), for instance, we see a tumbling spray can. Instead of seeing a new image every frame in a series of weak collisions, we see incremental stages of the can's movement in an intentionally uneven series of frames. In the consecutive images in Figure 4.23, the first image appears for three frames, the second appears for

Figure 4.23. Incremental, uneven movement in *LMNO* (1978). Screen captures by the author.

seven frames, the third lasts four frames, the fourth lasts two frames and the fifth lasts six frames.

The number of frames with which each image remains onscreen, therefore, fluctuates. Exploring the domain between motion and still pictures, Breer possessed 'a heightened awareness of the operation of the single frame as the locus of the tension between the static and the moving', according to Sitney (2002: 272). This technique offers viewers occasion to consider how cinema plays upon their perceptual capacities in order to create the impression of motion. In a Breer film, movement is staggered momentarily to show the viewer how the impression of motion is created, before resuming back to ordinary phi motion. Sitney referred to his work as 'the fusion of stills into flowing motion and then back again' (ibid.: 276).

Lois Mendelson suggests that Breer's 'creative limitation' is the 'relentless temporal flow' of film – continual movement is his constraint. She compares Breer with the painter Paul Klee, who wanted to imbue static imagery with the feeling of motion, while Breer conversely wanted to allow spectators to experience each cinematic frame as a static picture in and of itself as well as part of a sequence:

> the attempt to define the limits or thresholds of their respective media and to push beyond them as a strategy for expanding their aesthetic options led both Klee and Breer to incorporate ambiguity as a concrete feature of their work. (Mendelson 1981: 31)

Again, Breer explores the dialectic of eye and camera by demonstrating how phi motion may be pulled back to the threshold of perceptibility by providing what appears to be a series of still images transforming into motion and back. Our visual facilities are again engaged in a way that they are not in the natural world.

Phi Disruption

In addition to flicker, flicker fusion and fluctuation, Breer offered a unique perceptual experience by creating a uniquely cinematic distortion of phi motion with a technique that will be called phi disruption. This technique sits at the threshold between phi motion and the flicker effect with a series of pictures in which objects might undergo strong collisions in colour, but weak collisions in shape. Phi motion is neither conventionally exploited to achieve an impression of smooth motion, nor is it discarded through strong collisions. Instead, it is 'disrupted'. For example, in 69 (1968), a square moves downwards in a series of weak collisions, prompting the perception of phi motion (Figure 4.24). However, the colour of the square and the background changes with every frame. Thus, we are presented with a perceptual ambiguity: the squares in the frame formally undergo a series of weak collisions, telling us that we are looking at a consistent object, while the use of colour creates a flicker effect with strong collisions. This occurs

Fig. 4.24

Fig. 4.25

Fig. 4.26

Fig. 4.27
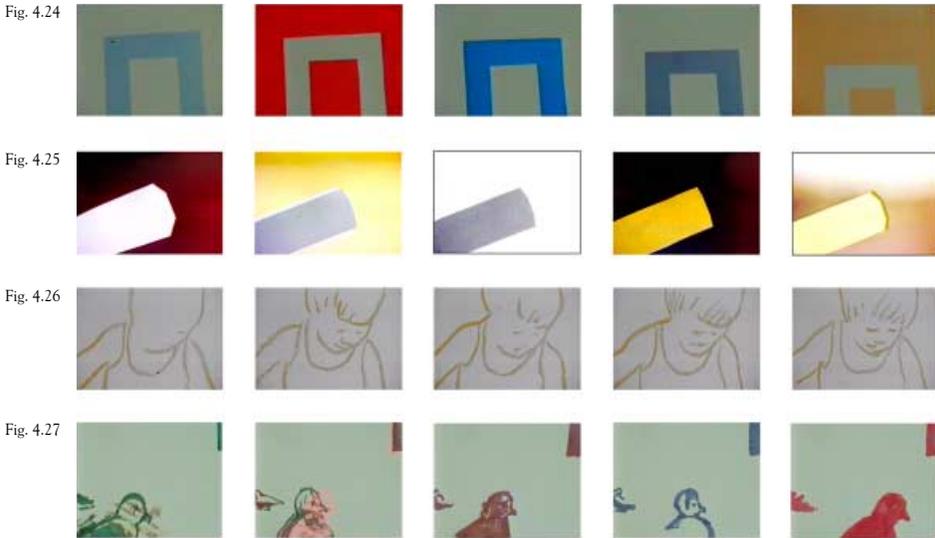
Figures 4.24–4.27. Instances of phi disruption: 69 (1968 4.24–4.25), *Gulls and Buoys* (1972; 4.26) and *Swiss Army Knife with Rats and Pigeons* (1980; 4.27). Screen captures by the author.

again in the same film with a rotating cylinder. The colour of the object and the background alters with each picture (Figure 4.25).

Phi disruption does not only occur with inconsistent colours, however. It is also accomplished by straddling a fine line between strong and weak collisions with form. From one image to the next, objects are similar enough in colour to be experienced as consistent, but loose enough in form that our perceptions are called into question. In *Gulls and Buoys,* this effect is rendered with a series of images of a young boy with a series of 'medium strength' collisions in form. He is drawn relatively consistently, but just outside the 'comfort zone' with a series of loose sketches (Figure 4.26).

Phi disruption, then, can occur through an object's form, and also through its colour. A collision may be relatively strong in relation to one property, but weak in relation to the other. On other occasions, both properties may cause phi disruption. *Swiss Army Knife with Rats and Pigeons,* for example, features a loosely sketched pigeon that walks across the screen (Figure 4.27). In each picture, the pigeon is similar enough to be perceptually bound together as the same bird, but different enough in its colour and form that our perceptions are called into question.

This effect is accomplished with the use of a rotoscope – a tool used for tracing from live-action footage. Patented by Max Fleischer in 1917, the rotoscope was developed with the intention of rendering animated figures with a high degree of realism. It was used in Fleischer's own *Minnie the Moocher* (1932) and later in Disney's *Snow White and the Seven Dwarfs* (1937) for this effect. Breer uses the ro-

toscope differently – instead of tracing the live-action footage with clear, smooth lines, he applies loose sketch work instead. As such, each frame is discernible due to the strength of collisions. Our visual perceptions are pulled in two directions at once: naturalistic motion is emulated, yet the collisions, as in the case of the loosely sketched boy in *Gulls and Buoys*, are just about strong enough that the frame rate visually registers – like a hint of naturalistic perception in an artificial, explicitly constructed environment. Initially developed by animators to hide their technique, the rotoscope becomes a tool for the reverse effect under Breer's hand. Fred Camper comments:

> the drawing and movement offers enough to suggest actual scenes and everyday movements, but is rough enough . . . to also reveal the nature of the medium. Thus our natural tendency to want to see realistic movements is constantly being argued with, as we are returned to film rhythms with our desire to 'soar' into some other world taken apart. (Camper 1997)

Again, Breer examines his own perceptual facilities, and in exploring the camera/eye dialectic, he reveals the way in which our propensity to perceive consistent objects can be stretched and stressed by creating visual arrays that are uniquely cinematic in their perceptual ambiguity.

Radical Phi Disruption

In addition to phi disruption, Breer sometimes makes notably bold alterations to the form of objects in adjacent pictures. In *Gulls and Buoys*, he rotoscopes a sequence in which a man rides a bike towards the camera. Instead of drawing a consistent head to match the body, he draws a series of comical faces, which change with every image – a relatively consistent body with an inconsistent, flickering series of heads. Again, perceptions are explicitly disrupted in a way we do not experience in naturalistic contexts (Figure 4.28). In *Swiss Army Knife with Rats and Pigeons* (Figure 4.29), we see a pigeon take flight. In each part of its movement, the pigeon is drawn in a different style with a variety of inks, paints and brushworks. *T.Z.* (1979) (Figure 4.30) features a series of bodies, which roughly occupy the centre of the frame. They appear to be separate figures, but are loosely bound together as a single object despite their radical differences, due to the fact that they appear onscreen for such a short period of time. The visual system never commits wholly to the idea that it is looking at a single figure, or at a series of separate figures in rapid succession.

In some instances, the object might be replaced for a single frame by another object with a comparable shape. In *LMNO*, a fish is drawn in a variety of styles and is momentarily replaced by a leaf (Figure 4.31). In *Swiss Army Knife with Rats and Pigeons*, the dominant compositional lines in two pictures of a rat are juxta-

Fig. 4.28

Fig. 4.29

Fig. 4.30

Fig. 4.31

Fig. 4.32

Figures 4.28–4.32. Phi disruption via alterations in form in *Gulls and Buoys* (1972; 4.28), *Swiss Army Knife with Rats and Pigeons* (1980; 4.29, 4.32), *T.Z.* (1979; 4.30) and *LMNO* (1978; 4.31). Screen captures by the author.

posed with comparable drawing utensils – the rat's pointed triangular face in one, and its semi-circular body in the other (Figure 4.32).

Motion Summary

Amidst the flickers, flicker fusions, fluctuations, phi disruptions and radical phi disruptions, Breer includes pockets of traditional live-action movement as a part of his expressive arsenal. Ordinary phi motion looks peculiar in Breer's films, since it is always encountered within the context of his other unique applications of cinematic movement. It appears sporadically throughout his career – in *Eye-wash,* an infant child turns his head, *T.Z.* features a misframed live-action shot of a patio and *What Goes Up* features a leaf falling on a photograph of a forest in ordinary motion.

The seemingly 'normal' movement of phi motion is defamiliarized in Breer's films, but also experienced anew by being reframed within the context of alter-native approaches to cinematic motion. At the core of this discussion of move-

ment, the suggestion has been made that Breer may be understood as a central example of an avant-garde filmmaker-as-practical-psychologist, who explored the camera-eye dialectic, distinguishing between ordinary vision and cinematic vision, and employing the process of revealing that distinction as a creative force. In doing so, through introspection, he touches on themes that have been the subject of study by perceptual psychologists, gives his audience occasion to reflect on their own perceptual facilities, and expansively provides his spectators with visual experiences that compel them to attend to their senses in ways that they do not have the opportunity to when engaging with the natural environment, or other films.

In addition, a series of creative techniques that Breer developed across his career has been schematized. In doing so, the general notion of 'rapidness' or 'flickering' may be replaced with a more nuanced set of expressive techniques. With a clearer sense of Breer's artillery of creative methods, his films may be attended to with greater sensitivity.

Now that cinematic motion has been explored in detail, the next part of this chapter will consider how Breer explored perceptual thresholds between flatness and depth within the dialectic of eye and camera.

Depth

Stan Brakhage and Robert Breer were contemporaries, and both constitute archetypal examples of avant-garde filmmakers who drew creative inspiration from visual perception. Both were also interested in the use and subversion of visual depth in cinema. Brakhage was far more vocal about his rationale behind collapsing the illusion of depth in order to engage the cinematic screen with an 'untutored eye', and resisting the inherent nature of the cinematic lens, which had been '[ground] to achieve 19th-century western compositional perspective' (Brakhage 2001c: 15). While Breer spoke less about the rationale behind his creative goals, this analysis will demonstrate that he was inspired to creatively pull and stretch between impressions of depth and flatness – much in the same way that he would shift between impressions of stasis and motion. While Brakhage flattened the screen by 'wrecking' focal attention, spitting on the lens, painting on the celluloid and applying other methods, Breer developed a different array of techniques to challenge our perception of depth, which will be explored in detail.

The self-reflexive acknowledgement of the tension between the flatness of the cinematic screen and inferred depth is not exclusive to Robert Breer. Emile Cohl's landmark *Fantasmagorie* (1908) features the artist's own hands assembling the animated characters, creating a 'material layer' on top of any inferred depth from the original picture (Figure 4.33). In some of Breer's films, we see his hands over the images, creating a second 'photographic' layer of inferred depth, while

Figures 4.33–4.38. Explorations of the tension between flatness and depth in *Fantasmagorie* (1908; 4.33), *Recreation* (1956; 4.34), *Time Flies* (1997; 4.35), *What Goes Up* (2003; 4.36), *LMNO* (1978; 4.37) and *Swiss Army Knife with Rats and Pigeons* (1980; 4.38). Screen captures by the author.

simultaneously flattening the original layer. These include *Recreation* (Figure 4.34), *Time Flies* (Figure 4.35) and *What Goes Up* (Figure 4.36).

Breer never took the illusion of depth on the cinematic screen for granted. He originally treated the cinematic screen as a flat canvas, just as he did the painter's canvas. Early work such as *Form Phases IV* (1954) followed the modernist tradition of acknowledging the flatness of the screen. In later work, Breer began to create illusions of depth, only to undermine them, or play perceptual games with his audience. *LMNO* features a rotating hammer, which initially appears to be three dimensional when seen in profile. As it rotates towards the screen, viewers discover that the handle is flat while the hammerhead is not (Figure 4.37). Breer invites his viewers to be conscious of illusions of depth on the cinematic screen.

In *Swiss Army Knife with Rats and Pigeons*, a second plane of depth is created when a picture of a monk lifts up from its canvas, creating a 'material layer' – perhaps an ironic comment on the idea of religious transcendence. The monk then turns around. Like the hammer, instead of giving the monk three dimensions, Breer makes him flat as he rotates, which could be interpreted as a reference to the flatness of Byzantine art (Figure 4.38). Sitney comments that Breer 'systematically alternates abstract, linear forms which affirm the flatness of the screen upon which they are projected with forms creating three-dimensional illusions and a sense of extreme depth in the screen' (Sitney 2002: 8).

Rules of Perspective

Like his work on motion, Breer takes a fundamental perceptual facility that is exploited by cinema and draws our attention to its illusory power. Identifying

objects in a three-dimensional space is a core facility developed in the visual cortex, and it is as useful to us today as it was during the long period of our evolutionary development. As Joseph Anderson comments, 'we only have to cross a busy street to realize that our lives literally depend on our capacity to locate objects accurately in space' (Anderson 1996: 65). We are good at depth perception because our ancestors lived and died on the basis of their ability to know what occupied the space around them.

Any time one experiences visual depth, however, it is reconstructed. The brain uses a variety of cues to extract three-dimensional information from two-dimensional impressions. David Hubel and Margaret Livingstone explain:

> As we look around, most of us think we 'see' a three-dimensional world. Yet since each retina is a flat sheet of neural tissue, all the brain could possibly acquire through the eyes are two flat images (one from each eye). The brain must somehow interpret these two flat images as three-dimensional space. (Hubel and Livingstone 2008: 100)

We do not always construct depth from a visual stimulus, however; we only do so when the visual information we are presented with conforms to the appropriate rules. Of Figures 4.39, 4.40 and 4.41, we more easily discern depth in the 'Necker' cube (Figure 4.39), and not so readily with the Kopfermann cubes (Figures 4.40 and 4.41). Even though all three objects depict a plausible impression of a cube from various angles, only the Necker cube does so according to the appropriate 'rules' (Hoffman 2000: 23–24). We do not perceive depth at any given opportunity, and since the Kopfermann cubes can be perceived as flat, symmetrical objects, the visual system more easily interprets them as such. Of course, the Necker cube can be experienced as flat, and the Kopfermann cubes may be experienced as three-dimensional, but with more of a specialized effort.

In an attempt to identify and emulate the rules that the visual system operates by in order to experience the world in three dimensions, Italian Renaissance artists developed the rules of perspective, which offered a means of representing
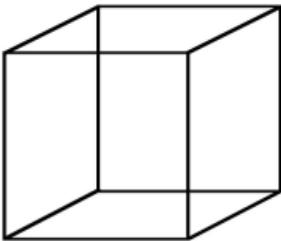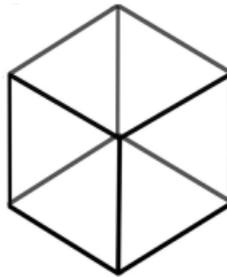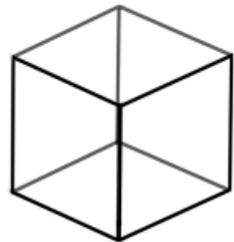

Fig. 4.39   Fig. 4.40   Fig. 4.41

Figures 4.39–4.41. Depth can be perceived more readily in the Necker cube (4.39) than in the two Kopfermann cubes (4.40 and 4.41). Drawn by Kirsty Garland.

the three-dimensionality of the real world through the two-dimensionality of a painting. With the rules of perspective, the artist attempts to represent the shapes, colours and shading of the real world as if it were seen through glass. The film camera, like the photographic camera, embodies the principles for generating images according to the rules of perspective. However, controversy has ensued as to whether these rules, employed initially in drawing and painting and later in photography and motion pictures, are a natural function of the eye or a distorting cultural convention.

William Wees, echoing Jean-Louis Baudry (1975) and Stan Brakhage (2001b [1963]), argues that pictorial perspective is 'a rather unscientific mixture of theory, experiment, and artistic convention' (Wees 1992 37), and that the camera is a machine tailored to satisfy socially determined expectations about what an image of the world should look like. These are expectations that rest on assumptions about image-making and visual perception that date back to Italian Renaissance painting – predating the invention of cinema by several centuries. The Renaissance theory of perspective '[encourages] an implicit equation between seeing and picture making based on the presumption that vision operates according to the same rules that artists follow in producing pictorial perspective' (Wees 1992: 42). Others disagree with this position, and argue that perspectival painting and photographic imagery are not cultural distortions, but rather they capture a basic truth about visual experience. Anderson, for example, suggests that 'perspective may not be merely a cultural convention, it may be a built-in feature of the way we see' (Anderson 1996: 72), since the human eye also utilizes the same principles as the rules of perspective. The camera lens does not 'distort', then, according to Anderson. It emulates human vision.

Whether it is to be understood as a cultural convention or a fundamental truth about human vision, exploiting and disrupting the rules of perspective became a fertile ground for experimentation and expression in Breer's work. One of the freedoms afforded to Breer as an animator is that he was not subjected to 'the perspectival biases of the lens' (Wees 1992: 54) in the same way that live-action filmmakers were; therefore, he could exploit and discard them as he saw fit.

Depth Cues

In order to perceive three-dimensionality, we depend on depth cues, and these can take two different forms. One depth cue called stereopsis relies on both our eyes working together, and it arises from the fact that our eyes each have a slightly different view of the world. The overlapping fields of vision create a disparity, which helps us perceive our surroundings in three dimensions. Stereopsis also reminds us that cinematic images, like paintings, are flat. Most cues to

depth, however, are 'monocular' and do not rely on both eyes working together. Artists who work with still paintings or photographic images are limited to the use of monocular depth cues, and these might include foreshortening, motion parallax, interposition, relative size, relative height, shadow, texture gradient, aerial perspective and linear perspective.

Before some of Breer's perceptual ambiguities generated by his use of depth cues are explored, the conventional emulation of naturalistic perceptions of depth should be considered. One such depth cue commercial animators apply is shadows – the shape and angle of a shadow will depend on where the source of light is situated. In a place with only one source of light (e.g. outside in the sunlight), all shadows go in the same direction. Objects in Breer's animation are not typically illuminated by an imaginary light source, so they do not normally cast shadows.

Animators, particularly those using CG with a wider colour palette, may also emulate naturalistic perceptions by applying a depth cue called aerial perspective (also known as atmospheric perspective). Here, particles in the atmosphere scatter light, and blue wavelengths of light are most easily scattered. This is why the sky is usually blue in sunlight, although scattering also occurs for other wavelengths of light as well. This has a bearing on our experience of depth. The further away an object is, the more its light will become scattered. As such, the more distant an object is, the more vividly it will be cast in the same colour as the sky. Distant objects also appear less sharp because most of their light particles are being scattered. Breer never exploited this technique in his work, since he did not attempt to re-create natural perceptions. Objects were seldom coloured realistically, and using crayons, pens, felt tips and other ordinary consumer products, a more limited range of colours was applied instead of a wide array of hues.

For Breer, animation was not a medium to be modelled on live-action movies; it possessed an expressive vocabulary of its own. As such, conventional depth cues were not exploited. In the following section, the way in which Breer extended his exploration of the camera-eye dialectic (exposing the difference between ordinary and cinematic vision) by providing a series of perceptual ambiguities with the use and subversion of depth cues will be considered. Like the previous section on motion, each depth cue will be explored in a series of subsections.

Relative Height

One of the ways in which Breer generates perceptual ambiguities is with the use of relative height as a depth cue. In western perspectival painting, the horizon line is usually somewhere in the middle of the image. As such, the most distant part of the sky and the ground are in the middle of the image, where the sky and the land or water meet. In turn, the nearest part of the ground is at the bottom

of the frame, and the nearest part of the sky is at the top. In Breer's films, spatial relations are less clearly defined, and there is seldom a coherent 'landscape', or a horizon line, which creates the impression of a receding space. Occasionally, landscapes with horizon lines do appear, briefly creating spatial depth before disappearing again. In *Rubber Cement* (Figure 4.42), the viewer moves laterally along a beach. *LMNO* (Figure 4.43) features a boat floating along a river, in a loose approximation of naturalistic colours. A sunset over the ocean features in *ATOZ* (2000) (Figure 4.44).

Creating a visual ambiguity in *Time Flies* (1997), an abstract line and circle shrink, momentarily taking on the appearance of the sun and a horizon line. For that brief period, the frame appears to spatially recede into the distance. Then, the horizon line continues to shrink, undermining the momentary illusion of depth (Figure 4.45).
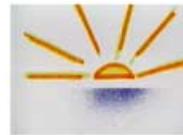

Fig. 4.42   Fig. 4.43   Fig. 4.44

Fig. 4.45

Figures 4.42–4.45. Perspective is fleetingly discernible in the Breer films *Rubber Cement* (1976; 4.42), *LMNO* (1978; 4.43), *ATOZ* (2000; 4.44) and *Time Flies* (1997; 4.45). Screen captures by the author.

As is the case with most depth cues discussed, the ambiguity in depth perception lies not in the individual frame, but in the passage from one image to the next. This often runs alongside the interplay between stasis and motion.

Relative Size

According to the relative size depth cue, the more distant an object is, the smaller it appears to be on your retina. With a mechanism known as 'size constancy', the visual system does not perceive far-flung objects as 'small' because it recognizes that the retinal impression of an object shrinks the further away it is. We recognize, then, that a distant car is not a toy, but rather it is a normal-sized car that is far away.

Since Breer does not typically orientate his objects in a coherent space or with a clear horizon line, it is sometimes unclear as to whether objects are big or close, or whether they are small or distant. In *ATOZ*, an acorn shrinks in size, but we
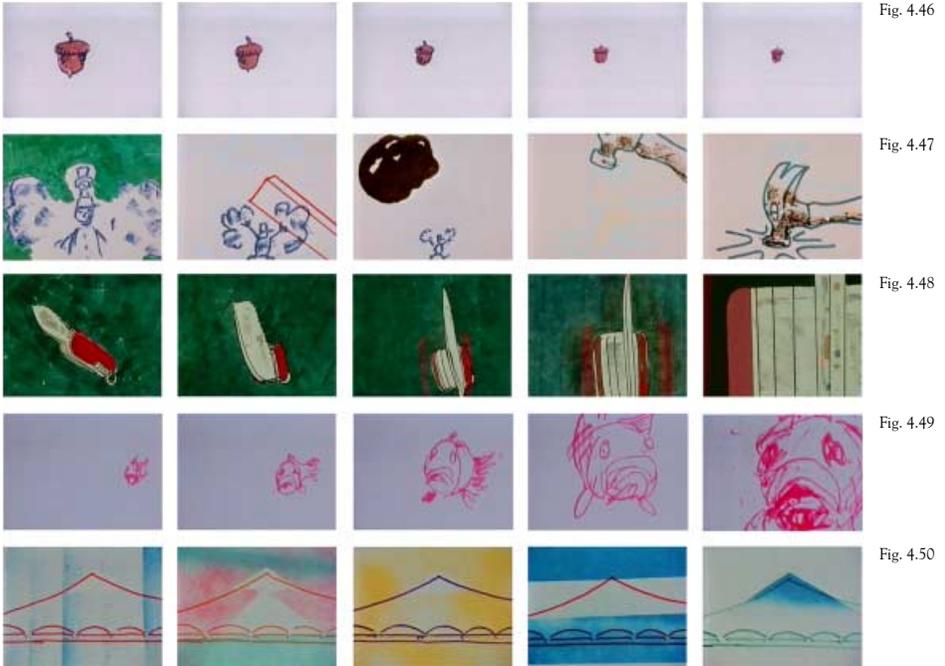
Figures 4.46–4.50. Ambiguities in relative size and motion parallax: *ATOZ* (2000; 4.46), *LMNO* (1978; 4.47), *Swiss Army Knife with Rats and Pigeons* (1980; 4.48), *Bang!* (1986; 4.49) and *Fuji* (1974; 4.50). Screen captures by the author.

cannot discern whether it is disappearing into a horizon (or 'falling'), or whether it is shrinking into nothingness (Figure 4.46).

Sandy Moore comments that there is a 'miasmic' deep space in *LMNO*, 'where things continually deport for, or arrive from a vague distant horizon' (Moore 1980: 8). In *LMNO*, a man either shrinks, or he falls into an undisclosed horizon and is flattened with a hammer (Figure 4.47). What does he fall into? Is it a giant hammer or a miniature man? Is the man in the background and the hammer in the foreground? We are presented with another perceptual ambiguity that is never made clear.

In *Swiss Army Knife with Rats and Pigeons*, a knife rotates towards the viewer, and then seemingly 'stabs the spectator in the face' by appearing to move towards the screen (Figure 4.48). On other occasions, objects move through the empty canvas of the frame, but are signalled as 'getting closer' rather than 'getting bigger' by using implied forms of motion. In *Bang!*, a fish swims imposingly close to the viewer through invisible water, approaching from the distant background. Implied motion, then, can be understood as an additional depth cue that is interlinked with relative size (Figure 4.49).

Motion Parallax

Motion parallax is a distinctive depth cue because it only occurs when objects are moving. According to this principle, nearby objects move faster in the visual field than objects in the distance when you are moving through space. In *Fuji*, the impression of visual depth is principally created by the speed at which the objects in the background and foreground move along the frame. In sequence where the point-of-view moves laterally along a fence and Mount Fuji, there is minimal use of the rules of perspective (Figure 4.50). When the sequence is seen in motion however, it becomes apparent that Breer uses motion parallax; the fence in the foreground appears to move at a greater speed than the mountain in the background. This abides by principles of everyday perception. To create this sequence, Breer rotoscoped footage taken from out the window of the Tokaido Express, a 135 mile an hour train during a trip to Japan. He explains, 'What attracted me to the footage was the mountain in the background and the possibility for motion perspective in the foreground. The film plays with deep space and the flat picture plane of the screen' (Breer, quoted in MacDonald 1992: 46).

When the images in the sequence above are seen individually, then, they appear relatively flat. But in this sequence from *Fuji*, the spectator is compelled to perceive depth when the images are experienced in rapid succession through motion parallax. Our perceptual facilities are pulled in two directions at once between flatness and depth – the flatness of the individual frames, and the depth as it is evoked by the motion.

Foreshortening

The final depth cue considered here is called foreshortening. On this occasion, Breer exploits our perceptual abilities in an ordinary way, but its use becomes the focus of aesthetic attention. Foreshortening is a depth cue that can be re-created by closing one eye and using a pen. If you hold the pen at arm's length and point it towards your eye, its projected length is small. As you rotate the tip away, the projected length grows until it is perpendicular to your eye. As you continue to rotate the pen, the projected length shortens again. This demonstrates that any line has its longest projection when it is perpendicular to your line of sight.

Foreshortening serves as one of the principal aesthetic concerns in *69*, where viewers see geometric figures rotate and change in length (Figure 4.51). The rotation is not in the service of a larger narrative, or for the purpose of serving to evoke a coherent surrogate environment in which a story is set. Breer gives his spectators occasion to simply contemplate the impression, created by the process of foreshortening, that an object is rotating towards them and then into the distance.
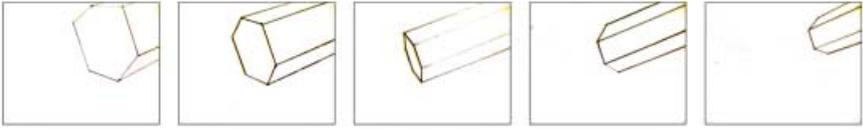
Fig. 4.51

Fig. 4.52

Fig. 4.53

Figures 4.51–4.53. Foreshortening in 69 (1968; 4.51), *Time Flies* (1997; 4.52) and *ATOZ* (2000; 4.53). Screen captures by the author.

This technique is a commonplace discipline for an artist. Since Breer works with the moving image, we pay attention to the transformative process of an object in its various stages of foreshortening. This occurs throughout Breer's oeuvre, such as in *Time Flies* (Figure 4.52), where an isometric, shape-shifting letter 'A' appears to rotate towards the viewer. Likewise in *ATOZ,* a giant 'F' appears to fall in the direction of the viewer (Figure 4.53). In these examples, Breer's use of a depth cue is ordinary, but he gives us occasion to contemplate its effect instead of using it in the service of a larger narrative.

In summary, the ways in which Breer creates perceptual ambiguities for the purpose of aesthetic interest have been considered. Since he does not usually use clear horizon lines, it is sometimes difficult to discern whether objects are large or up-close, or whether they are small or distant. We also considered how motion parallax can create the impression of visual depth, even when images appear to be flat when seen individually. The transformative stages of foreshortening, it has been demonstrated, become an independent object of interest in Breer's films. Other depth cues such as shadows and aerial perspective are never applied. Viewers are called upon to attend to their perceptions in ways they would not in other aesthetic contexts, or outside aesthetic experience.

Illusions of Depth and Motion in *Fuji*

Within the larger scheme of this book, the claim has been advanced that by offering spectators occasion to contemplate their own perceptual facilities, providing perceptual experiences that are unrehearsed in cinema, and drawing creative inspiration by exploring his own visual capacities, Breer can be understood as a

practical psychologist working within the avant-garde. Providing novel perceptual experiences, Breer's films expand our range of possible routes to aesthetic interest by engaging with cinema in an unfamiliar or under-rehearsed way. In advancing these claims, two aspects of visual perception have been considered that Breer explored – motion and depth. In this discussion of motion, names have been coined for a series of techniques that Breer developed: fusion flicker, fluctuation, phi disruption and radical phi disruption. When exploring Breer's unique use of depth cues in order to provide perceptual ambiguities, the focus was on relative height, relative size, motion parallax and foreshortening. With all of these specialist terms in place, a single case study, Breer's *Fuji,* may be considered in light of the aforementioned analysis.

All of Breer's trademark aesthetic concerns that relate to motion and depth appear in *Fuji.* Here, he negotiates the thresholds between representation and abstraction, object consistency and inconsistency, motion and stasis, and a visual space that is both explicitly flat while simultaneously creating the illusion of depth. At one moment the sonic rhythm slows, and then it picks up speed again. Live-action footage operates as material for rotoscoping, and raw material for studies in motion and form. As with his other films, there is a clarity to each individual frame, but ambiguity arises in Breer's use of the passage from one frame to the next, where illusions of depth and motion appear and disappear.

The structure of Breer's *Fuji* bears a closer semblance to that of a musical composition rather than that of a narrative-dramatic film. That is to say that a 'motific' development takes place, using a limited range of short sequences as motifs and finding variations in how each one can be re-created differently through rotoscoping, and how they might be intercut with other visual motifs. James Peterson describes this pattern in the following way:

> A film introduces a concept and subjects it to a series of permutations. For the viewer, comprehending this form is simply a matter of tracking the similarities and differences of the sections of the film. (Peterson 1994: 49)

At the beginning of *Fuji,* viewers are introduced to three visual motifs: a face by the window of the train (Figure 4.54), a man running across the screen (Figure 4.55), and a flicker fusion between alternating cylinders (Figure 4.56). Each sequence is separated by black leader tape. Since there are no immediately obvious causal links between them, the spectator can intuit that these images are being used for their graphic qualities rather than narrative purposes.

After the third motif is introduced and there is a final brief roll of black leader, the same image of the man running across the screen reappears; this time he is rotoscoped. Each picture in the rotoscoped sequence lasts eight frames, breaking visual continuity and the impression of a smooth passage of time (Figure 4.57). The sound of the trundling, continuous rhythm of the train provides sonic con-

Fig. 4.54

Fig. 4.55
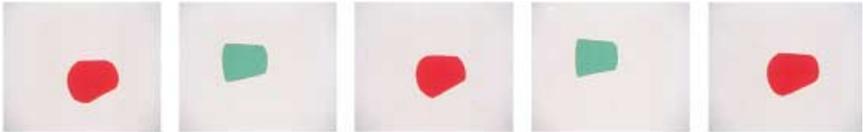
Fig. 4.56

Fig. 4.57

Fig. 4.58

Fig. 4.59
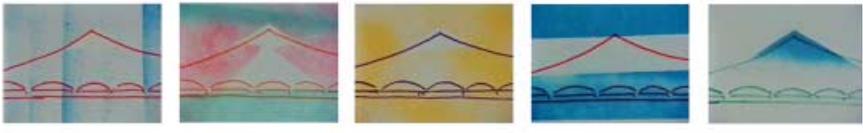
Fig. 4.60

Fig. 4.61

Fig. 4.62

Figures 4.54–4.62. *Fuji* (1974) brings together Breer's characteristic treatments of depth and motion. Screen captures by the author.

tinuity, creating tension between the aural continuity and the visual fluctuation. The first three images in Figure 4.57 visually register as the same man, and the following two are increasingly abstracted. Viewers continue to perceive the final highly abstracted image as a man, even though if seen in isolation it looks more like an abstract shape.

Following this, two new motifs are introduced. This time, viewers are only shown the rotoscoped images and not the original live action source material. Three distant human figures approach, and this alternates with an abstracted impression of a passing tunnel, which (unusually for Breer) casts a shadow (Figure 4.58). Each image lasts for two frames, as they alternate between the visual motifs. In a phi disruption, the approaching human figures are inconsistent in colour, but the forms are consistent enough that viewers may assume them to be the same objects.

A three-way fusion flicker also occurs between the human figures, the tunnel and a train ticket inspector (Figure 4.59). The inspector is subsequently isolated from his surroundings in the second freeze-frame from the right. All of the images, as they continue to alternate, last either two or three frames each.

By fifty-five seconds into the film, viewers have been introduced to most of the motifs and the visual techniques that Breer employs in the eight and a half minute animation: temporal fluctuations, alternations, and variations of the same short sequences through reinterpretation with a rotoscope.

Variations between the existing motifs are intercut until 1:55, when a new motif is introduced – Mt Fuji. In this sequence, the visual collisions between the forms of the mountain and fence are weak (implying consistency), but the colouring is inconsistent (Figure 4.60). Using phi disruption, Breer provides the spectator with a perceptual ambiguity in which two seemingly incompatible perceptions work in tandem. The form of the mountain remains consistent, but the colouring assigns the sequence a visual rhythm comparable to that of a flicker film. Where does the eye and its interpreting mind focus its attentions? On the consistent shape of Mt Fuji, or the inconsistent use of colour and its impact on the frame? Viewers may be more likely to focus their attentions on the consistent aspects of the frame, and defer the inconsistent aspects to the periphery of their attentions. Pulling our perceptions in two directions at once, Breer offers his audience a dual experience in which they register both the consistency of Mt Fuji and also the flickering inconsistencies running through it. It is also here where Breer exploits the use of motion parallax, creating visual depth by making the fence move laterally at a greater speed, while the distant mountain moves more slowly. At the same time, there is no use of shadowing, aerial perspective or occlusion to give the impression that the screen is anything but a flat canvas.

Creating another perceptual ambiguity, birds are introduced into the film at 5:10 and alternate frame by frame with Mt Fuji (Figure 4.61). As a flicker fusion sequence, it is clear by looking at the freeze-frames that they are drawn separately,

but on playback the images alternate so rapidly that they appear superimposed. This might be interpreted as a playful reference to the thaumatrope – commonly, the thaumatrope would feature a bird on one side of the disc, and a cage on the other. When the disc was spun, the bird would appear to be inside the cage.

David Curtis comments on the effect of perceptual ambiguity in his summary of *Fuji*, stating: 'The classic outline of Mount Fuji, filmed by Breer from a train, then rotoscoped, becomes involved in an extended speculation on the boundaries between representation and abstraction. Is it a mountain, or just another of Breer's geometric obsessions?' (Curtis 1983: 19). At 7:10, for example, forms isolate themselves and detach from their original place and move in their own direction. In this instance, the snow cap on Mt Fuji becomes an autonomous triangular shape that moves independently (Figure 4.62).

Breer's film, then, is a rich exercise in the breakdown and re-establishments of visual illusions one can create in animated film. Object consistency is destabilized by fluctuations, phi disruption and visual abstraction. Visual collisions are simultaneously weak and strong, and images experienced during phi disruption and slower fluctuations appear flat, while motion gives them depth.

Conclusion

According to evolutionary accounts, our present visual system had its beginnings millions of years ago when sea creatures developed light-sensitive pits on the surface of their bodies, and began to interact with the world on the basis of the new information that was available to them (Anderson 1996: 26). There is an adaptive advantage to vision, then. Creatures possessing little information about their surroundings are at greater risk of being grazed upon by their predators, while those that can see may take evasive actions, and become predators themselves. Breer, then, stretches this core capacity for the purpose of aesthetic interest, rather than for adaptive or utilitarian purposes. The films that he produced may be characterized as continually playing at the edge of depth illusions and the cinema screen's actual flatness, and between stasis and motion. Still images begin to move, and then become isolated images again. The depth/flatness threshold functions in a similar way – when the illusion of depth is invoked, a two-dimensional shape enters the frame and 'flattens' the screen. Fred Camper suggests that sometimes Breer's films seem almost like toys that never quite succeed, contraptions that never quite 'get going', model planes that crash after only the briefest of flights. But it's never one 'crash': the ecstatic nature of his work is that his films are taking flight and 'crashing' at every instant of their unreeling, and the 'crashes' are experienced as being every bit as pleasurable, just as cinematically rich, as much a part of the films' unity-in-disunity fabrics as the 'flights' (Camper 1997).

The purpose of this chapter, then, was not to propose a revision of our understanding of Robert Breer as an artist who self-reflexively creates and dispels his own cinematic illusions – an understanding set forth by Camper, Sitney and Breer himself. Instead, the goal was to look at this characterization in close detail and see how he creates the effects he evokes by schematizing them. All of this was considered in light of existing research on perception so that his work may be understood in the context of perceptual mechanisms that operate beneath the conscious radar. A 'pro-visual' discourse was employed, discussing visual effects while drawing from research on visual perception, and Wees' discussion of the camera-eye dialectic was extended by considering the ways in which Breer reveals some of the similarities and disparities between cinematic and everyday modes of visual experience.

It was also demonstrated how Breer's films call upon the audience to attend visually to the cinematic screen in an unusual way. Core perceptual capacities such as motion and depth perception are challenged – Breer uses film to challenge these core capacities. An attempt was made to elucidate what occurs onscreen so that the viewer might 'see' more of what they are looking at more clearly.

In closing, other aspects of Breer's aesthetic that may reward further consideration within a cognitive context will be outlined. Breer, characteristically for an artist in the avant-garde, stated that visual expression ought to be allowed free reign, and 'not tied to some organization imposed on it coming from extra-visual areas such as narration' (Breer, quoted in Moore 1980: 11). For him, cinema is fundamentally a visual medium, and a narrative can be detrimental to the visual experience. He commented:

> One thing about narration is its effect on the figure-ground relationship. One common form of narration is to have a surrogate self on the screen that people can identify with. In cartooning it's a cartoon figure. Grotesque as he or she might be, the figure becomes an identity you follow. If that figure is anthropomorphic or animal, it has a face, and that face will dominate, the way an active ingredient in a passive landscape dominates the field. It sets up a constant visual hierarchy that to me is impoverished. I want every square inch of the screen potentially active, alive – the whole damned screen. I don't want any one thing to take over. The problem with narration is that the figures always dominate the ground. (Breer, quoted in MacDonald 1992: 22)

There are other recurring elements to Breer's aesthetic that would reward further consideration. For example, he had an ongoing interest in metamorphosis, and would rapidly intercut between photo realistic imagery and cartoonish pictures (e.g. a real life dog and Felix the Cat in *Rubber Cement*). He also took an interest in sounds and images, and their corresponding words – *Bang!* opens with a banging sound over a black screen, followed by the word 'Bang!' over a silent soundtrack. Also notable about Breer's work is that 'little cadenzas' (Moore 1980:

7) playfully emerge from his abstractions and then disappear again. These are typically macabre and comical. In the climax to *Swiss Army Knife with Rats and Pigeons*, a cartoon rat encounters a rat trap. Before realizing that it is a trap, he reads the word 'rat' and does a celebration dance. He then realizes that he has stepped into a trap and is killed. Parodying Mondrian's transcendental creative aspirations, the rat ascends to heaven via an upwards-moving Mondrian painting (Figure 4.63).

Elena Pinto Simon comments that his work 'abounds in anecdotes and small stories that erupt, dance brilliantly and briefly before our eyes, and disappear only to evolve into another brief narrative passage' (Simon 1979: 185). Breer acknowledges that he includes objects in his films that would belong in a story, but he refrains from providing one. Of *T.Z.*, he comments:

> I thought the material could support a story, I didn't think of a story supporting the material, because that would be against all my principles. Just when you think there is a story building, it gets sabotaged. I acknowledge an expectancy on the part of an audience looking at something . . . they would expect to have . . . a story, it's inevitable if there are figurative elements . . . I'm much more interested in not excusing the non-sequitur. The burden is on the viewer, let them figure it out. (Breer, quoted in Moore 1980: 10)

While fully realized stories are absent from his work, themes still arise in Breer's films. Thematic, 'extra-visual' elements feature without distracting from the visual experience. *T.Z.* is a portrait of his living space near Tappan Zee bridge, in New York's Hudson River valley. Camper interprets *Swiss Army Knife* as 'a metaphorical exploration of the work of an artist, seen as a knife which, through
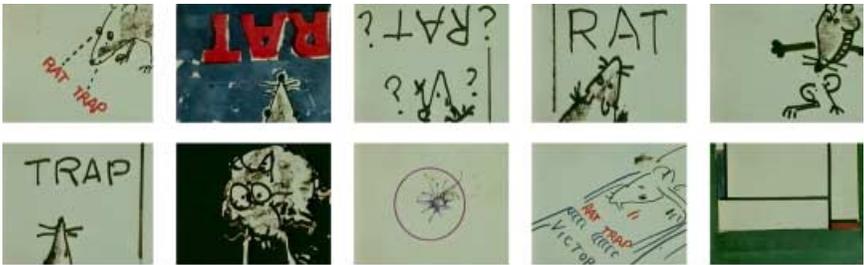
Fig. 4.63

Fig. 4.64

Figures 4.63–4.64.   The interaction of language and image suggest ephemeral meanings in *Swiss Army Knife with Rats and Pigeons* (1980; 4.63) and *What Goes Up* (2003; 4.64). Screen captures by the author.

art, can cut objects into any shape' (Camper 1997). *Bang!* is an evocation of boyhood recalled through flashes of memory – sport, Tarzan, toy aeroplanes, images of World War II and a burgeoning interest in women. *What Goes Up?* can be understood as a 'testament' film, a portrait 'of an artist who, desperately trying to touch the world, realizes he can do so only through his art' (Camper 1997). *What Goes Up?* was made in the 'autumn' of his career, and so autumnal trees feature heavily, including an abstraction of falling leaves. The word 'fall' also becomes a pun, doubling up as a reference to autumn, but also the fall at the end of one's career, and the disastrous fall of a train that 'falls' to the ground (Figure 4.64). An elegiac atmosphere is evoked, then, without compromising the visual dynamism of the film. The final image in *What Goes Up?* is a still photograph of Breer lifting a glass to say goodbye.

Notes

1. Other animators have since been influenced by his style, notably Jeff Scher and Stuart Hilton.
2. As an aside, television (British standard) presents twenty-five images per second, each given twice, to raise the flicker rate to fifty per second.