

Norman McLaren

ON THE CREATIVE PROCESS



National  
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du Canada



*Norman McLaren*

ON THE CREATIVE PROCESS



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Compiled and edited by Donald McWilliams

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## FILMOGRAPHY AND LIST OF MAJOR CREATIVE CONTRIBUTORS AND COLLABORATORS

Born April 1914, Stirling, Scotland  
Died January 1987, Hudson, Quebec, Canada

Hand-painted Abstraction	1934	Stewart McAllister
* Seven till Five	1934	McAllister, Wm. J. MacLean
* Camera Makes Whoopee	1935	McAllister, MacLean, Helen Biggar, Violet Anderson
* Polychrome Phantasy	1935	
Colour Cocktail	1935	
Five Advertising Shorts	1935	
* Hell Unlimited	1936	Biggar, MacLean
* Book Bargain	1937	Cavalcanti (producer)
* News for the Navy	1937	"
GPO Trailer	1937	"
* Mony a Pickle	1937	"
* Love on the Wing	1938	" Jacques Ibert
* The Obedient Flame	1939	Arthur Elton (producer)
NBC Xmas Card	1939	Benny Goodman
* Dots	1940	
* Loops	1940	
* Scherzo	1940**	
* NBC Valentine Greeting	1940**	Albert Ammons
Happy Birthday for Solomon Guggenheim	1941	
* Stars and Stripes	1941	John P. Sousa
* Boogie-Doodle	1941	Albert Ammons
* Mail Early	1941	Goodman
* V for Victory	1942	J. P. Sousa
* Five for Four	1942	Ammons
* Hen Hop	1942	Folk Music Trio
* Dollar Dance	1943	Louis Applebaum, Guy Glover, Robert Anderson
* C'est l'aviron	1944	Maurice Blackburn, Alouette Trio
* Alouette	1944	René Jodoin

* Keep Your Mouth Shut	1944	George Dunning
* La-haut sur ces montagnes	1945	Blackburn, Alouette Quartet
* A Little Phantasy on a 19th-century Painting	1946	Applebaum
* Hoppity Pop	1946	Anonymous Calliope
* Fiddle-de-dee	1947	Eugène Desormeaux
* La Poulette grise	1947	Blackburn, Evelyn Lambert, Anna Malenfant
* Begone Dull Care	1949	Lambart, Oscar Peterson
* Around Is Around	1951	Raymond Spottiswoode, Chester Beachall, Applebaum
* Now Is the Time	1951	Spottiswoode
* A Phantasy	1952	Blackburn, Jodoin, Bert Niosi
* Neighbours	1952	Grant Munro, Jean-Paul Ladouceur, Wolf Koenig, Lambart
* Two Bagatelles	1952	Munro, Koenig
* Blinkity Blank	1955	Blackburn
* Rythmetic	1956	Lambart
* A Chairy Tale	1957	Claude Jutra, Ravi Shankar, Lambart, Herbert Taylor
* Le Merle	1958	Blackburn, Trio Lyrique, Lambart
* Short and Suite	1959	Eldon Rathburn
* Serenal	1959	Anonymous folk music band
* Mail Early for Christmas	1959	Anonymous music band
* Jack Paar Credit Titles	1959	Lambart
* Lines-Vertical	1960	Lambart, Blackburn
* Opening Speech: McLaren	1961	Arthur Lipsett
* New York Lightboard	1961	Jodoin, Ron Tunis, Kaj Pindal
* New York Lightboard Record	1961	
* Lines-Horizontal	1962	Lambart, Pete Seeger
* Canon	1964	Munro, Rathburn
* Mosaic	1965	Lambart, Ron Alexander
* Pas de deux	1967	Ludmilla Chiriaeff, Vincent Warren, Margaret Mercier, Blackburn, Jacques Fogel, Wally Howard



* Spheres	1969	Jodoin, Glenn Gould, J.S. Bach
* Synchrony	1971	
* Ballet Adagio	1972	David and Anna-Marie Holmes, Albinoni
* Pinscreen	1973	Alexeieff & Parker, Munro, NFB animators
* Animated Motion (parts 1 to 5)	1976-78	Munro
* Narcissus	1983	Donald McWilliams, Fernand Nault, J.L. Morin, S. Kinal, S. Lafortune, Maureen Forrester, D. de Volpi, and many others.

In addition to the above collaborators, valuable advice and suggestions were made on a continuing basis by Grant Munro, Evelyn Lambart, Guy Glover, Tom Daly, and Maurice Blackburn.

\* Available in Canada from the National Film Board. Outside of Canada, inquiries should be directed to the nearest office of the National Film Board.

\*\* These films were not completed in 1940. They were lost, re-discovered, restored and completed in 1985 by Norman McLaren and Donald McWilliams.



## FILMS ON NORMAN McLAREN

Pen Point Percussion	(1951)	C 0151 035
Window on Canada #29	(1954)	C 0154 061
The Experimental Film	(1963)	C 0163 048
The Eye Hears, The Ear Sees	(1970)	C 0170 068
McLaren on McLaren	(1983)	C 0183 071
Creative Process: Norman McLaren	(1990)	C 9190 079



## INTRODUCTION

The central idea for the film **Creative Process: Norman McLaren** came from McLaren himself. "I'm a Scot," he would say with a smile; and so, he had saved nearly all of his tests and uncompleted films since his arrival in North America in 1939. He had also kept outtakes and alternate sequences from several of his films. McLaren had a voluminous collection of photographs, drawings, correspondence and "philosophical" jottings on cinema. With this material and his completed films, McLaren believed it would be possible not only to trace the creative process of a filmmaker, but also to learn something about the creative process in general.

Because of my familiarity with his work and his working methods, McLaren suggested that I undertake the film. His cooperation with the project was, unhappily, halted by his death in January, 1987.

In making **Creative Process**, I not only drew upon the above material, but also on my own collection of audio-cassette discussions with McLaren and his colleagues, begun in 1968. During this production process, my colleagues and I also unearthed film and radio interviews, and other archival material, dating as far back as 1938.

This booklet is a complement to **Creative Process: Norman McLaren**; and is intended to enrich viewings of that film, as well as McLaren's own films. It is divided into two parts. In Part A, there are further thoughts by McLaren on cinema and his creative process. Part B consists of McLaren's technical notes on the films included in **Selected Films: Norman McLaren**.

Donald McWilliams  
(1991)



PART A



## STRUCTURE OF THE FILM

The structure of **Creative Process: Norman McLaren** is modular — each module dealing with a different theme. This approach was taken because neither McLaren nor myself wished **Creative Process** to be a conventional, chronological biography. In a certain sense, we believed the man less important than the ideas. Biography was used only as it illuminated a theme. I also decided that McLaren would, as far as possible, be his own witness. The film would be something like a conversation between him and the viewer.

A consequence of the thematic structure is that the film weaves back and forth in time. Initially, we feared that this might cause problems for viewers. Screenings during the editing process taught us that, within a thematic structure, viewers did not miss, nor even wish, a linear chronology. This reaction led us to reduce the temporal signposts to a minimum.



## OUTLINE OF THE FILM

The screenings during the editing process of **Creative Process: Norman McLaren** reminded us that viewers bring their own knowledge, experiences and interpretation to the viewing of a film; and, therefore, have trains of thought and reach conclusions which we filmmakers cannot forecast or control. This outline, consequently, only presents the main themes and ideas of **Creative Process**. It does not attempt to indicate the various sub-texts and inter-connections.

1. **Discovery of the arts**, especially cinema; biographical overview.
2. **Music One**. McLaren's musical background, his synaesthesia (the condition in which the stimuli of different sensory modes are linked together); his discovery of cinema as a means to express this synaesthesia.
3. **Surrealism and Hand-made Cinema**. McLaren's discovery of surrealism in the late 1930's and its influence on his work. His technique of hand-made cinema is described, partly because it is an ideal illustration for McLaren's thoughts on the roles of the subconscious and the conscious in the creative process; and partly because it demonstrates McLaren's idea of cinema as movements-designed-through-time.
4. **Nature**. McLaren also thought of cinema as painting with light. This came from the Scottish environment of his youth. He expressed it, in one way, with the chain-of-mixes technique.
5. **Dance**. McLaren saw a connection between his films and dance. This topic is elaborated by relating it to McLaren's identification with hens and birds, with comments by him on abstraction in cinema, on film structure and creativity.



6. **Collaboration - Tradition - Technology.** The role of collaborators, particularly Evelyn Lambart. This topic is interwoven with an examination of the place of tradition and technological invention in McLaren's creative process.
7. **X-ray.** In 1955, McLaren's head was x-rayed. Afterwards, he doodled his thoughts in the x-ray. He explains those doodles.
8. **Colour-Music.** This section elaborates the theme of synaesthesia first raised in Music One. McLaren's theory of the cyclical or repetitive nature of artistic ideas and discoveries across the centuries is sketched here by reference to marble, Pompeii and Jackson Pollock (and, perhaps, McLaren).
9. **Trompe l'oeil.** McLaren's fascination with illusion is examined in this look at a McLaren artefact, the tesseract (a 3-D representation of a 4-D object) and his design for a 4-D house.
10. **Travelling Zoom.** This technique was invented by McLaren in the late 1930's. It is now commonplace, particularly because of the impact of its use in Kubrick's film *2001: A Space Odyssey*.
11. **Social Conscience/The Last Dance.** McLaren was very aware of the responsibility of the individual to the community. He thought of this responsibility as a particularly difficult problem for the artist drawn, like him, to abstraction. In this context, he also wrestled with the idea of narcissism as both a negative and positive factor in creation. *The Last Dance* is Donald McWilliams' comment on this topic; and is a conclusion to all the ideas, explicit and implicit, in *Creative Process: Norman McLaren*.



## ILM CREDITS

### CREATIVE PROCESS: NORMAN McLAREN

#### FEATURED

Norman McLaren  
Clyde Gilmour  
Tom Daly  
Grant Munro  
with the voices of  
Glenn Gould  
John Grierson  
Peter Raymont  
Magnus Isacson  
Steve Dale  
Donald McWilliams  
Yolande Parent

#### EDITING AND DIRECTION

Donald McWilliams  
with the collaboration of  
Susan Huycke  
David Verrall

#### SCRIPT

Donald McWilliams  
Susan Huycke

#### READ BY

Susan Huycke

#### ORIGINAL MUSIC, ARRANGEMENTS, AND DIRECTION

Eldon Rathburn with the  
musical collaboration of  
Maurice Blackburn and  
Ammons, Applebaum,  
Anonymous, Bach, Berg,  
Bloch, Boughton, Bozza,  
Brahms, Chopin, Czerny,

Debussy, Desormeaux,  
Gluck, Handel, Ibert,  
McLaren, Milhaud, Mozart,  
Mussorgsky, Peterson,  
Piazzolla, Poulenc, Ravel,  
Respighi, Rubbra, Satie,  
Seeger, Shankar, Strauss,  
Villa-Lobos, Villoldo

#### CINEMATOGRAPHY

Pierre Letarte  
Jacques Leduc

#### ADDITIONAL CINEMATOGRAPHY

Andreas Poulsson, CSC  
Donald McWilliams

#### ANIMATION CAMERA

Pierre Landry  
Jacques Avoine  
Barry Wood  
Robin L. P. Bain

#### OPTICAL EFFECTS

Jimmy Chin  
Susan Gourley

#### LOCATION SOUND

Yves Gendron  
Hans Oomes  
Esther Auger  
Richard Besse

#### SCRATCHED INSERTS

Caroline Leaf

#### ROSCOPING

Joan Churchill

ARCHIVAL FILM RESTORATION  
David Cassidy

ARCHIVAL SOUND RESTORATION  
Louis Hone

MUSIC AND EFFECTS EDITING  
Raymond Vermette

DIALOGUE EDITING  
Tony Reed

ASSISTANT CAMERA  
Naomi Wise  
Serge Lafortune  
Michele Paulin  
Carol Jarry

ASSISTANT SOUND  
Aimée Leduc

ASSISTANT PICTURE EDITOR  
Alison McGillivray

ASSISTANT SOUND EDITOR  
Jean-Pierre Viau

NARRATION RECORDING  
Norah Fraser  
Christian Fortin

MUSIC RECORDING ENGINEER  
Louis Hone/NFB  
Gaëtan Pilon/Studio Victor

RE-RECORDING  
Adrian Croll

FILM COLOUR CORRECTION  
Gudrun Klawe

FILM MATERIALS SUPERVISOR  
Arlene Sawyer

NEGATIVE CUTTING  
Robert Shipley

ARCHIVAL FILM  
BBC, Cinémathèque  
québécoise, Elfried  
Fischinger, Gaumont-Pathé,  
Gosfilmofund-USSR, Arthur  
Hungerford, National Film  
Board, Philip Stapp, Cecile  
Starr, UNESCO, Jorge Reyes,  
Anna Shepherd, Ivor  
Montagu, Stanley Forman.

STILL PHOTOGRAPHS  
Cinémathèque québécoise,  
Harold Edgerton: Palm Press,  
Arthur Hungerford, Angus  
McBean: Harvard Theatre  
Collection, Sam Tata, Estate  
and Family of Norman  
McLaren, National Film  
Board, Prometheus-USSR.

PAINTINGS AND DRAWINGS  
Grant Munro  
Philadelphia Museum of Art  
Estate and Family of Norman  
McLaren

ARTWORK PHOTOGRAPHY  
Marie-Josée Crête

MANY THANKS TO  
Guy Glover, Robert Forget,  
John McLaren, William  
McLean, Florence M. Russell,  
James Fyffe, Merilee and  
Richard Worsfold, Colin  
Neale, Jacques Giraldeau and  
Technical Services, National  
Film Board.

MUSIC  
Bloch - Concerto Grosso #1  
Mihaud - La Création du  
Monde

Poulenc - Sextuor for Piano  
and Woodwinds  
Villa-Lobos - Bachianas  
Brasileiras #5  
by permission of G. Schirmer  
Inc.

Bozza - Scherzo  
Ibert - Trois Pieces Brèves  
by permission of Alphonse  
Leduc, Paris

Boughton - The Faery Song  
by permission of Stainer and  
Bell Ltd.

Che Puro Ciel by Gluck  
sung by Kathleen Ferrier  
by permission of Decca Record  
Co. Ltd.

Adios Nonino by Astor  
Piazolla  
played by Quartango

by permission of Editions  
Henri Peuch and Canadian  
Broadcasting Corporation  
Sonata #2 for Violin and  
Piano by Edmund Rubbra  
played by Rubbra and  
Frederick Grinke

by permission of Alfred  
Lengnick and Co. Ltd. © 1932  
and Decca Records Co. Ltd.  
El Choclo by Angel Villoldo  
played by Quartango  
by permission of Richard Hunt  
and Canadian Broadcasting  
Corporation

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STUDIO ADMINISTRATORS  
Carrol Smith  
Tamara Lynch

ASSOCIATE PRODUCER  
Susan Huycke

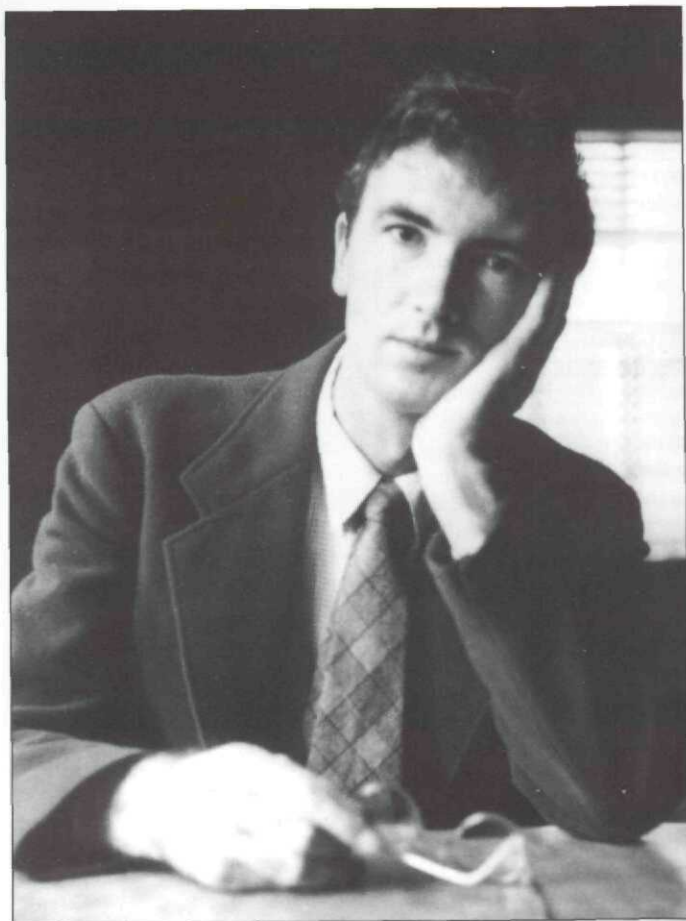
PRODUCER  
David Verrall

EXECUTIVE PRODUCER  
Douglas MacDonald

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**URTHER THOUGHTS BY McLAREN  
ON THE CREATIVE PROCESS.**



**INEMA, AN ART OF MOTION**

You can capture movement in a static position, and, sometimes, it's even more potent than seeing the thing in actual movement. It's a kind of arrested movement, which is a peculiar, artificial thing. Before movies, arrested movement was something terribly exciting.  
(1971)



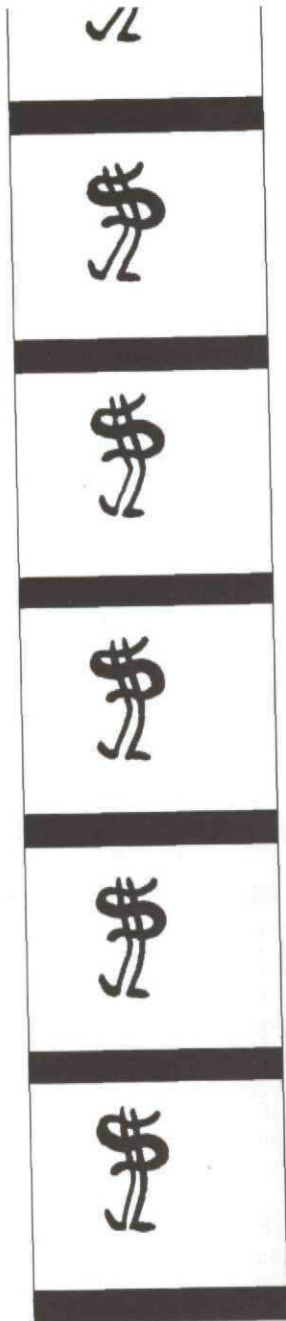
McLaren arrested at leapfrog.

Whether or not a camera is used to get images on film seems irrelevant. All that is necessary is a strip of film with related images and a projector.

To me, the "purer" the cinema, the more it communicates its essential information, thoughts and feelings to the audience by means of motion, with little or no reliance on factors other than motion.

Secondary factors, such as backgrounds, settings, apparel, and lighting, etc. are not cinematic, unless they are changing or moving. A reliance on such factors to make a point leads to impurity, especially if the point could have been expressed by motion. Such secondary factors should never be a substitute for movement. However, they may supplement or complement it.

The spoken word is often used to adulterate and rob the cinema of its purity.  
(1975)



*Dollar Dance*

I certainly don't see animation as an extension of static forms of art, such as painting and drawing. It seems to me that a link that exists in that way is very slender, and really quite meaningless. In the motion picture film, it's the motion that counts. Any art which doesn't move seems to me to be in one category, and all the arts that are connected with motion are in another category.

(1968)

I've always been fascinated by the beauty of slow-motion which is the normal reaction of most people. When I see sports programs on TV and run the slow-motion version of it with a freeze-frame at the end, too, I'm really much more excited by the slow-motion version of it than the normal-speed version of it. With hand-painted films where the action is almost always fast, you can only expose the viewer to a short time of it. We're not accustomed in daily life to have frantic motion going on and it's tiring to the eyes and mind. I would have introduced slow-motion into the hand-painted film if I could've, but it's so difficult.

(1971)

Just as the basic condition of the hand-painted film is frantic chaos and motion, the basic condition of a cut-out film is staticness. Because the simplest thing to do with hand-painting is chaos, frantic motion, the simplest thing to do with cut-outs is nothing - they can stand still!

If you want a very slow image in hand-drawn film, it is tedious and difficult, because you have to register the image so precisely with such a minute difference that it becomes almost impossible. So all my direct-on films are fast.

If an image had to stay still, I'd make it give a slight undulation that way, this way back and forth. It would still be standing in the same place, and yet there would be enough movement to cope with the fact that it does not stay still!

(1971)



## WORK OF ART

I set limitations. Yes, technical limitations and artistic limitations, too. Because I think most works of art depend upon a set of technical limitations. Many works of art get much of their spriteliness and liveliness from a set of limitations. But I don't search for the most difficult. It's easier to work within a set of strict limitations than not. For instance, it's easier to do a woodcut than to do an oil painting. You have very strict limitations in woodcut or linoleum cut. Now, in oil painting you are very free. But I don't try to make things difficult for myself. Once I've set up the initial limitations, I try to find the easy way. If I come to a point in the film where I've got an alternative of three ways of doing a certain thing, and all equally good, I'll choose the easiest one.

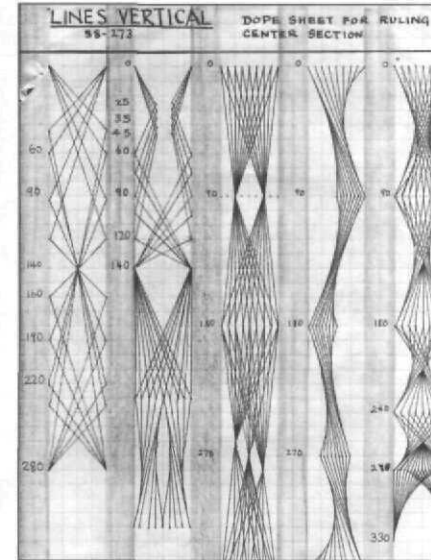
(1968)

At that time, around 1948, I believed filmmaking was like dreaming, although not as free and loose as a dream. By that time, I was beginning to become aware of the need for unity consciously. It happened unconsciously in a thing like **Hen Hop**, because it's short. You don't have a problem of unity if a thing is very short. It's much easier, but the longer it becomes...! Progressively, with the years, I've become more conscious of the need for unity, maybe to the detriment of the film. The **Lines** films suffer perhaps from monotony, because I'm so obsessed by unity. There can be unity that's so unified, that it's boring and monotonous. **Lines** is a disciplined exercise. I always thought of it like a Chopin etude, which is based on a certain phrase of an interval or rhythm. So, at one end of the spectrum, you have films which are monotonous, but unified. At the other, there's diversity, which has no unity, which is similar to a lot of rushes. In between, somewhere, you get the nice balance, a diversity within a unity. That goes for all art.

(1974)

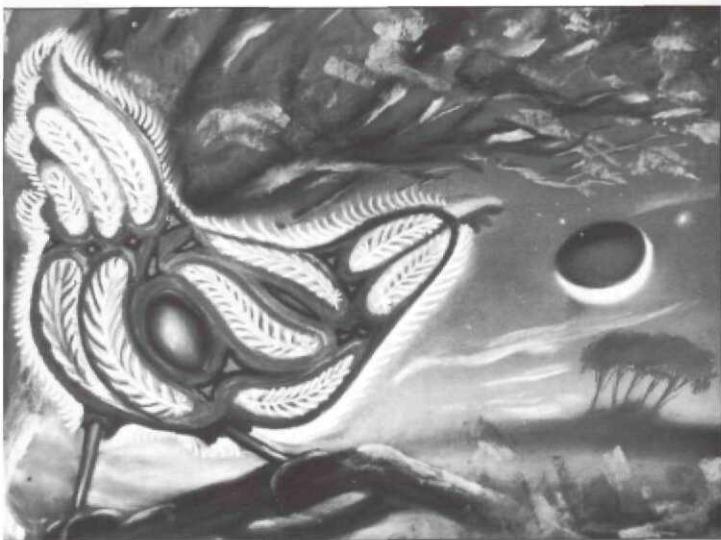


*Hen Hop*



*Lines-Vertical - example of lay-out sheet.*





*La Poulette grise.*

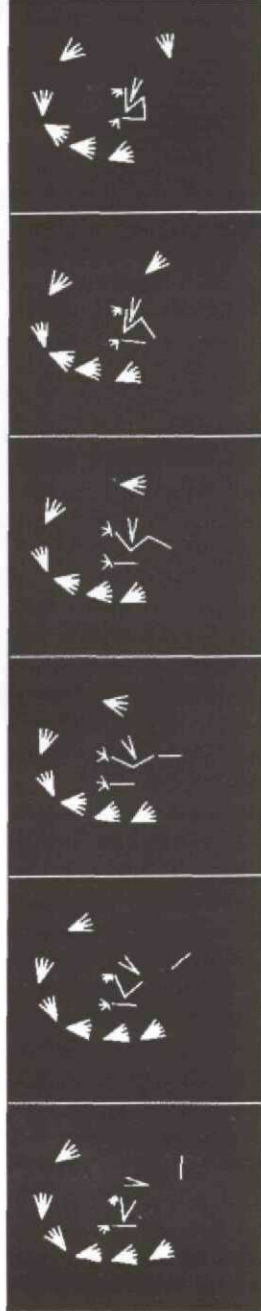
I've often said I never use a script, and in the sense of a written-out thing, I never use it. In another sense, I do use scripts — any film where there is music to start with, and to which I make the picture, there is a script — a musical script.

I have found that traditional musical forms are worth using. **A Phantasy**, **Begone Dull Care** and **Spheres** have an ABA sonata form (**A Phantasy** - moderato, allegro, moderato; **Begone Dull Care** - allegro, lento, presto; **Spheres** - poco andante, allegro, poco andante). **Short and Suite** has a rondo form, ABCBDB etc. **Canon** has an ABC form. **Fiddle-de-dee**, **Hoppity Pop**, **La Poulette grise**, **Serenal** and **Le Merle** being based on folk dance and song, have a repeating form, A1, A2, A3, etc., and in a loose way the visuals have a theme-and-variations form. Other films have the traditional form of Hindu classical music: **Lines Vertical**, **Lines Horizontal**, **Mosaic** and **Synchromy** are the best examples, and to a lesser extent, **Neighbours**, **Opening Speech** and the last item of **Canon**.

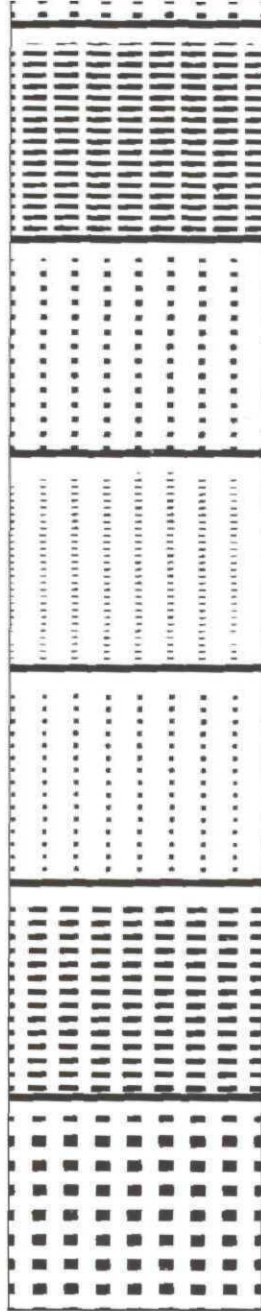
I often found that when I started with a real, creative hunch, and started what seemed like a doodle, I knew when it was going right; and I became very uncomfortable when I felt it was going wrong. I would often backtrack and start at the point where I thought it had gone wrong and do it again. That's very important, if you are improvising or semi-improvising, the feeling that it's going wrong. I would be improvising, and, as the day went on, various alternatives would crop up in my mind. I'd be stuck. I might stop at three o'clock in the afternoon, because I was paralysed by the 3 or 4 different ways to make the film go. A good night's sleep, and I'd come back next morning; and I'd think one was the correct way.

You have to have visual concept of what you're going to do. It's best of all if you have a total concept of the whole film...like **Synchromy**, I had a general overall picture in my mind. I had to do details always keeping in mind the overall picture.

If I had a vision at all of **La Poulette grise**, it's a feeling I got by the way it is sung. It is a very slow song, sung very lovingly



Le Merle



Synchrony

and gently and beautifully and prettily — a mother singing to her babe. So the whole mood gave me a feeling of making the thing very slow, with pretty colours. I don't think there's a single straight line or a straight edge or a hard edge in the film! A vision of a film often starts with just a single drawing on a page of paper — I have a kind of feeling — it starts with a line...

On the whole, artistic inspiration and scientific discoveries come suddenly with a flash. That Renoir painting of the girl at the piano. I am sure that one day he was sitting and he saw that girl at the piano — there's a picture! Then, he had to paint it. (1971)

In my preliminary tests for **Le Merle**, I started drawing on film a very fanciful-like Aztec bird and tried to make it move; and when projected it was all too clumsy and cluttered and a lot of work. I did then a cut-out which was metal with joints and lots of parts. When I got it on the table and started to move it, I said, "This is going to be hell, making this move!" I began to think more and more of the words of the film — how quickly they go...only then did I come to the solution of doing unjointed parts. But why didn't that strike me first!

I was really very happy working at the elaboration of the optical work on **Synchrony**. I was very unhappy, too. I went through a stage where there were so many possibilities that I was in a quandary what to choose. This went on for several weeks, and I really got into a state. Then something happened to me. I said, "You can't go on being nervous and undecided like this. You've not to worry yourself trying to get the very best of all possibilities." I realized that, if there are half-a-dozen fairly good possibilities, instead of examining each one precisely to try and find some minute improvement, I should say, "What the hell! I'll choose one and get on with it!" From then on, I went quite fast. In my mind, I want to make a perfect film. All films have faults — it's in the nature...no, that's wrong to say all films have faults. For instance, all paintings of the past don't have faults in them. (1974)



When we were making **Begone Dull Care**, we were working in an old building and we were cursing the dust; it settled on our partially painted film and sometimes ruined everything. One day we had just painted very carefully several feet of film when it fell to the floor while still wet. We were furious. But on picking it up, our fury turned to excitement. We discovered a curious phenomenon; the wet dye had pulled away in serrated circular shapes from each grain of grit, making a splendid overall texture. On running it on the moviola, we were elated. From that time on, Eve started collecting different kinds of dust which she catalogued in small boxes from fine-powdery to coarse-rough. It was marvellous for making new effects.

(1971)

In one sense, the finished product is the most important part of it. It's what you're aiming for, all the duration you're making it; but the creating, the making of it is the important thing. Just as soon as I see a satisfactory trial print, my interest drops immediately. The film is dead meat, as far as I am concerned. If I am forced to see it after that stage I squirm, particularly at passages where I know it could have been better. Like **Pas de deux**, I now see I could have done the whole first section a different way, which would have been more satisfactory. This feeling of hostility to a film after you've made it falls away after a few years.

(1971)

In any art movement, the art has to move onto a new phase — a filmmaker has a desire to make a film that is not like a previous film. Film is changing, and it can't help but keep changing. I don't know whether it ever comes back to the same thing; it does return to the spirit of a previous period in some way, but it's different, it's new. Take a film of Jacques Tati like **Mon Oncle** which has something quite new — for me, unique — in it. So, people will come along and do new things and sometimes return to the spirit of an earlier age. The process of art evolving is always one which has fascinated me.

(1971)



The hands of McLaren and Lambart painting *Begone Dull Care*.

For me, moral art is the greatest kind of art. Amoral art, such as abstract painting and decoration, many kinds of music and dance, fine cuisine etc., is predominantly an appeal to our senses, and, although a very vital and essential part of human activity, is of a lower order than moral art which appeals not only to our senses, but through our senses to our whole being. The good moral work of art should have all the qualities that a good amoral work of art should have, such as formal unity, balance, contrast and a sensitivity to the material out of which it is made. But, it has, in addition, an even more precious quality — a consciousness of the human intelligence, the human spirit and that man is a social creature.  
(1954)

I don't want to down the work of art which is not moral, because the majority of our works of art are not moral; and I feel that works of art are a terribly essential part of human activity and life. I'm not talking about it from the artist's point of view only, but also from the spectator's point of view, too. It starts at such an early age with kids drawing pictures. Man, as far back as we know him, has wanted to draw pictures, and, for one reason or another, for the last 100 years, he's been drawing pictures that move; and it's one of the mysterious complexities of the human spirit that we want to do this and need to do this and can't get along without it. People want to be entertained. Think of the average person who works as a secretary, in a factory and life is very dull and monotonous. They want to escape and not constantly be thrown into a film or TV which pounds issues and problems of the present.... I've been sounding off on general philosophical problems; and I don't know if I'm the person to do that.  
(1971)



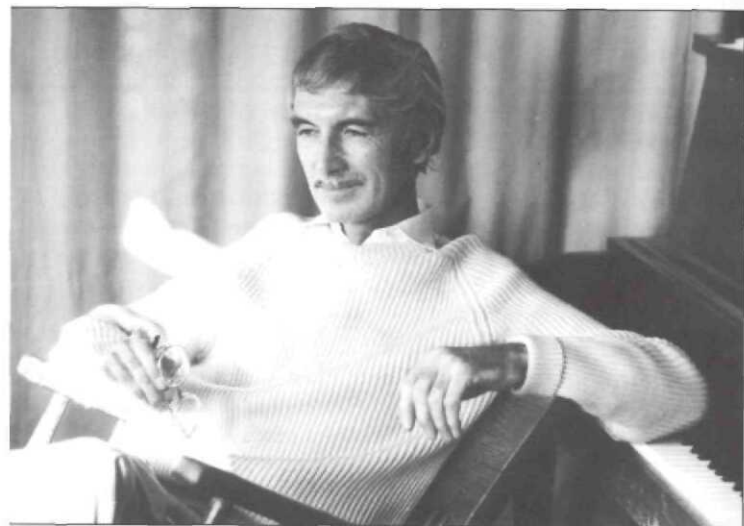
## MUSIC

If a person's a static artist and a musician, the chances that he or she will be an animator are much higher, because he's interested in motion — the whole flux and flow of what's happening. Music is organized in terms of small phrases, bigger phrases, sentences, whole movements and so on. To my mind, animation is the same kind of thing.  
(1968)

In one sense, I'm musically educated, and in one sense I'm not. I learned piano at six for one year only, and then I learned violin for three years between the ages of 9 and 12. The violin is purely melodic, except for double-stopping; and it was my bitterest regret in my teens that I was not studying piano. But during the study of violin, we had classes in musical theory and I learned quite a lot from that. I pushed it aside at that time, but later on I found it very useful.

I got excited about classical music after my teens. In my teens, I was only interested in jazz or popular music or folk music. But I read a lot about classical music. For example, Hindemith wrote two books about the structure and composition of music. I read those with avid interest. I was absolutely fascinated with everything he said; and so I found myself in the position of being a half-baked musical composer. I really am half-baked.

My first serious attempt at making music was in **Neighbours**. I always had the urge within me to do the music for my films. I felt if I'd had a thorough musical education, I would have been able to write music for almost all of my films. The musical structure of **Neighbours** is pretty unified. There is one theme stated behind the titles, and that theme keeps re-appearing in different forms. By the time the fight comes it's so elaborated that you can scarcely recognize it.



McLaren and his piano at the NFB, 1970.  
(Photo: Ben Low)

The music came afterwards in **Neighbours**. I had music in mind. So we shot the various motions with a certain rhythm to them. When they walk, they walk at a certain tempo...this was all worked out carefully, in order to facilitate doing music.  
(1971)

I think the filmmaker who uses existing music gets a free ride. And film music of any type can cover up weaknesses in the visuals. It is an easy way out.  
(1971)

The visuals of **Mosaic** started in a very slow and simple way and gradually built to a climax; so I felt I had to hold back my sound too. There were tiny little things moving, so I felt I needed tiny little sounds. I put tiny sounds where the little dots come together; but right away it seemed too busy — it took away some of the mystery. So I eliminated...and it gave me more chance of building to a climax. The silences were made very much more tolerable by the use of reverberation, varying that reverb. That became an important feature.

Some of my movies (**A Chairy Tale**, **Lines**, **Mosaic**) were made as silent films, and I would have preferred to have had them that way, but distributors and the general public have been conditioned to feel something is wrong and missing.

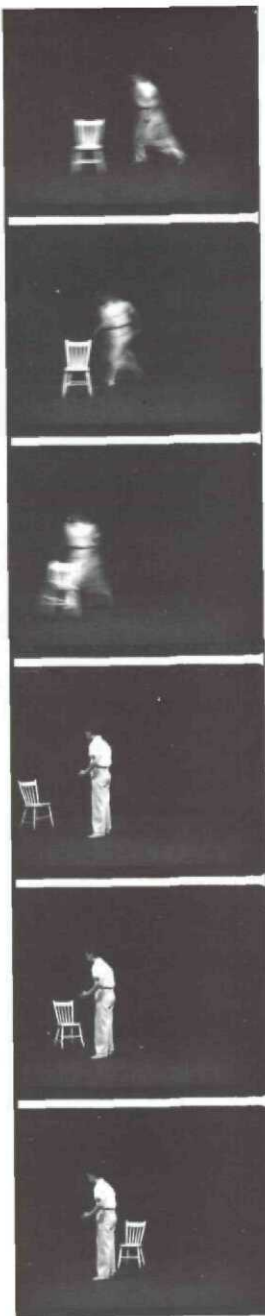
I think there should be a public place for silent movies. Just as radio (pictureless sound) is a valid public medium, so silent films (soundless picture) should be equally valid. But unfortunately, the ways things developed has made that well nigh impossible.

Compare Marcel Marceau in silence or with sound; for me, the former is much stronger. Silence has the effect of riveting my attention.  
(1974)





McLaren and Ravi Shankar recording  
music for *A Chairy Tale*.  
(Photo: Sam Tata)



*A Chairy Tale*

*A Chairy Tale* was made as a silent film; and I began to get neurotic, until I saw Ravi Shankar on TV giving a recital, pure Indian music; and it struck me immediately as being the solution to the problem. So I spoke to him...I said, "I don't want terribly Indian music, I want a kind of halfway house between Hindu music and Western music. Can you do a raga and can you do it in such a way that it's international music?" I'd been in India and realized how Indian music was really something very different from Western classical music. That whole cliché about music being an international language is not right; but I said I would like to make an international language of the music for the film!  
(1974)



## SYNAESTHETIC STORY

When I was a teenager, I used to collect smells. I had a wooden box with holes drilled in it, and with test-tubes in the holes. I'd go around collecting smells and making arrangements of those tubes. I'd arrange them like a melody — like a pan-pipe. I'd run it across my nose and get one smell after another — a little melody with ten notes of smell. I'd rearrange them and try them in a different way. I felt certain it would come to movies.

(1968)

In the forties, I was in a cinema in New York equipped with smell. It was a steeply-ramped balcony and in the seat in front of you, two or three feet below, there were a couple of little tubes. What amazed me was, that when the smells came, (and they came only occasionally) they were pretty well in synch. How they managed to get those smells through all those distances of tubes in synch, I don't know.

At the Film Board, I decided to try this out. We collected smells of various sorts. What made it possible was that I discovered that a theatre which held about twenty people had an air-conditioning system which was pretty powerful. That meant you could move smells quickly and there was a place behind the screen where we could open up the air-conditioning, which meant we could pump smells in. We bought a lot of fly-tox sprays and about a dozen or twenty perfumes. I can't remember the film. I'm pretty sure it was a slow film. We did tests beforehand to figure out the delay between spraying and hitting the auditorium. It was fun! I think there was Grant Munro, Eve Lambart and me pumping away. People dropped into that theatre while it was being screened and - eugh! Because what happened is that every smell lingered a long time. They got all the smells which had been pumped in, up to that moment. Of course, for those sitting there, it wasn't the same. As soon as a new smell was introduced over an old smell, you didn't notice the old smell,

just the new. When the lights went up, the people who had come in late talked about the awful smell when they came into the theatre. We all went out for a minute, closed the doors, opened the doors, and went back in to a smell like stale cherry pie!

But then, someone was running a film in the theatre after us. There was a scene where a woman came down a flight of stairs. Grant and Eve knew the film, and pumped in a stronger and stronger feminine perfume. It worked beautifully, because you got the perfume from a faint whiff, getting stronger and stronger. But we dropped the idea of making smellovision.

(1971)





## UTOMATIC MURAL MOVIES

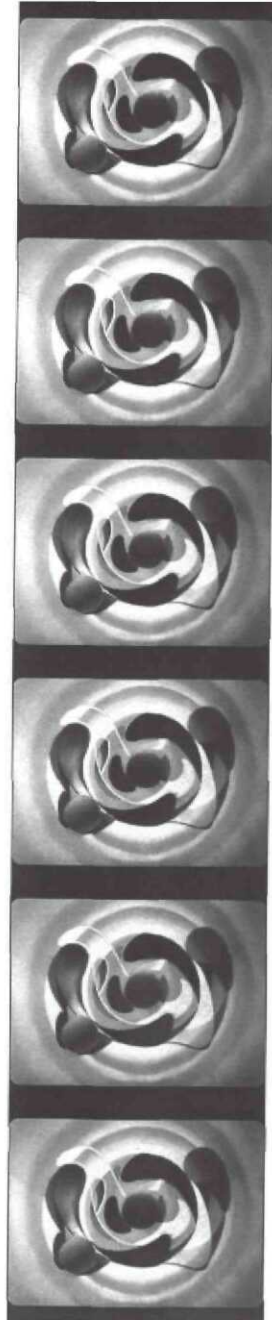
(Proposed by McLaren to the Museum of Non-Objective Painting, New York, 1940.)

This is a method for showing mobiles (hung on a wall in a gallery) alongside "still" paintings. This is how it would appear to visitors of the gallery. Hung on the wall near to other pictures is a frame containing what looks like a perfectly plain white canvas. (Alternatively the canvas might have a certain organization painted on it.) Upon passing, or standing in front of, or sitting down on a seat facing the picture, an electric circuit would come into operation, the illumination in the part of the gallery near to the picture would dim, and at the same time the canvas would grow luminous with colour and non-objective form, which would slowly swing into rhythmic and balanced motion, making a complete evolution of non-objective action at the conclusion of which the canvas would dim and the gallery lights would return to normal. (Alternatively, if an organization were on the canvas to start with, on the illumination lowering the organization would become luminous, begin moving, and complete a cycle, returning to a point at which the organization started, whereupon the canvas and gallery illumination would return to normal.)

The whole impression is one of a *painting in action*.

The apparatus for this is comparatively simple. An automatic loop projector, sunk into the wall, and back-projecting onto ground glass with a white gauze...

(1940)



Metamorphic pastels.  
(1940)



## N MEANING

If you have two points of equal interest on the screen, one on the left, one on the right — well, you shouldn't do that, unless you want to create a confusion and an uncertainty. One has to be the primary interest, the other can be secondary. Leading the eye around the screen, sometimes quickly, sometimes slowly, you must always know at which point on the screen your spectator is going to be watching. I used it in a lot of films. The most obvious one is **Rythmetic**.

(1974)

There are many ways of progressing through time without being narrative, though that is one of the old and fundamental ways, especially in literature. How would you classify my films **A Phantasy**, **Rythmetic** or **Hen Hop**? They are certainly not abstract and they are certainly not narrative.

(1974)

I want to tell the viewer about my inner feelings; but I don't want to tell the viewer about my inner thoughts and opinions — you know, intellectualizing. In **Begone Dull Care**, I'm telling them how I feel about that music; in **A Chairy Tale** how I feel about the chair being sat upon.

(1971)

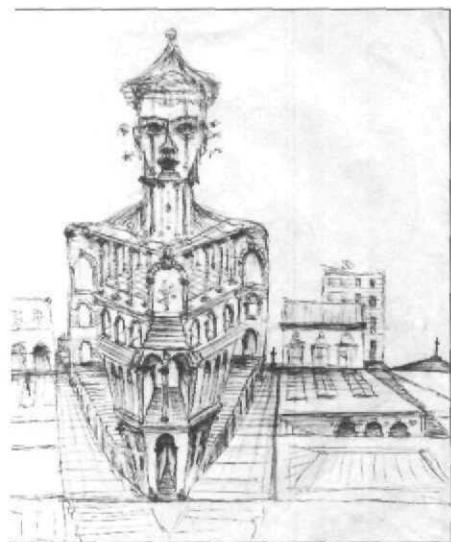
For me the chair could be a symbol of anything — the underdog — but I've heard many different interpretations, like a man and a woman; or the servant and master, or the last interpretation I had from a whole class of children — the teacher-pupil relationship. **A Chairy Tale** shows what can go wrong with that relationship. I'm happy if people take their own interpretation.

(1971)

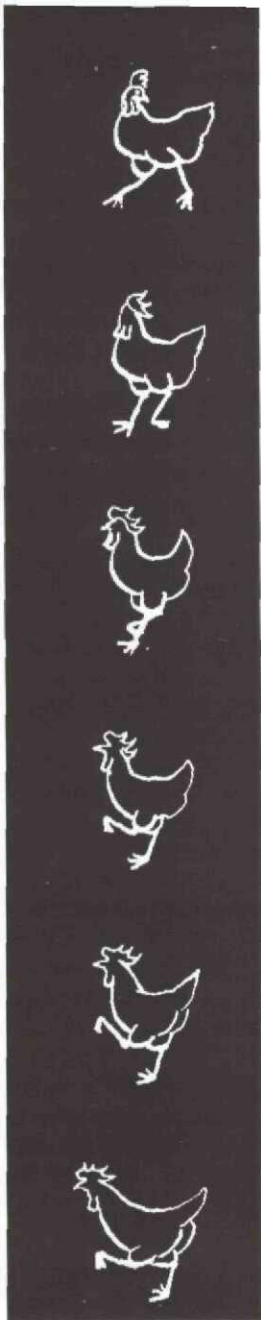
It's crept up in a number of films, even **Serenal**. Like in **Boogie-Doodle**, these two little things are a male and a female sort of — being kept separated by a line and jumping over that



Love on the Wing



Untitled, December, 1948.



Hen Hop



line. They are frustrated, but at the end they are together. And that same trend of thought or feeling finished up with **Pas de deux**. It finds itself in **Ballet Adagio** in a way. I would have liked **Ballet Adagio** to have started off the way it does and develop into much more of a love thing — the ending being their intimacy. Instead, it ends up with a great flourish.

Always behind the very abstract films was the thought that these dots or blobs are human creatures or animals. It doesn't matter which.

(1974)

I do think the situation — whether it's represented in simple abstract form or more complex human form — two creatures coming up against each other and getting together finally is something that satisfies me and is something that everyone understands.

(1985)

With two things, you can create quite a lot of interest; with three, you can get a triangle situation that reflects a human triangle. I thought of them as little creatures — like **Stars and Stripes**, the four stripes — one squats down and jumps up — I thought there's something funny in that, and I made use of it very intentionally. I got fun out of trying to make them funny. The fun welled up in me. In **Hen Hop**, there's only one creature, but the antics of the creature are sufficient to make it look like a solo dancer — like Fred Astaire, he doesn't need a partner. He can do all sorts of things on his own.

Mind you, these little things gain by the fact they're abstract, because people don't expect a triangle or a square to behave anthropomorphically. So, there's an interest and curiosity. That was the fun of animating abstract things.

(1971)





## AN ANECDOTE

The strobe attack is a little box with a parabolic reflector and tiny teeny little light — a pinpoint — there's a knob and you can make flickers from about 2 or 3 a second up to thousands. I found the Film Board machine shop had a strobe attack which they used for determining high-speed machinery. It's a flash, a terribly brilliant flash including infra-red. When you look at it, particularly if you put a sheet of tissue paper or frosted glass on top and change the speed, you get the most fabulous brilliant colours and patterns, which would change. The purity of the colours is fabulous. It was a time that mescaline first was being written about a lot and this flicker thing was mentioned in relation to mescaline in articles I read. I used to borrow this thing for months on end, have it in my room and at lunch time I would go and have visions. It was sheer pleasure. And then when I went to have my eyes examined a few months later, the doctor said, "You've got faint cataracts. Have you been looking at infra-red or ultra-violet?" So, I enquired about what kind of light it was. It had infra-red. So I had to stop.  
(1974)



## ON ABSTRACTION

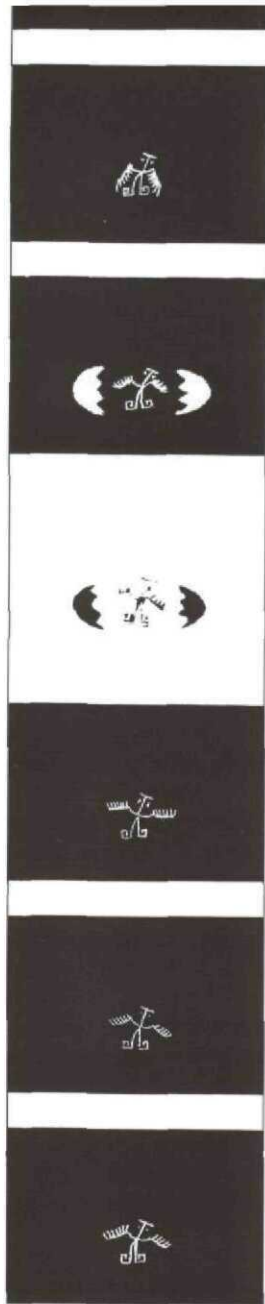
As a painter, one of your trainings is to see a thing as an abstract thing. When you look at a group of objects, it's not just this object and that object, it's also the relationship between the two, the shading, etc. You analyze it, it's no longer a crucifix or a plant leaf. It's a green shape with a curve and a darkening on one side. I think the painter automatically sees a scene as an abstraction — even in the process of doing a painting that is completely realistic.

In art, you want to stress some things which you feel are important. If you eliminate the things that aren't important you arrive at the things you want to say very quickly.  
(1985)

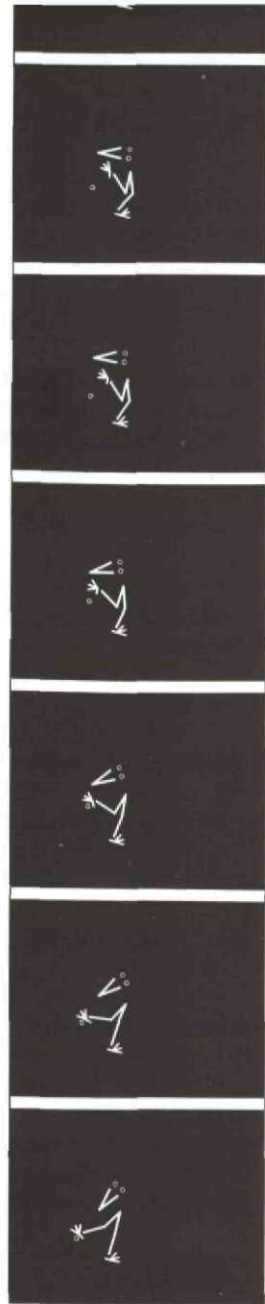
Paul Klee strips away the solidity of the object and even, often, its flat content, and deals with just line. Now I see a relationship to **Blinkity Blank**. It's kind of Paul Klee-esque; although Paul Klee never entered my mind in doing **Blinkity Blank**. With **Rythmetic** I don't know...

In animated film, there is a very practical reason. It just cuts down on the amount of labour — anything not essential to the behaviour. It lets me get on with making the film, and there is practically nothing in many of my films! If there was a little tree standing there in **Blinkity Blank**, it would distract the attention and be out of place. Only in films in the surrealist period, like **A Phantasy** — there I'm interested in decor and graphic detail; but I don't know whether the painters like Klee had that practical motive; because it's very easy to add additional lines to a drawing or a painting. It's not going to mean doing it 1000 times.  
(1974)

That sort of thing is Marcel Marceau. **Le Merle** is full of that — leaving out things. The bird is not structured like a bird, but you assume it's got a neck. You have to supply a lot of



Blinkity Blank



Le Merle



things which are not visible, but which are referred to by the motion. When Marcel Marceau goes up a flight of steps, there are no steps there. He remains on the ground. I think that this is the same thing when the bird bounces the ball in the clouds. (1974)

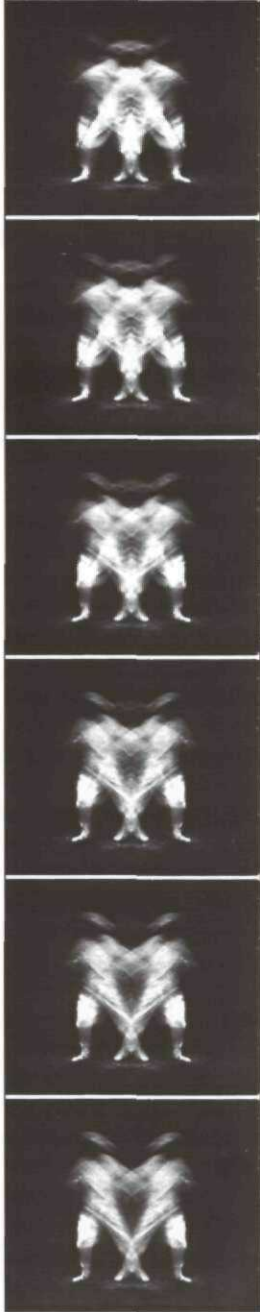
Once I had the idea for *Neighbours*, I felt it terribly important not to tell the story naturalistically, because it's a parable and not a story. We had to introduce some non-naturalistic motion — the chairs sliding towards the camera rather than the human beings, so it is a kind of naturalism once removed. As for the trees, they're natural but they behave unnaturally.

I like black and white films. I don't exactly know why — probably because there is a stylization which is removed from actual life, unlike a colour film. Unless it's done superbly, as in the Japanese film, *Gate of Hell*, colour can be a very distracting element.

In *Pas de deux*, there couldn't have been 13 images moving all the time. We had to bring them back to human reality; so that they are human beings going through these things. I can think of some filmmakers who would want to make an abstract film, with the same technique, with wonderful patterns of light and shade moving across the screen and you're vaguely aware that human beings are making them. I wanted it to be a human story.

An abstract film which is abstract both in its shapes and in its motion completely is *Spheres* and here the creative process involved a general hunch or a conception that could not be specified clearly beforehand. René Jodoin and I started to improvise very simply, with one sphere splitting into two, into four, and evolving the motion as we went along, knowing that it would become increasingly interesting. (1971)





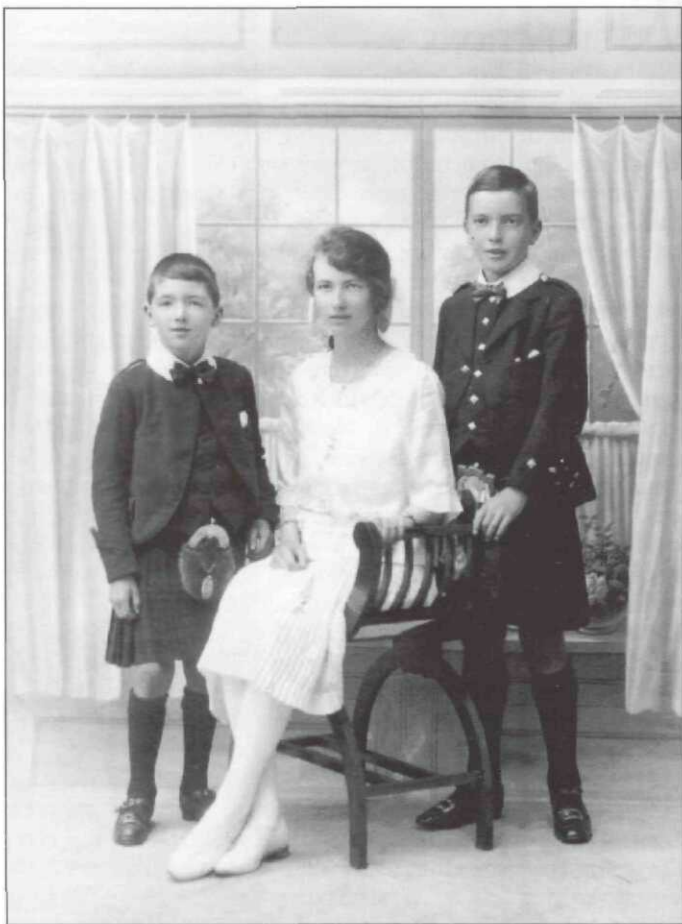
*The Last Dance*  
(from Creative Process)



## REFLECTIONS

Animation as such has lost its appeal to me; just because I've done so much, I think. I'm searching for ways of making films which are still (sometimes, in very small ways) experimental, but interest me. As you grow older, your tastes change. Your initial excitement and vitality of youth turns into something more meditative or more — well, I don't know how to say it...for instance, my taste in music. I grew up in the twenties and thirties and my taste in music at that time was in jazz, Dixieland jazz, all kinds of jazz, with excitement and high tempo. I listen to that kind of music occasionally for nostalgic reasons which are very different from the reasons I listened to it when I came to know it. Now, my tastes in music have become more and more classical, so that I can scarcely stand popular music except if I manage to get to a discotheque with a girl and dance. It becomes suddenly terribly exciting. On the whole I prefer very placid, calm, slow music. I really can't bear Beethoven symphonies, first, because I've heard them so much and they're full of sudden changes; but go back to Orlando de Lasso, and it's very placid and calm. I think my taste in music reflects something in my whole being which will come out in film too. I like the slow-moving film. I know I did *Synchromy* (1971), but I don't think that is in line with the direction I'm going.  
(1974)

I got excited in a technique and that was that. The direction I'm going is to something slow and simple, and maybe very simple; so that finally I'll be making films which are terribly boring, but that's how I am, and that's part of the process of growing older — for me growing older, anyway. You know, I would like to do a film on the *Bachianas Brasileiras #5* because it's just so — well, I was going to say slow and sentimental, but I don't think that's quite it. It's a matter of my feeling of...it's a matter of how I feel and...  
(1972)



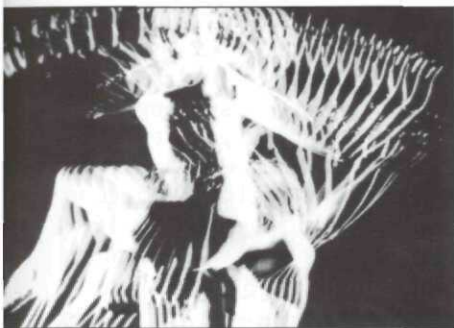
McLaren with his elder brother and sister.

I'm still deluded by the impression that I should make another film every year. That's an internal pressure which makes me want to come in to the NFB at 8:30 and work on past 5:00, which I frequently do. It's a kind of duty — it's a thing which has been inculcated in me ever since I started going to school at the age of five. You go at 9:00, come out at 4:00; on Sunday you go to church at 11:00, to Sunday school at 12:00, go to church at 6:00 — everything up to the age of 16 or 18 is ordered like that. I think all that sort of discipline of my young days dominates me even now.

If I don't have an idea, do I come here and sit in this office and sit and do nothing? I can't sit and do nothing. It drives me crazy. I think for ideas. Until I find an idea, I'm in a crazy state of dislocation and lostness and depression. Now, to implementing that idea and getting it done, if it's one that I can do myself, no problem. I've just myself to contend with. But, if the idea evolves into that big, foreign world with a lot of strangers, I get cold feet. I dilly-dally, shilly-shally until I make some kind of decision. As soon as I've made such a decision, I begin to feel happy again!  
(1971)

Sometimes I've had a feeling that there has been so much art or artistic activity or creative activity in the past, that we're so rich in it, that we don't need anymore. Then, I say to myself, the world has to go on, I have to go on living, everyone has to go on living and everyone has to go on doing something and doing the thing they're best at. We're overloaded with culture — a lot of it has become almost meaningless. This is my pre-ordained role that I have to function in almost automatically.

But when I look at the history of painting — the French Impressionists for instance, did a kind of painting which was a different kind of joy from Rembrandt, Bosch or Breughel. So the human creative activity is capable of an infinite number of things, many of which have probably never been touched. Sometimes I think, God, what is painting going to look like 100 years from now? Maybe, it will turn out some marvels



*Pas de deux*



*Ballet Adagio*



*Pas de deux*



which are totally inconceivable to us. So, we have to go on doing our own thing, as they say. It has obviously been a terribly intensive urge in the human being to create works of art...

Maybe it's because my enthusiasm or talent is drying up. On the other hand, it might be that I have a subconscious urge to be so excited about a work that I'm terrified to approach it!  
(1971)

I can say that the film I get most pleasure from is **Pas de deux**. I don't see my films much after they are made, but when I do see them, some I squirm at, but others I don't; and one of these others is **Begone Dull Care**. It still gives me a kind of lift. I don't know if it does for people today, who are not used to that old-fashioned type of music.  
(1971)

Take **Ballet Adagio** — you don't feel the excitement of the filmmaker. He's shifted from excitement about the medium of film to excitement about something that exists outside of the medium of film.  
(1972)

From a certain date, I started eliminating, becoming more severe. I was being made aware in everything I was reading, or seeing, of the beauty of the classical approach, the beauty of the sonnets, the beauty of Greek architecture as opposed to Renaissance or Gothic; Georgian architecture as against Victorian architecture. There is the whole change in our times, too, since Bauhaus.

Incidentally, Mondrian is a painter whom I could never get a feeling for. But I saw a screening here of a film on Mondrian and his work. Now, I understand him much more and appreciate him and his work. I realize that I am part of that swing, that whole drift within a century. We can't escape our period.  
(1974)





McLaren, Paris, 1950 - en route to Canada from China.



McLaren, Cuba 1962.

The fact that so many of my films are abstract is related to the environment, being deprived of nature, and not being involved much in human activity. When I was in China, I was involved in something quite outside my own life, and that had its effect. (1974)

In a sense, when I said I feel part of the first decade of this century, it's not the artistic aspect. It's the technical aspect, the exploration and discovery of a new toy, as it were. (1974)

I would say I have no technical regrets; I found here at the Film Board all the technical facilities I need — in fact, many more than I need or ever used. Looking back, let's say, I'm kind of sorry I've done so many abstract-type films but... I wish I had done a wider range of subject matter. I secluded myself, wrapped myself around in a very minute, personal world, didn't expose myself to influences that would probably have led me to do a wider diversity of themes and types of subject matter — because I feel I am capable of doing it, but I never had the stimulus; never sought out the stimulus. (1974)

Part of my humility stems from my inherited make-up, I think. Part of it was due to my sense of inferiority when I was a teenager; and I started to compensate for it by my desire to excel in films. It wouldn't have mattered what I turned to. I would have had the desire to excel. I felt inferior. But this desire to excel in films didn't dominate. It wasn't the main motivating force — it was a kind of subconscious pressure. My sheer excitement in the medium was the drive.

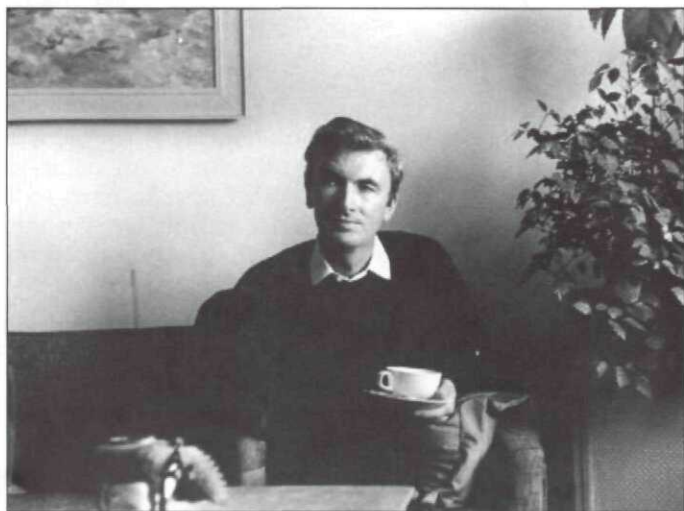
In the face of any success, I would tend to say, that's not important. I don't want it. I'm embarrassed by it. My main happiness was in the film — the actual making, the peak of my satisfaction. The film's success was a by-product. (1974)

I shall always remember a bitter mid-winter's day, the scene of a car crash. The traffic cop sitting beside me in the warm car, writing down the details of the accident in his notebook. On seeing my name, he asked "Are you the movie guy?" From that moment on, his notetaking was constantly interrupted by all sorts of questions about my films and their techniques; he remembered things about them I'd forgotten. I was flabbergasted. When he finished his notes on the accident, he flipped his book to the back page and asked me to sign it. With a hearty handshake we parted. I felt very happy about this proof that my contribution had not been just for an elite, but had reached the grassroots.

(1982)

Well, I don't know. I just would like to be remembered for having made some films which have touched people greatly or melted them or moved them in some way or excited them.

(1982)



Norman McLaren's favorite photo of himself anoted by him as follows:  
*Sam Tata's cup of tea portrait of McL.*



## PART B

SELECTED FILMS:

*Norman McLaren*



## TECHNICAL NOTES

Norman McLaren wrote "technical notes" for all of his films. These notes could be sent out in response to the many enquiries from around the world.

This group of technical notes covers the films in **Selected Films: Norman McLaren**.

Copies of technical notes for other McLaren films and techniques can be obtained by writing to:

National Film Board of Canada  
English Animation, P-16  
P.O. Box 6100, Station A  
Montreal, Quebec  
H3C 3H5





## BOOGIE-DOODLE (1940)

### THE VISUALS

The visuals of the above film were drawn directly on clear 35 mm film with pen and India ink. This produced a black-line image original (first generation). From this was made a clear-line-image-on-black print (second generation), and then from this a black-line-image-on-clear print (third generation).

The second and third generation prints were used to make colour prints on a now defunct 2-colour black & white separation process (Warner Color System). This process used two dyes, red and blue; two passes were needed to make the final colour print.

Printing the second generation print (clear image on black ground) with the red dye produced a red linear image on a black ground. Then, with a second pass, using the third generation print (black-image-on-clear) printing for the blue dye produced a blue background with an unexposed linear image.

The final result was a red linear image on a blue ground.

If the red and blue dyes overlapped the result was black; if they underlapped the result was clear. By slightly horizontally off-setting the printing of the 2nd & 3rd generations with each other, the red-line image developed a black edge on one side edge and a clear edge on the other side. This off-setting method was used in several of my hand-drawn films.

### THE SOUNDTRACK & SYNCHRONIZATION

The soundtracks were recorded prior to the visuals. For synchronization, the soundtrack was then threaded on the sound head of a moviola with blank leader on the picture head. With both running interlocked (often at slower than normal speed) the musical beats, phrases and sentences, were tapped out on the blank leader with grease pencil. The leader

was then run through a frame-counter and the distances in terms of frames between grease pencil marks measured as an accumulating total, from which the number of frames between each beat could be derived. These measurements were written down on a "dope-sheet" which provided all information necessary for synchronization (where needed) of the visuals with the sound. This is, of course, one of the usual standard practices for synchronizing animation to pre-recorded sound track.

Norman McLaren (1985)



## LE MERLE (1958)

**Le Merle (The Blackbird)** is based on a well-known old French-Canadian folksong. It is a cumulative nonsense song about a bird which, with each verse, loses a different part of its body..but no sooner is a part lost than it re-appears three-fold and, as the song progresses, the lost parts accumulate.

The soundtrack was recorded first.

### VISUALS

Single frame animation of stiff white paper cut-outs on a black horizontal surface, photographed on black-and-white stock. The image of the bird was extremely simplified and stylized; the various parts of its body were made with small rounded rectangular bits of paper, occasionally jointed together, but more often left unjointed and kept free from each other to allow for greater flexibility in animating.

The colour backgrounds which consist of holds, pans, and zooms on pastel drawings were shot separately on Eastman colour negative. These backgrounds were then married, in printing, to the image of the bird.

Norman McLaren (1958)



## CHAIRY TALE (1957)

### VISUALS

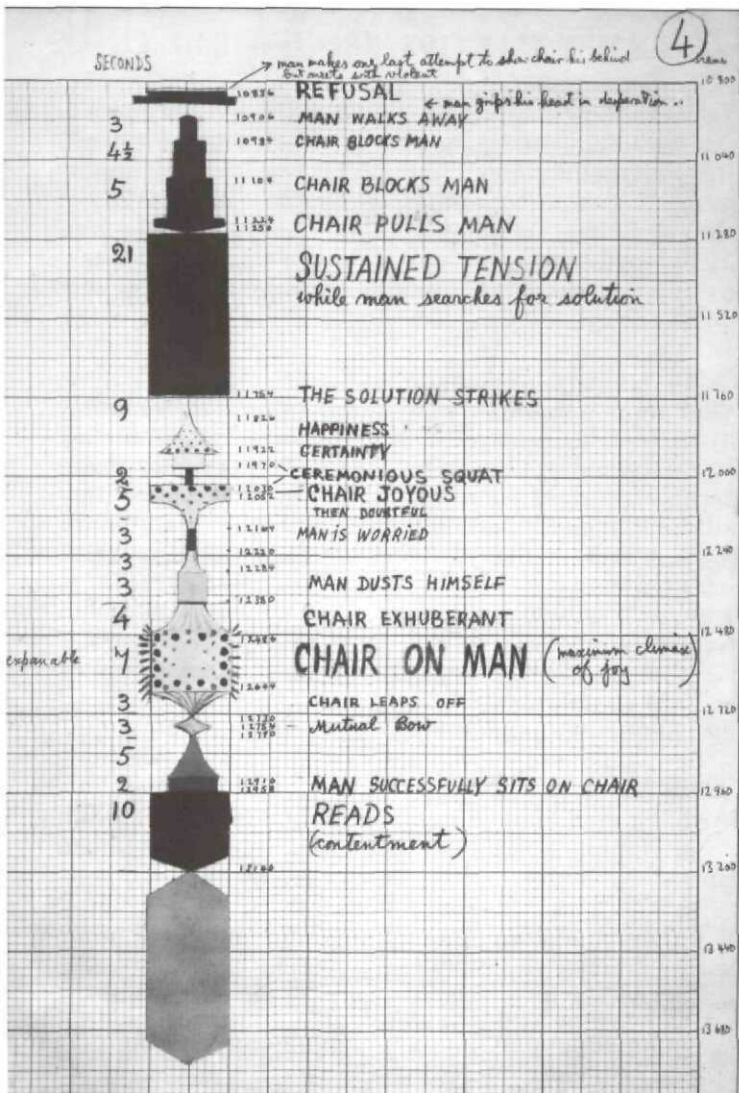
Our method for making the chair move was that of traditional string-puppet technique, except that instead of having the strings run vertically upwards, we had them attached to the chair and run horizontally to off-screen right and off-screen left, where they were manipulated by two animators. For only a very few scenes did we use vertical threads. The strings were fine black nylon fishing tackle, which was invisible to the camera.

While rehearsing, we discovered that it was very important just *where* the strings were attached to the chair. Tying them low on the legs, or high on the legs, or low or high on the chair's back, or to combinations of these parts, made possible very different types of chair motion. If we wished the chair to rotate, at least two threads were wound around the chair's four legs in advance of shooting; during the shot these threads were pulled (off-screen) in opposite directions. For the most complicated motions, such as the chair leaping off the floor and flying through the air, we had to have four manipulators and add threads running vertically to pulleys on the ceiling, then horizontally to left and right off-screen.

### USE OF SUB-NORMAL CAMERA SPEEDS

We had a variable speed motor attached to the camera, which could give us 16-, 12-, 8-, 4-, 2- and 1- frames per second (fps).

It was much easier to control the chair's behaviour if we moved it slower than normal. This led us often to shoot at half-speed (12 fps). If we wished both the chair's and the man's action to appear as if they were behaving at normal speed, the chair was manipulated at half-speed, and the man performed at 1/2 speed. Or if the chair's action was very tricky to manoeuvre, we would run the camera at 6 fps, and have the chair and man move at 1/4 speed. As long as the action and



Part of visual outline of *A Chairy Tale*, prepared by McLaren for Ravi Shankar.

camera speeds were slowed down by the same amount, the final projection looked normal. In cases where the chair moved with supernatural speed and the man with normal speed, our formula might be: camera-8 fps, chair normal speed, and man 1/3 normal speed. (The idea of variable ratios between camera speed and performance speed is dealt with in more detail in the technical notes on *Neighbours*.)

#### SOUNDTRACK

The picture was completely edited before we considered what to do about the sound.

At this moment, by great good fortune, the distinguished composer-performer sitarist Ravi Shankar, who was then living in New York, had come to Montreal for a TV recital. I invited him and his tabla-player, Chatur Lal, to view the silent film. He expressed a keen interest in composing the music.

We went about it in this way. In advance, I prepared a chart of the whole film on squared-off graph paper, where each square represented one second of time. The duration of sequences, episodes, actions and gestures was indicated precisely on this chart, by the use of colours, diagrammatic marks, names and numbers.

I then spent an afternoon screening the film many times for Shankar and his percussionist. Between every screening we would identify each sequence on the chart. After about a dozen screenings, they were both thoroughly acquainted with the film and the chart as it related to the film. They required three weeks to evolve the music based on the chart.

For the recording session the film was split into about ten loops, and the music performed as each loop was projected. About 20 seconds of silence was included in the loop, just enough for decisions to be made for improving the substance and manner of the performance.



When the music was felt to be right, we did not stop the projector, but continued running, and made several takes immediately; for Shankar it was important that they be recorded while at the peak of their "warming-up" rehearsals.

We also recorded 'wild' a few special effects on the sitar, and many percussive and semi-musical sounds on the table. These were later selected from and edited into the re-recording tracks for the final sound mix.

Norman McLaren (1957)  
(Re-written 1984)

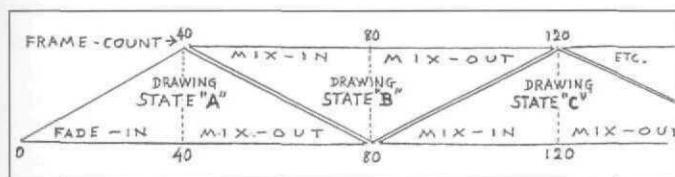


## PHANTASY (1952)

### VISUALS

The film is in three parts. The first and third part used the same technique, namely: a single colour-pastel drawing which was slowly metamorphosed by an almost continuous chain of 48 frame mixes; the drawing being slightly changed between each mix.

A simple example may show this process more clearly.



The initial drawing (STATE "A") is faded-in from frame zero to 40, and mixed-out from 40 to 80. The film, without being exposed, is then wound back to 40.

The drawing, by adding or removing pastel, is changed to STATE "B", which is then mixed-in from 40 to 80, and mixed-out from 80 to 120. Once again the film, without being exposed, is wound back from 120 to 80.

Again the drawing is changed to STATE "C", which is mixed-in from 80 to 120, and out from 120 to 160, etc.

As a result of this technique, the drawing is put into a continuous state of flux or metamorphosis.

Different areas of the drawing are made to metamorphose at various speeds. While some areas remained static between states, others changed slowly, moderately or rapidly.

Generally, the area of primary interest in the drawing had the swiftest change. Further, sometimes only a minute detail

would change during one mix, while at other times the whole drawing might do so.

In my opinion, the metamorphosis of a drawing (or painting) by the chain-of-mixes technique is especially effective when the drawing is in soft-edged and blurred chiaroscuro, or is rendered in pointillism and broken texturing, or even in fine or loose cross-hatching. Chain-of-mixes are much less suited to clear-cut linear imagery or hard-edged areas.

In **A Fantasy**, there was considerable additive and subtractive animation, where certain elements in the imagery grew, became blurred and diminished (pastel being added-to or rubbed-away from existing images, frame by frame).

Norman McLaren (1984), Donald McWilliams (1991)

#### SOUNDTRACK NOTES BY MAURICE BLACKBURN (1948)

The music was planned after the visuals were completed.

The score for saxophones and animated sound\* was written as an ordinary score, the animated sound being considered as an instrument of the ensemble. The only difference being that in their length and placing the synthetic notes were thought of in units of 1/24 of a second, or, in other words, framefuls of film.

A "click-track" was made from the shot synthetic sound in order to synchronize the other instruments too. The other instruments were 3 saxophones (soprano, alto and tenor). They were each recorded in turn by the same instrumentalist to this click-track, which therefore permitted complete and individual control of each track in the final mixing of all 4 tracks.

\* See *Technical Notes on Animated Sound by the Card Method* available from the NFB.



## NEIGHBOURS (1952)

### STOP-MOTION LIVE-ACTOR TECHNIQUE

This technique (sometimes referred to as "pixillation") consists of applying the principles normally used in the photographing of animated and cartoon movies to the shooting of actors; that is, instead of placing drawings, cartoons or puppets in front of the animation camera, we place real human beings.

The technique is not new. Its origins go back to the early French movies of the Méliès epoch, when the camera was stopped in the middle of shots to produce trick effects, and the same principle has since been used occasionally in films by experimentalists like Hans Richter, Len Lye, Richard Massingham and many others. But on the whole, the technique has never had the exploration it deserves, nor has it had this in the film **Neighbours** or **Two Bagatelles** where only a few of the possibilities have been applied, and rather crudely at that. Nonetheless, as a result of working with this approach I have jotted down the following observations.

In essence, any technique of animation consists of stopping the camera between the taking of each frame of film, instead of letting it run on relentlessly at normal speed (that is, 24 frames a second). Once it is assumed that the actor being photographed by a movie camera can stop between any or every 24th of a second, a new range of human behaviour becomes possible. The laws of momentum, inertia, centrifugal force and gravity, but what is perhaps even more important, the tempo of acting, can be infinitely modulated from the slowest speed to the fastest. Apart from the apparently spectacular feats of virtuosity that this makes the actor capable of, it is possible to use the technique in a concealed way behind what appears to be normal acting. Or, if used in a less concealed way, it can permit to the actor a caricature type of movement. In much the same way as a pictorial caricature can make comment on character and situation by distorting the static form of a drawing, so live-action animation can create a



caricature by tampering with the tempo of human action, by creating hyper-natural exaggerations and distortions of the normal behaviour, by manipulating the acceleration and deceleration of any given human movement. This type of caricature is, of course, often found in animated cartoons, but cannot be found in live-action films until an animation technique is applied to them.

It is also possible to devise many new ways for a human being to locomote. Apart from new types of walking and running, a person may get from one place to another by sliding, (while sitting, standing, balancing on one foot, or any other way) and appearing and disappearing, and a host of other ways.

At the outset of shooting **Neighbours** our conception was to get all action by taking a single frame at a time throughout each shot (having the actors move in small amounts, between frames), but after some experimenting it became apparent that the single frame approach was best only for certain types of shots.

To meet all our requirements, we decided to use a whole gamut of shooting speeds, from one frame every five minutes to one frame every 1/16th of a second, depending on the nature of the shot, so we would select the most desirable shooting speed. Within one shot we might often vary the shooting speed if different parts of the action demanded it.

The tempo of the actor's movement was also considered a variable factor, ranging from very slight changes of static positions through very slow movement, up to normal speed.

The tempo of the actor's behaviour and the tempo of the camera's shooting was therefore adjusted to any desired ratio, depending on the final desired effect, and the speed at which it would be easiest for the actor to achieve his point. For instance, if the actors moved half as slow as normal and the camera shot half as slow as normal (twelve frames per second), the final screen speed would appear normal but, in the process

of shooting, a tempo-control factor of two has entered in and the actor, by performing at speeds between half-normal and normal had available a range of final screen speeds ranging from normal to twice normal. The concept of a tempo-control factor proved to be a useful one.

Many of the shots in **Neighbours** that appear in fairly normal tempo were shot with camera and actors both moving slowly, sometimes as much as four, six, eight, ten and twelve times slower than normal. In the shots with speeded up human action, the camera often took pictures at eight times slower than normal, while the actors moved about four or three or two times slower than normal.

Another advantage of achieving a final normal speed effect by using a tempo-control factor while shooting was this: to tie in with steady musical beats and phrases of the as-yet-unmade soundtrack, we often wished the actions to be of precise metrical lengths, so while shooting at slow speed we would count out the number of each frame as it went by in the camera, thus the actors could arrange to be at such and such a spot on the 60th frame, to have their arms raised at the 80th frame, and their hands touch on the 90th frame, to start rotating on the 100th frame and to decelerate to a standstill over a period of sixty frames, etc. For purposes of integrating human action with music (in a rather ballet-like way) this method is of considerable value, especially so if the music has already been recorded, and the lengths of beats and phrases permanently fixed.

#### EFFECT OF TEMPO

Since both camera tempo and acting tempo are considered as flexible, in order to obtain, for instance, the effect of a man walking, starting at one mile an hour and gradually and almost imperceptibly speeding up until he reaches twenty miles an hour, either the camera may be run at a constant slow speed and the man allowed to accelerate from extremely slow to normal speed, or alternatively the man may walk at a constant speed, and the camera be allowed to decelerate. In either case,




the overall effect of tempo will be the same, but in the bodily or muscular behaviour and centre of balance of the figure there will be differences.

We did not use or explore this field of subtle differences, but we did compare the convenience of either varying the actor's or the camera's speed. In many, but not all cases it was found better to keep the camera speed constant and let the actor do all the modulating of the movement himself; at times both methods were used, especially if during a take the actors were tending to move either too slowly or too fast, we would compensate by pushing the single frame button slightly more or slightly less frequently.

Obviously a normal effect (a 1:1 ratio of camera and acting speeds) can be achieved at any overall tempo, such as, for instance, the camera running at half normal speed and the actors performing at half normal speed; alternatively, the camera running ten times slower than normal and the actors performing ten times slower as well, etc.

However, apparently normal effects achieved by such means do not appear normal when certain effects of gravity, inertia, centrifugal and centripetal force are involved, for instance if a girl who wears a long full skirt twirls around rapidly, and this is photographed normally, the skirt will fly out in all directions, (the more rapidly she rotates, the more the skirt will fly out). If the camera is made to shoot twelve times slower than normal and the girl to move twelve times slower than normal, on projection at normal speed, the girl will twirl at her original fast speed—but her skirt will not fly out. The audience will interpret this either as a lack of centrifugal force or, more likely, as the skirt's being made of lead or some excessively heavy substance. The degree to which the skirt will fly out (or its apparent weight) can thus be controlled by the changes in the overall tempo of the 1:1 ratio between shooting speed and acting speed. Many gradual or sudden modifications in the behaviour caused by momentum, gravity and other physical forces are possible by this technique.



The creative potentialities of this stop-motion, live-action technique are quite considerable for a new genre of filmic ballet and mime.

Norman McLaren (1952)

#### FURTHER NOTES

We used a single camera, that could run at 24, 16, 12, 8, 6, & 4 frames a second, and also take single frames.

We used two animator artists as the actors; this was important, as when it came to shooting single-frame sections (and also other speeds slower than normal) they knew exactly how to move themselves, for instead of making a series of drawings they made a series of postures.

At the outset of shooting, in single-frame sections we made the actors move a small amount, then hold each new position while we clicked each frame. But we soon found a better method: a certain action being decided upon, the actors chose the best rate for clicking the camera, the cameraman then clicked at that speed (usually about 1/2, 1 or 2 seconds), counting aloud the number of each frame (1, 2, 3, 4, etc.). The actors then moved very slowly and continuously, synchronizing their tempo, acceleration and decelerations to the frame-count. For instance, we decide to shoot them walking nine paces, the first pace to take 30 frames, then next 25, then 20, then 15, 10, 8, 6, 4, 2. It is possible they will do this steep acceleration correctly on the first take, because both their action and the camera are going so slowly. When the cameraman gets to the first 30th frame, he starts calling from 1 again and goes to 25, etc., to make it easier for them. Again, in another shot, if both actors were to converge from a distance on the flower at the same instant, and one was moving too slowly, we could always shout out to him to speed up a little.

Not all of **Neighbours** was shot single-frame. Some shots or parts of shots had to be, such as the deck-chairs sliding on the grass and opening up, all the scenes where actors slide,

whether on their backs or on their feet, the flower and the fence moving, and the man flying in the air (which was done by having him jump as high as he could, and clicking one frame at the high-point of the jump; he kept jumping continuously, and moving sideways each time, and we kept clicking the camera. Only when he got exhausted after 20 or 30 jumps did he shout out to stop the camera; with his feet positions marked, he then lay down on the grass, and rested up for the next series of jumps).

Occasionally, very much time was required to change the positions of things between the taking of single frames, such as in the animating of all the fence posts around the graves at the end of the film. With 3 or 4 of us working on it, it might take 3, 4 or 5 minutes. Changing the fence's position between the two houses, 2 or 3 minutes. Changing the position of a baby on the ground, less than half a minute. Changing the position of an actor sliding on his back on the lawn (he did it himself) took five seconds.

Much of the fighting was shot continuously at 8 frames a second. Where great rapidity and violence were needed, it was shot either at 4 fps or rapid single-frame, so that no actual physical violence was involved.

Near the opening of the film, the scene where the men walk back to investigate the flower was shot at 12 frames a second. Since they also slowed down their action by about half, the tempo looks almost normal, but in their performance they were thus able to incorporate slightly eccentric nuances in their gait.

Since there was no scenario, but only a skeletal idea of the theme and its rough development in my head, the detailed action was improvised from day to day as we shot. It was all filmed in natural sequence. At the start of each day our team of four (2 actors, cameraman and myself)\* discussed for about an

\* Actor-animators: Grant Munro and J.P. Ladouceur; Cameraman: Wolf Koenig

hour how we should make the action progress for that day. Then before beginning each shot we would decide at what camera speed it would be best to take it; sometimes we would break a shot down and shoot different parts of it at different speeds. It might, for instance, start with some action at 12 fps, then require 4 fps, then a patch of single frame work, with longish pauses between each frame for careful re-positioning of the props (and therefore also the actors), and then the shot might finish with a stretch of single frame, clicking a frame every half second, every second, or every two seconds.

No optical work was used. The fade-in at the beginning of the film was done in the camera; and the fade-out at the end was made by God. When we first filmed our last shot we began at 3:30 p.m. and were most annoyed that before we could finish the action the sun had set, and it was dark. But in the rushes, the natural sun-fade-out looked good in itself, so we retook the shot, carefully planning to start at 1:45 p.m., so that the sunset would coincide with our last bit of action.

As is obvious, the whole film was shot out of doors in the one location. If doing another such film, I would shoot it indoors with artificial light.\* For single frame work, the summer climate of eastern Canada fluctuates too much from day to day. Many days we had to stop shooting because of grey skies; but what was worse was that on a sunny day, when we were shooting, a slowly-passing cloud might block out the sun in the middle of a single-frame shot, just when the actor was balancing on one leg and holding a difficult position.

Norman McLaren (1973)

\* *A Chairy Tale* (1956) was shot indoors; but McLaren discovered, to his chagrin, that indoor shooting has its own problems. Dust and foot marks on the black floor were to prove just as irritating as any problem with the Canadian weather. (ed.)





## THE "LINES" FILMS (1960-1962) (VERTICAL & HORIZONTAL)

**Lines - Vertical** was made by etching straight lines on 35 mm black leader. That is, by running the tip of a knife sharpened like a tiny chisel along a straight edge, the black emulsion was lifted off the film and a white line resulted. As we wanted the lines to be as smooth as possible, it was necessary to have a particularly good straight-edge, and a method of stretching the film out perfectly straight and holding it there while drawing the line. We were working with approximately six-foot lengths of film and therefore needed a six-foot rule, true through its entire length.

A number of pieces of stock brass and steel supplied by our Engineering Department were tried, in the hope that one would be true enough, but all had waves in them which showed up as undulations in the line when projected. A special stainless steel draughtman's rule was finally ordered from England, and this helped give us the desired smoothness.

The line needed to be clean as well as firm and straight. To support the film, a steel plate about seven feet long by eight inches wide by a quarter inch thick was used. This hard base made it easier to get the line clean. A piece of tape was placed along one side of it and one edge of the tape was cut straight with the ruler; this gave us a guide edge as straight as the original ruler. Each section of film was taped securely by its edge to this guide edge before the engraving began.

Three knives were kept sharpened to a different thickness at all times, so as to be able to produce lines of a varying thickness at will. The finest knife gave the most trouble as it was constantly breaking, thus making itself wider, or cutting the film. Such things as the hardness of the emulsion, the amount of pressure put on the knife, and the exact angle at which the knife was held all affected the thickness.

Emulsion is a solution of silver nitrate in gelatin; when exposed to light the silver nitrate turns black, and fixing makes



the black permanent and tough enough to withstand ordinary handling without scratching. The emulsion on old film which had been exposed to dry air for some time gets very hard and brittle and it was almost impossible to get a clean line out of it. No matter how carefully the knife was handled, the line came out ragged and weak with patches in it. There are quite a number of these places in the film, they were kept because it was almost impossible to duplicate the shot. We learned to keep only a small stock of film on hand and to take it out of a sealed can only when we wanted to use immediately.

The formations used in the film were drawn on squared paper first. A lot of experimental drawing was done to find out which were the most effective and what form the film should take.

In order to make these formations intercuttable, several standard gauges or line positions were adopted to which the lines always returned at the end of each sequence. The simplest one had five equally spaced points. The next one divided the spaces between these points evenly, giving nine points; the next one had seventeen, and that seemed to be about the limit.

By making the slow-moving lines thin, and the fast-moving thick, we were able to create an impression of perspective.

### COLOURING

From our etched clear-line-on-black original we struck a negative (black-lines-on-clear), and from that a print (clear-lines-on-black).

With a first pass in the optical printer, the negative was used with colour-filters to print the hues of the background onto colour-stock. In a second pass, the print (clear-lines-on-black) was used without filters to burn in our white lines.



Upon completion of **Lines-Vertical**, we became curious about the possibility of a version of the film in which all the lines were horizontal, and their movement vertical.

By viewing our vertical-line film with our heads cocked horizontally, we were able to see that there was something more to the effect than a mere 90 degree change in the angle of the lines. In fact, with horizontal lines, our minds read into their rising and falling motion the existence of gravity. Since the lines did not decelerate as they rose up, nor accelerate as they fell down, they seemed to float. This seemed sufficient reason to have our entire vertical-lines film turned on its side by 90 degrees.

To have this unusual operation done we had to send our engraved original (clear-lines-on-black) to a special optical company in New York. The first generation of our new horizontal version was in negative form, black-lines-on-clear. Screening a work print from this confirmed our feelings that, if it had an entirely different colour treatment from **Lines-Vertical**, and a new musical score, it could be released as a separate (but related) film — **Lines-Horizontal**.

#### COLOURING

The colouring was added with filters by two passes in the optical printer. In the first pass, a black-line-on-clear-ground print was used to colour the background. In the second pass, a clear-line-on-black-ground print was used with filters to colour the lines. Where we wished the lines to be black, no second pass exposure was required.

To go from one colour to another, (be it on the background or lines), mixes of varying lengths were used.

#### SOUNDTRACK

A score was planned and performed by the well-known American folk musician, Pete Seeger, using a number of instruments and multiple recordings.

Evelyn Lambart & Norman McLaren (1960-62)

#### MUSIC: NOTES BY PETE SEEGER.

For the music of **Lines-Horizontal**, I played two different wooden flutes, a five-string banjo, a mandolin, a six- and twelve-string guitar, drums, maracas, autoharp and sound effects.

Since I am an "ear musician," and read and write notes but poorly, I improvised my way through. I rigged up our barn as a recording studio with acoustic tile in one room and a synchronous-speed movie projector in another room. The movie was projected through a heavy glass window onto the screen of the recording room.

I looked at the film dozens of times, with my banjo in hand and whistling and humming to myself. Then I decided roughly what I wanted to do. I divided the film into four pieces and worked on each separately. I spliced each section of film head to tail making a loop which repeated itself on the screen without rethreading.

For the first sequence of the film I recorded the theme melody after improvising and rehearsing with the alto Chalil (Israeli bamboo flute) for about an hour. Then the flute melody was played back to me from the first track of the tape recorder. As I listened through the earphones I improvised a guitar accompaniment for the flute. The guitar was recorded on track two of the tape recorder. Now the two tracks — flute and guitar — were played back to me together and I added a banjo track.

The second section of the film was now projected while I played for it, adding new instruments to the arrangement already recorded. For this sequence I omitted the flute but added the mandolin and shimmering thunder effect, made by shaking a long strip of copper flashing left over from the year I repaired my roof.

For the third sequence of the film I used drums, rattles and a guitar bass drone as a basic background for the counterpoint of

two tenor recorders, plus banjo and then 12-string guitar. In the fourth sequence of film I returned to the original instrumentation.

A few weeks later, at the National Film Board in Montreal, all nine separate instrument tracks were mixed together into one.

If my music is good, credit should be shared three ways: between the visual inspiration of the film, the technical staff and the instrumentalist.



## OSAIC (1965)

### VISUALS

By engraving straight lines on black leader with a knife, we had made the film **Lines-Vertical**. By optically turning this image 90 degrees, we had made the film **Lines-Horizontal**.

By running a clear-on-black copy of both vertical and horizontal in contact with each other, in an optical printer, we got the basis for the film **Mosaic** — namely a new negative, the print from which had a black background with clear dots wherever the lines intersected.

For colour our intention was to have the dots, wherever they crossed each other, briefly flicker in different colours, on a background which slowly changed its overall colour.

To plan the colour scheme for the flickers, we used a very thin, transparent coloured celluloid, with adhesive on one side, which we stuck onto our work print, a different colour for each frame, for the duration of the flicker. This gave us dot-colour only, on a black background.

To plan the effect of adding coloured backgrounds, we used two interlocked projectors; the first took our coloured-dot work print; the second took a corresponding 'negative' (black-dots-on-clear ground). In front of the lens of the second projector we held by hand pieces of coloured celluloid, which we could change at will. In this way we decided what the colour scheme for the backgrounds would be.

To make the final new colour negative of the film, we had to have two passes in the optical camera. For the first, we used a high contrast clear-dot-on-black-ground print, and colour filters corresponding to the hues of our flick-dot work print. For the second pass a black-dot-on-clear-ground print was used, with filters matching the colours of our hand-held

celluloids. Slow mixes were made from one background colour filter to another.

#### SOUNDTRACK

Apart from the human whistle at the beginning and end of the film, the rhythmic sound track of **Mosaic** was made by direct engraving on 35 mm black emulsion-coated leader. The black emulsion was scratched off with a knife or needle to leave occasional small clear marks; such scratch-marks, when run on the optical soundhead of a moviola or projector, produced percussive sounds.

Variations in the size and shape of the scratched marks affected the pitch, volume and quality. In this way a variety of clicking, thumping, thudding, and rasping sounds were produced.\*

This is the same method as used in the percussive sound track of **Rythmetic**; however in **Mosaic**, since there were long intervals of silence between the percussive sounds, during the final mix we added a very great deal of echo and reverberation, often increasing the dynamic level of the reverb which followed the clicks.

Norman McLaren (1985)

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\* For more details on engraved sound tracks see *Technical Notes on Handmade Sound* available from the NFB.



## NEW YORK LIGHTBOARD RECORD (1961)

In 1961, the Canadian Government Travel Bureau rented the huge open-air light-bulb screen in Times Square, New York for "Come to Canada" tourist publicity. The Bureau asked the NFB to produce a 9-minute silent 16 mm film for this screen.

The screen consisted of over a thousand high-wattage light-bulbs; 27 horizontal rows of 38 bulbs formed a large luminous rectangle. Behind the screen, on the wall of a large room, were 27 rows of 38 photo-electric cells, each linked to one of the bulbs. A 16 mm silent projector projected animated images in black and white (no greys) onto the photo-electric cells. The film had to be joined in a large loop, for continuous projection. A solitary projectionist guarded and maintained this primitive set-up.

Since the photo-electric cells were spread out with spaces between them, the animation had to be done with very broad lines or broad areas. Thin line imagery, when it fell between the photo-electric cells, would not activate the light bulbs.

Four animators each did a sequence, namely Ron Tunis, Kaj Pindal, René Jodoin and myself. Some of us worked directly on 35 mm clear film with a very broad-nibbed pen and India ink, (this was later reduced to 16 mm). Others worked flip-book style, on small sheets of thin paper, having a field-size of about 4" x 3" (10 x 7.5 cm), using a very broad felt marker pen; during shooting these were registered, not by punch-holes, but by their corners.

**New York Lightboard Record** is a straightforward silent documentary record of the reactions of New Yorkers in Times Square while watching the lightboard film we had made for the large outdoor illuminated screen.

Norman McLaren (1961)

**Note:** The version in **Selected Films: Norman McLaren** is an edited version of McLaren's original nine-minute film.





## EGONE DULL CARE (1949)

### THE SOUNDTRACK

The music, although recorded before the visuals were made, was the result of a close collaboration between Oscar Peterson (with double bass and percussion) and myself. Four days were needed to evolve the musical structure and details.

I had already certain visual ideas which dictated that he do certain things in the music. There was, however, much give-and-take between us, in the sense that Peterson often did things on the piano that, for me, gave rise to new visual ideas. His abundant improvisations were, therefore, an inspiration to Evelyn Lambart and myself. The shaping of the music evolved almost bar by bar, and certainly phrase by phrase.

### PREPARATION FOR THE VISUALS

The music was measured, note by note, phrase by phrase. The measurements were transferred to a "dope-sheet" which charted the music on paper. The measurements were numbered, and these numbers were marked on the 35 mm celluloid, between the sprocket and along the edge of the film.

### MAKING THE VISUALS

The movie is in three parts; the first and third were almost all painted on clear 35 mm celluloid leader; the second, (very slow part) was engraved on 35 mm black emulsion coated film.

### THE FIRST AND THIRD PARTS

The clear celluloid was stretched out and pinned to a very long narrow plank of wood (over 12 ft. or 4 m long).

In various ways, almost too many to list, we applied all kinds of transparent coloured dyes, and scratched or engraved on them. One basic way was to apply a different colour to each side of the film, for the following reason. A flat wash of yellow

on one side and blue on the other side gave us an overall green ground; engraving on the yellow side produced a blue pattern, on the blue side a yellow pattern.

We applied the dyes with big and little brushes, with stipple brushes, with sprayers, with finely crumpled paper, and with cloths of various textures. We pressed dry, textured fabrics into washes of still wet dye. Netting, mesh and fine lace were stretched out tightly in various ways against the celluloid, to act as stencils when dye was sprayed on the film. Different types of dust were sprinkled on wet dye, which formed circles as it recoiled from each dust speck. We found a black opaque paint which, as it dried, created a crackle pattern. And so on.

Generally, in the first and third parts the frame-line was disregarded; we tended to treat the visuals in metrical lengths of textured patterns corresponding to the paragraphs and sentences of the music. However, sudden musical accents or short phrases were later emphasized by additional painting or engraving, in which case the actual frames of the film were taken into account.

In certain solo percussion sections, we engraved on black film individual frames with clearly defined images being synchronized with musical beats.

In still other sections, painting with a full brush of wet dye was applied as the film moved through the gate of a moviola, the brush being moved to and fro, up and down, or pressed in and out, from its base to its tip, in rhythm to the music, which was run interlocked in the sound-gate of the moviola.

### THE SECOND PART

For the second, very slow section of the film, only black leader was used. While running in a moviola interlocked with the sound track, it was engraved on by a sharp-pointed knife. If the knife touched the film very lightly, the intermittent motion of the film in the moviola gate made the knife bounce, so that

little clear dots were created on each frame. If pressed harder, the knife made larger dots with a faint tail, if pressed really hard, it made a more or less vertical line.

Thus, the knife-point was made to slide and move on the surface of the film; my hand pressed, guided and, as it were, made it "dance" to the rhythm of the music.

The complete painted and engraved film was used as a master positive, from which was made a colour negative. Initial release prints were then struck from this negative.

Norman McLaren (1949)



## PAS DE DEUX (1967)

### MULTIPLE-IMAGE TECHNIQUE

In the original shooting of **Pas de deux** no attempt was made to get a multiple image. The dancers, dressed in white, were filmed against a completely black background and black floor. The shooting speed was mainly at 48 frames per second, to give a slight slow motion effect. (Normal speed is 24 frames per second.)

The multiplication of the image was done at a later stage in an optical printer. In the projector of the optical printer we used a high contrast positive made from the original negative; in the camera of the optical printer we used black-and-white dupe negative.

To create the multiple image, we exposed this high contrast positive many times successively on to our new optical negative. The same shot was exposed on itself, but each time delayed or staggered by a few frames. Thus, when the dancers were completely at rest, these successive out-of-step exposures would all be on top of each other, creating the effect of one normal image; but when the dancers started to move, each exposure would start moving a little later than the preceding one, thus creating the effect of multiplicity.

The maximum number of exposures was eleven. The amount of stagger varied from shot to shot, and also within a single shot. A 2-frame stagger created a tightly packed chain of images; a 20-frame stagger made a very widely spaced chain; an average of a 3-, 4- or 5-frame stagger gave images that were overlapped, but distinct enough to be separately identified.

Two methods were used to collapse the image-chain into a single image. In the first, we would, in the original shooting, have the dancers come to a natural stop and pause. In the second, at a suitable moment in the action, we would optically freeze a frame of the first exposure long enough to let all the

other exposures in turn catch up to, and freeze, on the same frame. When the last exposure was caught up, we would have a single, unified static image. Then, by having all the exposures proceed in step with each other, the figure would continue the action as a single unified image.

If, by the second method, we wished this single image to spread out once again into many images, we would have to optically freeze all exposures except one, allowing it to proceed, then allow each of the other exposures in their turn to proceed, with, say, a 5-frame delay between each.

In addition to having black backgrounds, preliminary tests proved that it was essential to have back lighting on the dancers. Normal front lighting lead to visual clutter when the images multiplied. Delineation of the dancers by as thin a line of light as possible, gave maximum readability when the multiplied figures were in motion.

Norman McLaren (1967)

#### MUSIC: NOTES BY MAURICE BLACKBURN (1967)

On seeing the silent cutting copy of *Pas de deux*, the musical piece that came immediately to my mind was "Song of the River Olt" played on the panpipes by Constantin Dobre, with a very quiet murmuring orchestral backing, on a disc of Rumanian folk music.

It was an extremely lyrical piece, and the panpipes gave to it an undeniable human breath. In my opinion, it captured the very essence of the film. In the space of a few hours of listening to the disc, I was able to envisage how to develop the piece. I explained my ideas to Norman. He agreed and gave me carte blanche.

The music on the disc was not more than three minutes long while the film required a thirteen minute soundtrack.

But the solution to this problem of length and that of the structure already seemed to me sufficiently clear. I had only to follow the film's narrative development, starting with the girls' introspective self-withdrawal and follow the action through to the final ecstasy.

I, therefore, began by making several copies of the piece on magnetic tape, and with these, I separated all the musical elements: the initial orchestral murmuring, the panpipe motifs, phrases, sentences and also the entire melody.

Then I rebuilt a soundtrack which began with only the quiet murmuring accompaniment of the orchestra which continued without interruption to the end of the soundtrack. On top of this background, at critical moments in the visuals, I added short fragments of the panpipe, a few notes, a motif, then phrases, sentences and finally, in the last minutes of the film, the entire melody.

I had already recorded a great variety of harp arpeggios in different pitch registers, colourations and tonality related to the murmuring, so that they would integrate with the background of the melody. These I made into many separate tracks.

Finally, our marvellous sound mixer, Ron Alexander, with great subtlety, manipulated the dynamics and colour-shadings of the various tracks to form a constantly shimmering background and support for the panpipes.





## LINKITY BLANK (1955)

### VISUALS

An animated film made without the use of a camera, by engraving directly on black emulsion-coated film with a penknife, sewing needle and razor blade, the engraving being coloured with transparent dyes, and a sable-hair brush.

Animating directly on opaque black film poses the problem of how to position and register accurately the engraved image from one frame to the next. To bypass this problem **Blinkity Blank** intentionally set out to investigate the possibilities of intermittent animation and spasmodic imagery.

This meant that the film was not made in the usual way, one frame of picture following inexorably after the next, each second of time crying out for its pound of visual flesh — its full quota of 24 frames; instead, on the blackness and blankness of the outstretched strip of celluloid on my table top, I would engrave a frame here and a frame there, leaving many frames untouched and blank — sprinkling, as it were, the images on the empty band of time; to the spaces between, to the music, and to the idea that emerged as I engraved.

On the majority of the frames there is nothing at all. When such a movie is projected at normal speed, the image on a solitary frame is received by the eye for a 48th of a second, but, due to after-image and the persistence of vision, the image lingers considerably longer than this on the retina, and in the brain itself it may persist for several seconds until interrupted by the appearance of a new image.

To make play with these factors was one of the technical interests of producing **Blinkity Blank**. Sometimes, for greater emphasis, I would engrave two adjacent frames, or a frame-cluster, (that is, a group of 3, 4 or more frames); sometimes a frame-cluster would have related and continuous image within it and would thus solidify some action and movement; at other



times the frame-cluster would consist only of a swarm of disconnected, discontinuous images, calculated to build up an overall visual "impression." Here and there, to provide much needed relief from the staccato action of single-frame images and frame-clusters, I introduced longer sections of contiguous frames with a flow of motion in the traditional manner.

During the process of making the film, tests and experiments revealed a number of definite laws relating to persistence of vision, after-image effects and intermittent imagery as they affect both the retina and the mind, especially when organized in sequences and with continuity.

Perhaps the film can be likened to a sketch, which uses a kind of impression of action and time, much like a draughtsman when he suggests a scene by leaving most of the page blank and only here and there draws a stroke, a line, or a blob of tone — often to indicate quite a complex subject; this is in contrast to the usual animated film, in which all the frames of celluloid carry images, and which could be likened to a surface of paper which a draughtsman has completely covered with a fully rendered drawing.

### SOUNDTRACK

Since it was decided to record the music first, and having in mind that I would be sprinkling the images only here and there on what was for most of the time empty black film, music composer Maurice Blackburn took this into consideration in scoring the music, by allowing many silences between notes, phrases, short chords and tone clusters. He also approached the scoring in an experimental way.

Norman McLaren (1955)

### MUSIC: NOTES BY MAURICE BLACKBURN (1955)

The group of instruments used for the recording of **Blinkity Blank** consisted of a flute, an oboe, a clarinet, a bassoon, and a cello. The music was written without key signature on a three-line stave (instead of the usual five lines); the spaces between

the three lines were not used, therefore there were only three possible note positions to indicate pitch. If a note appeared on the top line, it indicated that the instrument played in its high register; a note on the middle line — in its low register. The limits of the three registers were set beforehand for each instrument. Inside that register, the musician was completely free to choose whatever note he wished.

The notes, however, indicated the precise time value and rhythmic pattern, time signatures and bars being used in the usual manner. It was therefore possible to conduct the orchestra and give some coherence to the group of instruments.

Signs for the control of dynamics and signs for instrumental colour were used in the conventional manner.

The best results of this “semi-free improvisation” were achieved by taking the orchestra practically by surprise and recording without rehearsals, thus ensuring as complete a divergence of inspiration in each musician as possible, a complete freshness of improvisation and a complete disregard for all consciously agreed key signatures.

Occasional percussive rhythms were added by engraving directly on a separate 35 mm optical track, which was fed into the final mix.



## SYNCHROMY (1971)

Around 1950, Evelyn Lambart and I worked out a method of shooting soundtrack optically on film, without using a microphone or regular sound system, but with the use of an animation camera. We called it “animated sound,” because it was shot frame by frame, onto the soundtrack area at the edge of the picture.\*

For pitch control we used a set of 72 cards, each having stripes or striations, and each representing a semi-tone in a chromatic scale of six octaves. The more stripes the higher the note, the fewer the stripes, the deeper the note.

Our first set of cards (with which the music for **Neighbours** was made) had soft-edge undulating stripes, corresponding roughly sine-wave sound. A later set of cards had simple hard-edge black-and-white stripes, corresponding acoustically to square-wave sound. It is with the square-wave cards that I shot the music for **Synchromy**.

The volume was controlled by varying the width of the sound track. A moveable shutter controlled this width. If the shutter was almost closed, the extremely narrow band of striations would give a pianissimo note. If the shutter was wide open, the broad band of stripes would give fortissimo. All intermediate degrees of volume were possible by regulating the position of the shutter, which was calibrated in decibels.

In **Synchromy** the music was composed first, and filmed by the above method. It started with a single musical part, later to be joined by another, and finally by a third (mid-pitch, treble and bass).

\* See *Technical Notes on Animated Sound by the Card Method* available from the NFB.

These three parts were shot on separate strips of film, which were recorded and finally mixed in the normal manner onto magnetic tape and thence to standard optical track for release prints.

### THE VISUALS

To create the visuals, the three striated-card sound tracks were kept separate and in their striated form. By means of an optical printer they were moved over into the picture area of the film.

Since the shape of the sound track opposite a single frame of film is a long, narrow column, and since the visual frame is rectangular, it was possible to fit as many as eleven columns for sound tracks, side by side in the picture area.

At the very outset of the film, where there is just one musical part, only the central column carries the striations; but somewhat later the same striations are moved into one or more of the other columns.

What is on the screen, be it in one or several columns, is strictly the striated images of the original sound shot with cards. Thus, there is exact parallelism between sound and image. When the second and third musical parts enter they are clearly visible as such.

While optically shifting the sound track into the picture area, we added colour by filtering a black-and-white master positive, and its dupe-negative. We opticalled one column at a time (the rest being masked off).

In columns with no striations, or with just white striations on a coloured ground only one pass was needed.

Where there were coloured striations on coloured ground, two passes were needed, one using clear-on-black master positive, the other using its matching black-on-clear dupe negative.



Towards the end of the film, where all eleven columns were active, if we wished both ground and striations to be coloured, 22 passes were required.

Variety was given to the visuals by frequently changing the track positions from one column to another. In general, the colouring was changed at the beginning and end of musical sentences or phrases for variety's sake; although no "colour-sound-theory" was relied upon, pianissimo passages were usually in muted hues, and fortissimo passages in highly saturated contrasting hues.

Apart from planning and executing the music, the only creative aspect of the film was the "choreographing" of the striations in the columns and deciding on the sequence and combination of the colours.

Norman McLaren (1984)





## ANIMATED MOTION #5 (1978)

*"What the animator does on each frame of film is not as important as what he or she does in between."*

-Norman McLaren and Grant Munro

In the early 1970s, McLaren was asked to make a film which would teach basic animation laws to beginning animators. McLaren readily agreed, and the result is these five films (made in collaboration with Grant Munro). Making these films allowed McLaren the opportunity to examine logically the underlying principles of an art form he had practised all his adult life and which he had always understood in an instinctive and intuitive way.

McLaren and Munro are concerned mainly with the problem of how much an animator should move the subject or graphic elements between one frame of film and the next.

Reducing the problem to its simplest form by having a disc move in a straight line from point A on the left of the screen to point B on the right, these instructional films classify and demonstrate many of the different possibilities of motion.

Motion can be divided into five categories: constant, accelerated, decelerated, zero, and irregular. The first four films in the series deal with this topic. The fifth film studies not motion (if motion is defined as a change of location), but change — defined as change in the amount and colour of light within an otherwise static screen. Normally, the animator combines such change with motion, but here it is studied in isolation.

Based on McLaren's notes (1991)



## NARCISSUS (1983)

In the first two parts of the film, where Narcissus encounters first the girl and then the boy, no special optical effects were used. The original shooting was done mainly in slow motion, with the camera running at 48 frames per second; some shots were also taken at 24 fps, and 36 fps.

In the final editing these speeds were freely intercut, depending upon the nature of the dancing.

In the third part of the film, Narcissus encounters himself, first as a reflection in a pool, then as a live person, who has come out of the pool to confront himself.

Since we could not find identical twin dancers, Narcissus had to perform two roles in succession — his real self (N1) and his reflected other self (N2).

In order to combine his two performances within any given shot, we had to use an optical printer; this would have been necessary anyway, since we intended to employ a number of special optical effects.

As is the normal procedure in optical work, interpositives were made; these were loaded on the projector heads of the optical printer, and the special effects were created while shooting onto an optical negative.

Here is a description and explanation of the various effects and techniques, as they appear chronologically in the film.

### THE INITIAL FULL-FIGURE SELF ENCOUNTER SEQUENCE

Only in this one particular shot was a large mirror used. To have Narcissus 1 move out of step with his mirrored reflection Narcissus 2, we made two passes in the optical printer; in the first, we masked off N2 and shot N1's action normally; in the

second pass we masked off N1, and by skip-framing, freeze-framing or double-framing, we advanced, retarded and resynchronized N2's action relative to N1's.

From here on, no mirror was used (except for one brief close-up shot towards the very end of the film). We filmed the dancer performing each role in succession, and later combined them in the same frame by reshooting with two passes on the optical printer. This became our standard procedure.

#### THE DISAPPEARING SEQUENCE

When N2 becomes mischievous, evading N1 by repeatedly disappearing and reappearing, we simply mixed-out to blank background on the N2 pass for the disappearances, and mixed-in again.

To heighten N2's evanescence, we made him flicker by the use of blank frames, beginning with him 1-frame on screen and 1-frame off screen. Other flicker patterns followed: 1-frame on screen and 2-frames off, 2 on and 4 off, and, finally, a random flicker with a constant 3-frames on and anything from 4- to 15-frames off.

#### THE DANCE-TOGETHER SEQUENCE

When N2 stops being mischievous and presents himself to N1, N1 starts a joyful dance. N2 performs the same dance but with jump cutting. This involved taking an approximate 11-foot section of N2's dance, cutting it into eleven pieces, each about 16 frames long, numbering the pieces in chronological order, and reassembling them in this manner: 1, 3, 2, 4, 6, 5, 8, 7, 9, 11, 10. This procedure may appear arbitrary, but it was arrived at after experimenting with different-sized lengths and different ways of back-tacking.

At the end of this sequence, while both figures are kneeling, N2 vanishes (by a mix-out to empty background). He reappears, entering N1's image from behind (a mix-in of reverse action to the point where both images exactly overlap).

#### THE CRISS-CROSS SEQUENCE

This starts with a very distant Narcissus on screen-right, running into centre-screen with a large leap. At the peak of the leap he splits into two figures and both descend from the leap in symmetrical synchronization, (two exactly super-imposed passes to the peak, at which point one of the passes was flipped left to right).

Later in the shot, at the peak of another centre-screen leap, a pair of frozen images remain static in the air and mix-out, while the two remaining images continue their action. This required four optical printer passes, two of which were flipped. The inner two (one flipped and one unflipped) were freeze-framed and mixed out.

Four passes were again used at the climax of the shot, when four figures dance in a symmetrical interlacing manner.

This starts with two figures, each at extreme right and left of screen; each figure splits into two; one of each remains frozen at screen-right and left, the other pair moves onward to centre-screen. After 60 frames the frozen pair also start moving forwards through the same path of action, but, because of the 60-frame freeze, they were delayed by about 2 1/2 seconds. In other words, their relationship to the first pair was similar to a two-part musical canon. To complete the canon, the pair which did not freeze at the start, froze for 60 frames at the end of their motion, thus letting the delayed pair catch up and unite with the first pair.

#### THE UPSIDE-DOWN SEQUENCE

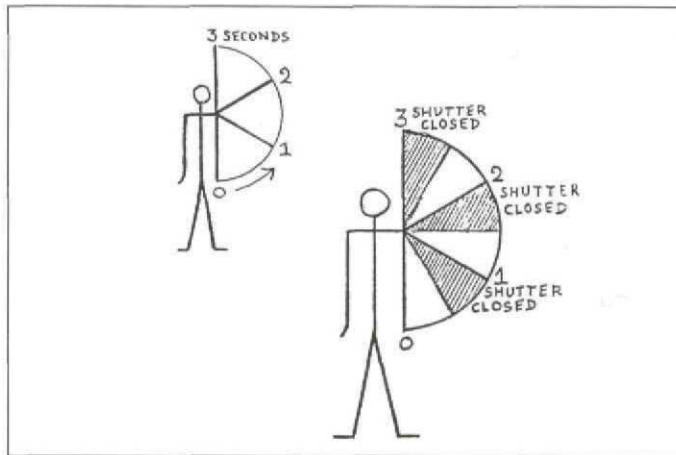
In the original shooting, only one upright figure was filmed. For the figure in the sky the image was turned upside-down and flipped left to right to get diagonal symmetry. Two passes were therefore necessary in the optical printer. To put the action of the two figures in and out of step with each other, we again used freeze-framing, skip-framing and double-framing.

## THE BLUR SEQUENCE

For this we had to turn to a complex technique which required considerable preliminary experimentation.

In the original shooting, the dancer performed at normal speed while the camera mechanism ran 24 times slower than normal (shutter open 1/2 second, shutter closed 1/2 second). When the dancer moved swiftly, a large area of blur was recorded on a single frame, when moving at a moderate speed a smaller area of blur resulted, and when not moving at all there was a sharp image with no blur. In other words, the faster the motion the greater the area of blur.

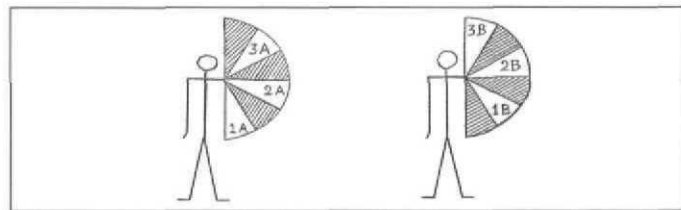
With the camera adapted for this speed of 1 frame per second, only 1/2 a second of the action is recorded on each frame; during the other 1/2 second the rotating shutter of the camera is closed to allow the film to be moved on to the next frame.



Thus, if the dancer raised his arm in three seconds, only the first, third and fifth 1/2-second segments of the blur would be seen on three successive frames of the film; the action during the second, fourth and sixth segments would not be recorded.

To record the action of the second, fourth and sixth 1/2-second segments, another camera (B) was required, interlocked (either mechanically or electronically) with the first camera (A).

The shutter of camera B was put 180 degrees out of phase with the shutter on the A camera; in other words, one camera's shutter was open precisely when the other camera's shutter was closed. Thus, we were able to record all segments of the 3-second blurred action,

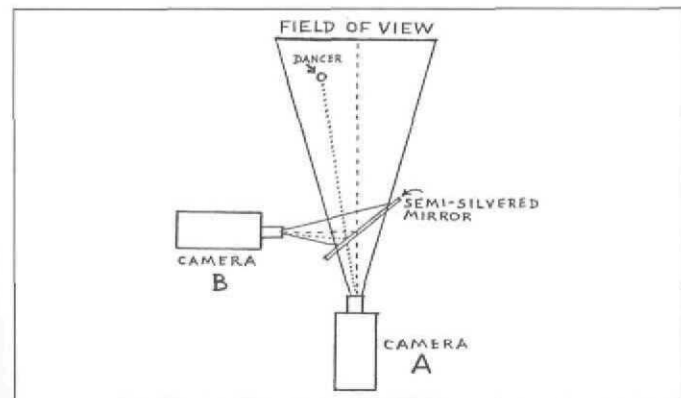


on three successive frames of Camera "A",

and

on three successive frames of Camera "B".

Theoretically, the two cameras should have been in exactly the same position in relation to the dancer, but of course this was impossible. The problem was solved by having camera B placed at right angles to camera A, with a semi-silvered beam-splitting mirror set at 45 degrees between each camera.





Great care had to be taken to line up the cameras so that the dancer appeared in precisely the same position on the viewfinders of both cameras.

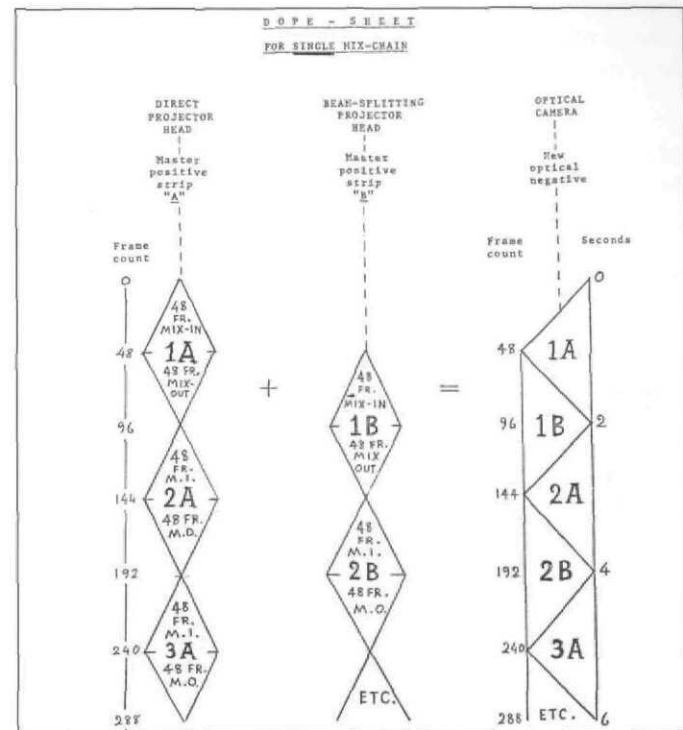
Assuming the shot of the dancer, performing at normal speed, lasted 1 minute and 40 seconds (100 seconds), his actions would be recorded as a series of blurs on 100 frames in camera A, and on 100 frames in camera B.

If projected at normal 24 fps speed, these 100-frame strips would each have appeared as about four seconds of frantic motion. Our purpose, however, was not to consider them as ordinary movie material, but rather as a series of consecutive still pictures, to be converted back into a movie by a chain of continuous mixes done on the optical printer.

Master positives were made from the original negatives of the two strips. Master A was loaded on the direct projector head of an optical camera, and Master B on the beam-splitting head. (Should the optical printer have had only one head, A and B could have been shot in two successive passes).

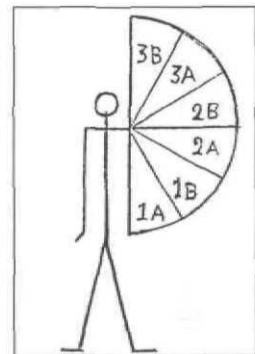
If we were to make a simple chain of 48 frame (2-second) mixes onto a new optical negative, a dope-sheet such as follows would be needed, each frame being frozen during its mix-in and mix-out.

## DOPE SHEET FOR SINGLE MIX-CHAIN

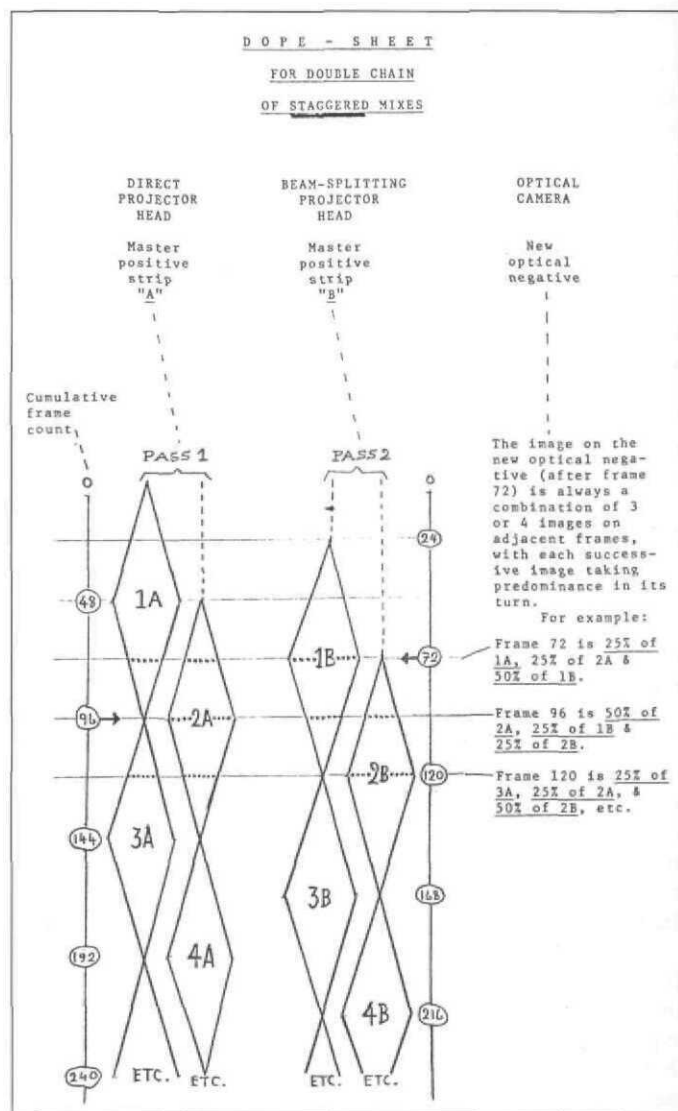


The result would consist of blur 1A mixing-out as blur 1B is mixing-in; and blur 1B mixing-out as 2A is mixing-in, etc. This would be seen more as a series of static adjacent blurs than as a blur that flows forward.

To help create more of a sense of flow, an overlapping of the blurs was required. This was done by a double chain of staggered mixes. For this we used the following type of dope-sheet:



## DOPE SHEET FOR DOUBLE CHAIN OF STAGGERED MIXES



## THE REVERSE-SPLIT-IMAGE SEQUENCE

This is the last extended sequence of the film; in it the single forward-moving Narcissus repeatedly splits into two figures, one continuing forwards, the other reversing on its previous path of action while fading out.

Only one master positive with a single figure was used. The first pass consisted of the forward-going figure uninterrupted from beginning to end of the shot.

The second pass superimposed the same image on itself until the split, at which point the master positive in the projector head of the optical printer was run in reverse and mixed out, while the dupe negative in the camera continued forward.

## THE FINAL KISS CLOSE-UP

This was shot with a mirror placed as close as possible in front of a brick wall. At a certain moment in the shooting, the camera was stopped, the dancer held his position rigidly, the mirror was swiftly withdrawn to reveal the brick wall, at which point the camera started shooting again, and the dancer continued his action.

Later, in the optical printer, a slow mix was made from the mirror shooting to the brick wall shooting.

Norman McLaren (1984)

## MUSIC: NOTES BY MAURICE BLACKBURN (1984)

The score for *Narcissus* was written in the traditional way of music for film. That is, it was composed after the visuals were edited; the key points of its general structure were known in advance.

It was decided, after discussion with Norman McLaren, that the musical style most suited to the spirit and unfolding of the action would be romantic, with solo instruments. As to the choice of instruments, Norman would have liked to use the panpipes as the main link throughout the film, but in view of

practical difficulties, we finally opted for the transverse flute, with the addition of harp and piano, and for a harmonic background, a group of seven strings.

The melody for solo voice was composed and recorded several months in advance of the final recording. It was built into the final mixing tracks with the addition of some harp and held strings.

The synthetic or "animated" sound was by way of being a discreet homage to the inventiveness of McLaren, who *photographed it himself, following my score.*

My overall conception of the music was to give a kind of subconscious interpretation to the story on the screen, and to attract the attention of the ear as little as possible; in my opinion, this admirable film was made first and foremost through the eyes.



## ANIMATION TECHNIQUES

In animation film, an illusion of movement is created frame-by-frame, so that otherwise inanimate objects and forms become lifelike on the screen. As a consequence, Norman McLaren defined animation as movements which are drawn, rather than drawings which are moved. He believed that "how it moves is more important than what moves. Though what moves is important, in relative order of importance, it's how it moves that's the important thing."

Almost anything can be animated: drawings, clay, sand, matchsticks, nails, oil paint, etc. Techniques are myriad, limited only by the imagination of the animator. Basic equipment consists of a camera which can shoot one frame at a time. But, as McLaren demonstrated, not even the camera is necessary when the animator draws directly on the film. Now, computers are being used increasingly by animators; and the opportunities offered by this piece of technology have, as yet, only been glimpsed.

Here are descriptions of some of the more common animation techniques.

### CEL ANIMATION

This is the most common method. Drawings are made on transparent sheets of acetate (cel) for each stage in the action. Consequently, elaborate static backgrounds (in full chiaroscuro) can be painted on one cel, and only the moving foreground figures have to be redrawn frame-by-frame on separate cels.

### PAPER ANIMATION

Instead of cel, the film is drawn on sheets of paper. Since paper is not transparent as in cel animation, all the elements in the drawing have to be repeated for each frame. A characteristic of paper animation is, therefore, simplified drawing without chiaroscuro.



### CUT-OUTS

Two-dimensional forms are moved by hand and filmed frame-by-frame. **Le Merle**, **Spheres** and **Rythmetic** are examples of McLaren's work with cut-outs.

### OBJECT ANIMATION

Similar in spirit to cut-out animation; but here the animator will move three-dimensional objects, some as small as beads, others as large as mannequins.

### SAND, PAINT, PASTEL ETC.

Fluid materials are animated a frame at a time. The animator begins with a "painting," and then proceeds to alter it frame-by-frame. Consequently, errors cannot be corrected. The animator must recreate the original state and begin again. **La-haut sur ces montagnes**, and **La Poulette grise** are examples of McLaren's work in this method; although, as he demonstrated in **Creative Process**, he tended to use the dissolve as the means of moving from one state of the drawing to the next, rather than the single-frame mechanism on the camera.

### PIXILLATION

Human beings are moved one frame at a time. Consequently, they can behave in ways not normally possible for humans. **Neighbours** and **Two Bagatelles** are two examples of McLaren pixillation.

### ANIMATION WITHOUT A CAMERA

In this technique, first executed by Len Lye in the 1920s, the animator draws or paints or scratches directly onto movie film. McLaren made several films in this manner, most notably **Begone Dull Care**, **Hen Hop** and **Blinkity Blank**.

And, of course, there are all those other techniques waiting to be invented!

Donald McWilliams (1991)



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