The First Signs of Film Editing (1890-1903)
Fragmenting the film strip and segmenting the film shoot in the "animated views"

Research Director: André Gaudreault (Université de Montréal)

Abstract
This research was begun in 1993 and consists in locating the various traces of fragmentation, assemblage, and, ultimately, editing in the "views" produced during the early years of cinema. In so doing, we hope to contribute to the ongoing revision of the traditional hypotheses concerning these phenomena. Our close and exhaustive scrutiny of the views produced by the Lumière company between 1895 and 1905 and the Edison company between 1890 and 1900 has made possible the discovery that an impressive number of pre-1900 views are made up of frames, or what we will call photograms, of more than one block of time, contrary to the canonic model of photogrammic continuity. These discontinuous views--whose sequence of photograms necessarily bears the mark of at least one caesura--join at least two distinct segments through a minimal editing procedure. Our research thus contributes to a re-evaluation of early cinema, particularly with respect to the so-called birth of film language.

Table des matières

I. Goals and Focus of the Study
II. The Lumière Company (1895-1905)
III. The Edison Manufacturing Company (1893-1900)
IV. Other Bodies of Work
V. Historical and Theoretical Perspectives
VI. A Typology of Assemblage Operations
VII. Bibliography
VIII. André Gaudreault Publications on Film Edition
IX. Collaborators
I. Goals and Focus of the Study

The value of research into the first signs of editing in the cinema became evident in the early 1980s, following the discovery of numerous cuts and joins on the film strip itself in the work of Georges Méliès, despite his being seen by traditional film historians as having had little if any recourse to editing. The extent of Méliès’ manipulation of the film strip became quite clear at a conference on his work held at Cerisy-la-Salle in France in 1981.[1]. There was born the idea, which then had to be documented, that a rudimentary form of editing could very well have existed, beyond Méliès alone, in the work of the very first camera operators. Our research goal thus consists of bringing to light the first forms of assemblage or editing,[2], however rudimentary, which the various standard film histories have until now neglected.

Our work has taken the form of two complementary stages. The first is an almost chrono-photographic study of the animated views. “Chrono-photographic” because it consists in examining, photogram by photogram, each of the views being studied and keeping a record of each of its interruptions (any cutting of the film strip or stopping of the camera) in a descriptive entry. The second stage is a more cinematic analysis of the films, meaning that the possible ramifications of the different forms of interruption are studied with respect to the film as a whole. To date, we have studied the entire Lumière catalogue in this way, while our study of the Edison views is nearing completion. Other film production companies will soon be included in the study, depending on the size of their output and the availability of their films.

Table of content    II. The Lumière Company
II. The Lumière Company (1895-1905)

The immense task of inventorying the films of the period began with the body of Lumière views. Here we worked in parallel with the Services des archives du film[1] of the Centre National de la Cinématographie in France, which was carrying out the immense project of restoring this work. Our task, while laborious, was made easier by the incredible state of preservation of the nitrate film, which allowed us to obtain very precise data. When these films were made, camera operators were instructed to employ a single, continuous take from just one camera position, a method that was also fostered by the technical limitations of the Lumière camera. We were thus startled to discover that 8.5% of these views contain traces of fragmentation.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of views produced</th>
<th>Number of views preserved</th>
<th>Number of views screened</th>
<th>Number of views without any fragmentation</th>
<th>Number of fragmented views</th>
<th>% of fragmented views</th>
</tr>
</thead>
<tbody>
<tr>
<td>1895</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>0</td>
<td>0,0%</td>
</tr>
<tr>
<td>1896</td>
<td>298</td>
<td>293</td>
<td>293</td>
<td>291</td>
<td>2</td>
<td>0,7%</td>
</tr>
<tr>
<td>1897</td>
<td>508</td>
<td>504</td>
<td>504</td>
<td>477</td>
<td>27</td>
<td>5,4%</td>
</tr>
<tr>
<td>1898</td>
<td>205</td>
<td>200</td>
<td>200</td>
<td>180</td>
<td>20</td>
<td>10,0%</td>
</tr>
<tr>
<td>1899</td>
<td>120</td>
<td>119</td>
<td>119</td>
<td>96</td>
<td>23</td>
<td>19,3%</td>
</tr>
<tr>
<td>1900</td>
<td>152</td>
<td>152</td>
<td>152</td>
<td>139</td>
<td>13</td>
<td>8,6%</td>
</tr>
<tr>
<td>1901</td>
<td>44</td>
<td>40</td>
<td>40</td>
<td>33</td>
<td>7</td>
<td>17,5%</td>
</tr>
<tr>
<td>1902</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>14</td>
<td>5</td>
<td>26,3%</td>
</tr>
<tr>
<td>1903</td>
<td>58</td>
<td>57</td>
<td>57</td>
<td>32</td>
<td>15</td>
<td>26,3%</td>
</tr>
<tr>
<td>1904</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>50,0%</td>
</tr>
<tr>
<td>1905</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>6</td>
<td>7</td>
<td>53,8%</td>
</tr>
<tr>
<td>Total</td>
<td>1428</td>
<td>1408</td>
<td>1408</td>
<td>1288</td>
<td>120</td>
<td>8,5%</td>
</tr>
</tbody>
</table>

This table covers all the views in the Lumière catalogue from this period, except the 20 views considered lost (5 in 1896; 4 in 1897; 5 in 1898; 1 in 1899; 4 in 1901; and 1 in 1903). Also included are the three remakes of view no. 91 (Sortie d’usine/Leaving the Factory); the two remakes of no. 99 (Arroseur et arrosé/Waterer and Watered); and the one remake of no. 765 (Danse serpentine). Note in addition that we have not included in our study the 21 so-called “phantasmagoric” views (nos. 2001 to 2010 and nos. 2010b to
The results of our work—see in particular the significant increase in the percentage of fragmented views between 1897 and 1899; a period, we should recall, when editing had not yet come to be seen as forming part of film production practice—thus contradict the long-dominant discourse on the supposed supremacy of strict photogrammatic continuity. These views from the first years of film production should, in principle, have illustrated this continuity. Confronted with an apparatus which constrained them and with an extremely short strip of film (the legendary 17-metre Lumière film strip, which ran for about 50 seconds), many camera operators contravened the rules and manipulated the film strip. Indeed the stop-camera technique, which we call the resumption of filming, was widely practised from the very beginning.

**The First Kind of Interruption: The Resumption of Filming**

The resumption of filming, which necessarily involves a rupture in photogrammic continuity, was easy enough for the operator to carry out, as it simply involved stopping the camera momentarily while filming. Hence this technique’s great usefulness while shooting views “on the spot”. Resumption allowed the operator to react quickly to a number of problems which could arise in front of the camera and thus to “save” the view, which was already quite short. This technique involved no break in the film stock itself or any manipulation of the film after the shoot. It was, rather, a form of “in-camera editing”, a virtual editing in a sense: once shooting had begun, the operator would suddenly decide to interrupt the filming for a few seconds, most often without moving the camera. Since the film strip was neither cut nor broken, this kind of interruption left no physical trace on the nitrate film stock itself. The use of resumption was, of course, systematised in trick films, such as those of Méliès; there are however a few significant examples of this genre in the Lumière views.

The Second Kind of Interruption: Abutting

We also found another kind of interruption, one closer to editing practices as we understand them today: abutting, which involves a break not only in the photogrammic continuity but also in the film strip itself, which is cut and re-joined. In the first place, re-joining was carried out to repair damaged films (for example when a film suddenly breaks while being projected). Re-joining was also carried out to eliminate photograms which bore the marks of the stop-camera technique (in most cases, this procedure resulted in the over-exposure of several photograms). This procedure gave rise to a true gluing together of images on a view which had heretofore been free of interruption. This fine-tuning then gave rise to a deliberate practice of matching fragments from different strips of film. In the Lumière corpus, 99 views contain at least one interruption. The 138 interruptions identified in these views consist of 90 resumptions and 48 abutments. The results of this research, which has made it
possible to establish the relatively massive presence of interruptions in the earliest views, obliges researchers
to take a new look at the first animated views. Our attentive examination of the animated views under study and
our analysis of the development of the forms of fragmentation and assemblage in the Lumière views have led
us to develop a terminology which enables us to make a clear distinction between these forms and the
institutional forms of film editing. They have also led us to propose a rigorous typology of the fragmenting and
assembling operations carried out by the three agents involved in a film’s production: the camera operator, the
producer, and the exhibitor. The observations we have made in this study raise a whole new series of questions
about this body of work, which is supposedly bereft of any interest to someone researching film editing. In
addition to shedding light on the various ways in which the first camera operators worked, our research has
brought to light some essential features of the development of film assemblage and editing and the emergence
of the earliest practices associated with them. A few articles, published between 1995 and 1999 in English[2],
french[3] and Spanish[4] summarise our analysis of the Lumière views and the problems of editing (see the
bibliography). Beyond our initial report on our research into the Lumière views, which we have already cited[5],
readers may also consult an article[6] which came out of a conference organised by GRAFICS in October 2000.
The initial goal of this research can not, of course, be achieved by limiting ourselves to the Lumière views alone.
This is why we have begun a similar study of the Edison views.

I. Goals and Focus of the Study

Table of content

III. The Edison Manufacturing Company
While this second part of our research involved working with half as many views as the body of Lumière views, the quality and format of the Edison views made our job a difficult one. With Edison, only a fraction of the original nitrate films has survived, obliging our team to work with another kind of document: the paper print collection at the Library of Congress in Washington, D.C. [1] (strips of paper identical in size to the 35mm film, which were deposited with the copyright office to protect the film from possible plagiarism). While it’s true that the legal status of the paper prints is a guarantee of their historical importance, both on the level of dating the work and with respect to the originality of their content, at the same time it also raises questions about their role in the overall process of producing animated views. Indeed it is difficult to ascertain with any certainty the place and role of the paper prints in this process. Were they produced by cheap hired labour or by the camera operator himself? Do they represent the entirety of the view? How can we account for striking dissimilarities among large numbers of duplicates deposited to copyright the same view? These questions about the nature of the material available for consultation came to complicate the numerous questions which had to be resolved in any event in order to satisfy our overall research premises. In addition, the paper prints are very fragile and difficult to handle. Sixteen millimetre copies have been made of these paper prints, making them easier to handle, but these copies, it turns out, lack historical validity. The transfer of the Edison views onto 16mm, which was carried out in the 1950s, did not always respect the paper print’s integrity. Many imperfect photograms were repaired or cleaned up, with the result that the 16mm version contained fragmentation operations which were not in the original, or that signs of original gluing were removed. Our analysis of the Edison views is in process and should be completed in 2003. Already, the results we have in hand are quite astounding. The percentage of views bearing some form of assemblage or fragmentation, in the Edison views for the period 1894-1900, is some 37% (recall that for the Lumière views this figure was 8.5% for the years 1895-1905).

### Percentage of fragmented views in the work of the Edison company (1894-1900)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of views</th>
<th>Number of views</th>
<th>Un- clear</th>
<th>Number of views without any fragmentation</th>
<th>Number of fragmented</th>
<th>% of fragmented</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Produced</td>
<td>Preserved</td>
<td>Screened</td>
<td>Cases</td>
<td>Views</td>
<td>Views</td>
</tr>
<tr>
<td>------</td>
<td>----------</td>
<td>-----------</td>
<td>----------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>1894</td>
<td>94</td>
<td>28</td>
<td>17</td>
<td>3</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>1895</td>
<td>42</td>
<td>9</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>1896</td>
<td>133</td>
<td>25</td>
<td>18</td>
<td>2</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>1897</td>
<td>188</td>
<td>132</td>
<td>121</td>
<td>10</td>
<td>75</td>
<td>36</td>
</tr>
<tr>
<td>1898</td>
<td>173</td>
<td>165</td>
<td>160</td>
<td>7</td>
<td>112</td>
<td>41</td>
</tr>
<tr>
<td>1899</td>
<td>135</td>
<td>97</td>
<td>87</td>
<td>5</td>
<td>33</td>
<td>49</td>
</tr>
<tr>
<td>1900</td>
<td>159</td>
<td>78</td>
<td>63</td>
<td>4</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>924</strong></td>
<td><strong>534</strong></td>
<td><strong>469</strong></td>
<td><strong>31</strong></td>
<td><strong>274</strong></td>
<td><strong>164</strong></td>
</tr>
</tbody>
</table>

These are provisional figures derived from different sources (paper prints, 16mm copies, and 35mm copies) which are not equally reliable.

The Edison company’s assemblage practices are distinct from those practised at the Lumiére company. First of all, we can see that the Edison views show a much greater number of abutments, a form of post-production editing which requires that the film be cut and glued directly. Indeed a little more than half of the interruptions in the Edison views (51.3%[2]) are the result of manipulating the film strip after shooting—in the Lumiére views, this percentage was a little more than 34%. In addition, we observed a large proportion of hetero-frame matches in both the abutments and the resumptions, which would have involved a change of camera set-up between the two shots being matched. Nearly 25% of the interruptions (24.9%) in the Edison views involve a change in the framing—in the Lumiére views, this figure was 13.1%. Of course, these figures should be treated with care, because we were only able to examine some of the Edison views of the period. However, the trend is sufficiently pronounced to compensate for this slight shortcoming in our sample.

In any event, we can see that in the Edison views there is a greater presence of different kinds of fragmentation and assemblage than there was in the Lumiére views. It would seem that the lack of such firmly established procedures as were found at the Lumiére company made it possible for the Edison camera operators to react more spontaneously to the different situations that might arise while shooting, giving them greater freedom for putting in place strategies of their own.

An initial report on our research into the Edison views has been published[3] and a master’s thesis has been written on the topic as well[4].

**II. The Lumiére Company**

**Table of content**

**IV. Other Bodies of Work**
IV. Other Bodies of Work

Other bodies of work have yet to be analysed. The work of Georges Méliès before 1901 has already been systematically viewed. Soon, our team will tackle the views produced by the American Mutoscope and Biograph Company and by various British producers. This will enlarge our research base and allow us to verify the universality of the practices of fragmentation and assemblage in all views from this early period. Because our final objective is to develop a valid theory concerning the emergence of editing, these detours through different bodies of work are absolutely necessary. Concerning exhibitor practices, we possess a wide range of film programs, both French and American. Our research team has also thoroughly combed through many catalogues from the period, giving us a precise idea of all the practices which pertain, according to our typology, to an in-texto assemblage of titles listed in catalogues. We have also examined and collected a plethora of directives for assembling films given to exhibitors by producers or distributors before 1900.
V. Historical and Theoretical Perspectives

The work of interpreting our data has been going on for some years now already and has given rise to a number of historical and theoretical ideas. The project's research director, André Gaudreault, in collaboration with Philippe Marion of the Université catholique de Louvain in Belgium, has recently proposed a schema for periodising early cinema. This schema takes into account the ways in which camera operators and filmmakers carried out practices of fragmentation and assemblage. Frank Kessler, of the Universiteit Utrecht, has also put his shoulder to the wheel in this task of historical-theoretical conceptualisation. The following publications have arisen out of this work:

- André Gaudreault et Philippe Marion, « Le cinéma naissant et ses dispositions narratives », Cinéma & Cie. International Film Studies Journal, no 1, Fall 2001, p. 34-41.

A Summary of the Work of Conceptualising the Data

Editing Paradigms in Early Cinema

1. The paradigm of capturing reality: fascination with the new apparatus' ability to capture and reconstitute movement.

   This practice involves capturing relatively spectacular events (attractions) and reconstituting them on screen. The only form this paradigm took was the unipunctual view taken on the spot, with no manipulation on the part of the filmmaker beyond the simple recording of the event.

   We use here the terms unipunctual and pluripunctual (and unipunctuality and pluripunctuality) to describe views composed of a single shot and multiple shots respectively. These categories were first discussed in film theory, we believe, by Eisenstein, and English translators of Eisenstein have rendered the concepts as 'single set-up cinema' and 'multiple set-up cinema', in the second volume of the British Film Institute's Selected Works, Towards a Theory of Montage. For their part, the translators of Jacques Aumont's volume Montage Eisenstein opted for the expressions 'single point of view cinema' and 'multiple point of view cinema'.

2. The monstration paradigm: filmmakers begin to manipulate profilmic reality and filmographic elements.

   Numerous forms of this paradigm co-existed:
   
   a. Complete unipunctuality: a wholly unipunctual view involving no manipulation of the film strip but showing a scene which has of necessity been staged (L’arroseur arrosé/Waterer and Watered, Lumière, 1895);
b. **Apparent or recurrent unipunctuality**: a view taken on the spot which involves no manipulation of profilmic reality by the camera operator but which is the result of some sort of operation of fragmentation or assemblage involving the film strip itself. There are two possible varieties of this form:

i. **Apparent unipunctuality**: here the fragmentation is solely the result of the stop-camera technique (Paris: les souverains russes et le président de la République aux Champs-Elysées, Lumière, 1896);

ii. **Recurrent unipunctuality**: an amalgam of segments which produces a sum of tableaux rather than a concatenation of shots (Épisodes du voyage du président de la République à Lyon, Lumière, 1900);

c. here the view combines the two kinds of intervening in reality, staging (the profilmic element) and manipulation of the film strip (the filmographic element). Such views can pertain either to apparent unipunctuality or to recurrent unipunctuality. (A Chess Dispute, R.W. Paul, 1903; Uncle Josh in a Spooky Hotel, Edison, 1900; Le merveilleux évantail vivant, Méliès, 1905.)

3. **The narration paradigm**: in the narration paradigm, filmmakers give free rein to their manipulation of profilmic reality and their manipulation of the filmographic element reaches previously unseen heights.

Two forms co-existed within this paradigm:

a. **detached pluripunctuality** (in that this pluripunctuality does not cross the threshold of concatenation (An Interesting Story, Williamson, 1905; A Fatal Sneeze, Hepworth, 1907; and the chase film genre in general).

b. **complete pluripunctuality** (here the matching shots cross the threshold of concatenation).
VI. A Typology of Assemblage Operations

THE EXHIBITOR

In situ compilation of a program of more than one view (inter-view by definition):
This is an almost statutory operation which consists simply in the exhibitor showing, one after the other, the different views in his program, without gluing them end to end. This is a minimalist form of assemblage and of creating a syntagm.

- The juxtaposition of similar views (where the exhibitor seeks to create a program in which the views will have a minimal thematic connection);
- The juxtaposition of disparate views (where there is an absence of real links between the views).

B) In situ collage on an exhibition print:
This consists in direct assemblage operations (cutting and joining) carried out by the earliest film exhibitors on their own copies of the film on the very site of exhibition (in situ).

Intra-view (assemblage of fragments from the same view)

- Abutting of hetero-frame segments
- Abutting of homo-frame segments

Inter-view (assemblage, through gluing, of disparate or connected views)

- Abutting of hetero-frame views
- Abutting of homo-frame views
- Juxtaposition of connected views

THE PRODUCER

A) In texto assemblage of titles in a catalogue (inter-view by definition):
This category accounts for the implicit editing or assemblage activity carried out when views are grouped together in a catalogue (in texto) in “bundles of views” as a way of encouraging their projection together by the exhibitor.
Explicit juxtaposition of connected views (the producer explicitly presents each view as forming part of a whole)

- Hetero-frame (example)
- Homo-frame (example)

Implicit juxtaposition of connected views (the views are presented as forming a whole but without explicit mention of how they are connected)

- Hetero-frame (example)
- Homo-frame (example)

B) In vitro assemblage on a developed negative:

This category covers all the physical operations of assemblage (of editing, practically) carried out by the producer in the laboratory (in vitro) before putting the view onto market.

**Intra-view** (with the fragments of a single view)

- Abutting of hetero-frame segments (example)
- Abutting of homo-frame segments (example)

**Inter-view** (with entire views)

- Abutting of hetero-frame views (example)
- Abutting of homo-frame views (example)

THE CAMERA OPERATOR

In vivo découpage on the undeveloped negative:

This category covers all the operations of assemblage or fragmentation that can be carried out by the camera operator at the time of filming.

**Intra-view** (involving a break in the photogrammic continuity by stopping and restarting the filming)

- Hetero-frame resumption without gluing (example)
- Homo-frame resumption without gluing (example)

**Inter-view** (an operation involving a break in the profilmic reality by the operator with a view to a subsequent in vitro assemblage using the developed negative)

- Virtual découpage during the process of shooting hetero-views
Virtual découpage during the process of shooting homo-views

For more information on this typology, please consult:

The First Signs of Film Editing

VII. Bibliography


GAUDREAULT, André, « De quelques figures de montage dans la production Lumière », Michel BOUVIER, Michel LAROUCHE et Lucie ROY (sous la direction de), Cinéma : acte et présence, Québec/Lyon, Nota bene/Centre Jacques Cartier, 1999, p. 27-39.


André Gaudreault's complete bibliography on film editing

General Bibliography

AUBERT, Michelle et Jean-Claude SEGUIN (avec Anne GAUTIER et Jean-Marc LAMOTTE), La Production cinématographique des frères Lumière (accompagné d’un CD-Rom), Paris, Éditions Mémoires du cinéma et Bibliothèque du Film, 1996.

VI. A Typology of Assemblage Operations

Table of content

VIII. André Gaudreault Publications
VIII. André Gaudreault Publications on Film Edition

FRENCH

Articles


GAUDREAULT, André et Philippe MARION, « Le cinéma naissant et ses dispositions narratives », Cie. International Film Studies Journal, no 1, Fall 2001, p. 34-41.


Books

GAUDREAULT, André (sous la direction de), Ce que je vois de mon ciné... La représentation du regard dans le cinéma des premiers temps, Paris, Méridiens Klincksieck, 1988, 180 p.


GAUDREAULT, André (sous la direction de), « Le cinéma des premiers temps », Les Cahiers de la Cinémathèque, n° 29, Perpignan, hiver 1979, 185 p.


ENGLISH


**ITALIAN**


**SPANISH**


GERMAN


BULGARIAN


DANISH

GAUDREAULT, André, « Filmfortællingens omveje - krydsklipningens oreindelse », Tryllelygten (Laterna Magica), Copenhagen, 1er semestre 1995, p. 21-46.

SWEDISH


POLISH


RUSSIAN


VII. Bibliography    Table of content    IX. Collaborators
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Collaborators
Jean-Marc Lamotte, of the Services des archives du film at the Centre National de la Cinématographie (Bois d'Arcy, France) between 1992 and 1996. Jean-Marc Lamotte is currently head of the Lumière archive at the Institut Lumière in Lyon.
Anne Gautier of the Services des archives du film at the Centre National de la Cinématographie (Bois d'Arcy, France) between 1992 and 1996.

Occasional collaborators:
Philippe Marion, professor, Université Catholique de Louvain, Belgium.
Frank Kessler, professor, Universiteit Utrecht

With the special participation of:
Tom Gunning, professor, University of Chicago

Research Assistants:
Stéphanie Côté, cataloguing technician, Cinémathèque québécoise.
Nicolas Dulac, doctoral student, Université de Montréal.
Églantine Monsaingeon, doctoral candidate, Université de Montréal.

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