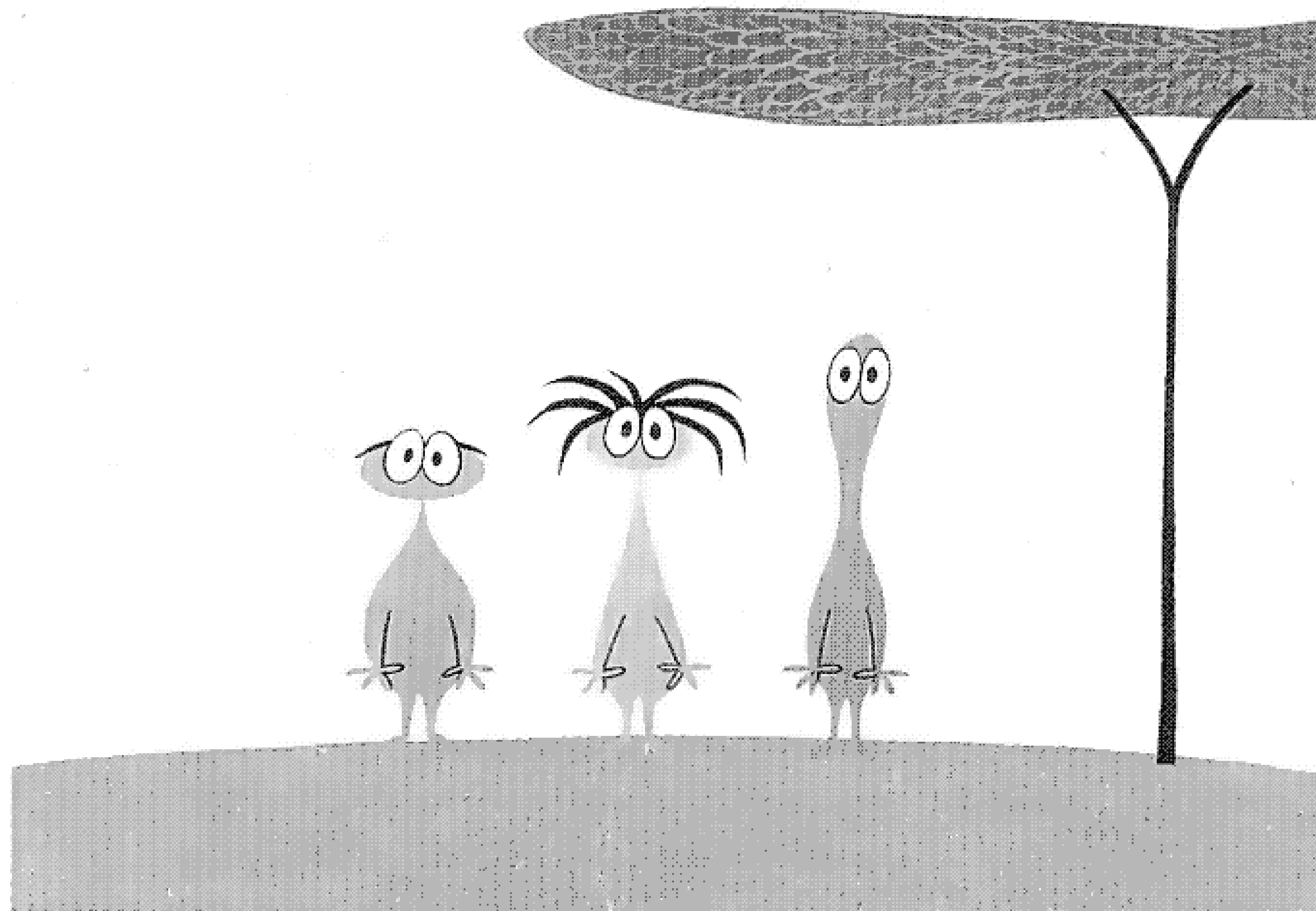
WHY THIS BOOK?

When I was ten years old I bought a paperback book, *How to Make Animated Cartoons*, by Nat Falk, published in 1940. It's now long out of print, but I used it as a handy reference guide for 1940s Hollywood cartoon styles when I designed the characters and directed the animation for *Who Framed Roger Rabbit*.

More importantly for me, however, the book was clear and straightforward; the basic information of how animated films are made registered on my tiny ten-year-old brain and, when I took the medium up seriously at twenty-two, the basic information was still lurking there.

I was living and painting in Spain when the incredible possibilities of what animation could do engulfed my mind. I planned my first film and took the money I had left from portrait painting to London. I starved for a bit, finally found work animating television commercials and managed to self-finance *The Little Island* – a half-hour philosophical argument without words which won several international awards.



The Little Island, 1958

Three years later, when I'd finished the film, the unpleasant realisation slowly crept up on me that I really didn't know very much about animation articulation, that is, how to move the stuff. To train myself I traced off the animation that Ken Harris had done of a witch in a Bugs Bunny cartoon (*Broomstick Bunny* – 1955, directed by Chuck Jones). Doing this only confirmed how little I understood about movement.

While I was making *The Little Island* I had seen a re-release of *Bambi*, but since I'd considered myself a revolutionary in the field of animation, I'd rejected the film as conventional. But when I finished my film, I saw *Bambi* again, and almost crawled out of the theatre on my hands and knees. 'How did they ever *do* that?' I'd learned just enough to realise that I really didn't know anything!

Photo Frank Herrmann

Animation master Ken Harris and wannabe, 1969

So, how and where to get the expert knowledge? I was working in England as an independent and didn't want to go into the Hollywood cartoon mill. I wanted it both ways. I wanted my artistic freedom but I also wanted the knowledge.

Preston Blair's *How to Animate Film Cartoons* **was available, but because I was put off by the squashy-stretchy 1940s cartoon style, it was harder for me to grasp the underlying principles I was after – although it's a solid book and Preston was a very good animator from the Golden Age. It's ironic that forty years later I would become best known for my work on** *Who Framed Roger Rabbit* **– drawing in precisely the same style that had put me off learning from Preston.**

Much later, I was able to work with Ken Harris, the first 'real' master animator I met, and whose witch in *Broomstick Bunny* **I had traced off. It's generally agreed that Ken Harris was** *the* **master animator at Warner Bros. Certainly he was director Chuck Jones's lead man.**

In 1967, I was able to bring Ken to England and my real education in animation articulation and performance started by working with him. I was pushing forty at the time and, with a large successful studio in London, I had been animating for eighteen years, winning over one hundred international awards.

After seven or eight years of working closely with Ken, he said to me, 'Hey Dick, you're starting to draw those things in the right *place.'*

'Yeah, I'm really learning it from you now, aren't I?' I said.

'Yes,' he said thoughtfully, 'you know . . . you could be an *animator*.'

After the initial shock I realised he was right. Ken was the real McCoy whereas I was just doing a lot of fancy drawings in various styles which were functional but didn't have the invisible 'magic' ingredients to make them really live and perform convincingly.

So I redoubled my efforts (mostly in mastering head and hand 'accents') and the next year Ken pronounced, 'OK, you're an animator.'

A couple of years after that, one day he said, 'Hey, Dick, you could be a *good* animator.'

When he was eighty-two, I would go out to Ken's trailer home in Ohai, California and lay out scenes with him that he would later animate. He'd often take a half-hour nap and I'd keep working.

One day he conked out for three hours and by the time he woke up, I had pretty much animated the scene. 'Sorry, Dick,' he said, 'you know . . . I'm just so god-damned *old*.' (long pause) 'Oh . . . I see you've animated the scene . . .'

'Yeah,' I said, 'I didn't know what else to do'.

'Nice drawings . . .' he said, then pointed. 'Hey, that's wrong! You've made a mistake.' And of course he was right.

'Dammit Ken,' I said. 'I've worked with you for thirteen years and I *still* can't get your "thing". I'm afraid it's going to die with you.'

'Ye-e-aaahhhhh . . .' he snickered, then said, 'Well, don't worry, you've your own pretty good thing going.' Then he snickered again.

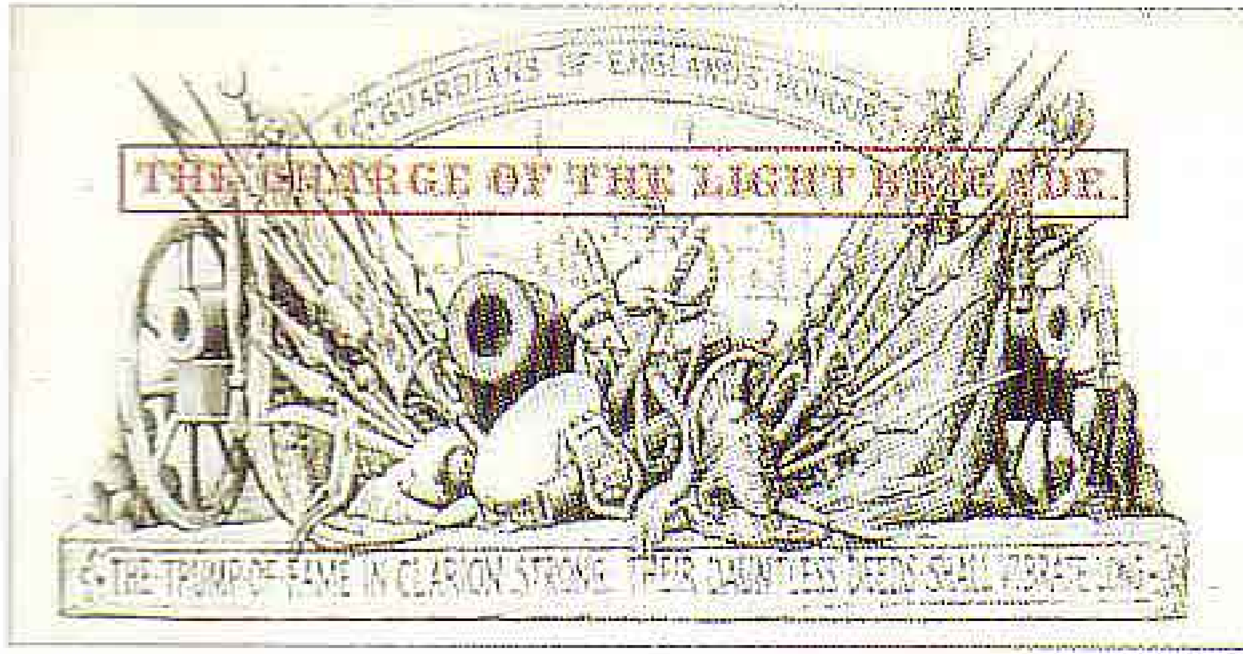
Ken was a very fast worker and I was always squeezing him for more and more footage and getting him to animate even when the taxi was ticking outside waiting for him to catch a plane home to the States.

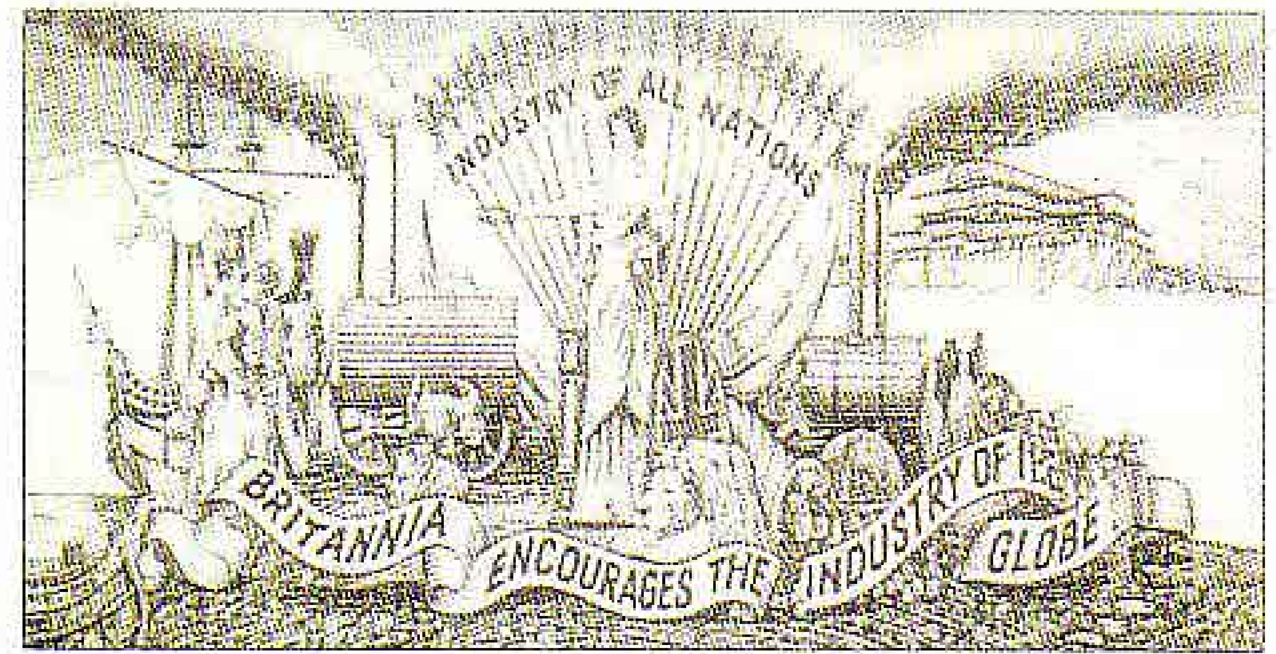
When he died in 1982 at eighty-three, my real regret was that when I was a pallbearer I didn't have the guts to tuck a blackwing pencil into his hand in his open coffin. He would have loved that.

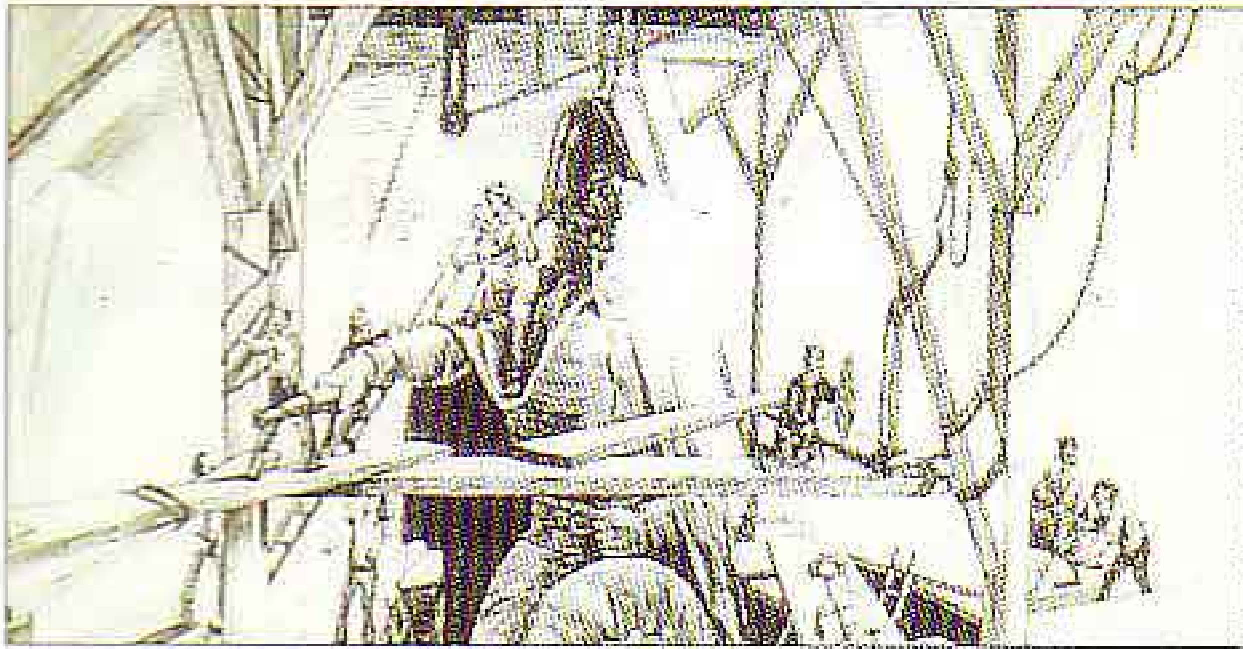
When I first started working with Ken, we had just completed the animation sequences which occur throughout Tony Richardson's epic film *The Charge of the Light Brigade* and I thought I was getting pretty proficient. When Ken saw it in the theatre he said, 'God, Dick, how did you guys ever do all that work?' (pause) "Course it doesn't *move* too good . . .'

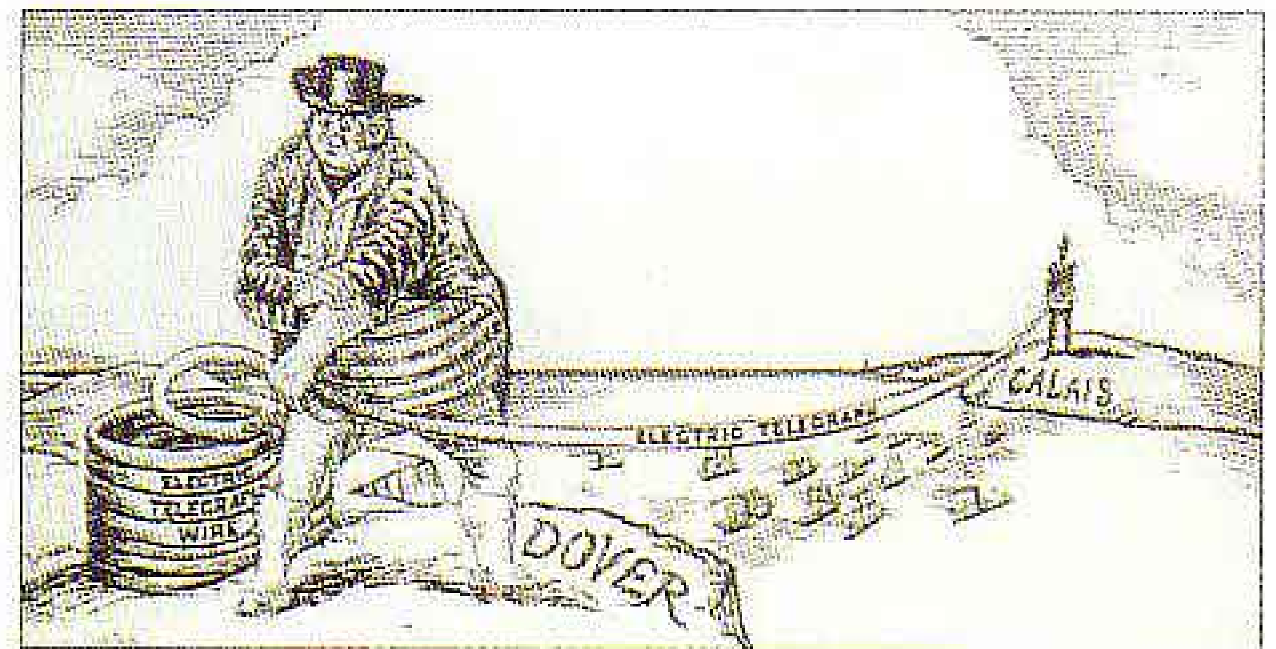
But I'm still not ashamed of our work on that film.

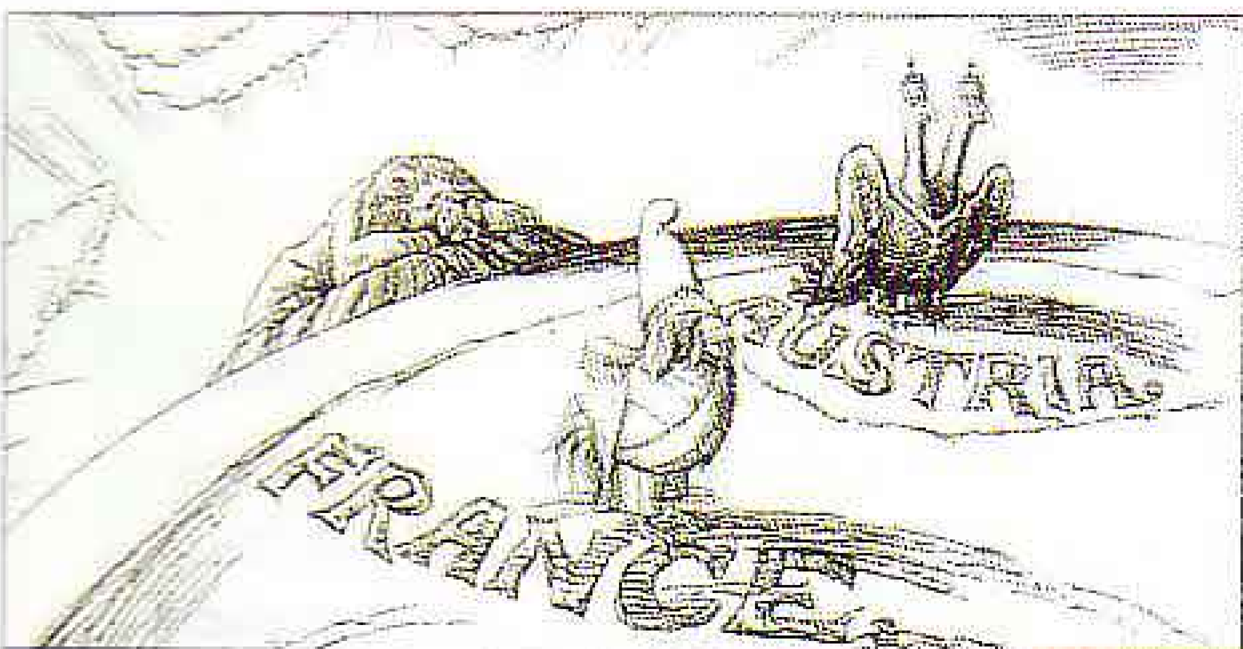
After that we went to see The Beatles' feature cartoon *The Yellow Submarine*. Though I liked the designer Heinz Edelman's styling, the 'start-stop, stop-start' jerky quality of most of the animation meant that after a half hour much of the audience went to the lobby. No matter how stylish or inventive – jerky or bumpy animation seems only to be able to hold the audience for about twenty-five minutes. While *The Yellow Submarine* had an enthusiastic cult following from the advertising agencies and university crowd, the general public avoided the film. It killed the non-Disney feature market for years.

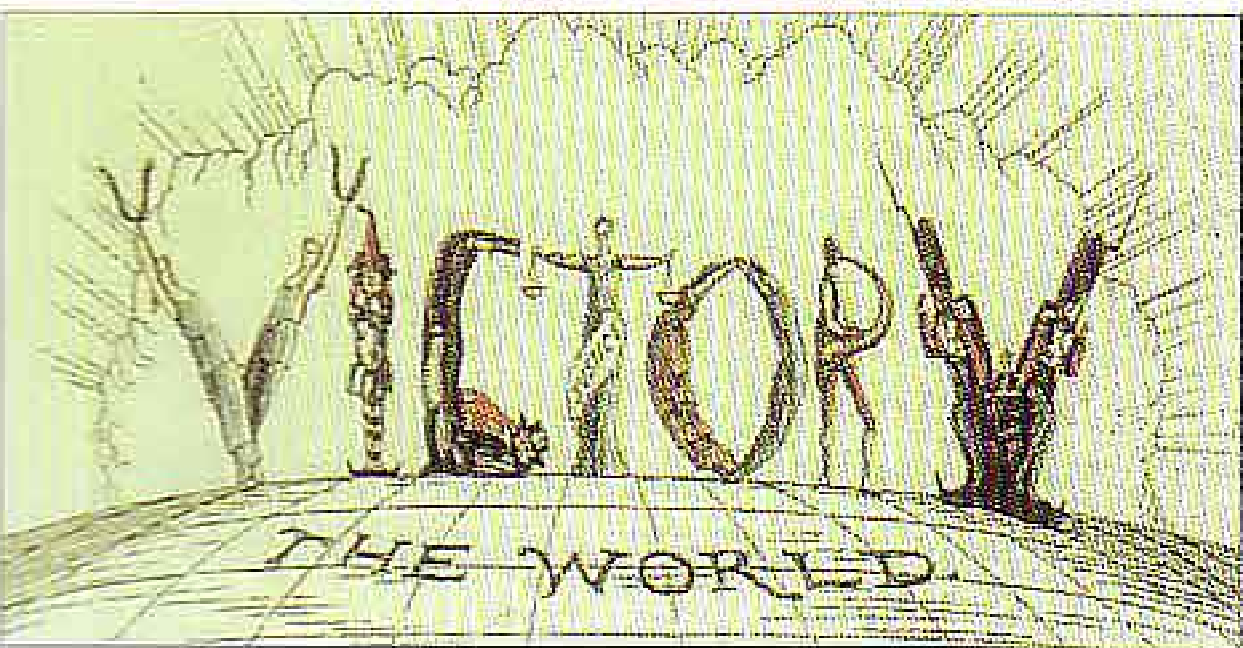


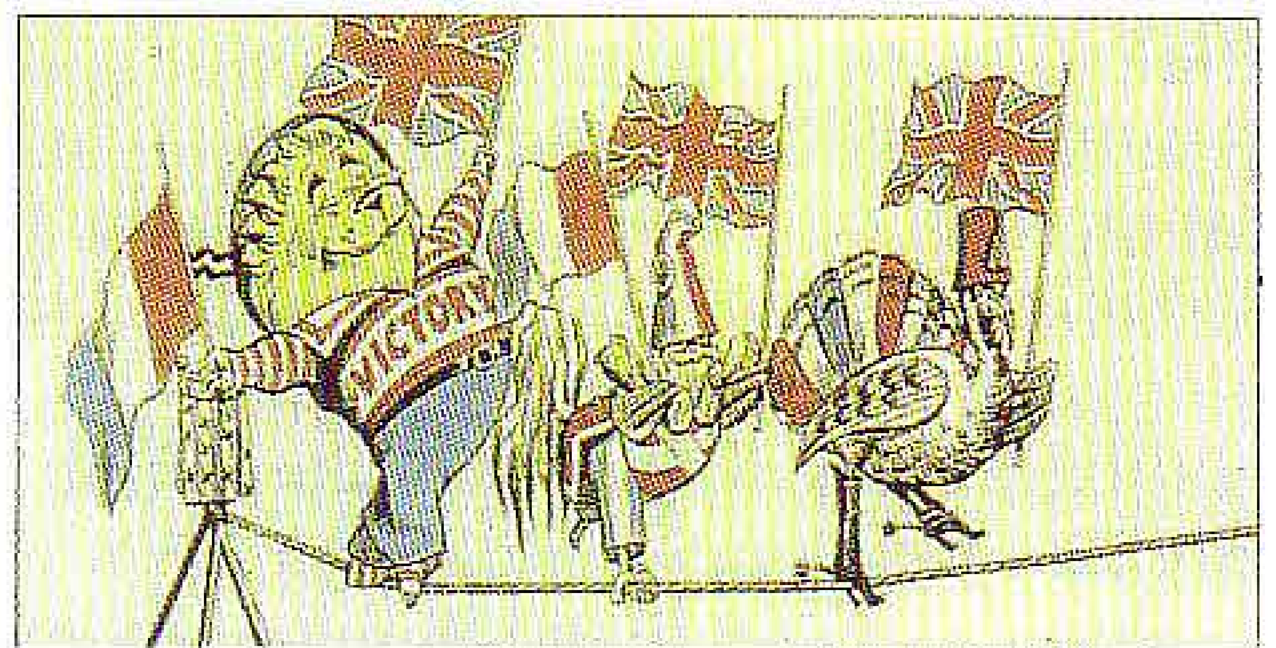


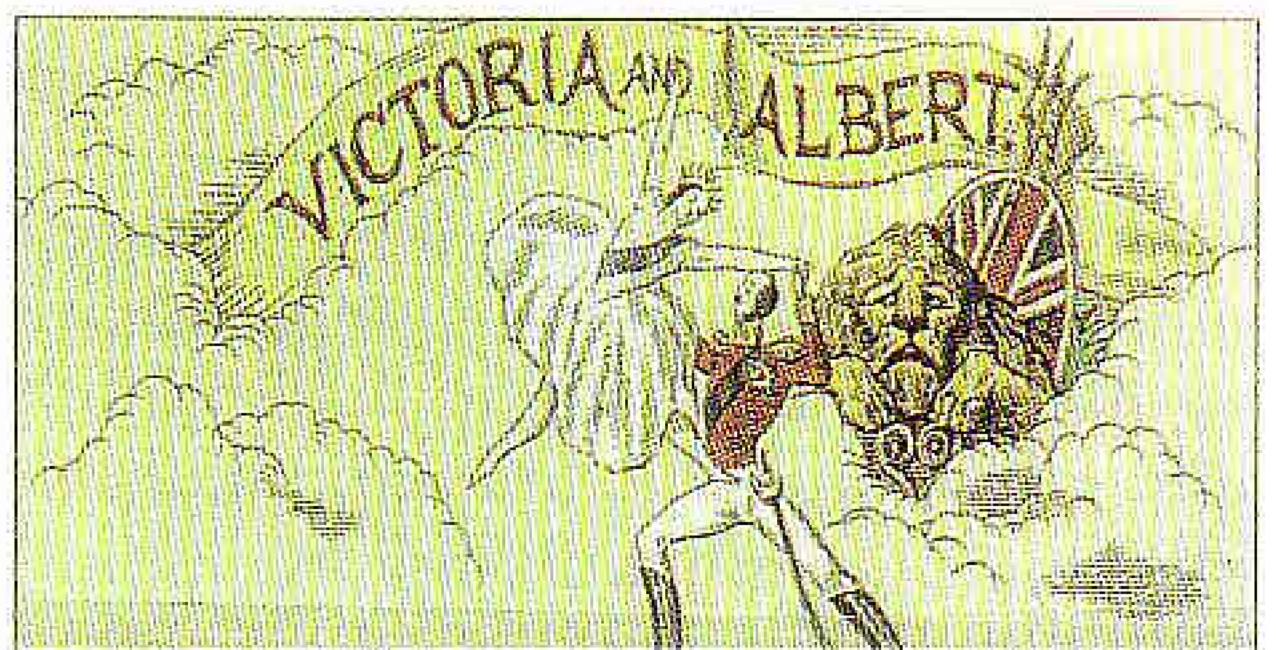












My animated sequences from Tony Richardson's epic film, *The Charge of the Light Brigade*, 1968.

A top United Artists executive who distributed *The Yellow Submarine* told me, 'This is the Beatles at the height of their popularity and *still* people stay away from non-Disney animation.' Film executives at that time always said of animation, 'If it doesn't have the Disney name on it, no one will go see it.' But the real point is, it wasn't just the Disney name – it was the Disney *expertise* that captivated the audience and held them for eighty minutes.

Almost the same week Disney's *The Jungle Book* came out and was an instant hit. I went along to see it reluctantly, thinking (as I still considered myself an innovator) that though there might be something interesting, it was probably predictable stuff.

That's how it started – with standard-issue wolves adopting the 'good housekeeping seal of approval' cutesy baby. I remember the boy Mowgli riding a black panther moving and acting in a clichéd way – until he got off. And suddenly everything changed. The drawing changed. The proportions changed. The actions and acting changed. The panther helped the boy up a tree and everything moved to a superb level of entertainment. The action, the drawing, the performance, even the colours were exquisite. Then the snake appeared and tried to hypnotise the boy and the audience was entranced. I was astonished.

The film continued at this high level, and when the tiger entered weighing eight hundred pounds and was both a tiger *and* the actor who did the voice (George Sanders), I realised I didn't even know *how* it was done – let alone ever be able to do it myself. I went back to my studio in shock and, through the night, I wrote a long fan letter.

In those scenes I thought I had recognised the hand of the great Disney genius Milt Kahl, who Ken Harris had raved about. The first name on the directing animator's credits *was* Milt Kahl, so I assumed the work that stunned me had been Milt's. And it turned out that it was – except for one shot that was by Ollie Johnston. Johnston and Frank Thomas had done lots of other marvellous work in the picture.

So I wrote to Milt saying that I thought *The Jungle Book* was the absolute high point of pure animation performance and that I didn't think it would ever be possible for anyone outside the Disney experience to reach that pinnacle.

It turned out Milt said it was the best letter they ever had – and even better, that he knew my work a bit and wanted to meet me.

Irrepressible ambition made me change my opinion that they *alone* could attain such heights; I figured, I think correctly, that given talent, experience, persistence – plus the knowledge of the experts – why should everything not be possible?

I couldn't stand it any more. I had to know *everything* about the medium and master all aspects of it. Cap in hand, I made yearly visits to Milt and Frank Thomas, Ollie Johnston and Ken Anderson at Disney.

One of the most important things Milt said was: 'Our animation differs from anyone else's because it is believable. Things have weight and the characters have muscles and we're giving the illusion of reality.'

Photo Frank Herrmann

A powerhouse of animation knowledge. From the left – Ken Harris, Grim Natwick and Art Babbitt, with students Richard Purdum and me outside my Soho Square studio in London, 1973.

But how to make it believable? I didn't go there to drink Milt's bathwater or to find out what Frank Thomas had for breakfast. I would fire my carefully prepared list of questions at them and later write down everything they said. These wonderful virtuosos became my friends and were incredibly generous with their help. As Milt said, 'If you ask questions you find out what you want to know. *If* you're lucky enough to ask someone who knows.'

I was also fortunate enough to enlist the marvellous legendary animator Art Babbitt as a collaborator and teacher. Babbitt had developed Goofy and animated the Mushroom Dance in *Fantasia*. He 'dumped his kit' of knowledge by giving several month-long in-house seminars as well as working with me in my London and Hollywood studios for several years.

In 1973, I hired the eighty-three-year-old – but still brilliant – Grim Natwick as a 'live-in' tutor in my London studio. Grim had made his name designing Betty Boop and animating most of Snow White herself in *Snow White and the Seven Dwarfs*. I also worked closely with Emery Hawkins who Ken Harris regarded as the most imaginative animator. Emery was wildly creative and rotated in and out of every studio. I was also able to work for a short time with Abe Levitow, Gerry Chiniquy and Cliff Nordberg. Dick Huemer, one of the first New York pioneer animators, and later a key Disney story director (*Snow White and the Seven Dwarfs*, *Dumbo*, *Fantasia* and all the early Disney features) also gave me a very clear picture of the early days of animation.

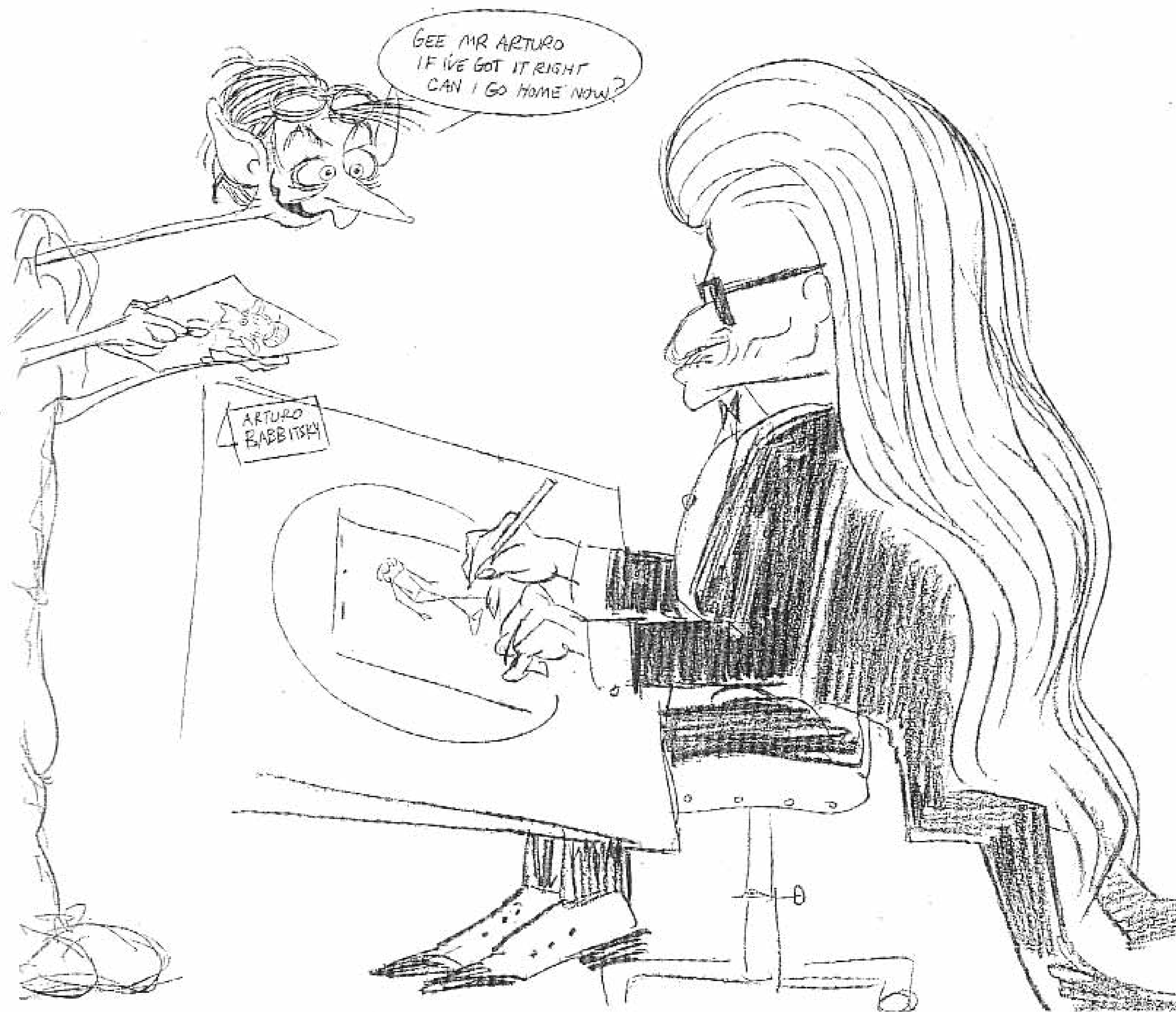
Most of them are gone now but this book is full of their accumulated knowledge and craft.

Used by permission from Disney Enterprises, Inc.

I scribbled this of Milt when he was lecturing us at my studio. Milt is saying, 'Don't listen to Dick, he's too technical.'

Milt was always encouraging me to do my own personal, more unconventional work, which he liked – but I wanted the knowledge first.

Two geniuses at once tutor the author – Frank Thomas standing and Milt Kahl at the desk, early 1970s.



'The Arthurian Legend' was a formidable professor who regarded the professional skills of the animator as being equivalent to those of a concert pianist.

Art in action: his first month long seminar at my London studio was like water in the desert for us.

In the three-day masterclasses I've been giving lately, some experienced professionals initially feel that we're running over material that they're quite familiar with. Then about half way through the seminar things deepen and on the last day it all suddenly knits together. Some even describe it as an epiphany. Well, it sure was for me when I finally 'got it'.

So please read the whole thing.

Animation is just doing a lot of simple things – *one at a time!* A lot of really simple things strung together doing one part at a time in a sensible order.

The movie actor, Scott Wilson sat through my three-day San Francisco masterclass. To my surprise he came up at the end and said, 'Of course you realise, Dick, that *this whole thing* has been about acting.'

I said, 'What?' and Scott said, 'These are the *exact* equivalent methods, exercises and analyses we actors do in our acting workshops.'

So acting is intrinsically part of the whole. And if you can't draw or articulate movement how are you ever going to do the acting?

Someone once asked Milt Kahl: 'How did you plan out the counteraction you used on that character?'

Milt blew up: 'That's the wrong way to look at it! Don't think of it like that! I just concentrate on giving the performance – *that's* what's important! The play's the thing. You'll get all tangled up if you think of it in a technical way!'

Of course he's right. If a musician knows his scales, he can concentrate on giving the performance and bringing out the ideas inherent in the music. But if he constantly has to think of the mechanics of what he's doing – then he can hardly play.

Therefore, if we know and understand all the basics – then we've got the tools to create. Only *then* we can give the performance!

This book is an anatomy course in animation. Just like an anatomy course in life drawing, it shows you how things are put together and how they work. This knowledge frees you to do your own expression.

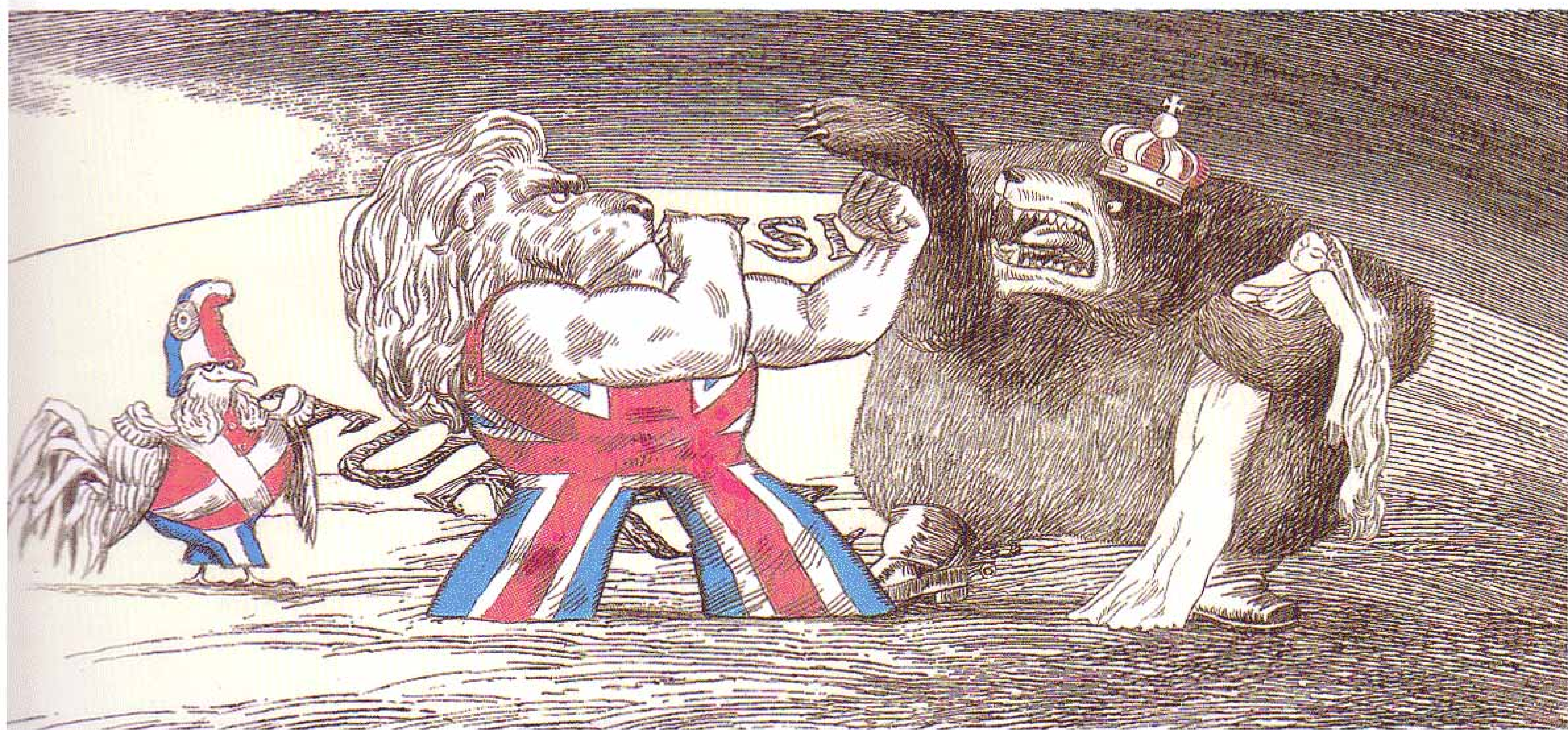
It takes time. I didn't encounter Ken Harris until I was nearly forty and he was sixty-nine. I had to *hire* most of my teachers in order to learn from them.

I hired Ken in order to get below him and be his assistant, so I was both his director and his assistant. I don't know if this is original, but I finally figured out that to learn or to 'understand' I had to 'stand under' the one who knows in order to catch the drippings of his experience.

There's a tale about a decrepit old Zen master wrestler. A very fit and brilliant young wrestler begs the old master to take him on and show him the master's ninety-nine tricks.

The old man says, 'Look at me, I'm old and decrepit and I'm not interested.'

The young man keeps pestering the old man who says, 'Look, son, I'm fragile now and when I show you the ninety-nine tricks, you'll challenge me, they always do – and look at me, you'll make mincemeat of me.'



The Charge of the Light Brigade, 1968

'Please, oh please, master,' pleads the powerful young man. 'I promise I will never challenge you! Oh please teach me the ninety-nine tricks.'

So reluctantly the old man teaches him until the young man has mastered the ninety-nine tricks. The young man becomes a famous wrestler and one day takes his master into a room, locks the door and challenges him.

The old man says, 'I knew you'd do this – that's why I didn't want to teach you in the first place.'

'Come on, old man, there's just me and you in here,' says the young one, 'Let's see what you're made of.'

They start and right away the old man throws the young fellow out of the window. The crumpled-up young man moans up from the street below, 'You didn't show me that one!'

'That was number one hundred,' says the old man.

This book is the ninety-nine tricks. The hundredth trick is called talent.

I became a repository for various strands of animation lore and I've taken all this stuff and given it my own twist. The goal here is to master the mechanics in order to do new things. Get the mechanics into your bloodstream so they just become second nature and you don't have to think about them and can concentrate on giving the performance.

I remember once saying to Emery Hawkins (a wonderful, unsung animator), 'I'm afraid my brains are in my hand.'

Emery said, 'Where else would they be? It's a language of drawing. It's not a language of tongue.'

So everything I know about animation that I can put into words, scribbles and drawings is here in this book.

DRAWING IN TIME

Why animate? Everyone knows it's a lot of hard work doing all those drawings and positions. So what's the hook? Why do it?

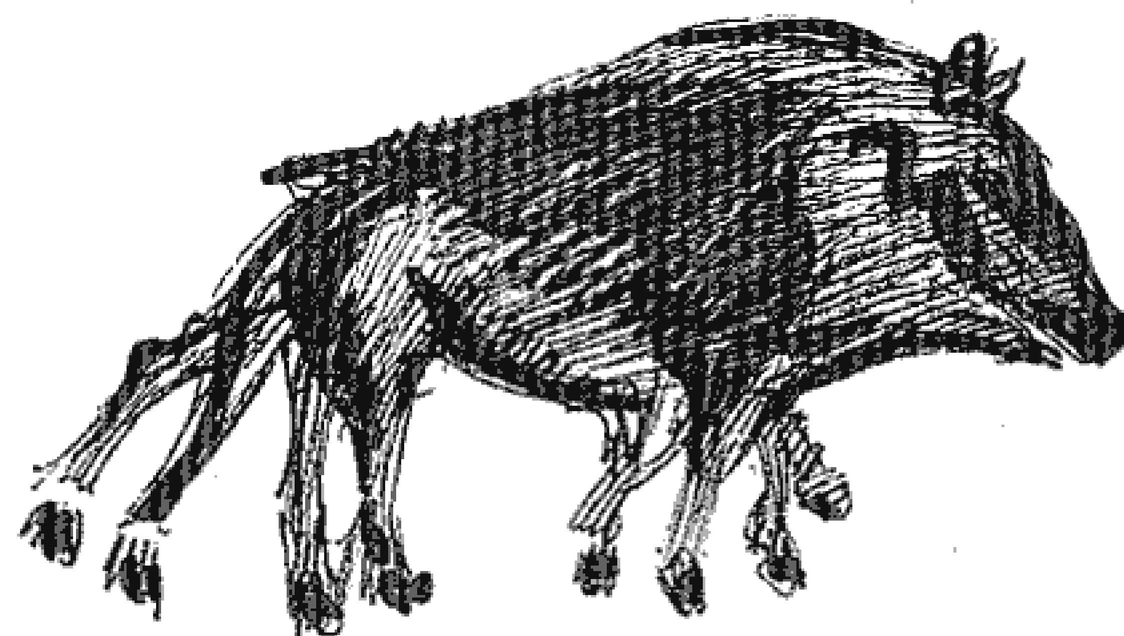
Answer: Our work is taking place in *time*. We've taken our 'stills' and leapt into another dimension.

Drawings that *walk*: seeing a series of images we've made spring to life and start walking around is already fascinating.

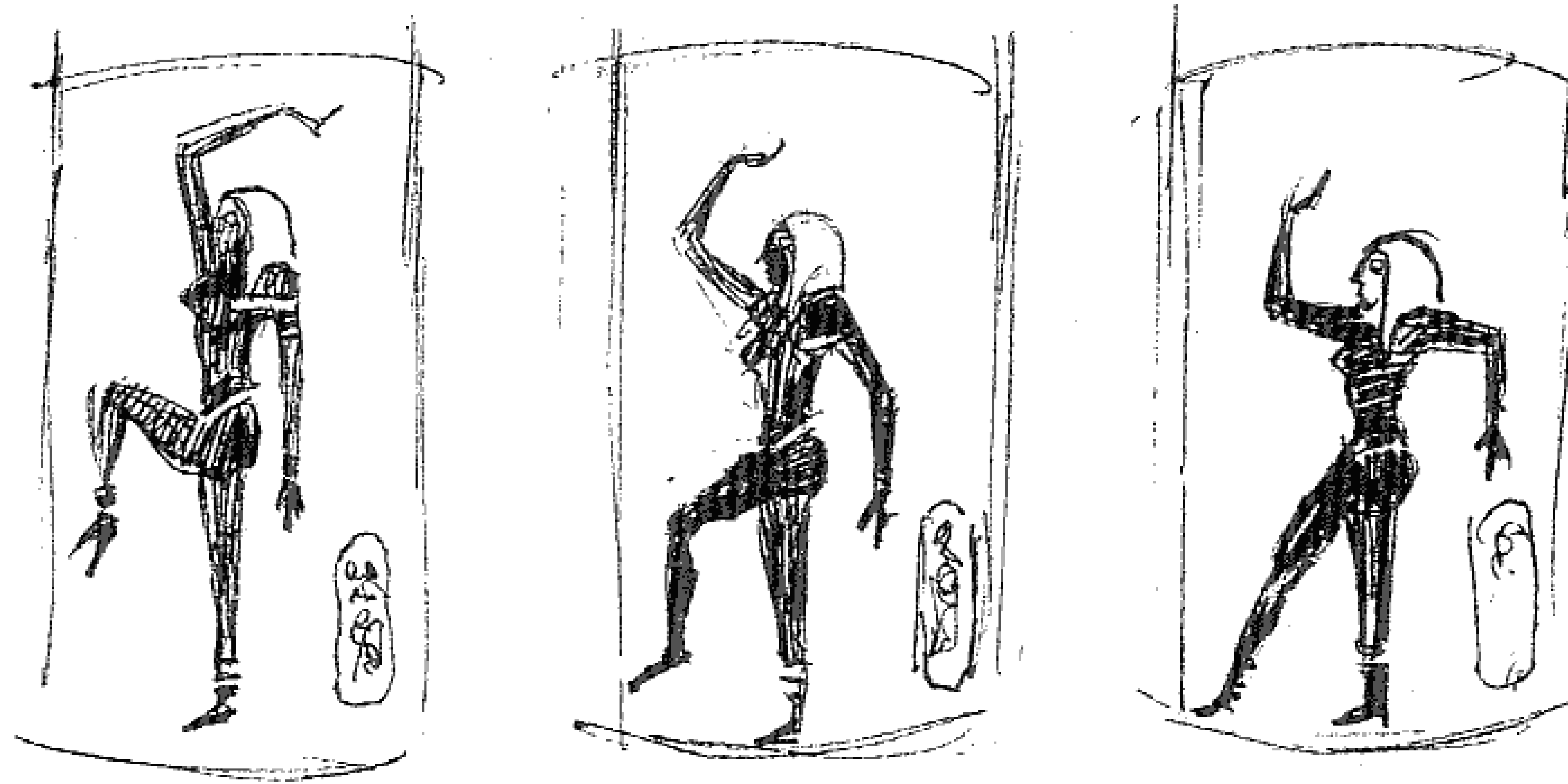
Drawings that walk and *talk*: seeing a series of our drawings talking is a very startling experience.

Drawings that walk and talk and *think*: seeing a series of images we've done actually go through a thinking process – and appear to be thinking – is the real aphrodisiac. Plus creating something that is unique, which has never been done before is endlessly fascinating.

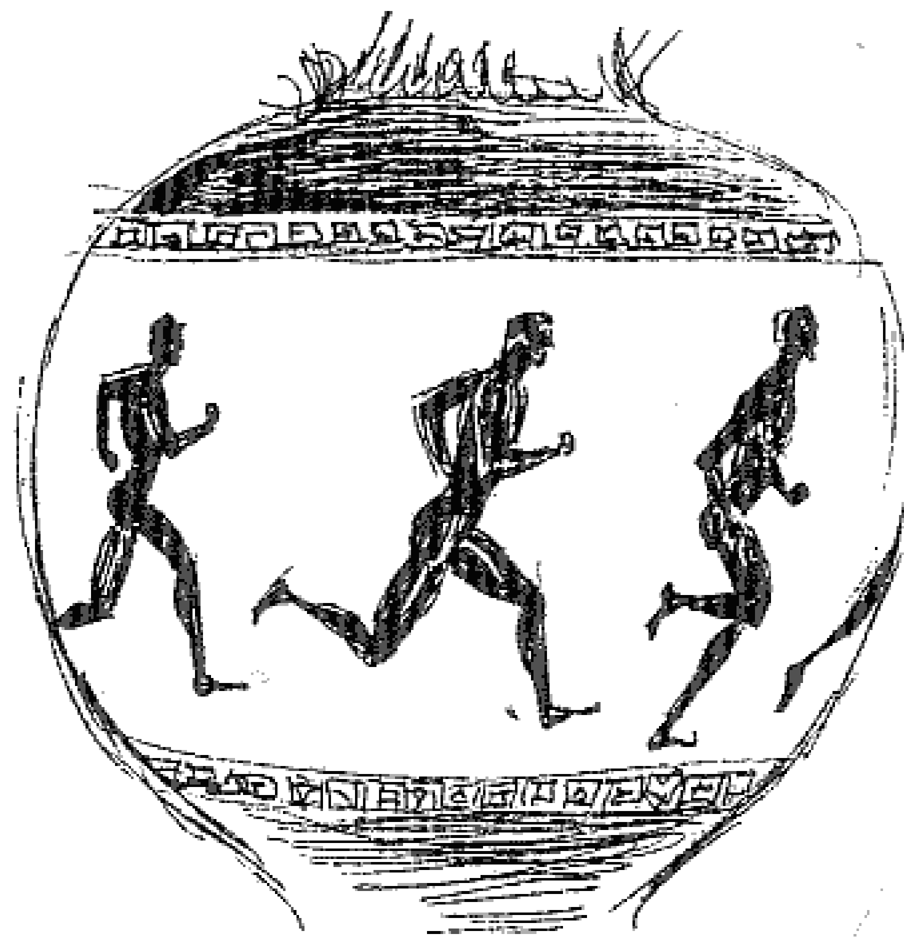
We've always been trying to make the pictures move, the idea of animation is aeons older than the movies or television. Here's a quick history:



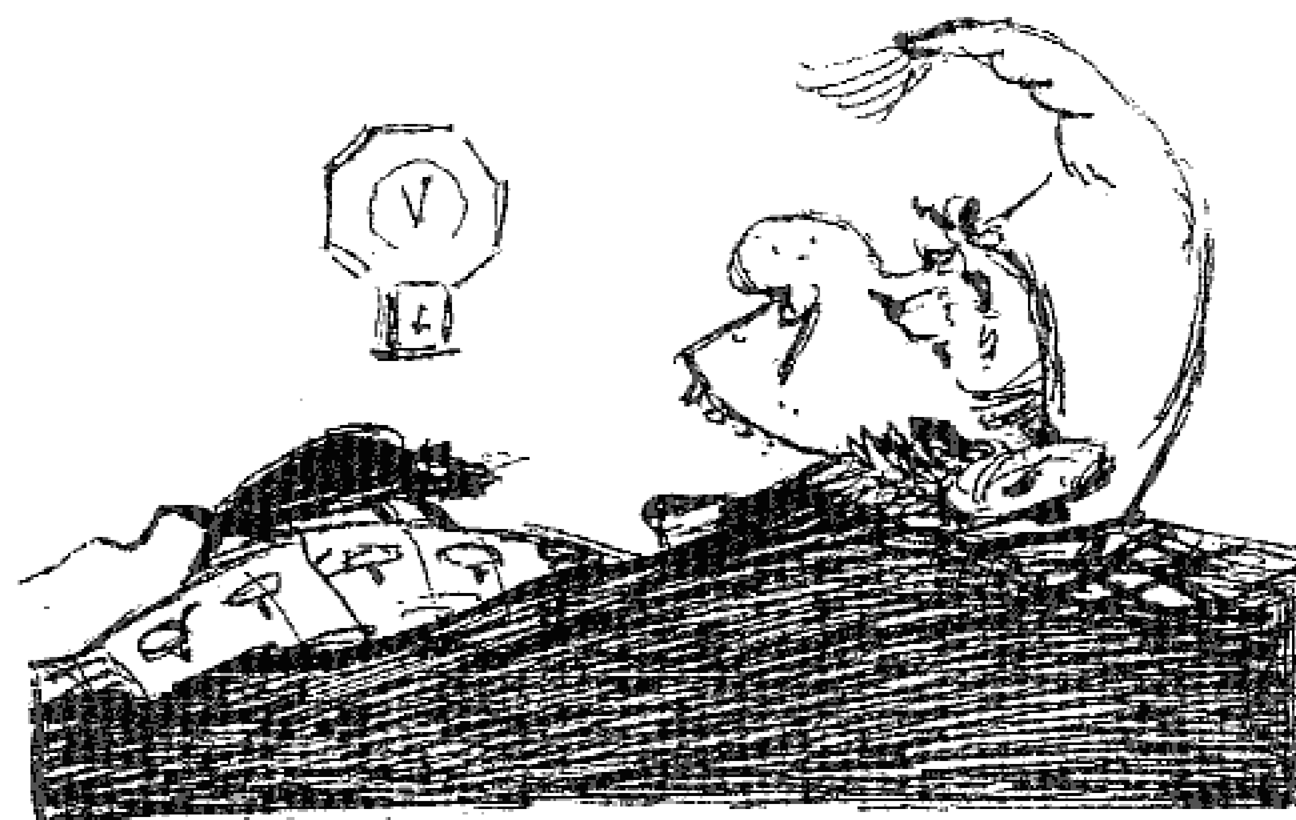
Over 35,000 years ago, we were painting animals on cave walls, sometimes drawing four pairs of legs to show motion.



In 1600 BC the Egyptian Pharaoh Rameses II built a temple to the goddess Isis which had 110 columns. Ingeniously, each column had a painted figure of the goddess in a progressively changed position. To horsemen or charioteers riding past – Isis appeared to move!



The Ancient Greeks sometimes decorated pots with figures in successive stages of action. Spinning the pot would create a sense of motion.



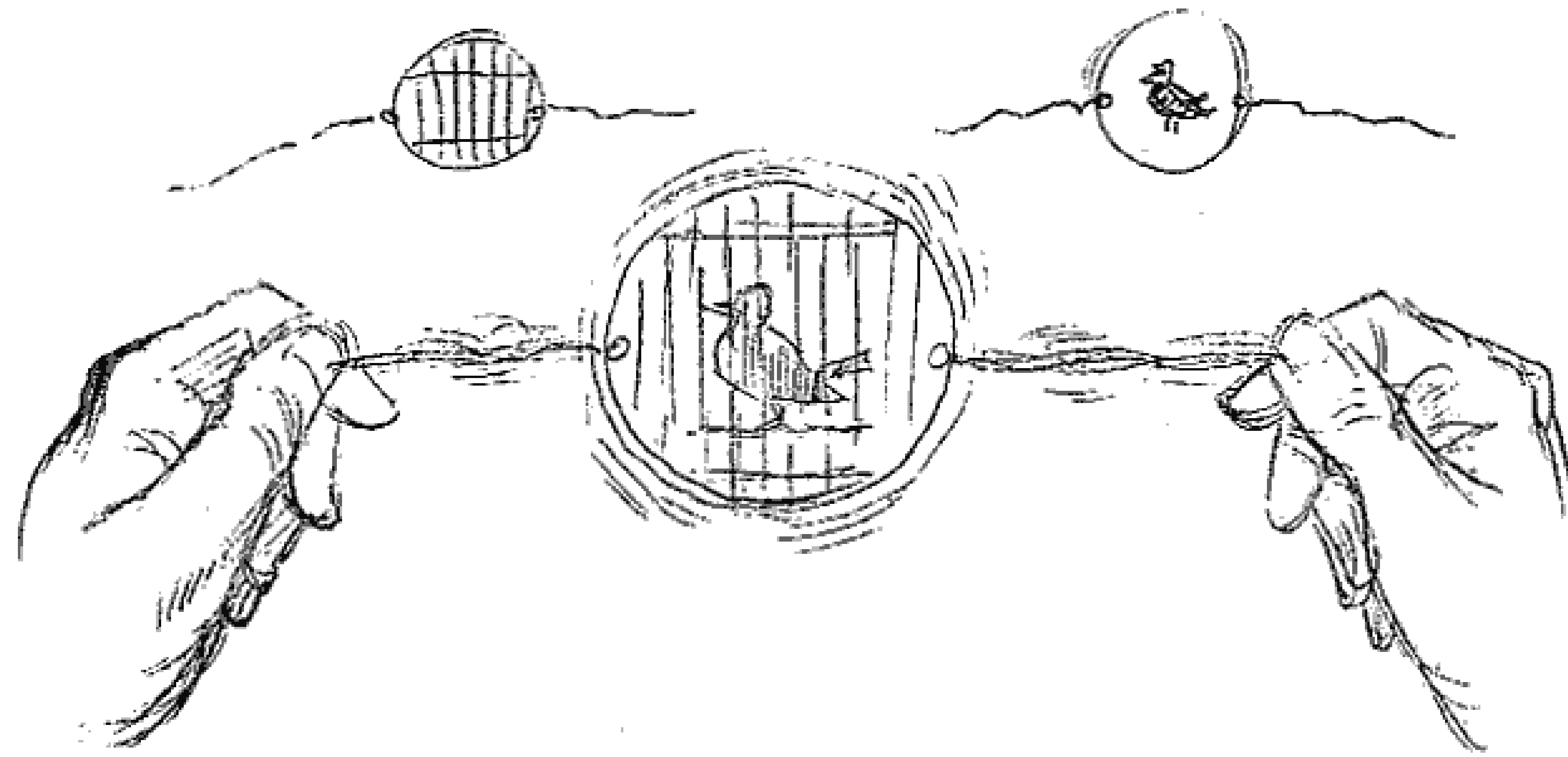
As far as we know, the first attempt to project drawings onto a wall was made in 1640 by Athonasius Kircher with his 'Magic Lantern'.

Kircher drew each figure on separate pieces of glass which he placed in his apparatus and projected on a wall. Then he moved the glass with strings, from above. One of these showed a sleeping man's head and a mouse. The man opened and closed his mouth and when his mouth was open the mouse ran in.

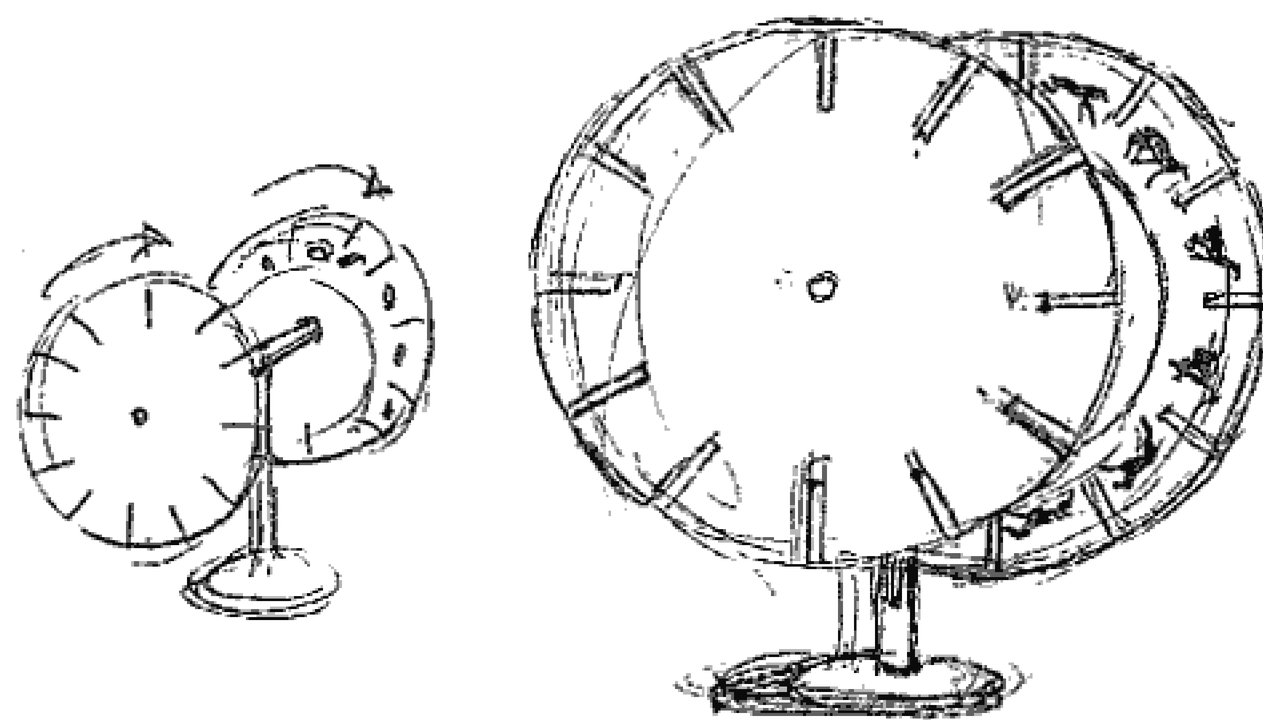
Although photography was discovered as early as the 1830s, most new devices for creating an illusion of movement were made using drawings, not photos.

In 1824 Peter Mark Roget discovered (or rediscovered, since it was known in classical times) the vital principle, 'the persistence of vision'. This principle rests on the fact that our eyes temporarily retain the image of anything they've just seen. If this wasn't so, we would never get the illusion of an unbroken connection in a series of images, and neither movies nor animation would be possible. Many people don't realise that movies don't actually move, and that they are still images that appear to move when they are projected in a series.

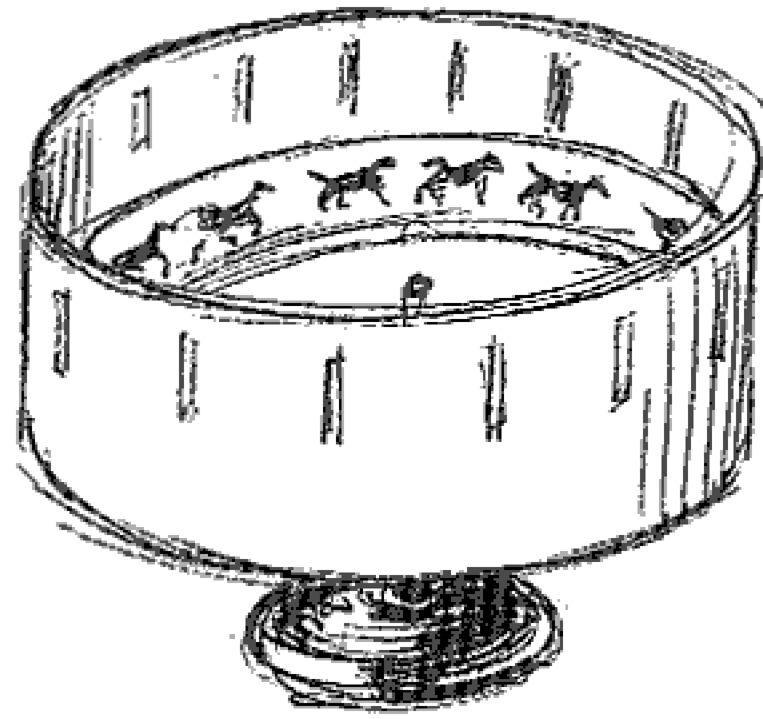
Roget's principle quickly gave birth to various optical contraptions:



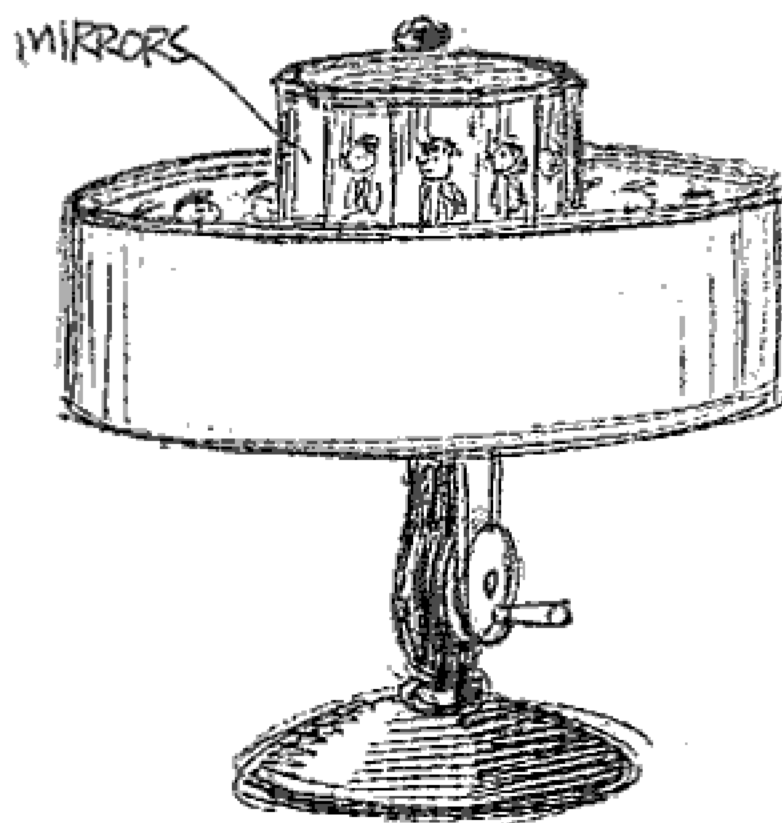
The Thaumatrope: A cardboard disc mounted on a top – or held between two pieces of string. A birdcage drawing is on one side and a bird on the other. When the top is spun or the strings are pulled the disc twirls, the images merge and the bird seems to be in the cage.



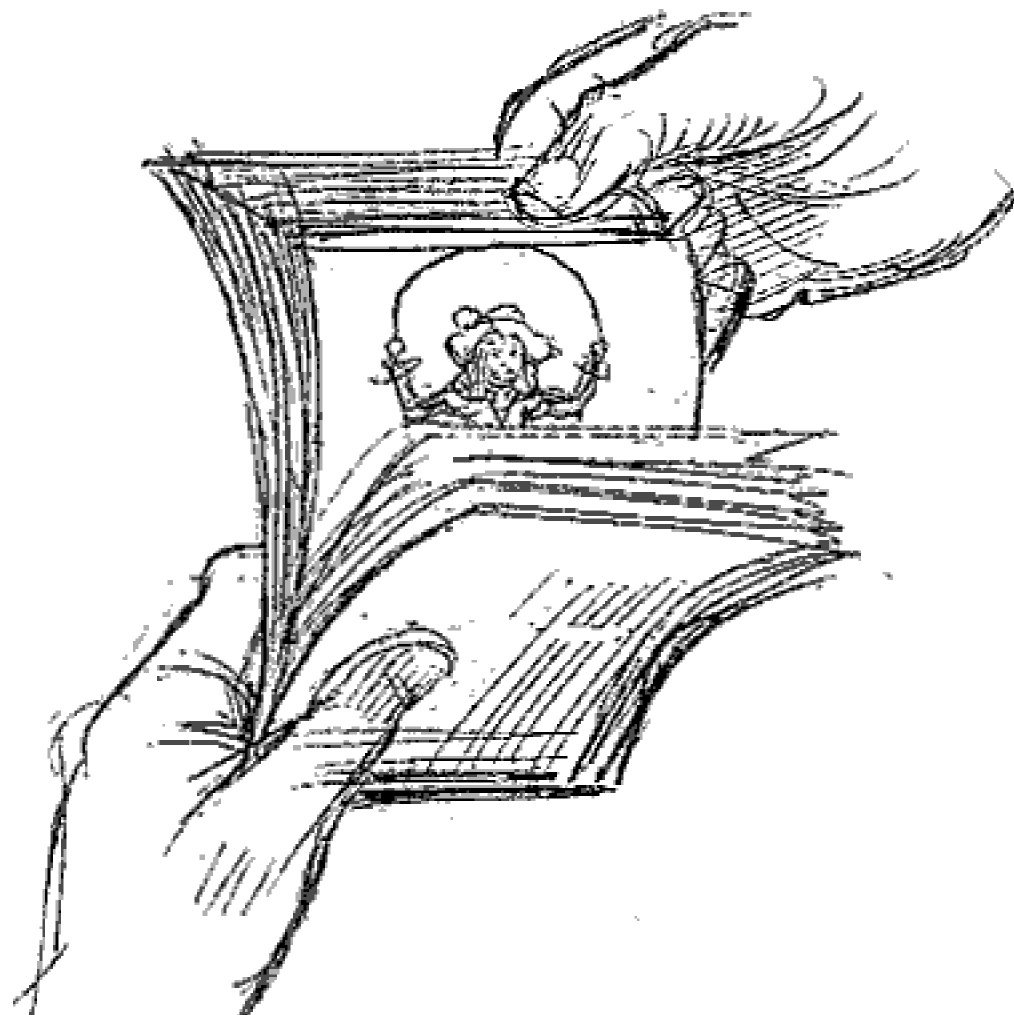
The Phenakistoscope: Two discs mounted on a shaft – the front disc has slits around the edge and the rear disc has a sequence of drawings. Align the drawings with the slits, look through the openings and as the discs revolve we have the illusion of motion.



The 'Wheel of Life' (or the Zoetrope): Appeared in the USA in 1867 and was sold as a toy. Long strips of paper with a sequence of drawings on them were inserted into a cylinder with slits in it. Spin the cylinder, look through the slits and the creature appears to move.

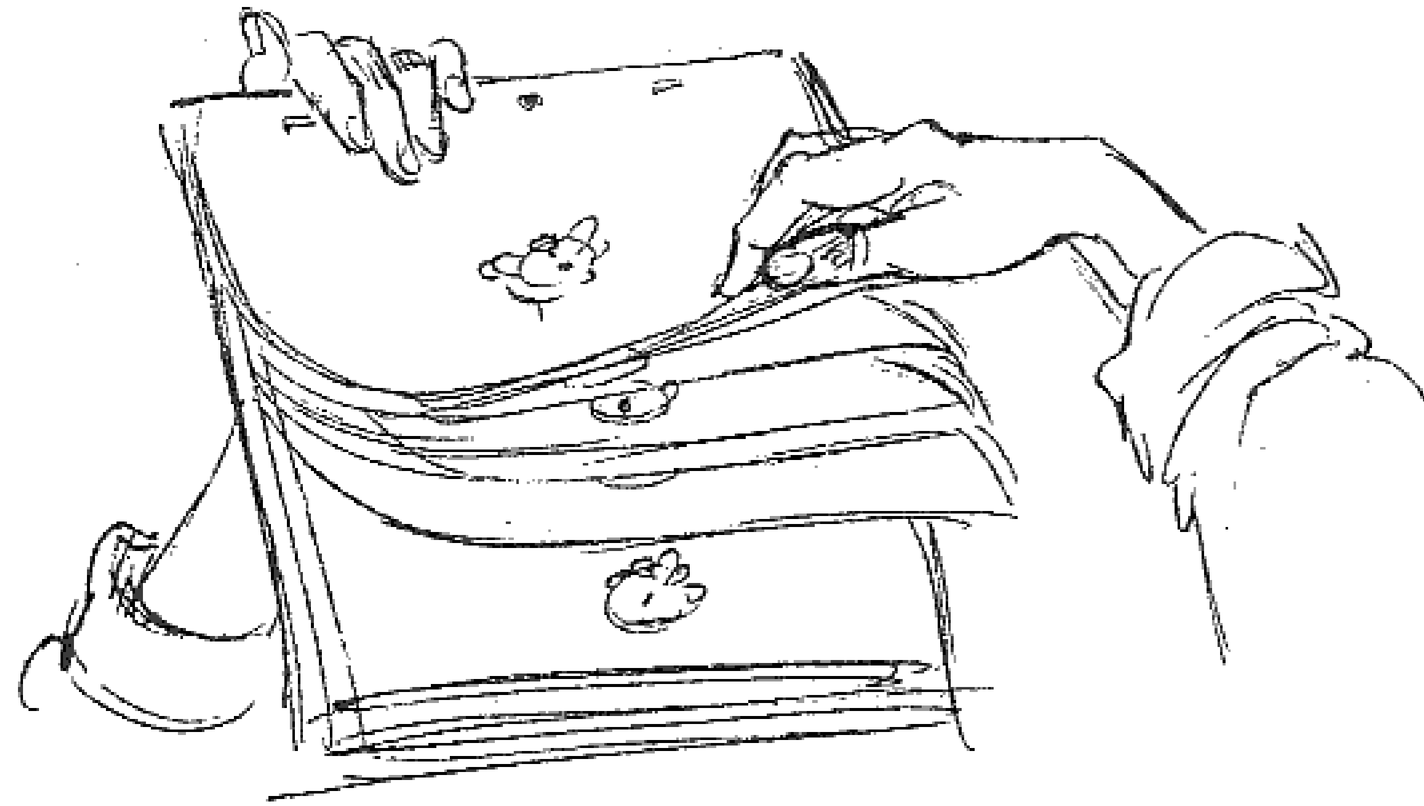


The Praxinoscope: Devised by the Frenchman Emile Reynaud in 1877. He was the first to create short sequences of dramatic action by drawing on a 30 foot strip of transparent substance called 'Crystaloid'. This opened the way for the tremendous advances to come.



The Flipper book: In 1868 a novelty called 'the flipper book' appeared worldwide and it remained the simplest and most popular device. It's just a pad of drawings bound like a book along one edge. Hold the book in one hand along the bound edge and with the other hand flip the pages and 'see 'em move'. The result is animation – the illusion of continuous action. Drawings in time.

This is the same as school kids making drawings in the corners of their math books and flipping the pages.



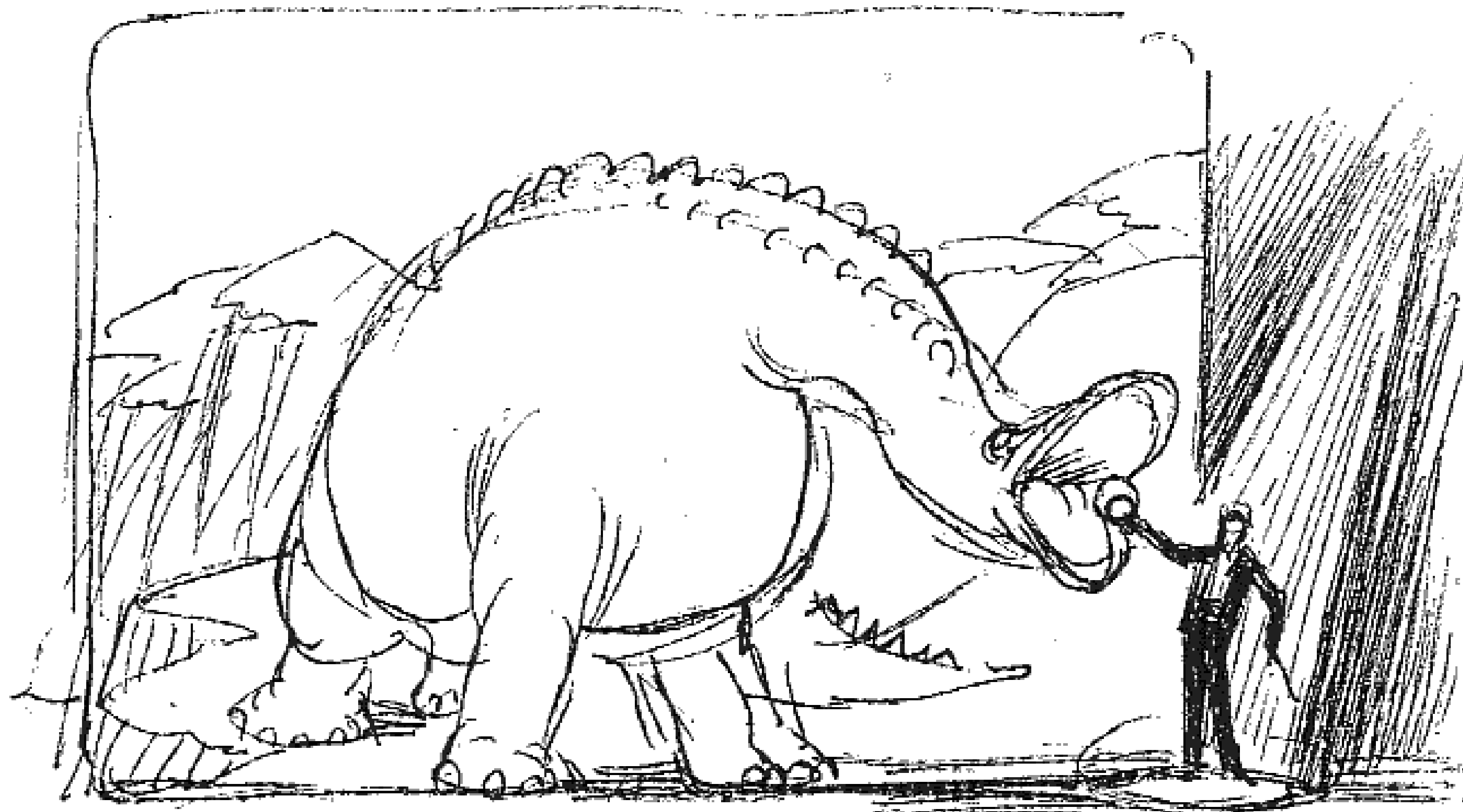
Today the 'classical' animator still flips his drawings the same way as a flipper book before testing it on the video or film camera. He places the drawings in sequence, with the low numbers on the bottom, then flips through the action from the bottom up. Eventually he should get good enough at it to approximate actual screen time and spot any errors or drawings that need altering. Now that we have the video camera with its instant playback of the drawings at film speed, not everyone learns to flip.

In 1896 a New York newspaper cartoonist James Stuart Blackton interviewed the inventor Thomas Edison who was experimenting with moving pictures. Blackton did some sketches of Edison, who was impressed by Blackton's speed and drawing facility and asked him to do some drawings in a series. Later, Edison photographed these – the first combination of drawings and photography. In 1906 they publicly released *Humorous Phases of Funny Faces*. A man puffed a cigar and blew smoke rings at his girl friend, she rolled her eyes, a dog jumped through a hoop and a juggler performed. Blackton used about 3000 'flickering drawings' to make this first animated picture – the forefather of the animated cartoon. The novelty brought explosions of laughter and was an instant hit.

A year later Emile Cohl made and showed his first animated film at the Follies Bergères in Paris. The figures were childlike – white lines on black – but the story was relatively sophisticated: a tale of a girl, a jealous lover and a policeman. He also gave lampposts and houses intelligence and movement, with emotions and moods of their own. Cohl's work prefigures the later animation dictum, 'Don't do what a camera can do – do what a camera *can't* do!'

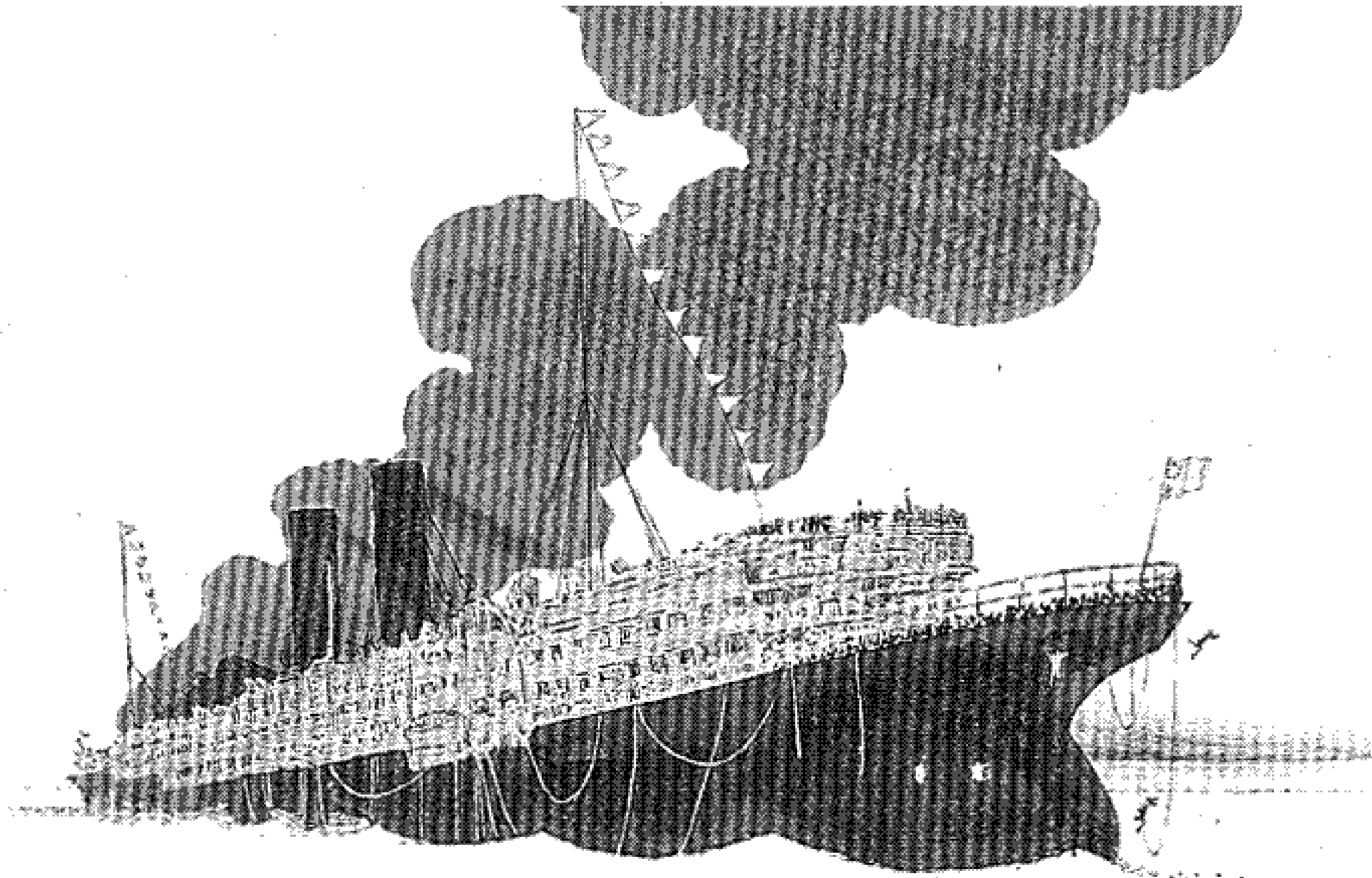
Winsor McCay, brilliant creator of the popular comic strip *Little Nemo in Slumberland*, was the first man to try to develop animation as an art form. Inspired by his young son bringing home some flipper books, he made 4000 drawings of 'Little Nemo' move. These were a big hit when flashed on the screen at Hammerstein's theatre in New York in 1911.

As another experiment he drew a bizarre short film, *How a Mosquito Operates*, which was also enthusiastically received.



Then in 1914 McCay drew *Gertie the Dinosaur* and McCay himself performed 'live' in front of the projected animation, holding an apple in front of Gertie and inviting her to eat. Gertie lowered her long neck and swallowed the fruit – astounding the audience. This was the first 'personality' animation – the beginnings of cartoon individuality. It was so lifelike that the audience could identify with Gertie. It was a sensation.

In McCay's words: 'I went into the business and spent thousands of dollars developing this new art. It required considerable time, patience and careful thought – *timing and drawing* the pictures [my italics]. This is the most fascinating work I have ever done – this business of making animated cartoons live on the screen.'



McCay also made the first serious dramatic cartoon, *The Sinking of the Lusitania*, in 1918. A war propaganda film expressing outrage at the catastrophe, it was a huge step forward in realism and drama – the longest animated film so far. It took two years of work and needed 25,000 drawings.

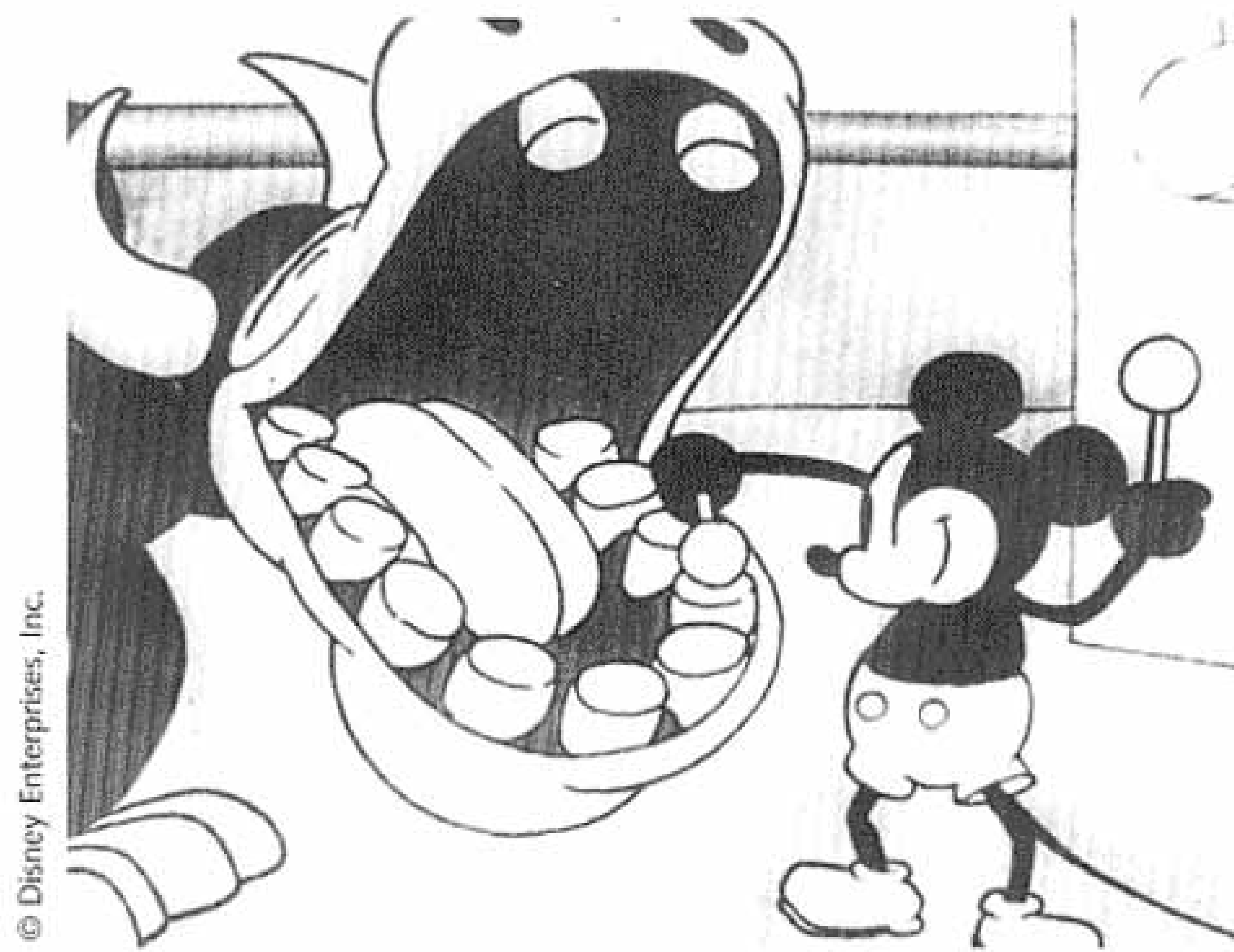
Later, as an older man being celebrated by the younger funny-cartoon animators in the business, McCay lashed out at them saying that he had developed and given them a great new art form which they had cheapened and turned into a crude money-making business done by hack artists.

This well defines the endlessly uncomfortable relationship between the pioneering artist/idealist and the animation industry – working to comfortable and predictable formulas.

Still doth the battle rage . . .

In the twenties Felix the cat became as popular as Charlie Chaplin. These short Felix cartoons were visually inventive, doing what a camera can't do. But more importantly a real personality emerged from this flurry of silent, black and white drawings and Felix 'himself' connected with audiences worldwide.

The Felix cartoons led straight to the arrival of Walt Disney, and in 1928, Mickey Mouse took off with his appearance in *Steamboat Willie* – the first cartoon with synchronised sound.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The brilliant Ward Kimball, who animated Jiminy Cricket in *Pinocchio* and the crows in *Dumbo*, once told me, 'You can have *no idea* of the impact that having these drawings suddenly speak and make noises had on audiences at that time. People went crazy over it.'

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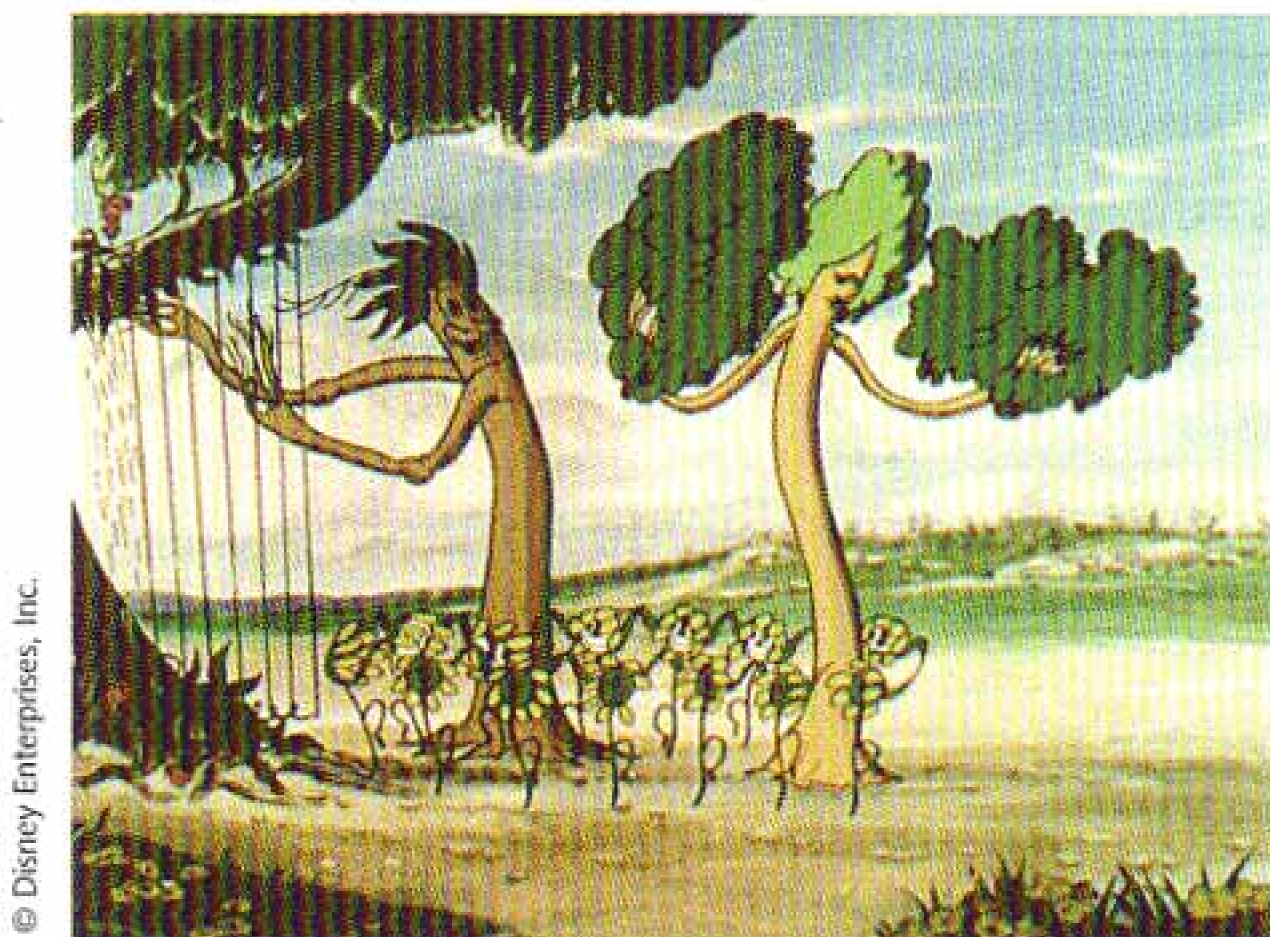
Disney followed *Steamboat Willie* with *The Skeleton Dance*. For the first time, action was co-ordinated with a proper musical score. This was the first *Silly Symphony*. Ub Iwerks was chief animator on both films and a lot of the sophisticated action of *The Skeleton Dance* still holds up today.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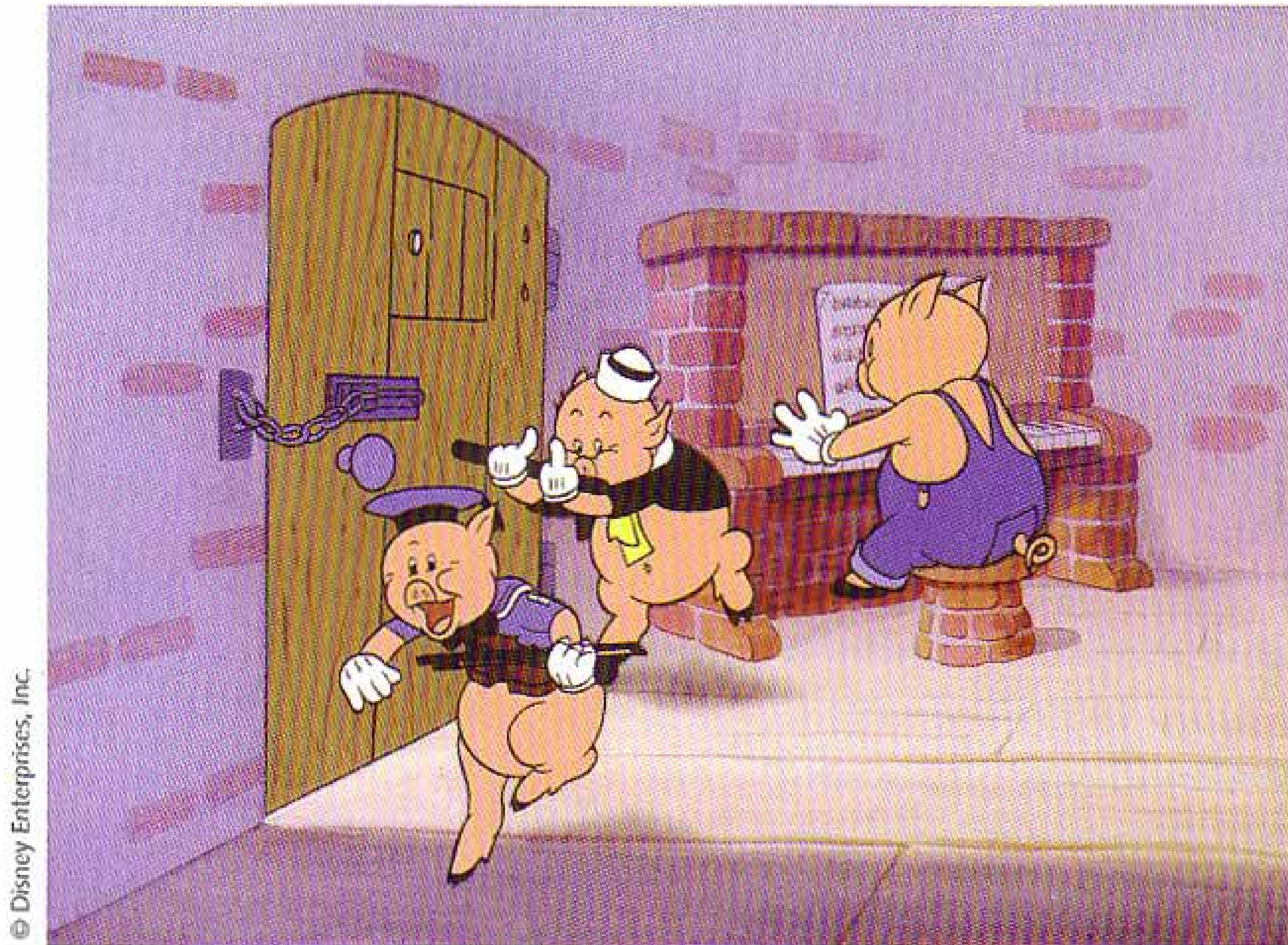
Disney leapt forward again in 1932 with *Flowers and Trees* – the first full colour cartoon.



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Then he followed it one year later with *Three Little Pigs*. This had a major impact because of its fully developed 'personality' animation – clearly defined and believable separate personalities acting so convincingly that the audience could identify with and root for them. Another first.

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Astonishingly, only four years after that, Disney released *Snow White and the Seven Dwarfs*, the world's first fully-animated feature-length film, raising cartoon drawings to the level of art and holding the audience spellbound for eighty-three minutes. A truly staggering feat accomplished in an incredibly short space of time. (It's said that many of the artists booked themselves in advance into hospital to recover from the effort of completing the film.)

The tremendous financial and critical success of *Snow White and the Seven Dwarfs* became the foundation of Disney's output and gave birth to the 'Golden Age' of animation: *Pinocchio*, *Dumbo*, *Bambi* and *Fantasia*, as well as the *Silly Symphonies* and Donald Duck and Mickey Mouse shorts.

Surrounding the potent Disney centre were the satellite studios: Max Fleischer with two features – *Gulliver's Travels* and *Mr Bug Goes to Town* – and Popeye shorts; Warner Bros' Looney Tunes and Merrie Melodies with Bugs Bunny, Daffy Duck, Porky Pig; MGM with Tom and Jerry, Droopy and the great anarchic Tex Avery shorts, and Walter Lantz with Woody Woodpecker. Fed as they were by the knowledge and expertise emanating from the Disney training centre, their much wilder humour was often in reaction to or in rebellion against Disney 'realism' and 'believability'.

But after the Second World War the situation changed.

The arrival of television and its voracious appetite for rapidly produced product demanded simpler and cruder work. 1950s stylisation gave birth to UPA studios in Hollywood who created Mr. Magoo and Gerald McBoing Boing. UPA's approach was regarded as more graphically sophisticated than Disney and used more 'limited' and much less realistic animation. At the same time there was a worldwide flourishing of personal, experimental and 'art house' animated films made in new ways with many different techniques and with very different content to the Hollywood product. Animators were reinventing the wheel stylistically but were ignorant of the structural knowledge developed in Hollywood's Golden Age.

This knowledge, though residing in the hands of the originators, was generally ignored as being 'old hat' or was forgotten in the following thirty years.

However, in the last few years, the renaissance of animation as a form of mass entertainment is giving rebirth to the old knowledge. The startlingly successful innovations of computer animation are helping to transform animation in all it's multi-faceted forms into a major part of the entertainment mainstream. Alongside this, there is also the explosion in the computer games industry.

If drawn 'classical' animation is an extension of drawing, then computer animation can be seen as an extension of puppetry – high tech marionettes. Both share the same problems of how to give a performance with movement, weight, timing and empathy.

The old knowledge applies to *any* style or approach to the medium no matter what the advances in technology. Most of the work methods and devices in this book were developed and refined in the Hollywood animation studios between 1930–1940.

I've co-ordinated what I've learnt from various approaches and I'm presenting it here in a form based on my own experience in this medium – with its limitless possibilities of imagination.

Emery Hawkins said to me, 'The only limitation in animation is the person doing it. Otherwise there is no limit to what you can do. And why shouldn't you do it?'

I meticulously painted this poster for the 1981 London Film Festival. Everybody said, 'Oh, I didn't know you did collage.'