

NOTES ON THE MARGINS OF SALT'S AND BAXTER'S STUDIES

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The place I chose for these notes – on the margins, not in the midst of our conversation on statistics – signals their marginal relevance to our dialog's central subject: how statistics can help explain the history and vagaries of film cutting. The last thing I want to do to this dialog is to sidetrack it. Unlike my prior interventions, these notes do not qualify as “questions.” These are but asides, for the most part, asides of films history.

1. On pace and pulse

It would be nice if 'dramatic tension' could be quantified, so that we could get on with the important job of analysing its relation to all the visible features of movies. It IS something that is conceivably possible, but far away at present.

Thus begins Barry Salt's study *Lines and Graphs* written in response to my *Question 2: What do Lines Tell?*

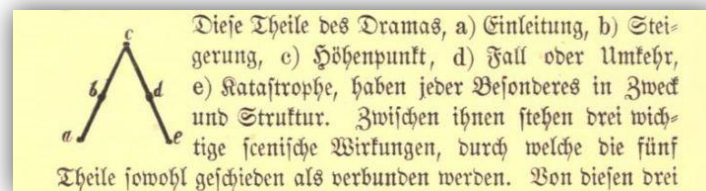


Figure 1: The dramatic “pyramid” from *Die Technik des Dramas* by Gustav Freytag (1876)

What Salt is skeptical about is whether pictures like the 1876 diagram on Figure 1 or statements like Epes Winthrop Sargent's from 1916 (“A diagrammatic representation of the plot should offer a succession of peaks and valleys”, etc.) count as a time-series analysis. “There are no numerical values attached to the points on the curve,” Barry wrote in a letter to me. “In theory it might be possible to measure the ‘dramatic tension,’ or whatever the quantity that is supposed to be represented on the y-axis, but nobody has done it so far. So it is just a fantasy drawing.”

The aim of this note is not to dispute the above, but to provide room for some exceptions to Salt's “nobody has done it so far.” Some have, but either failed to publish their results or did not feel like converting them into numerical values. All this would be history had the tension-measuring problem been really solved. But since, as Salt points out, the solution may be far away at present, it makes sense to look back at the past to find out what others did or where they failed.

This may sound as a truism, but let me start with this: it is the spectator's body that is the home of dramatic tension, while films or stage plays are mere scripts that regulate the latter. So, any conceivable

data, qualitative or quantitative, which could be used to diagram this tension, must result from observing the behavior of bodies: bodies of individual spectators or the body of audience as a whole.

There may be a neuroscientist some place or other doing this as we speak, or, as Barry Salt suggests, solving the task is more likely a matter of time. Still, the beginnings of tension-measuring science go back to the 1920s, and involve names and titles relevant to film history. So a brief time excursion to the beginnings of body-metrics is in order.

Our first stop is at TIM, 1925. *TIM* was an acronym for The Meyerhold Theater, a Soviet Left-Wing stage theater in Moscow headed by the (already then) famous stage director Vsevolod Meyerhold. As was habitual with avant-garde artists of the Soviet twenties, Meyerhold believed that the destiny of all new art is to be wedded to science. In line with this belief, Meyerhold founded a research unit within the walls of TIM which he called Theater Laboratory. One of the tasks of the latter was to register, rank and analyze audiences' reactions to every performance of every production staged at TIM. Lab assistants imbedded with audiences used special logs to pen down spectators' reaction to key lines, businesses, routines or other "stimuli."

SEQUENCES

Lines, businesses, routines and suchlike stimuli.

Audience Composition:

Table of Reactions:

- Silence
- Noise
- Loud noise
- Collective reading
- Singing
- Coughing
- Knocking
- Feet shuffling
- Exclamations
- Weeping
- Laughter
- Sighing
- Actions
- Applause
- Whistling
- Hushing
- Leaving the hall
- Rising from seats
- Throwing things at stage
- Running onto stage

Состав Зрительного Зала:	ЭПИЗОДЫ.			
	Реплики, действия, трюки и т. п. возбудители.	1	2	3 4
	Приезд сразу 12.47			
	Хардайт ударяет сурь. Куха, высован!			2
	Вы высованте в Маннер, там ухасикате			11
	Тренер Панаси ударя Хардайт			2
	Мобурайтскому американцу между ахати			11
	Возвращение Плавотта: про мибуде носате			2
	Первое выступление Энциздинг			18
	Манец Мбайбана: роза и т.д.			11
	Секретарь Энциза надевает прибор цюдрей. 12			11
	Секрет. Энциза затывает рот цюдрей. 14			11
	Цюдрей. 15. Кладет ногу на Энциза			11
	Цюдрей. 15. замкается			11
	Цюдрей. 15. ударяет секретаря Энциза			11
	Цюдрей. 15. ударяет Энциза			11
	Секретарь пишет на доске: деретсе			11
	Артистичные колхозные танцы			11
	Первый танец Парнаха			18
	Вы сумасшедший или апархист?			11
	Танец Парнаха на полу.			11
	После второго танца Парнаха.			18
	Выступление освещенного костюмного			11
	Возврата, молодая наука свечника			6
	Эта конструкция			2
	Пустынные осмаленки и кубатв			11
	Мелроуриетика (показывает Куху)			11
	Тренерман и половина жизни выговка			11
	Далее: похитируйте			11
	Бот анимационный около лица Мбайбана			11
	... особую породу колхозных людей			11
	... человек ланет и другие по исламанию			11
	... Это не дружка а репаратуре, ударя паршивца			11
	У цюдрейки - 10 ишадных бий			11
	А далее выступление подвояго Мубурсаде			11
	Энциза не покидывает			11
	Все пугавици оборвали			11
	Нилево а не ради... Варно, дабы.			11
	Сибирские мифы свежа не похитает мене концепта			11
	Я емичу... я скапчу... смотрит на газон, убивает			11
	Вы говорите сауншайт. Вы говорите советская			11
	Мбайбана ударяет толпой			11
	Почка а вас			11
	Оркестр (анало, мобурици в полу)			6
	Все время до вратки Кухушка, Мубурава и толпы			2
	А без СССР декорационирется... и дальше			6
	... Высшие инсталации. Сибирск а м. г. и Камидра			2
	Речь Канз			6
	Реплики правых: неуравда, и колокалтиши			11
	... и ленинизм... (Большой колокол)			11
	Женщины с арабой: Локсе!			11
	Большой колокол			11

Figure 2: Audience-reaction log (detail) taken during the May 19, 1925 performance of Meyerhold's production *D.E. (Give Us Europe!)* The space left blank on the upper left is provided for possible remarks about the social composition of this-night audience (workers, soldiers, schools etc.) The list on bottom left labeled "Table of Reactions" is a legend; one or two of the 20 reactions it numbers is entered by the lab observer in one of the numbered columns (1 to 4 to the right side of the log) each facing a brief reference to specific lines, businesses, routine and other stimuli coming from the stage (wide middle column).

If this is science, it cannot be very seriously science. Ranking reactions on the scale 1-20 from inactivity to agitation may raise some doubts. The continuum is based on the so-called "muscular-motoric and mimic reflexes." Its terms and tenets derive from reflexology, a branch of behaviorism dominant in Russian/Soviet psychology of the time, but perhaps too mechanical to modern taste. Questions may also arise about the degree of involvement which some of these "sonic-motoric reflexes" are believed to betoken. Is noise in the viewing hall really a sign of a more active audience involvement, or perhaps, as D.W. Griffith used to claim, silence rather than noise is such a sign? And while the first 18 reflexes stretching from "silence" to "rising from seats" do seem to correspond to empirical evidence (in the account shown on Figure 2, columns to the right, number 18 which stands for such rising appears

thrice), such reaction as “throwing things at stage” or “running onto stage” seem more based on theoretical extrapolations than on actual observations. If this is science, this is applied science, for the ultimate purpose of Meyerhold’s Theater Laboratory was to find out how to maintain and improve the interaction between spectators and the stage.

On the other hand, daily annotated observations of audiences’ behavior in response to the same sets of stage events for months (possibly years) was an undertaking heroic enough for any scientist to respect, and had the Lab been given a chance to sort out and analyze the amount of observations thus amassed, they may have come up with revised rankings and usable results. If such were the case, theater historians might by now have at their disposal a set of time series diagrams with ranked numerical data ranging from 1 to 20 attached to the curve of audiences’ emotional involvement. Inestimable evidence for theater history which, distinct from literary or film histories, deals with artworks that no longer exist.

Others did more. A Harvard student of mine Ana Olenina whose dissertation looks at the role of science in Soviet avant-garde endeavors discovered and explored the archive of the so-called “Exploratory Theater Workshop” (ITM) active in Moscow in the mid-1920s. The Workshop’s task was to explore and analyze spectators’ reactions across different venues, from cinema to circus. Among a number of pearls which Olenina found in the ITM archive is a long paper ribbon that summarizes graphically viewers’ reaction to Eisenstein’s *Battleship Potemkin* (1925), the film famous for its iron grip on the viewing hall’s dramatic tension.

- 22. Plate broken
- 20. Cook
- 14. Cook
- 13. Giliarovsky
- 18. Canteen
- 5. Inspection
- 9. Cooking
- 8. Morning
- 12. Doctor speaks
- 17. Officer
- 21. Plate
- 3. Sailors
- 2. Battleship
- 6. Beating
- 10. About meat
- 15. Peeling
- 19. Tower wash
- 7. Outrage
- 11. Maggots
- 16. Lunch
- 19. Canteen
- 1. Sea
- 4. Night

- Active interference with action
- Conversations on the subjects of action
- Applause
- Strong laughter, weeping, fear
- Weak laughter, weeping, fear
- Disinhibition
- Tense silence
- Silence
- Distractedness
- Conversations unrelated to action
- Actively negative interference with action

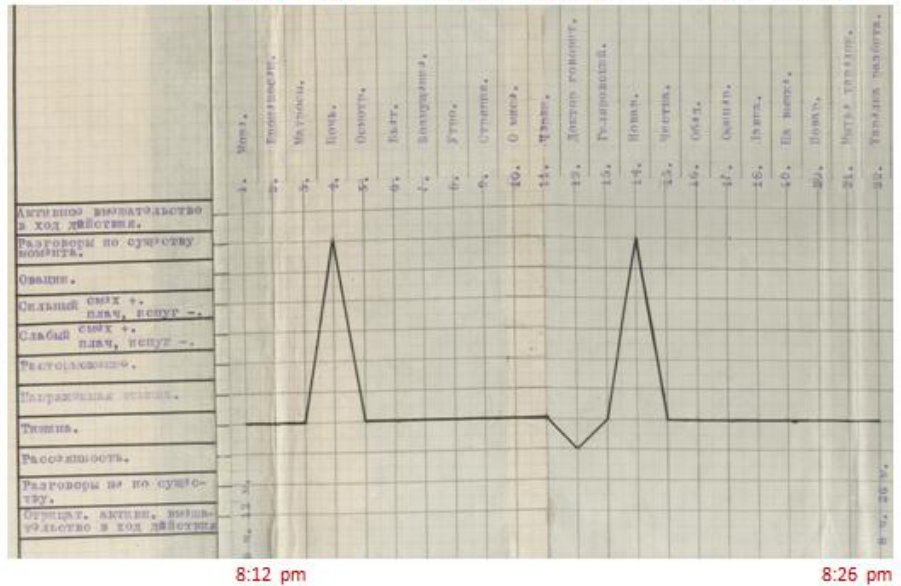


Figure 3: Time-series analysis of viewers’ reactions to *Battleship Potemkin* (detail). The observation was implemented by the ITM team in 1926 and recently discovered by Ana Olenina at Russia’s State Archive for Literature and Art (RGALI). The observed reactions are plotted on a long paper ribbon whose head-piece is reproduced above. The x-axis stands for the film’s unfolding in time, the y-axis ranks degrees of audience involvement. The film’s storyline is divided into 178 segments numbered and tagged by the dominant story event. The above fragment covers 22 segments, the 14 minutes of the first reel of the film.

Here, 11 ranked data have been used: 3 grades for negative, 8 for positive reactions. *Silence* seems to have been chosen as the ground level of involvement, capped by *tense silence* and “*disinhibition*” (the lifting of self-control) etc. On Figure 3, silence dominates (something all film goers know tends to happen when films begin) punctuated by two comments and one instance of distracted attention.

8:27 pm

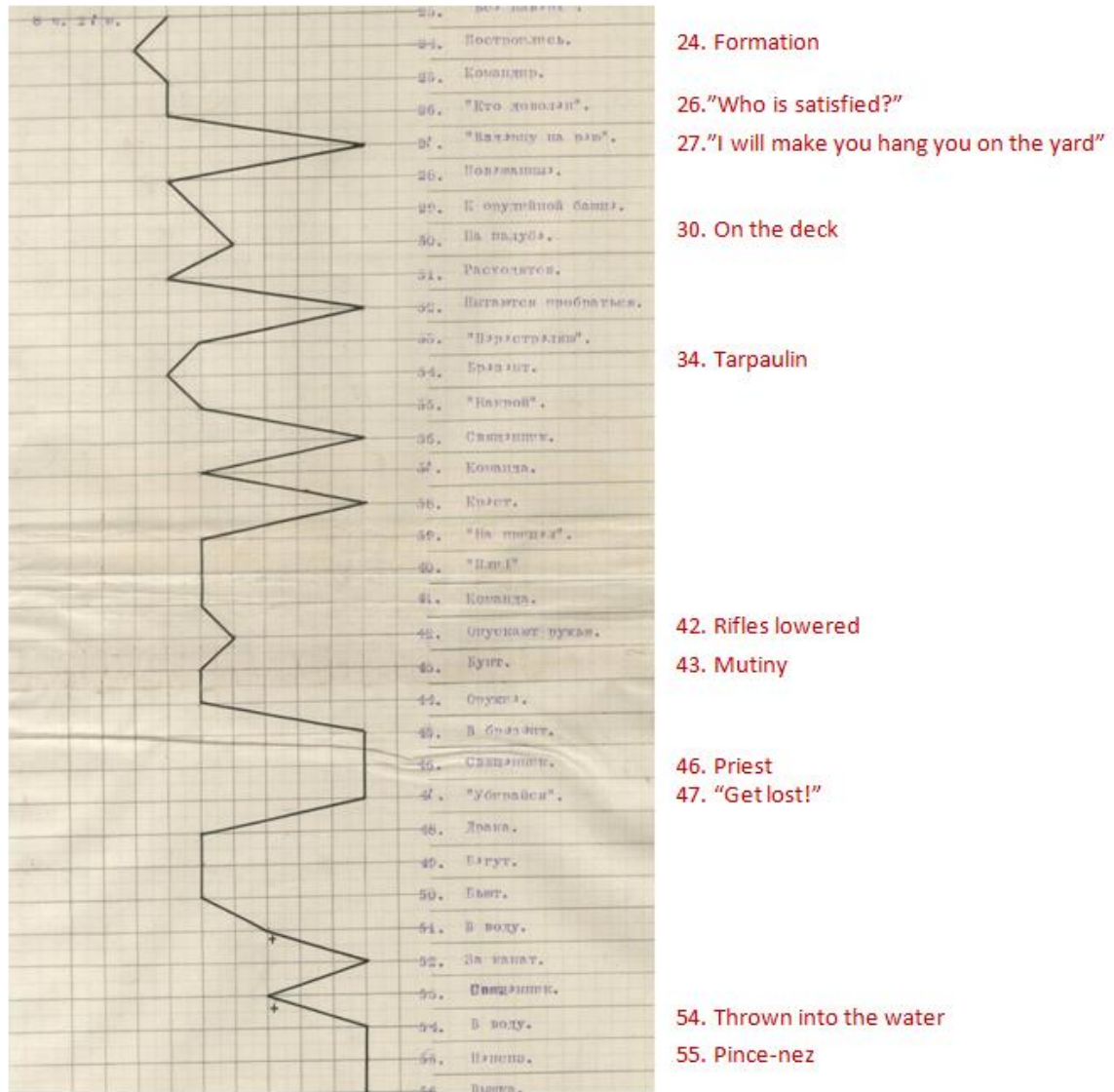


Figure 4: Time-series analysis of viewers' reactions to *Battleship Potemkin*, reel 2 (detail). This is part of the same ribbon as shown on Figure 3, with its orientation changed: the time-series axis show horizontally on Figure 3 is shown vertically here

As one would expect, the tension graph becomes choppy as the sailors' discontent becomes evident, followed by the would-be execution and subsequent mutiny. *Silence* gives way to *tense silence*, to *disinhibition* and voiced comments. Olenina has found pages of comment transcripts as well.

Olenina's dissertation (see 2013; some of its points were presented in her paper at the SCMS conference in 2012) tells more about people who compiled such lists of reactions and conducted observations like the above, and gives a sober assessment of how well the experience derived from Pavlov's dogs qualifies one to quantify our reflexes vis-à-vis works of art like *Battleship Potemkin*. One would be a little more confident, perhaps, if reflexology grids provided by psychologists could be complemented with notes and observations made by a veteran film projectionist or a director experienced with sneak previews.

Luckily for us, D.W. Griffith made notes to that effect and shared some of them with the readers of *Liberty and Collier's*. Studying audience reaction, Griffith explains in his essay "How Do You Like the Show?" published in *Collier's* in 1926, was part of the editing job:

At my own studios every single subtitle, every situation, every shift in scene or change in a sequence that is made in editing a film, has to go before an audience for its test before being accepted as part of the completed product. So I have learned to watch audiences closely (Griffith 2008: 180).

The visual and auditory clues which Griffith used to assess how strongly this or that segment of the film engaged the viewer were similar to ones used by the Soviet observers, but his ranking was somewhat different. Sound and commotion signaled a lack of involvement; conversely, soundlessness and immobility signified that editing worked as it should.

Silence is always sure sign of attention. ... Let the situation begin to clear itself, allow the tension to relax, and you can observe an instantaneous reaction as they sit back again, relax, begin again the ceaseless shifting into slightly different positions. The undercurrent of movement and sound, like a barometer, begins rising again to show that interest has waned (180).

In this essay Griffith also distinguished between patrons' behavior as a group and their behavior as individuals. The former includes fits of coughing, waves of fanning and currents of conversation; the latter, somatic, cardiac and respiratory indications. To get a general sense of when the film works and when it does not, it is enough to listen to the viewing hall as a whole; to gauge the effect of higher intensity one needs to observe individual behavior.

One of the most dependable signs is coughing. If you cough frequently during the unreeling of a film, I know that you are not keenly interested. ... At most New York and Chicago theaters, in winter, there is almost continuous firecracker chorus of coughing – here, there, all over the house. But as interest increases the coughing stops (179).

"Conversation stops before movement does." What movement exactly? Griffith's favorite indicator of attention was the frequency of collective fanning.

By the way you play with your program I know whether a picture is registering with you. If a house is warm, you will undoubtedly use the pamphlet as a fan, joining in a waving sea that fills the auditorium. As interest rises the movement lessens, becomes imperceptible and, at an effective dramatic climax, ceases altogether. The picture is "getting" you then. As the interest decreases the waving recommences, becoming subconsciously less restrained. (179).

"There are signs of still higher degree of interest." To detect them, one needs to look at someone sitting in front of you or listen to the way your neighbors breathe.

Here and there people in an audience will begin to hold their breath. They will unconsciously lean forward in their seats. Unconscious of their automatic actions, they are carried along entirely by the sweep of the story they are watching (180).

What kind of films will cause these somatic and respiratory responses? “[T]he key to interest is suspense. Suspense alone will often carry an entire picture” (182), is Griffith’s answer to this.

Ironically, the intensity of suspense does not guarantee the spectators’ eventual approval of your film. An anecdote used at the end of “How Do You Like the Show?” is Griffith’s example of the opposite.

I took “Broken Blossoms” for a tryout to Santa Ana, Cal. The story is a tragic one, in which a fragile girl of the slums dies from the effects of a beating she receives at the hands of her brutal father, a prize fighter. I have never seen an audience more nearly stunned by the picture than were those people of Santa Ana. It had beauty, but it had also grief, agony, horror.

The exhibitor at whose theater the picture was shown told me he had never had such an impossible reaction.

“I’ve had pictures that most people liked and a few criticized,” he said, “and I have had pictures that a few people liked and most people criticized. But this is the first time I’ve ever run a picture that *nobody* liked!”

Yet, unconsciously, the Santa Ana audiences gave the evidence of which I was able, later, to build a tremendously wide distribution of the picture; from start to finish of the film each audience sat motionless. I remember seeing one man leaning forward throughout a performance. So far as I was able to observe, he never once touched the back of his seat during the hour or more that it took to run the six reels. The picture had *suspense* (182).

Above breathing and leaning forward, viewers’ pulse was the ultimate measure of tension in Griffith’s view. You cannot observe your neighbor’s pulse without risking being misunderstood, so Griffith ideas on pulse and pace were, by necessity, more theoretical than empirical. Yet theory is not always the same as fantasy, particularly when proposed by practitioners like Freytag, Sargent, Eisenstein or Griffith. No film historian can afford to disregard the director’s own theory of film perception, even if that theory has not been experientially proven. I turn therefore to Griffith’s remarkable essay “Pace in the Movies” (1926) whose very title ought to alert anyone interested in cinematics.

How can we estimate successes and failures of editing of a movie? The way Griffith addressed this question in “How Do You Like the Show?” was to pick and rank signs of (in)attention at film showings. “Pace in the Movies” poses the same question in a hypothetical form. Two hypothetical spectators of different age and gender are conjured up in the beginning of Griffith’s essay. “For a quick, keen estimate of a motion picture, give me a boy of ten and a girl of fifteen—the boy for action, the girl for romance” (Griffith 1926). Of many different things that attract them to movies, is there something that makes a movie talk to them and only them? “That something I have called pace,” Griffith says, and explains what pace does to film stories and film viewers.

Add pace—the ebb and flow of pleasurable tides of excitement, the rhythmical movement of events toward the ecstatic consummation of romantic and adventurous dreams—and it is easy for people to delude themselves into believing that, in some strange way, the romance and adventure are their own.

As Griffith's theory goes, in order for film editing to work, its pace must resonate with what he calls the pulse:

It is a part of the pulse of life itself, and, being common to all human consciousness, its insistent beat has the curious power to seduce and sway the emotions, as the rhythmic tread of marching troops sways a suspended bridge. When the pace of a picture weds the pulse of an audience, the results are astonishing. During showings of "Way Down East" I have seen people jump from their seats; and what habitual movie-goer cannot recall instances when rapt spectators have cried out advice to the actors?

At times (as in the passage above) Griffith's *pulse* sounds more like a figure of speech than a reference to the arterial heartbeats. Near the end of the essay, however, it is exactly the medical, palpable, measurable pulse that Griffith proposes to use as what we might call a cinemetric grid. It will look strange if you stretch for someone else's wrist to palpate while looking at the screen? Well, use your own.

Picture fans will find it a fascinating pastime to measure their pulse beats with the pacing of motion pictures. Please don't try it the first time you view the film. Give it a chance to interest and amuse and arouse you on your first visit. But when you go back, surrender yourself to the picture as you did at first. Then, when there is quickened action, a climax of a tense situation, feel your pulse and see it is not going about the same beat as the pace in the drama.

"You will find," Griffith predicts, "that it is for the very good reason that the whole science of pace in the drama is founded upon your pulse." This reason is, Griffith reminds to the reader, that the pace of pulse lies at the origin of art.

After all, there is nothing new, mysterious, or complex about this business of pacing. It is as old as the beating of the first barbaric drum. And didn't the first drummer get the idea of his stroking from the beating of his pulse? Where else!

2. *On peaks and punches*

The following working notes are on Mike Baxter's "Comparing cutting patterns – a working paper" written in response to my "Question 3: Looking for Lookalikes?" The aim of Baxter's paper was to explore ways in which patterns of cutting across a body of films could be averaged to obtain groups of "typical" cutting patterns. Two bodies of data were explored and their discrete density estimates visualized in Baxter's Figures VII and IX (Arabic in original) which I reproduce below in *my* Figure 5 for readers' convenience. The idea behind my notes on the margins of Baxter's graphs and comments was to go on from there back to films. What came out of it are some working hypotheses on how it happened that the cutting of this or that group of films resulted in this or that curve.

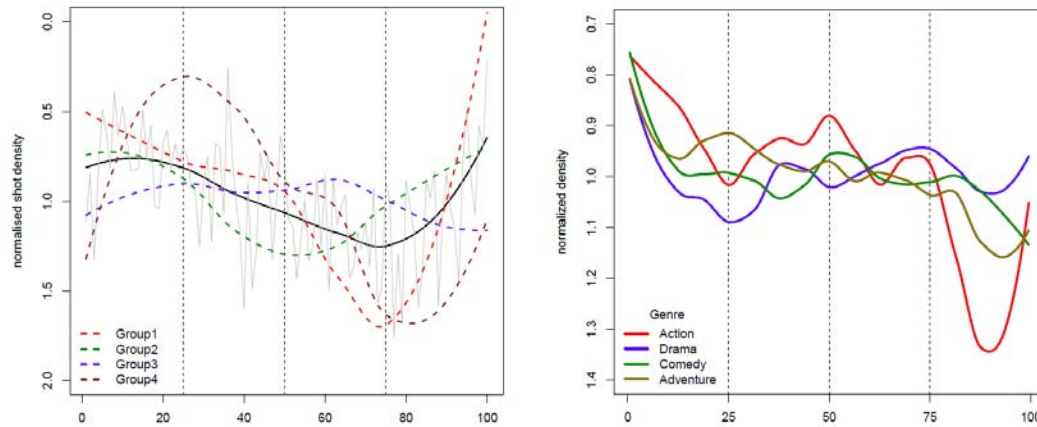


Figure 5: Baxter's Figure IX (to the left): discrete density estimates across groups for Griffith films from 1911; Baxter's Figure VII (to the right): discrete density estimates across genres in the 1935-2005 (Cutting's sample)

My main focus will be Griffith's films, but let me start with the later ones analyzed in Baxter's graph (Figure 5 to the right). What its four curves demonstrate is a distinction in cutting profiles between 4 genres used in modern filmmaking (1935-2005): Action, Adventure, Comedy and Drama. Baxter took genres as defined by Cutting et al. (2012) in order to show some average differences between genre profiles. The sample size is large here, as is the variety of directors and editors responsible for the cutting profiles represented. In contrast, Baxter's 4 dashed curves (Figure 5 to the left) are based on a smaller (14) sample of films, a narrower time (1 year) from a more distant past (1911). In addition, distinct from the body of films represented in Baxter's Figure VII, the left-hand graph on Figure 5 results from films made by the same director, D.W. Griffith.

All these distinctions granted it seems reasonable to start with an assumption that the attempted grouping of Griffith's films has to do with generic variations within the sample not unrelated to the four genres singled out in the right-hand graph on Figure 5. Even though Griffith's output at the Biograph studio pre-dates the reign of norms and habits known as the Classical Hollywood Style, a number of these emerged in the process of Griffith's experiment at Biograph. And, of course, Griffith tried his hand at the four genres which Cutting et al. and Baxter chose for their analysis: action, adventure, comedy and drama. Doesn't it stand to reason to suspect that Griffith's editing profiles of 1911 might bear an embryonic resemblance to the four sister genres from 1935-2005?

If I understand it correctly, what was done to obtain the results shown in the frame to the right was to sort out data by genre tags assigned to respective films titles in metadata, and calculate/smooth discrete density estimates for each pre-sorted group. One day it makes sense to try this out on Griffith's (larger) body of films. A quick provisional estimate I think is to take an opposite tack: check if films of a certain genre dominate this or that group of Baxter's 4 for 1911. Let me explore this option first.

Group 1 raises high expectations which other three groups interestingly undermine. The four films from Group 1—*The Indian Brothers*, *The Adventures of Billy*, *The Miser's Heart*, and *His Trust*—are what we would easily call action movies nowadays. Like the action-genre films averaged on Baxter's Figure VII, the above four rely on suspense built up around the middle of the film and culminating in its last

quartile. Tribal revenge, juvenile witness protection, getting a hostage out of trouble or loyalty of a model slave, any of these action motivations is familiar to us from later action pictures, from *Witness* (1985) to *Ghost Dog* (1999). Typically for Action, three of the four feature a minor as a victim, and in two of these three the minors are kidnapped. Psychological torture is another familiar ingredient of suspense: in *The Miser's Heart* the little hostage girl is literally suspended from an upper-floor window by two crooks one of whom is holding a candle to the rope.

Crosscutting, Griffith's signature techniques of rousing suspense, is to this day a staple of action editing. Characteristically for the group-1 type of films, more than one crosscutting "punch" can be detected over the course of the story. There are three crosscutting punches over the course of *The Indian Brothers*. A weaker one is the funeral pyre kindled for murdered Chief in the Indian village crosscut with the bonfire which the Chief's brother lights in far-away mountains; a stronger one, between the fugitive murderer and the brother on the path of revenge; the fastest, the riding chase. Likewise, there is a brief crosscut chase around the 3rd minute into *The Miser's Heart*, some crosscutting in the middle as the crooks are shown maneuvering on the roof of the house as the unsuspecting miser is playing with the girl, and, to crown it, a frantic police rescue near the end.

To repeat, crosscutting techniques tried out by Griffith early on have defined action movies ever since; action titles as *Suspense* (1913) or *Speed* (1994) point to this techniques as much as they do to its narrative skins. It is hardly surprising, therefore (and, to confess, immensely satisfying) to see how closely the red dashed profile of Group 1 (the "action group" of 1911, on the left) corresponds to more modern action films, with an understandable amendment that, as opposed to a feature film, in a 15-minute movie the fast climax takes place before, not after 75% into its course.

Life would be wonderful but short if the rest of the groups behaved as well. Not this time. Groups 2 and 3 fail to display the generic cohesion peculiar to Group 1. Group 2 looks only coherent in contrast to Group 1: three of the four films it includes are not about action and suspense. *His Trust Fulfilled* (a sequel to *His Trust* which, if shown in tandem with the latter, transforms the whole into a two-reel movie) is a drama about the freed slave using his savings (and then, his thieving hand) to pay tuition for his master's daughter. *Last Drop of Water* is a Western epic topped with the eponymous adversity. *Swords and Hearts*: a Civil-War melodrama in which a Southern girl of the "poor white class" with a bandit for her father saves and eventually marries a Confederate officer. *His Daughter*, too, features a wretch of a father whom the daughter mistakes for a robber and whom her fiancé unmasks on his way home from the college to the village where the young couple will live happily thereafter. No traces of crosscutting in either of the three.

Fighting Blood is more problematic. It begins as a light comedy about a retired Civil War veteran who drills his multi-aged children in front of their family cabin. Complication: the elder son, aged for romance, takes AWOL, and for a brief time the comedy appears to be turning into a love story. After one third into the film the adventure genre takes over. Sioux Indians attack the family cabin and the frantic crossfire fills the rest of the reel. The "deserter" son, now leading a rescue posse, takes in the rear, and a father-and-son reunion caps the family's military success. There is enough suspense after the middle of *Fighting Blood* whose crosscutting anticipates the famous climax of *The Birth of a Nation*: shots showing

Indians circling around the cabin and its waning defenders on the inside alternate with the posse galloping to rescue.

If there is a denominator common to all the films from Group 2 it cannot be genre. Absence of crosscutting might have been a possible unifying feature for Group 2 if not for *Fighting Blood*, a film in which cross-cutting is salient. Let us look at Baxter's Figure IX (on my 5) again. What makes the dashed green line different from its red companion is that its fast trough (almost) coincides with the middle of the film, not with its second quartile. The question one might pose here is this: could it be that, due to this interference or other, *Fighting Blood* is an anomalous specimen that would belong to Group 1 if its speed climax were not 25% precocious?

A possible explanation might proceed from the fact that at the Biograph time genre was a less stable category than we sometimes expect. I will discuss this instability and its probable reasons later in these notes. Meanwhile, let us take a closer look at *Fighting Blood*. As often happens with these kindred genres, *Fighting Blood* is mostly a mixture of Action and Adventure. The Indian attack is an adventure. When Griffith's Indians attack a wagon or a cabin, the reduction of ASLs is inevitable: brief shots of Indians shooting alternate with shots of defenders shooting back.

One should be wary of confusing crossfire sequences with crosscutting ones: crosscutting entails two (or more) parallel actions in two separate (though not necessarily distant) spaces, while crossfire is a form of communication which, like dialogs, lovemaking or prizefighting require the space common to both parties. A-b-a-b chases belong to the crosscutting category, but not close chases: when the pursuers and the pursued are within sighting or firing range of each other what we are talking about are shared spaces, not parallel ones.

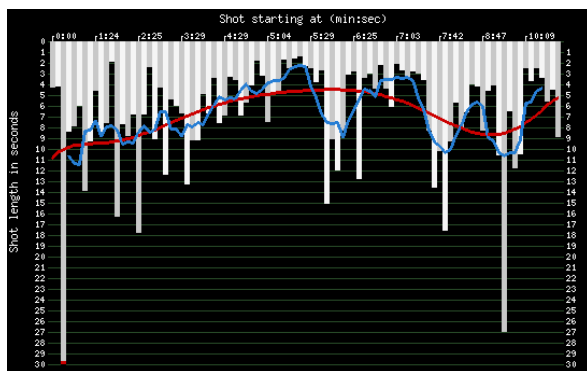


Figure 6: *Fighting Blood* as measured by Charles O'Brien on 2012-06-06. Cinemetrics graph set at the polynomial degree=8, moving average range=6

What must have happened in *Fighting Blood* is mutual interference of crossfire and crosscutting sequences. Take a look at the Cinemetrics graph on Figure 6 whose polynomial curve is pretty similar to the dashed green on Baxter's Figure IX, and whose moving average shows three peaks of action, the highest of which does occur somewhere around the middle. This highest peak is a close horse chase which takes place after the Indians notice that the white boy has noticed their war dance; it falls roughly on the middle of the film. The peak in the area of 6' and 7' is the crossfire. Only two minor peaks close to

the end of the film are crosscutting peaks, which, to complicate matters, are hard to tell apart from crossfire: one of two parallel actions is galloping, the other, cross-firing.

To summarize, the central adventure—the aggression and its repulsion—has out-peaked the crosscutting sequence which is placed where it should be, at the end. As a result, *Fighting Blood* got into Group 2, whose dashed green line is at its fastest around the middle of the film.

No generic physiognomy can be put to the titles assembled in Group 3 either. *Heartbeats of Long Ago* is a blood-chilling tale set in fourteenth-century Italy: a young lady hides a secret lover in an airtight closet in which he suffocates after her jealous fiancé steals the key. *A Country Cupid* is a rural comedy as light as its title, with a minute-long scare in the end. *The Battle*: a love story wedded to a battlefield adventure. *Enoch Arden*: a shipwrecked sailor returns after many years to find his wife married to another man.

In this or that form, crosscutting can be detected in all 4 films belonging to Group 3 and in the single film which constitutes Group 4. Let me make a quick comment on the singleton from 4 and then, a longer one on two films from Group 3.

What Shall We Do with Our Old is a generic hybrid one finds among Griffith's Biographs more often than we nowadays expect. 1908-1913 was the period in which diversity was film exhibitors' doctrine. Programming tactics everywhere was to mix laughs and thrills within the same show. This something-for-everyone mentality spilled into the very films which comprised variety picture shows. It was not a sin against genre or in bad taste that Griffith made a village half-wit produce a gun and take hostage the beautiful schoolmarm at the end of *A Country Cupid*: if the film fails as a comedy, the time-proven last-minute rescue may rescue it.

This goes for the film from Group 4 as well. *What Shall We Do with Our Old* is a social problem drama based (according to an expository title) on an actual occurrence. An old carpenter is fired and compelled to steal food for his dying wife. He is caught and imprisoned. However, the kindly judge sends a cop to verify the old man's story about his ailing wife. Accompanied by two jailers the old man hurries home to say farewell to his wife before she dies. Crosscutting: they on their way – she on her death bed. The husband is late: the wife is dead. The old man forswears the unjust world. "Nothing for the useful citizen wounded in the battle of life," the last title concludes.

The rescue operation at the closure of the film looks like another case for an appended ending: as we learn from the doctor in the third shot, the wife is beyond rescue. But, appended or not, the race against time does take place in the end, which explains the steep dive which the dashed brown line makes in Baxter's Figure IX at around 80% into the film. This looks like a good enough reason to transfer *What Shall We Do with Our Old* from its solitary confinement in Group 4 to Group 1 where the likes of it are found. The line's peculiar behavior in the beginning and in the middle of the film which made the PCA machine decide to isolate *What Shall We Do with Our Old* may be due to uncommonly protracted interior shots 4=109.9", 6=169.1", 10=101", 16=55.7". The last of this series occurs shortly before the 9th minute of the 14-minute film, which is what caused a "sidesaddle" on Baxter's dashed brown line at 60% into the film. Another anomaly which makes *What Shall We Do with Our Old* look not like your typical

rescue movie is the unusually high (9) number of short explanatory titles (a problem picture!) which, in contrast with the long shots mentioned above and with the old man's grieving shot at the end (30=59") result in the coefficient of variation as high as 1.42.

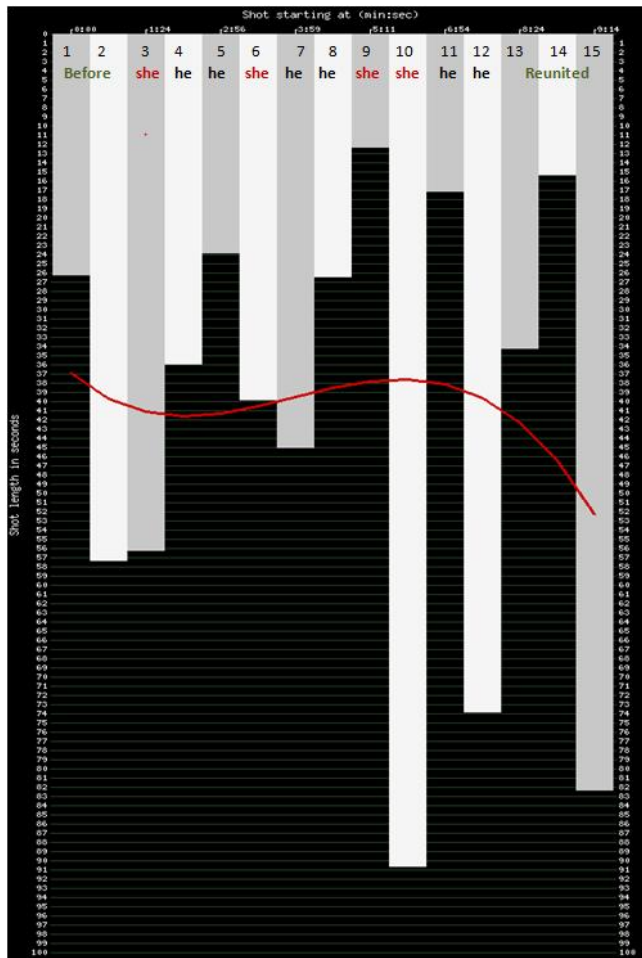
Let me now return to Group 3. A rare variety of crosscutting found in two films from Group 3 may help explain something about the behavior of the dashed violet line in Baxter's Figure IX.

Normally, crosscutting alternates between two activities taking place in separate locations. In our case, at least one of these activities is passive. Classical Hollywood cinema knows of an editing device called Reaction Shot (RS). Typically, this is a closer shot of a face expressing an emotional response to an event, action or spoken line. Often, RS is capped by another RS showing a different face. Another sustained variation is when the same face recurs, forming an alternation chain a-r-a-r-..., for instance when a face in RS is shown watching a tennis match.

While the above pattern looks much like crosscutting it cannot be subsumed under this category for the same reason as cross-firing or reverse angle shots cannot: for the RS to work, the viewer must be sure that the reacting character sees or hears (or otherwise senses) what he or she is reacting to. As common sense tells us, action and reaction co-occur in common space.

This is not always the case with Griffith's editing. "Chance places her alone in her home with the battle outside," says the title one fifth into the running time of *The Battle*, and, from time to time, an MLS of Blanche Sweet at the window recurs, showing her suffering or worrying as she watches her Confederate beloved perform at the theater of war. But then, the Confederate boy is sent on a mission to bring reinforcement. We see him running roads and crossing bushes, but (now MS) shots with Blanche Sweet reacting at the window keep coming back. The boy is out of sight, we see him doing his things and her doing hers: suffer and worry. A series of recurrent RSs has metamorphosed into crosscutting.

This kind of crosscutting is perhaps best defined as the Split Reaction Shot (SRS) sequence: action and reaction are split by distance. Loving souls separated for years or parted forever – stories like this are tailor-made SRS crosscutting. This may be why, early on, Griffith used *Enoch Arden* as a source.



AFTER MANY YEARS (1908)

- 1-2. Before parting. Husband and wife; his departure from their family cottage
3. Wife learns about her husband's shipwreck and rushes to his portrait on the wall
4. Husband landing a raft on a beach
5. Later. Husband seated on the beach searches the sea
6. Wife refuses a flower offered by a suitor
7. Husband gestures as if signalling a boat offscreen
8. Husband kisses a locket that contains his wife's lock:



9. Cut on the locket kiss to the wife who spreads her arms as if to embrace him:



10. Enter the suitor and begs her to marry him, but is again rejected
11. Husband signals offscreen and rushes to the sea
12. Husband rescued
- 13-15. Husband's return to England and reunion with his wife

Figure 7: *After Many Years*, released 11/3/1908. To the left: Cinematic graph submitted by Yuri Tsivian on 2011-03-12 with polynomial trendline Degree=4. To the right: shot-by-shot description of the film's action borrowed (abridged) from Gunning 1991: 110-112; frame enlargements at cut points from shots 8 and 9 come from the same source, p. 111

Data presented in Figure 7 summarize *After Many Years*, Griffith's 1908 adaptation of *Enoch Arden* which, distinct from Tennyson's poem and Griffith's second, 1911 adaptation, ends in a happy reunion. Shots 3-11 constitute a crosscutting segment that alternates shots with the wife in their village and the husband on his desert island. Throughout the sequence Griffith relies on the SRS effect, which culminates with the 8-to-9 cut illustrated in Figure 7: he kisses a locket with a lock of her hair / she extend her arms to embrace the missing him.

This was not Griffith's first crosscutting film, but, as Tom Gunning has established, "*After Many Years* is the first Griffith film which uses parallel editing extensively without a last-minute rescue. I know of no precedent for the film's narrative structure in the work of any other company" (1991: 110). Indeed, the SRS crosscutting is crosscutting minus suspense. This "minus" makes SRS sequences more difficult to detect by means of the SL statistics which proves to be very effective in isolating Group 1 as depicted on Baxter's Figure IX. When suspense is not at stake, there is less need for stepping up the cutting rate towards the end. On the way from RS to SRS "looking at" translates to "thinking of," the activity which does not necessarily require energy and speed.

The absence of the suspense factor does not make SLs unresponsive to crosscutting. It is hardly by chance that shot **9-she** in the Cinemetrics plot above is the shortest one in the film, while **8-he** which precedes it is the 4th shortest of 15. If we isolate the 10 crosscut shots in the middle of the film and number them 1-10, their SLs are as follows: 1=56.2"; 2=35.9"; 3=23.8"; 4=39.8"; 5=45.0"; 6=26.4"; **7=12.3"**; 8=90.6"; 9=17.1"; 10=73.8".

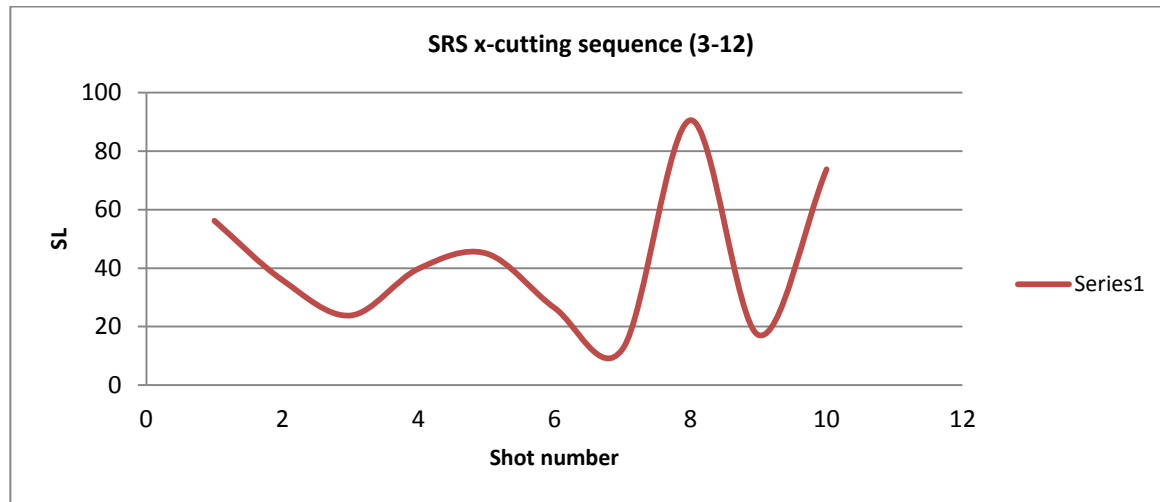
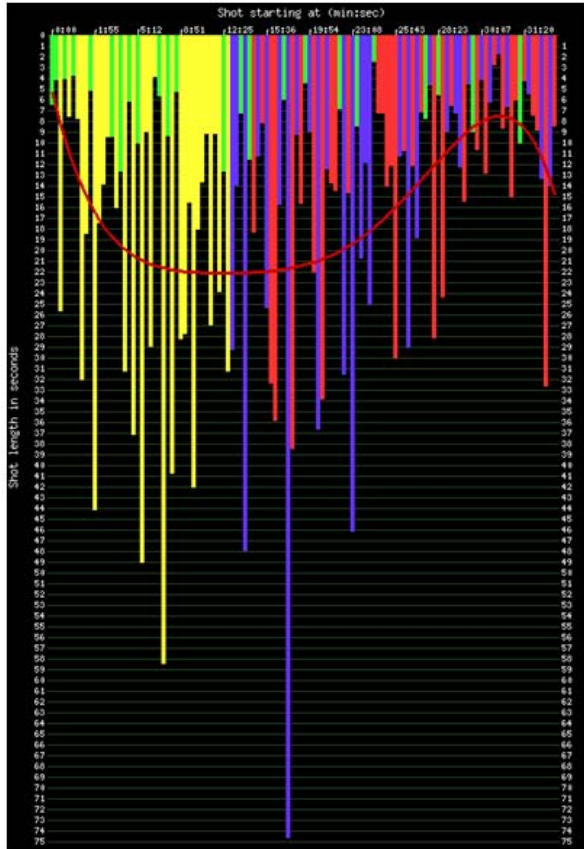


Figure 8: SL curve for the SLs over the 10-shot course of the SRS crosscutting in *After Many Years*

Three troughs of faster cutting occur closer to the middle of the film than they are likely to in last-minute rescues (Baxter's group 1); the fastest falls on the middle of the crosscutting segment. And this is exactly the spot of his vicarious kiss and her empty-handed embrace: a brief intimate interaction across inimical space.

I now return to Griffith's second try at *Enoch Arden*, a two-reel short from Baxter's 1911 Group 3. Griffith's *Enoch*, like his noble-hearted ancestor from Tennyson's poem, does not make it home before his wife remarries, and never lets her know that he is back. Compared to *After Many Years*, in *Enoch Arden* the SRS crosscutting is scaled up from parallel actions to parallel destinies.



ENOCH ARDEN (1911)

ASL: 16.7 MSL: 12.2 MSL/ASL: 0.73 LEN: 32:54.3
 NoS: 118 MAX: 74.6 MIN: 1.7 Range: 72.9 StDev: 13.2 CV: 0.79

Name:	Before	He	She	Title
Number of shots:	29	34	31	24
Length(min):	11.58	8.98	9.46	2.88
ASL(sec):	24	15.8	18.3	7.2
MSL	23.8	13.3	12.4	6.6
MSL/ASL	0.99	0.84	0.68	0.92
StDev	13.8	9.9	15.7	2.8
Min	3.8	2.7	1.7	2.4
Max	58.4	38.4	74.6	12.6
CV	0.58	0.63	0.86	0.39
Display?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Color	Yellow	Red	Purple	Green

Figure 9: *Enoch Arden*, released 6/12/1911 (Part One) and 6/15/1911 (Part Two). To the left: Cinematics graph submitted by Yuri Tsvian on 2013-05-04 with polynomial trendline Degree=6. To the right: table of variables related to the color-coded shots.

The polynomial trendline set at Degree=6 on the Cinematics diagram to the left may appear too smooth to be true, and so may the following theory that attempts to explain it. Call the line a scoop whose bottom touches the mark of 22" and whose handle goes up to 7.5" and down to 15". If one now shifts one's gaze from the line to the actual shot lengths (colored bars hanging from the time axis) which push its middle down one will notice that the longest is found close to the middle of the film (shot 56 of 118: SL=74.6"). This long **violet** shot is flanked by two less-long-but-still ones of the same color (47.9" and 46.1") and rivaled only by some yellow precipitations to the left. As the film unreels left to right, the ratio changes to the contrary: most of its violet shots which, as we just saw, used to outgrow **red** ones by half in the mid area of the film, noticeably shrink compared to the reds towards the end: only 3 out of 12 violet shots stick out slightly below the scoop's handle while out of 14 red shots 8 stick out, 4 of them conspicuously.

Let me try to interpret some of this proceeding from Griffith's supposed dramatic intensions. It stands to reason to assume that the dramatic leverage of shipwreck dramas depends on characters' bearings in space. If so, why not mark our film's shots as to who is where when? This was what I did measuring Griffith's *Enoch Arden*. Almost (not quite) half way into the film, its three protagonists, Enoch, Annie and Philip (her second husband) are shown mixing in their seaside village, their main business being who of

the two would marry Annie Lee. I coded this segment yellow, without distinguishing between the three inhabitants of it. Soon after Enoch marries Annie he sails away to earn some food for their kids. The moment his boat is out of sight (as we can guess from Annie lowering her telescope), her shots become **violet** and his **red**. This distinction stays active till the end of the film: when Enoch is back in the village, he and his wife are never shown in the same space, not even when Enoch is shown peeking at Annie's window seeing her, his grown children and Annie's new husband bustle about her newborn.

The dramatic trajectory of Enoch's cruise in relation to Annie is thus from being near to being apart, and then back to being near yet apart. By what may at first look like a coincidence, Enoch's distance from home turns out to be proportional to shot lengths: the farther he is, the longer the shots. There is a dramatic logic to this correspondence which will be easier to follow if we ask *whose* shots are longer where. You can tell at a glance: **her** shots are visibly longer in the middle, during his tenure of the desert island. Why?

A possible answer to this is genre. Unlike films about Robinson Crusoe, *Enoch Arden* is least of all interested in the hero's career as an islander: no hunting, no hut-building, no Fridays. The reason why Griffith needs to park off Enoch is to give Annie an excuse to long at her shore looking at the sea. *Enoch Arden* is a drama, not an adventure. **His** absence is **her** drama. Do something, marry me, move on, Philip implores. Yet all she does is to sit on the shore and wait. Sitting and waiting translates into longer SLs: **47.9, 25.3, 74.6...** Long is a measure in cartography and cinematics, longing is an emotional state that lasts for 13 minutes, a long screen time for a two-reel film.

Making a new, more faithful screen adaptation of *Enoch Arden* was Linda Arvidson's idea who played Annie and was then (*this* did not last long) Griffith's wife. It may seem plausible to suggest that both the choice of the story and longer shots for Annie had to do with Mrs. Griffith's planned rise to stardom, but there are two reasons why we should watch our step here. One, of course, is that while rivalry for parts did exist among Griffith's players film stars in the modern sense of the word did not yet exist in 1911; the other is that if we compare Annie's and Enoch's screen-presence times within the space of last (dramatic) 19 minutes of the film, we will find that Enoch is only 48" behind.

An explanation for this may have to do with the distribution of dramatic functions peculiar for *Enoch Arden*. Annie's longing for Enoch goes when her new baby is born. But her longing gone, it is passed on to Enoch. Annie's happiness is Enoch's drama. And happy Annie does not interest Griffith any more. Look again at the handle of the scoop. **His** shots are now longer than **hers**. Her business is diapers, his business, dying. Dying takes 32.6", Enoch's longest shot since his return.

Let me conclude these (inconclusive) notes with the following hypothesis. Normally, what filmmakers call a *punch* is associated with bursts of faster action. However, a group of films may exist among Griffith's earlies in which a punch is intended to fall on a longer and slower shot, not on a series of shorter and more dynamic ones. Griffith's own account of his cutting experiments at Biograph suggests a picture more complex than prompted to us by the wisdom of hindsight. The way we tend to describe these experiments is by presenting them as steps in a linear evolution. According to this model, Griffith's

path from relatively long shots in his 1908 films to shorter and shorter ones as he approached the year 1912 was a series of trials and errors as a result of which more effective and more efficient storytelling techniques gradually emerged. It may as well be correct looking from the point of view of where we are now, but not necessarily from the insider point of view in 1908, 1909 etc. Every experiment on Griffith's part was a shot in the dark, and, as American wisdom tells, when in the dark, don't put all your eggs in one basket.

Evidence exists that, for all his belief in faster cutting, from time to time Griffith would also stake on slow. I am not talking about numeric evidence, though it might make an interesting task to compare fluctuations of Griffith's ASL's within, not only across years. What I *am* talking about is Griffith's self-analysis found in his 1926 essay "Pace in the Movies" which I already evoked in the section of these notes entitled "On pace and pulse." The essay's subject, we recall, were cutting rates as related to Griffith's bio-poetic idea of pulse. When it comes to a punch, or the main climax in the film's story, should one go with or against the heartbeat? There are two schools of thought about this, Griffith explains.

In the practical production of these climaxes, opinion is divided into two schools; but the human pulse beat, as the criterion of pacing, is perceived in both. The American school (and I describe it in that way because it has been generally adopted in American films) makes an effort to keep the tempo of the picture in tune with the average human heartbeat, which, of course, increases in rapidity under such influences as excitement, and may almost stop in moments of pregnant suspense.

The other method, which may be called the German type because it has been widely employed by German directors, slows the unfolding of the picture until the pulse races on ahead of it.

Which method works best? To find out more about this, an experimental study was in order:

Both methods have been used by American directors. As long ago as 1910, I was carrying on a series of experiments, making one picture with normal pace, the next with underpacing; and the reaction of many audiences were carefully recorded.

The results greatly favored the pictures paced with the beat of the pulse.

That was the decision of American audiences, which are the masters of motion pictures.

Allowing that the above record of Griffith's pacing tests at Biograph is accurate, it corrects our linear view on the early evolution of motion picture editing. Slower films and lingering punches were Griffith's legitimate targets, not collateral damage. Try it fast, try it slow, and listen to the pulse.

If Griffith indeed experimented with underpacing, it may not be by chance that a film like *What Shall We Do with Our Old* with an ASL of 25.5" (and of 36.2" for the interior shots) has three more-than-100" long punches before the mid-film and one (almost) minute-long at the end: doctor's verdict; old man fired; wife's struggle with illness; he at her death bed. Scenes more auxiliary to the old man's drama go noticeably faster; and titles, the most auxiliary elements of the film, have an ASL of only 9". This may

also explain why, in *Enoch Arden*, **her** shots are longer when she longs for him and **his** when he longs for her. These were Griffith's experiments with slowness.

All this considered, one might suggest that the real choice made by American filmgoers was not between two styles of editing, fast versus slow, but rather between two kinds of stories. Stories as languorous as *Enoch Arden* are easier to find in Russian or Italian cinema of the 1910s; F.W. Murnau's 1924 *The Last Laugh* (minus the last laugh) could be easily called *What Shall We Do with Our Old*. With all due respect that Griffith had for French *d'art* films in 1909, Italian *peplums* in mid-teens and German *Kammerspiel* movies in the twenties, he knew that Americans voted for Group 1.

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