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Action and Acting at Biograph Studio, 1908-1912

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In memoriam Gunārs Civjans, co-creator of Cinemetrics

Abstract

The study explores the evolution of acting vis-à-vis narrative techniques during D.W. Griffith's tenure as director-cum-supervisor at the *Biograph* studio from the 1908 through 1913. The authors explore the *Biograph* output from two complementary perspectives: as it comes down to us in extant paper prints, and as it emerged in the mirror of contemporary film lore. Who should be in control of narrative unfolding—film players of film editors? To figure this out, contemporary observers used metric data gathered while watching films—as do the study's authors armed by state-of-the-art digital tool of film studies known as *cinemetrics*.

Introduction

Every dramatic actor, whether onstage or in front of a movie camera, does double duty. One job is to propel action: lend their voice and body to this or that story devised by a playwright or a screenwriter. Think of a story as a chess game. The way actors move or are moved across the board depends not on them but on which chess piece they embody—a knight, a pawn, or a queen. The other duty is acting. Dramatic actors ought to be dramatic—or funny, if comedy is the name of the game. During a chess game, no one expects a pawn to exclaim "Woe is me!" when taken or a queen in distress to wring her hands. In a theater or at a picture show, we do. While actors have little say in shaping the story they inhabit, their job is to render action relatable.

Our plan in this study is to highlight and annotate a set of actorly attitudes to a narrative event. Some of these attitudes are medium dependent, and it is on these that we are going to focus. On a stage, exclaiming "Woe is me!" or wringing one's hands are roughly equivalent ways of signaling emotional pain; when it comes to acting in silent films, only one of the two signals retains force.

Take the 1909 Biograph short titled *On the Reef*. A proper and dutiful Victorian wife, Grace resists the attentions of a family friend whose company she enjoys. A dreamy poet more than a proper womanizer, the family friend takes her resistance all too literally and, devastated, flees for parts unknown. Stunned by this news, Grace bursts into a remorseful tirade, which even the sharpest of lip readers would find impossible to make out. The only clues to Grace's silent soliloquy come from the gestures that accompany it: we see Grace wring her hands, spread them toward the heavens, drop them onto the table. The woman must be desperate, indeed.

Tags and Titles: Two Entrances to an Imaginary Museum

Enter the museum

Like any story, a scholarly argument is expected to have a beginning, middle, and end. Working in a digital environment grants us—or rather, our readers—extra room to maneuver. We envisage this study working as a space more than a story. Call it a virtual version of a film museum. There is no Start Here sign, nor is there a set itinerary for visitors to follow. You roam our rooms much like a visitor does at an actual museum—along the walls where picture after picture is exhibited.

We offer two complementary ways of exploring a variety of acting techniques peculiar to the Biograph studio style throughout the Griffith years. Imagine two virtual exhibition spaces: one labeled "Tags," the other "Titles." The Tags Room harbors clips arranged, unsurprisingly, by tags. Grouped along one of its virtual walls are telltale clues—eloquent props, expressive nos, hand gestures—used across Biograph films in lieu of explanatory titles. Another wall shows various portrayals of the other; a third (in case our virtual room is triangular and not, for instance, round) exhibits clips in which devices like editing or staging help the viewer construe what a character thinks or feels.

In the Tags Room, we collate similar clips across different films. Watch Grace's undersexed husband from *On the Reef* produce his pocket watch to inform her that it's time for him to get some sleep. Now, compare the old man's watch to the hourglass the medieval queen from *The Sealed Room* upends in order to intimate to her troubadour paramour that the king is unlikely to return in less than an hour. Different times, different timepieces, but Griffith's reasons for using them are much the same. Add here another hourglass from *The Call to Arms* and a king-size alarm clock that the worried wife from *The Drunkard's Reformation* keeps nervously consulting while her husband is having a good time at a bar, and you will get a pretty good idea of Griffith's reliance on his signature scheme: building a story around a ticking clock.

Tags

Various methods existed to help actors overcome the silent barrier. In this study, we categorize—or tag—a number of those. We have tagged the climactic scene of Grace's despair "pictorial acting" because Marion Leonard, a stage actress turned photoplayer, makes ample use of the gestural vocabulary familiar to us from live theater, visual arts, and culture-intrinsic traditions. Lifting one's hands, for instance, is an ancient form of worship known to us from as far back as the Old Testament via innumerable pictures. Perhaps less iconic, yet as idiomatic, is the gesture of wringing one's hands. Obviously men do it too, but so firmly has hand-wringing become associated with feminine anxiety that a phrase from a recent article on feminist politics, "Men, especially conservative men, continue to wring their hands over the male condition, of course," sounds almost like a stylistic gender bender.[1] In this study, we use the tags "pictorial acting," "mimed speech," and "facial asides" to catalog an array of mimic or gestural ploys that early film players used to make up for the absence of spoken lines.

Other tags point to other things. While the scope of films this study covers—the Biograph studio output from 1908 through 1912—sounds rather narrow, D. W. Griffith's narrative demographic is diverse: modern to medieval, urban to rural, north versus south, and east to west. Consequently, Biograph players were expected to know how to enact racial, class, and historical otherness—hence

such tags as “minstrel mannerisms,” “stoic Indians,” “period etudes,” “rustic simplicity,” or “foreign fops.” Tags like “dorsal angle,” “pause before exit,” “tableaux,” and “mental cuts” are less about acting as such and more about acting-cum-editing and staging. These are Griffith’s ways of making us privy to what a character is pining for or mobilizing a sense of déjà vu in order to plant an idea or a mood.

Titles

Using short clips stored in the Tags Room, we can work our way through an array of Griffith’s titles. Conversely, the Titles Room grants us an opportunity to analyze what particular tags define the acting anatomy of a movie. There is a list of titles on a wall, of which we select one. If we want to know more about Mary Pickford’s style of performance at Biograph, it makes sense to scrutinize *Awakening* or *Ramona*. If one is curious about Leonard, billed as a “Biograph Girl” before Pickford took over the title, one would study the Victorian melodrama *On the Reef*, mentioned earlier.

In the Titles Room, the modus operandi is stop-and-go. Here, we watch the selected movie end to end, but, at tagged junctions, the film freezes, and an annotation pops up. Take *On the Reef*. The film’s first tag, “mimed speech,” is found around a minute and twenty-five seconds into the film. A doctor is shown standing behind the head of the bed in which a woman is dying. He raises two fingers in the air. The gesture is mirrored by an elderly gentleman, who rushes hurriedly out of the room. Why? Two what? A modern viewer will likely need to read the annotation to this scene to get a sense of what is going on; it pays to rewatch the scene to appreciate how alert picturegoers must have been to digital numerals of the kind. Click to go on. The next stop (6:46.00–7:22.90) is tagged “tableaux” to indicate that the falling-in-love scene is a screen realization of a love story from a famous narrative poem. This is discussed in the annotation. At 7:53, the next tag, “telltale props/timepieces,” calls for our attention. Grace’s husband looks at his pocket watch, and nickelodeon picturegoers infer that the author is about to park the husband in the bedroom to give the family friend time to open his heart to Grace. Grace’s heart, despite itself, responds—until she remembers she is married. At 9:21, the tag “mimed speech/deictic dialogues” announces a drama of finger-pointing: toward the bedroom, at the door, at the floor. Dramatic exit, followed by Leonard’s trademark pictorial acting: hand-wringing, hand lifting, arm dropping.

The Counter and the Watch: A Long History of Cine-statistics

> **"In the early days of filmmaking—more so than nowadays—to stage a scene or edit a sequence involved solving a bunch of engineering problems alongside creative ones."**

The Titles Room is anecdotal by design; the Tags Room is potentially analytical. The entire output of Biograph films directed by Griffith from 1908 through 1912 exceeds 450 pictures; the number presently available on Scalar is 73—hardly a statistically representative sample. Yet, as the database grows, we may start examining the flow and ebb of tags across time. As some contemporary critics and many a Griffith scholar have observed, acting style at Biograph evolved. Pickford acts differently than her predecessor Leonard. Blanche Sweet’s acting is different from Pickford’s. Pantomimes and pictorials give way to what has become known as restraint: frontal and profile to three-quarter or dorsal angles, acting as staging to acting as editing. Could tag statistics help us date, detail, and—when needed—delinearize these convincing but, by necessity, sweeping claims?

Using statistical data to support, question, or fine-tune empirical observations on film is less far-fetched a prospect than it may at first appear. True, the idea sounds more intuitive with regard to staging and editing than acting. In the early days of filmmaking—more so than nowadays—to stage a scene or edit a sequence involved solving a bunch of engineering problems alongside creative ones. "Photoplays are put on . . . with a stop-watch in one hand and a yardstick in the other," literary theorist Joseph Berg Esenwein and practicing scenarist Arthur Leeds warned wannabe screenwriters in the manual *Writing the Photoplay*, which the two cowrote in 1913.[2]

Tools for space and time

Berg Esenwein and Leeds's two-gun figure is emblematic of the ideal film director—a demiurge in command of the space and time of their film. The stopwatch stands for knowing when to cut—at the time we are looking at, most of the cutting was done on set and in the head. The yardstick, or ruler, was for chalking distances on the ground: how close to the camera to stand (different studios had different standards for that), where an actor is in or out of the frame. Directors, like tailors, measure and chalk before they cut.

When it came to timing your movie, many a how-to manual—the likes of *Writing the Photoplay* mushroomed across the US in the early teens—suggested a learning procedure we might call reverse engineering. Make sure you watch as many movies as you have time for, and when coming to see a picture show, never arrive empty-handed. Bring with you a counting tool, a timepiece, and something to make notes on. "The inexperienced writer labors under a handicap, and one that he could overcome in a measure," writes Catherine Carr in *The Art of Photoplay Writing*, "if he would take the trouble to count the scenes and note the length of them by consulting his watch as the story is unfolded."[3]

A watch and a counting tool were the bare necessities. In Berg Esenwein and Leeds's manual, this minimal self-teaching tool kit is complemented by a makeshift tabulator intended to distinguish between film shots proper (then called "scenes") and verbal matter, explanatory intertitles (then called "leaders"), and close views of letters, newspaper clippings, bills, etc. (called "inserts"). "Make a practice of carrying a few small cards, with a line drawn down the middle of each," Berg Esenwein and Leeds instruct. "As the card is held in the hand, mark with a pencil a short stroke on one side for every change of scene, and on the other side a stroke for each leader, letter or other insert—this will serve as a convenient record device."[4] The distinction was worth making: if the length of a habitual shot was, as a rule, dictated by action or acting-related factors, how long a written text stayed on the screen hinged on an estimated reading speed (say, three words per second) multiplied by the number of words.

Statistics on set

Admittedly, there are aspects of filmmaking—and, therefore, of filmmaking history—that can and ought to be quantified and tabulated, for the sole reason that feet and seconds are the nature of the beast. But how on Earth can one tabulate Pickford? Sounds impossible, like knowing the dancer from the dance. An actress like Pickford is hard to pin down to a "line of business," or acting style. We have seen her go through conventional pictorial routines in a period melodrama like *Ramona*, do well in a slapstick comedy like *Wilful Peggy*, stereotype rustic simplicity in *An Arcadian Maid* or a child of the wild in the pictures of the noble native genre. Statistics is about putting data into tables in order to contrast and compare. A critic's—and arguably an actor's—favorite compliment is

"incomparable." Can the incomparable be convincingly tabulated, let alone compared?

We think we cannot pigeonhole a Pickford into a numbered grid, but only if we consider her in isolation. How many of us have seen Pickford other than in films? She herself is but a figment of our holistic imagination. Look at this from the standpoint of media ecology. All the Biograph actors we scrutinize in Scalar are two-dimensional, monochromatic creatures, mute like fish, only imaginable in the habitat of their medium—within the spatial and temporal parameters of silent film.

These parameters, as we have seen, are quantifiable. Everyone at Biograph—Pickford, Kate Bruce, Mack Sennett—knew they were not supposed to come closer than nine feet to the camera—the line was even farther off at other studios—so their heads did not loom too large, overlapping other players. The rule, of course, is easy to shrug off as irrelevant to acting, but not an observation like Jan Olsson's regarding Pickford: the way Pickford plays depends on how close to the camera she stands.[5] So much for the yardstick.

The full scene

As with blocking, so with cutting. Unlike us mortals, film characters live in a non-Kantian space–time continuum. It is discontinuous, contingent on what cutting scheme is currently on the director's mind. Some directors are always poised to cut away. Whether you are a comedian like Charlie Chaplin or a diva like Olga Gzovskaia, what worries you is a lack of time within a shot for your character to emote or for you to develop a gag. Trade papers and actors' memoirs resound with battles for acting time: between Chaplin and Keystone directors in 1914, Russian movie stars and their directors during the same decade.[6] Here is one echo as it reached us from a Russian trade journal in 1916:

> In the world of the screen, where everything is counted in meters, the actor's struggle for the freedom to act has led to a struggle for long (in terms of meters) scenes or, more accurately, for "full" scenes, to use Gzovskaia's marvelous expression. A "full" scene is one in which the actor is given the opportunity to depict in stage terms a specific emotional experience, no matter how many meters it takes. The "full" scene involves a complete rejection of the usual hurried tempo of the film drama. Instead of a rapidly changing kaleidoscope of images, it aspires to rivet the attention of the audience on to a single image. . . . This may sound like a paradox for the art of cinema (which derives its name from the Greek word for "movement") but the involvement of our best actors in cinema will lead to the *slowest possible tempo*. . . . Each and every one of our best film actors has his or her own style of mime: Mosjoukine has his steely hypnotized gaze; Gzovskaia has a gentle, endlessly varying lyrical "face"; Maximov has his nervous tension and Polonsky his refined grace. But with all of them, given their unusual economy of gesture, their entire acting process is subjugated to a rhythm that rises and falls particularly slowly.[7]

So much for the stopwatch—which, let's face it, Russian film directors before Lev Kuleshov were somewhat reluctant to consult. Who would venture to say "cut" to Mosjoukine? Kuleshov's experiment was a revolt against long takes, the cult of slowness, and the faith in "faces." The source of meaning is not Mosjoukine's gaze but wherever the director shall direct it. This idea, however, only gained currency in the wake of the political revolt of 1917.

Griffith, unlike his Russian prerevolutionary counterparts, was always a ready cutter. His philosophy was to cut before filmgoers want you to. We do not know how Griffith's actors reacted to

this policy, but we do know that many a film critic panicked. Thus, in 1912, a major American trade journal, *Moving Picture World*, launched a critical campaign against steadily accelerating cutting rates for fear that increasingly frequent scene changes might eat up whatever time was left for an articulate performance.

Cinemetrics

The craze ought to be stopped—but first, who started it? The culprit must have been well known to *Moving Picture World* subscribers, but, as was deemed ethical in old-school scholarship, you shall not assign blame unless you can prove it. So, as we learn from Epes Winthrop Sargent, a staff writer for the magazine, he and a contributing editor, Reverend Dr. Stockton, decided to begin their campaign with a comparative study that, to our knowledge, was the first ever exercise in cinemetrics—the oldest, and by no means the easiest, method of examining film form. Armed with "a stop watch, a pocket counting machine, an electric flash lamp and a note book," Dr. Stockton embarked on what otherwise may have looked like a film-watching binge.[8] He saw twenty-five reels of film "through twice each, counting scenes the first time, and inserts the second," Sargent reports. "We submit that 50,000 feet of film in two days is going some."[9]

Sargent's brief introduction is followed by Table 1, which combines metadata (production company, film titles) and numerical data (number of shots, intertitles, and inserts for each title).

"These figures are most decidedly interesting to the student of photoplay, and we believe that this is the first time this sort of table has been presented," Sargent concludes. "We are frank to admit that we find some of the figures startling."[10]

Table 1. Data Obtained by Dr. Stockton during His Field Study of the Number of Shots, Intertitles, and Inserts per Film, As Reported by *Moving Picture World* in 1912

Company	Title	Scenes	Leaders	Inserts
Lubin	*A New Beginning*	18	10	1
Lubin	*A Complicated Campaign*	11	11	7
Vita[graph]	*Sheriff Jim's Last Shot*	40	15	3
Cines	*Disowned*	18	7	3
Edison	*A Necklace of Crushed Rose Leaves*	22	14	0
Kalem	*A Prisoner of the Harem* (split reel)	15	15	3
Kalem	Educational subject, not tabulated			
Selig	*A Day Off*	24	5	1
Vita[graph]	*Wanted—A Sister*	32	10	0
Vita[graph]	*Adventure of the Thumb Print*	46	11	0
Essanay	*The Understudy*	36	11	3
Biograph	*The Sands of Dee*	68	7	0
Lubin	*A Western Courtship*	41	7	3
Edison	*The Little Artist of the Market*	18	12	1
Selig	*The Hand of Fate*	35	19	0
Vita[graph]	*The Victoria Cross*	44	17	1
Lubin	*Becky Gets a Husband* (split reel)	28	17	0
Lubin	Industrial, not tabulated			
Cines	*A Daughter Diplomacy*	25	11	0
Selig	*The Pennant Puzzle*	37	12	0
Edison	*Jim's Wife*	21	14	1
Lubin	*Just Pretending* (split reel)	24	2	5
Lubin	*A Pair of Boots*	14	0	0
Edison	*After Many Days*	26	14	0
Méliès	Run without title	21	10	1
Selig	*Dad's Girl*	31	15	0
Pathé	*On the Brink of the Chasm*	33	2	0

The floor is then given to Stockton, in whose view a surge in scenes, leaders, and inserts diffuses the plot and nebulizes the story of your film. The sun is one, and shines—do countless stars light up the night? "With the exception of the Edisons, the Cines and Selig's *The Hand of Fate* [35, 19, 0], the last a really big story, the stories of all the others, dramas and comedies alike, were as slim and attenuated as the Milky Way." And the dispersion appears to be very much an American disease. "It looks very much as if Edison and the foreigners were the only ones not bitten by the lightning bug, with the result that his releases are, to my mind, the only ones that are really drama. The others have a lot of action, but no acting and no chance for any."[11]

Who is to blame? First, the exchanges, whose standing order policy is easily translated as "anything goes." As a side effect of the nickelodeon boom, there was a shortage of screenplays, with more and more newbies sending in their patchy stuff. Last, but not least, there are directors whom Sargent calls faddists. "I suppose if one wants to sell one's scripts one will have to conform to the prevailing jumping-jack tendencies," concludes Stockton with a sigh. "But Oh! for the time when a man who wants to see things done with at least some pretension to verisimilitude will have a show to

getting something really worthwhile produced."

"To this last we most heartily say Amen," Sargent echoes Stockton's melancholy comment and raises his eyes to look at Stockton's table once again. The table, we recall, merely lists the number of scenes and other elements each film includes; the way Sargent reads it, however, is through the lens of what would become usual in cinemetrics. The key notion in cinemetrics is average shot length (ASL); that is how we distinguish between films and broader styles across studios—something Sargent and Stockton want (us) to know more about. To Sargent, the ASL data (acquired by way of dividing a thousand feet—the typical length of a single reel—by Stockton's number and adjusting to the typical projection speed) looks apocalyptic:

"'Acting is not possible. Clarity of story is not possible. Unfolding of plot is not possible.'"

> A twenty scene drama is run up to fifty or sixty scenes, with an average time length of from fifteen to eighteen seconds each. Acting is not possible. Clarity of story is not possible. Unfolding of plot is not possible. There is a succession of eye-pleasing scenes, but no stories, and self-contented directors, with concrete crowded craniums will presently be wondering why it is that the pictures are not as popular as they used to be; provided that they are capable of that much mental effort.[12]

Here, Sargent's rhetoric grows prosecutorial. There are studios and studios, some more steadfast than others. Stockton and Sargent decisively side with the former.

> Apart from a slightly excessive use of leader, we agree with Dr. Stockton that the Edison stories are the most complete, simply because time is taken to act out the scenes instead of merely sketching them in, and while it may be evidence of our weak intellect and inability to appreciate art, we confess that we would go ten blocks to see an Edison where we would not cross the street for the average multiple scened Biograph. Edisons have stories. Most Biographs are a succession of tableaux without plot.[13]

The Biograph numbers

Time to go ad hominem and point at the one that touched off the cutting race. There is but one Biograph film listed in Stockton's data table: *The Sands of Dee*. His count for *The Sands of Dee* is sixty-eight scenes and seven leaders—the highest number of scenes per film after Vitagraph's forty-six in *Adventure of the Thumb Print* by a margin of twenty-two. (The archival print of *The Sands of Dee*, remeasured in 2013 using a digital cinemetrics tool, yields seventy-seven shots and seven intertitles, with an ASL of 7.8 seconds). And there was but one noncomedy director at Biograph making noncomedy films in 1912.

> Some years ago the Biograph introduced the idea of close-up pictures with the result that the picture world gradually became populated with a race of persons who were cut off at the tops of their heads and the bottoms of their waistcoats. Now that three times the proper number of scenes are used to cover up the thinness of Director [sic] Griffith's on the flap of the envelope stories, everybody is doing it, and strong, vital, gripping plots are shelved in favor of the short story with numerous shifts.[14]

If Griffith at Biograph is a trendsetter, who are the faddists? Easy to figure out if we look at the table once again. Out of the twenty-four measured by Stockton, the highest numbers of scenes per picture are in three Vitagraph films. Three out of four Vitagraphs inspected had more than forty scenes. Compare this to where the "foreigners" are: two pictures released in the US by the Società Italiana Cines have eighteen and twenty-five scenes, respectively.

Apparently, by 1912 the tendency toward faster cutting was strong enough for Sargent and Stockton to admit they were swimming against the current. "This may be heresy," says Sargent in conclusion, "but if it is, we are proud to call ourselves a heretic."[15] Why the two preferred to stay with the slower camp is hard to tell. While there may have been a modicum of lobbying involved—trade papers are *trade* papers, after all—Sargent and Stockton's complaint about staging and editing at Biograph should not be written off as mere commercial politics or journalistic palaver. Rather, it is an early token of a controversy that has not subsided to this day. What defines what? Is the way movies are made—spaced, timed, and sequenced—defined by a preexisting property of the human mind, or is how we read a film shaped by directors and editors like Griffith?

Attention-driven editing

While questions like these are reminiscent of the one about the chicken and the egg, they do resurface, now and again, across critical and psychological film studies. As we saw, a venerable tradition that goes back to American or Russian trade paper philosophers of the 1910s posits cutting and acting as competing variables. Explicitly or tacitly, at stake in such claims is the filmgoer's attention. When Sargent, writing in 1912, warns that scenes whose length falls below such and such number of seconds make action and acting impossible to follow, he is calling on filmmakers to dovetail the length of their scenes with the audience's attention span. By the same token, in 1916, the Russian critic I. Petrovskii, quoted previously, praises fellow filmmakers for "riveting the attention of the audience on to a single image" rather than dissipating it across "a rapidly changing kaleidoscope of images."[16] Quality acting, or so Petrovskii believed, requires an unhurried succession of what Gzovskaia dubbed "full scenes." Indeed, an average shot length (sans intertitles and inserts) in Yevgeni Bauer's *Twilight of a Woman's Soul* (1913) is 28.9 seconds, and in *Daydreams* (1915), it is 30.4 seconds. "Riveting" is the right word for it.

"How short a shot is too short for the human mind to process?"

Today the idea of attention-driven editing is very much alive—primarily in cognitive studies and experimental psychology. The concept reemerged in Tim Smith's recent study "An Attentional Theory of Continuity Editing," in the course of which state-of-the-art eye-tracking equipment was used to trace what precisely film viewers instinctively watch within and across shots.[17] Another study, "Attention and the Evolution of Hollywood Film," focused on temporal rather than spatial aspects of attention, analyzes cinemetric data across seventy years of filmmaking—a trajectory which the principal investigator, James Cutting, boldly presents as replicating, in miniature, millions of years of natural selection:

> The makers of popular movies, over time and in some cases slowly over generations, have tried to make the layout and succession of shots as clear and as understandable to viewers as they can. They have explored different possibilities, and through a process of selection much like biological evolution, they have arrived at solutions.[18]

Modern-day studies are beyond the scope of this paper; Cutting's methods and premises have generated a productive and refreshing argument on cinemetrics theory here, here, here, and here. In a deeper historical perspective that interests us here, however, the pursuit of a correlation between attention and editing looks more like a wild goose chase. How short a shot is too short for the human mind to process? And what average scene length must screenwriters and directors look for in order to "make the layout and succession of shots as clear and as understandable to viewers as they can"?

The answer largely depends on when the question is posed. In 1912, we recall, Sargent set the threshold at eighteen—well, fifteen seconds per scene. For him, action and acting below these figures grew impossible to grasp. A more liberal estimate came in 1915, this time from one of the founders of experimental psychology—the chair of Harvard's experimental psychology lab, Hugo Münsterberg.

Much like Stockton, Münsterberg was, apart from his daytime occupation, a turn-of-the-century film buff and one of the first cinemetricians. He too watched motion pictures armed with a stopwatch, a pocket counter, and a notepad in order to find out how photoplays interact with our mind.

Parallel currents

Münsterberg's findings were theorized in the first treatise on the psychology of film viewing and filmmaking: *The Photoplay: A Psychological Study*, which came out in 1916. Unsurprisingly for a psychologist, his hypothesis is that cinema's psychological apparatus externalizes processes of the human mind such as memory, imagination, and attention. At one point in his book, we find Münsterberg fascinated by an editing pattern he dubs "parallel currents": two or more intertwined lines of action that take place at two or more different locations. "Life does not move forward on one single pathway. The whole manifoldness of parallel currents with their endless interconnections is the true substance of our understanding," Münsterberg muses. "The soul longs for this whole interplay, and the richer it is in contrasts, the more satisfaction can be drawn from our simultaneous presence in many quarters. The photoplay alone gives us our chance for such omnipresence."[19] How many parallel currents of action can our mind process without losing track, Münsterberg asks himself. He comes up with this optimistic estimate:

> There is no limit to the number of threads which may be interwoven. A complex intrigue may demand cooperation at half a dozen spots, and we look now into one, now into another, and never have an impression that they all come after another. The temporal element has disappeared; the one action irradiates in all directions.[20]

There is a limit, however, Münsterberg warns, to the frequency of scene shifts beyond which shifting as such, rather than the scenes, takes hold of our attention.

It is here that the watch and the counter came in handy. It so happened that in November 1915, two American screen versions of Mérimée and Bizet's *Carmen* were released. One version, directed by Cecil DeMille, starred Geraldine Farrar; the other, with Theda Bara as Carmen, was directed by Raoul Walsh. Both were five reels long, with a good deal of crosscutting in the last reel. As a filmgoer, Münsterberg seems more pleased with DeMille's version; the scientist in him is more interested in the other one, which he came back to watch again and measure. Here is his diagnosis:

> If the scene changes too often and no movement is carried on without a break, the [photo]play may irritate us by its nervous jerking from place to place. Near the end of the Theda Bara edition of *Carmen* the scene changed one hundred and seventy times in ten minutes, an average of a little more than three seconds for each scene. We follow Don José and Carmen and the toreador in ever new phases of the dramatic action and are constantly carried back to Don José's home village where his mother waits for him. There indeed the dramatic tension has an element of nervousness, in contrast to the Geraldine Farrar version of *Carmen* which allows a more unbroken development of the single action.[21]

Much like Stockton and Sargent before him, Münsterberg timed a sequence, counted how many shots it consisted of, and calculated its ASL. Like them, he did it in an effort to define the perceptual threshold of cutting. Importantly for us, Münsterberg's conclusion is a far cry from theirs. The Stockton–Sargent threshold was set at an ASL of eighteen seconds; Münsterberg's is three seconds. As we happen to know, the ASL of DeMille's *Carmen*—the one whose crosscutting our psychologist okays—is 11.4 seconds.[22] All that to say between 1912 and 1915, the alleged threshold beyond which "acting is not possible; clarity of story is not possible; unfolding of plot is not possible" shifted toward faster cutting to the tune of fifteen seconds. It is not only things that change, but also the measure of things—and in no small measure owing to Griffith and his ilk.

Walls and Doors: Crosscutting to Crossacting

Crosscutting

"The photoplay alone gives us our chance for such omnipresence." The film-specific pattern of storytelling that Münsterberg christened "parallel currents" used to be referred to as "cut-back" or "switchback" in Griffith's time, by Griffith himself and in photoplay writing manuals. Both terms are out of use today. Instead, modern-day film historians speak of alternate scenes (Bowser), intercutting (Joyce E. Jesionowski), or parallel editing (Tom Gunning). The pattern is also known as crosscutting (David Bordwell, Kristin Thompson)—an industry-derived term we will be using here. The word "crossacting" is our coinage. Here is why we think it is of use.

At the outset of this study, we introduced a distinction between action and acting, with every principal actor expected to provide a bit of both. Playing for films entailed playing two games at once: one narrative, another dramatic. It is along these two lines that we also construe the grammar of editing. Chases or montage sequences are used to propel actions; reaction shots parade reactions. Crosscutting, per Münsterberg, grants the viewer the joy of cognitive omnipresence and, per Bordwell, provides for narrational omniscience. Narrational editing expands or, as Münsterberg puts it, "irradiates in all directions." Conversely, a facial cut-in enters the character's soul and mind. Some editing figures serve to tell—others, to feel.

True enough, crosscutting is action-friendly, whereas cut-ins, reaction shots, or shot-reverse-shots are better geared to shore up acting. A problem, though, is that these and other continuity devices, taken together, constitute a system known as "scene dissection" (Barry Salt) or "analytical editing" (Thompson), which came into use relatively late—toward the end of the 1910s. Can it be that there was no interplay between acting and editing before, say, 1917—the year in which classical Hollywood editing took hold? Or was there a missing link?

Crossacting

There was, and we call it crossacting. It takes two to tango. There exists a subset of dramatic situations—falling in love, resisting an intruder, running for one's life, rushing to someone's rescue—that entail team or tandem acting. Take falling in love. On a theater stage, dramatic or balletic, we usually find ourselves following a romantic pas-de-deux, the lovers' feelings revealed via dialogue or footwork. In filmmaking, old as new, the unfailing technique of falling in love is in a two-shot, be it the Dantesque falling-in-love-over-the-book scene in *On the Reef* or the magnificent walk-and-talk-falling-in-love tracking two-shots in Paul Thomas Anderson's *Licorice Pizza* (2021).

So much for the in-frame tandem acting—the two-shot has always been and will likely remain its default setting. How about tandem acting *across* frames or—which is the same thing—across a cut? An early attempt to explore this avenue is found in Griffith's *Lonely Villa* (1909)—his sixteenth film after *The Greaser's Gauntlet* to contain an extended crosscutting sequence. While Mr. Cullison is away, the country villa where his wife and daughters are staying is burglarized. Having barricaded the door, the wife reaches her husband over the phone. Their frenzied exchange, complete with synchronized gesturing ("find the pistol," and the like) is one of the earliest samples of what we call crossacting—second only to the Pathé Frères' *Le médecin du château* (*The Physician of the Castle*, 1908), of which Griffith's *Lonely Villa* is ostensibly a rip-off.

Telephones are a handy but not prerequisite means of partnering across spaces. There is also telepathy. A shipwrecked sailor from *After Many Years* (1908) and his fate-fellow, the amnesiac fisherman from *The Unchanging Sea*, are washed ashore on a far-off beach. The fisherman's wife is shown looking at the sea. Cut: he is shown looking at the sea pondering where his memory has gone. Are we to understand this cut as a cutaway—a rudimentary variety of crosscutting? Or did Griffith want us to follow the flight of the wife's shots? Such cuts, as Gunning was first to suggest, cut both ways. Here, we tag such ambivalent moments "mental cuts." The wife's eyes meet her husband's in a mental space—ours and, fictionally, theirs.

Distance and the two-shot

Crossacting is not necessarily about acting across diegetic distances as much as large ones. In *Transformation of Cinema, 1907–1915*, Bowser proposes an amendment to Thompson's definition of crosscutting found in *Classical Hollywood Cinema: Film Style and Mode of Production to 1960*:

> Kristin Thompson recapitulates [Bordwell's] formulation a bit more simply: "Part One has defined 'crosscutting' as editing which moves between simultaneous events in widely separated locales." . . . I would suggest that "widely" should be dropped from this definition. "Separated," yes, but the distance of separation might be only inches: imagine a sequence alternating on the two sides of a wall, for example.[23]

"In whatever may serve as a wall, there is always something that functions as a door. . . . This door must remain closed or be opened, barricaded or broken in."

In other words, per Bowser, the "separated" locales can also be adjacent. Fair enough. Plus (to add an amendment to Bowser's), in whatever may serve as a wall, there is always something that functions as a door. Absent from most explanations of how crosscutting works is that, distant or adjacent, the crosscut locales must be mutually penetrable. Storywise, crosscutting is stress. This

door must remain closed or be opened, barricaded or broken in. In the end, crosscutting always resolves in some kind of peace—well-being or death. The French physician reunites with his family in their castle; so does Mr. Cullison at their villa. The tyranny of distance dwindles to zero when the lost fisherman regains memory and home—literally: *The Unchanging Sea* ends in a two-shot in which we see him and his wife embrace by the seashore.

Or the other way around: alone in her medieval chamber, Regina from Griffith's *Call to Arms* (1910) attempts to hold closed a door to an adjacent chamber against a drunken cousin greedy for her jewelry and honor. After a stretch of crosscutting, Regina yields. In her case, the two-shot reunion spells death. In Griffith's *Sealed Room* (1909)—another hair-raising medieval reversal of the last-minute rescue plot—where there was a door an hour ago, there is now a wall. A king in love orders a windowless dovecote built in a tower in his castle for him and his paramour to spend time together undisturbed. Tricked into thinking the king is away, his paramour brings her paramour—a court troubadour—to the trysting room, where the two make love. Little do they know, the jealous king has set them up. Yet we, the viewers, know. As scenes begin to alternate, we watch the lovers indulge each other in a game. Cut back to the antechamber: the king's bricklayers are shown walling up the only entrance to the room. Cut back: headed for the exit, the lovers run into a wall. And so on, till the two have suffocated. The king triumphs. Game over. Sweet revenge.

Sine waves in narrative

A long-standing tradition in film theory views crosscutting as an established pattern, an alternating series, or a narrative vector. Crosscutting is all of that, of course, yet it is also a wave. To understand a wave, we need to study its speed and shape, its highs and lows as compared to narrative calm—if such a thing exists; Griffith's advice here is to avoid it by any means. As software engineer Keith Brisson has shown—using mathematical modeling here—and statistician Mike Baxter confirms—using discrete density estimation (download the PDF here)— crosscutting is always a temporal wave, more often than not consisting of three crests (or "punches"), each crest followed by a bigger one.

Making meaning: Crossacting is emotion

Importantly for acting, crosscutting is also an emotional wave, whether manifested by lonely lovers looking longingly at the unchanging sea, dying lovers' convulsions inside a walled-up room, or the king's gloating delight on his side of the wall. Consider this a divorce. Crossacting is coacting across cuts—distinct from coacting inside one frame across the duration of a shot. As Kuleshov, a pioneer of experimental film theory, has posited and tested in a series of 1921 experiments (two of these survive), at stake here is a degree of participation. Take two persons who recognize one another, come together, and shake hands. When the action is presented in a single shot, the first thing directors think of is the where of the matter—defining a locale. Conversely, if we first show the first person walking—cut—the second person walking, she looks off and smiles—cut—close-up of hands shaken, the where of their meeting can be the product of our mind, as Kuleshov shows by dint of his partially extant experiment titled *The Created Surface of the Earth*.[24] Likewise, he demonstrates, a well-placed cut can bring into existence a nonexistent dancer or reshape relationships among characters or between characters and objects. To make meaning on screen, the world must be cut into shards and reassembled. (Here is how Bordwell links Kuleshov's experiment and contemporary-to-modern practice of editing.)

A wishful surface: Crosscutting in distance and time

In one respect, at least, Griffith's early experiments with mental cuts foreshadowed the ones Kuleshov would stage a decade later. The point of Kuleshov's handshake experiment was to show how several easily identifiable locations—the Gogol monument in Moscow, the White House in Washington—can be edited together to merge into a semblance of continuous space, which Kuleshov dubbed the created surface of the Earth. When Griffith crosscuts the fisherman and his wife thinking of him while looking at the sea, he, in a sense, also created his own surface of the Earth—the wishful surface with no sea. At first, this operation may look like the opposite of Kuleshov's. Kuleshov adds location upon location, five in all. Yet to think of it geographically, Kuleshov, like Griffith, eliminates a whole ocean plus half of Europe to combine Washington and Moscow. A cut can also cut through time, ten years in *As It Is in Life* or a thousand in *Zvenigora*. The wisdom of the montage cohort of the twenties—Kuleshov to Pudovkin, Vertov to Eisenstein, culminating in that Ukrainian master cutter Oleksander Dovzhenko, all of them the children of Griffith's *Intolerance*—was that film cutting is not adding; cutting is actually cutting.

From Facial Asides to Crossacting sans Crosscutting

To go beyond the year 1912 would take us out of the scope of this study. In Griffith's long creative career, the years at Biograph marked merely the beginning of what would become internationally known as his style of editing. At Biograph crossacting—acting across cuts—was unthinkable without crosscutting. To spark an arc between characters in two different shots, Griffith needed some kind of narrative motivation: a physical wall or a diegetic ocean. To account for how editing fared after 1912, we would want to reach outside Griffith's output and keep an eye on his disciple, actor and fellow Biograph director Sennett, who, in his slapstick years at Keystone, jettisoned motivational barriers and sent things and bodies—bricks and custard pies, kicks and glances, Chaplin and Normand—flying and fighting freely across cuts regardless of whether the action took place in different spaces or the same. Furthermore, we would have to factor in large-scale industry changes we believe facilitated analytical editing as we know it, such as the gradual transition from shorts to features, which forced filmmakers to think in terms of longer scenes—which, in turn, demanded some in-scene cutting.

Figure 1. The lord of the manor surprises a peasant girl asleep in the daytime.

Profiles over time

Instead of going through all these changes step by step, let's do it in a leap. Here is a falling-in-love scene Griffith staged in 1910, and here is falling in love as he conceived it in 1926. Spot the difference. The former is a story set in the feudal days of Ireland. The lord of a manor on a promenade walks into an "artless colleen" napping on the stoop of her peasant house (Figure 1).[25]

The lord is thirsty (Figure 2). "Arousing her, he commands her to bring him a drink [of water]. Commands, mind you," stresses the Biograph

Bulletin of August 25, 1910. “Well, this is surely rubbing Peggy the wrong way.”

“At first,” the synopsis goes on, “she positively refuses to budge, and he then becomes more suppliant and begs her to please favor him with a drink, so she condescends.” The lord has discovered a person in a peasant girl; she, a human being in a lord. Clearly this is the beginning of a romance.

Figure 2. On the left, the lord commands Peggy to fetch a glass of water; she is resentful. On the right, he asks her nicely; she warms up.

The scene runs for roughly seven seconds, till the lord of the manor, having quenched his thirst, exits the scene front right. The character arc the lord and Peggy share here might be defined as mutual warming. How does Griffith signal this in 1910? Take another look at the two stills in Figure 2. As was customary across silent pictures at the epoch, both players are posed laterally—roughly in three-quarter profile. This, of course, is a trade-off between visibility and verisimilitude. On the one hand, we expect the collocutors to face each other as we do in life; on the other, to read what the characters think and feel, we as filmgoers want to see their faces and bodies better. The three-quarter profile meets both in the middle.

Figure 3. On the left, a facial aside: Henry B. Walthall as the lord turns his face toward the camera for us to see he is impressed by Peggy (offscreen). On the right, Mary Pickford does the same so we can see she looks at him with interest.

This might have been enough for a dramatic stage, for there, in addition to what we see, we also hear what characters say. The characters’ words and actors’ voices will gradually warm. Not so in the world of silents. In the absence of sound, the director’s second choice is actors’ faces. How to make them readable? Post-Biograph Griffith, as we are going to see, cuts in to show the faces—now his, now hers. Biograph Griffith’s solution is to resort to what we have chosen to tag as “facial asides.” Whenever he wants the viewers to register the lord’s emotional warming up toward willful Peggy, he tells Henry B. Walthall to turn his face toward the camera and “register” (the period term) growing infatuation (Figure 3).

Pickford as Peggy follows suit. We see her purse her lips as she sees the lord leave and register tenderness as she looks

Figure 4. On the left, Peggy purses her lips in annoyance as the lord exits the frame. On the right, she smiles at the thought he may come back.

after him (Figure 4). Only a few years later, it will be the camera, not actors, that will move and turn for us to better read the characters' faces.

Cinemetrics and pacing

Let's leap a few years and land in 1926—not to look at a film, but to read a passage from Griffith's article "Pace in the Movies," arguably the most detailed and extended of our director's statements on editing and acting. Here, we find Griffith interested less in the readability and credibility problems—he has solved the former by now and matured enough to shrug off the latter—than in the rhythm, the pace of editing. Must the movie be slow or fast throughout? The pace must change as the movie unfolds; it would not be pace if it didn't. Griffith's essay proves this by assuming the opposite:

> If the picture were made so that each scene contained the same (or even approximately the same) number of frames . . . the audience would drop into the Land of Nod. To escape this eventual result of monotonous repetition, the director is forced to vary the length of his so-called shots—whether he has some conception of pace or not.[26]

"'The action must quicken to a height in a minor climax, then slow down and build again to the next climax, which should be faster than the first.'"

A remarkable thing about this assumption is that it is exclusively numeric. No one is entitled to restrict Griffith's notion of pace to shot lengths alone, but to rule them out would go against his mandate. Throughout the essay, Griffith talks about pace in terms of counting. Terms like the number of frames are what cinemetrics understands best, and this is how Griffith interprets slow and fast when he says, "The pace must be quickened from beginning to end." A term like climax may point in all directions and has been used by many to refer to dramatic tension, but when we read, "The action must quicken to a height in a minor climax, then slow down and build again to the next climax, which should be faster than the first," we know the formula has to do with speed and, yes, the speed of cutting.

It is here that a falling-in-love example comes in. Griffith's idea—or perhaps metaphor—was that each sequence or scene should be cut to an imaginary score, depending on its dramatic dominant. A battle, maybe, is best cut to brass and drums. His sample, however, will be love. What kind of music should a director keep in mind when staging and editing a love scene? An illustration Griffith comes up with is not from an actual movie—it is a mental experiment, a mock-up. Here is how Griffith says he would stage and edit a perfect tryst. Let us quote him first and then formalize and interpret what he says:

To illustrate: Let us imagine a love scene. The director desires to pace it in the rhythm of a waltz, or in scenes whose lengths are multiples of three.

A boy and girl are seated on a stone wall besid a country road. The camera records them as full-length figures in a long shot for a count perhaps of six—three seconds. Then the camera moves closer, picturing the boy talking earnestly with the girl, for a count of nine. Placed closer still, the camera photographs the boy pleading with her, for a count of twelve. A close-up of the girl is made. She registers indifference. The count is three, or a second and a half—the basic of the tempo.

The camera turns back to the boy's troubled face, for a count of six. He swings down from the wall, and the camera moves back to record that action, for a count of nine. The girl is interested now. She watches the boy, as he turns away from her. Count six.

Abruptly he faces about and renews his pleading. The girl seems to be yielding. Such a scene would probably run to the count of twelve, because of its importance.

Figure 5. Facsimile copy of Griffith's mock-up movie sequence as it appears in his article "Pace in the Movies."

Let's rephrase Griffith in terms of what we call decoupage, in the period sometimes named "continuity script":

1. A boy and girl are seated on a stone wall beside a country road. The camera records them as full-length figures for a count of perhaps six to three seconds.
2. Then the camera moves closer, picturing the boy talking earnestly with the girl for a count of nine.
3. Placed closer still, the camera photographs the boy pleading with her for a count of twelve.
4. A close-up of the girl. She registers indifference. The count is three—a second and a half—the basis of the tempo.
5. The camera turns back to the boy's troubled face for a count of six.
6. He swings down from the wall, and the camera moves back to record that action for a count of nine.
7. The girl is interested now. She watches the boy as he turns away from her. Count six.

8. Abruptly he turns around and renews his pleading. The girl seems to be yielding. Such a scene would probably run to the count of twelve because of its importance.

As we can see, Griffith's mental movie consists of eight shots, with two sets of values—nominal and numeric—assigned to each. The nominal scale ranges from long shot (LS) to medium-long shot (MLS) to medium shot (MS) to close-up (CU). Which shot scales Griffith had in mind either follow (as in shots 1–6) or can be ostensibly construed (shots 7, 8) from the description. Since we are dealing with a mental, not a real, movie, we are entitled to leeway as to assigning values where Griffith's own thinking is not clear.

Since the first of the eight shots shows "two full-length figures," it is easy to conclude that this scene is imagined within the idiom of analytical editing that requires that it begin with an establishing, or master, shot. And if we indicate *b* for boy and *g* for girl, we will see that what we are dealing with here is crossacting sans crosscutting:

bg / bg / b / g / b / b / g / bg

The waltz of love

Now, what do we learn from Griffith's "Pace in the Movies" about the shot lengths of the imaginary tryst? "[Pace] it in the rhythm of a waltz," Griffith recommends, "or in scenes [i.e., shots] whose lengths are multiples of three." He times each shot in counts. Since in music two counts equal a second, we can attach a numeric value to each shot:

Table 2. Nominal and Numeric Values in Griffith's Mock-up Sequence

Shots	Shot scale	Counts	Seconds
1	LS ("full-length figures")	6	3
2	MLS ("the camera moves closer")	9	4.5
3	MS ("placed closer still")	12	6
4	CU ("close-up of the girl")	3	1.5
5	CU ("boy's troubled face")	6	3
6	MLS ("camera moves back")	9	4.5
7	CU (conjectural; MLS or MS might be used here too)	6	3
8	LS (conjectural; MLS might be used here too)	12	6

"I have always found it necessary to depend entirely upon memory and judgement in this pacing of scenes never having found a record chart which was simple or exact," Griffith admits in "Pace in the Movies."[27] What we are tempted to do now is what Griffith neglected to do: present his out-of-the-head example as a chart, simple and exact:

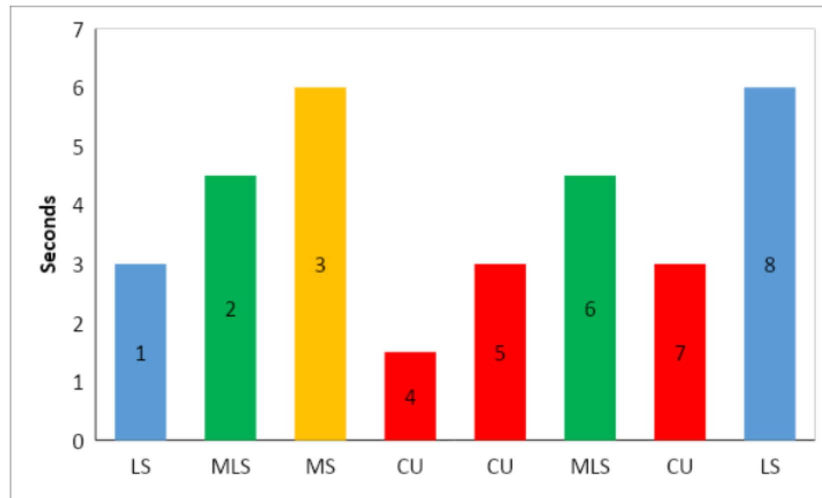

Figure 6. Bar chart representing data in Table 2. Shot scales are color coded.

What conclusions can we draw from this chart? As Griffith tells us, the bars (i.e., shot lengths) indeed alternate by threes: 1-2-3, 4-5-6, 7-8. In other words, the rhythm is fast slower slower, fast slower slower, faster slower:

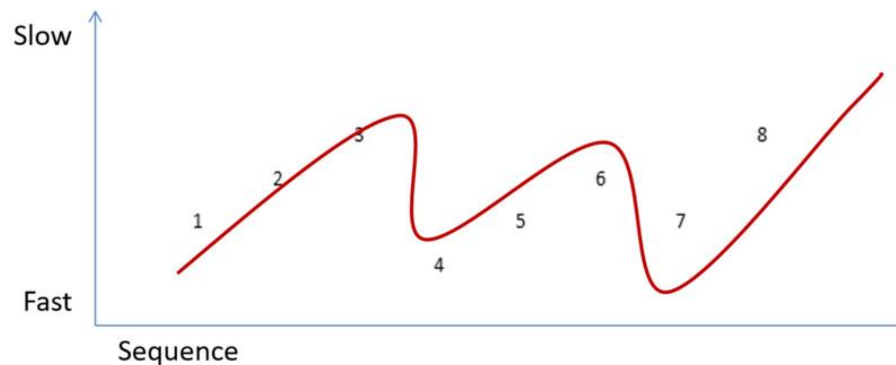

Figure 7. Fast-to-slow diagram.

How does Figure 6 dovetail with Griffith's philosophy of pacing? To repeat what he says in "Pace in the Movies" apropos action, "the action must quicken to a height in a minor climax, then slow down and build again to the next climax, which should be faster than the first."[28] Griffith's mental experiment is less about action, however, than it is about acting. The boy and the girl are not saving or chasing each other. While "a stone wall beside a country road" is mentioned in Griffith's description of the locale, no villain has walled it up, and no one is trying to bust the gate. The two lovers are peacefully sitting on this wall, ostensibly oblivious of its existence (isn't that really how all walls should be used?). It is a waltz wall, and it may not be by chance that Griffith's cutting pace in this love scene is anticlimactic. It runs opposite to the action recipe (minor climax, the next climax, a faster climax). It is acting, not action—love, not war. The rhythm quiets down. Action has given way to acting.

A list of external links featured in this essay can be found here.[29]

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[1] Zoe Heller, "Reigning Men: How Toxic Is Masculinity Really?" *New Yorker*, August 8, 2022, 67.

[2] Joseph Berg Esenwein and Arthur Leeds, *Writing the Photoplay* (Springfield, MA: The Home Correspondence School, 1913), 147.

[3] Catherine Carr, *The Art of Photoplay Writing* (New York: The Hannis Jordan Company Publishers, 1914), 106-7.

[4] Berg Esenwein and Leeds, *Writing the Photoplay*, 221.

[5] Jan Olsson, "The Thread of Destiny," in *The Griffith Project, Vol 4: Films Produced in 1910*, Paolo Cherchi Usai, ed. (London: BFI Publishing, 2000), 23.

[6] For the Chaplin-versus-Sennett controversy, see Mike Baxter, Daria Khitrova, and Yuri Tsivian, "Exploring cutting structure in film, with applications to the films of D. W. Griffith, Mack Sennett, and Charlie Chaplin," *Digital Scholarship in the Humanities* 32, no. 1 (April 2017): 1–16.

[7] I. Petrovskii, "Kinodrama ili kinopovest'? (Film Drama or Film Story?)," *Proektor*, no. 20 (1916): 3.

[8] Epes Winthrop Sargent, "The Photoplaywright. Scenes and Leaders," *Moving Picture World* 13, no. 6 (August 10, 1912): 542.

[9] Sargent, "Photoplaywright."

[10] Sargent, "Photoplaywright."

[11] Sargent, "Photoplaywright."

[12] Sargent, "Photoplaywright."

[13] Sargent, "Photoplaywright."

[14] Sargent, "Photoplaywright."

[15] Sargent, "Photoplaywright."

[16] Petrovskii, "Kinodrama," 3.

[17] Tim J. Smith, "The Attentional Theory of Cinematic Continuity," *Projections* 6, no. 1 (2012): 1–27.

[18] James E. Cutting, "Evolution of the Depiction of Telephone Calls in Popular Movies," *Projections* 16, no. 2 (2022): 26.

[19] Hugo Münsterberg, *A Photoplay: A Psychological Study* (New York, London: D. Appleton and Company, 1916), 95.

[20] Münsterberg, *A Photoplay*, 95–96.

[21] Münsterberg, *A Photoplay*, 45–46.

[22] The extant print of DeMille's is of the 1918 rerelease, not the 1915 release, but in cinemetric terms, the two cannot be very different.

[23] Eileen Bowser, *The Transformation of Cinema* (Berkeley, Los Angeles, London: University of California Press, 1990), 58.

[24] Ekaterina Khokhlova, Kristin Thompson, and Yuri Tsivian, "The Rediscovery of a Kuleshov Experiment: A Dossier," *Film History* VIII, no. 3 (1996): 357–64.

[25] Intertitle at 0:23:30.

[26] David Wark Griffith, "Pace in the Movies," *Liberty Magazine*, November 13, 1926, 30.

[27] Griffith, "Pace in the Movies."

[28] Griffith, "Pace in the Movies."

[29] Links Featured in "Action and Acting at Biograph Studio, 1908-1912"
Cinemetrics Main Website: https://cinemetrics.uchicago.edu/
Clip 1. *On the Reef* (Biograph, 1909): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-1-on-the-reef-1910
Clip 2. *On the Reef* (Biograph, 1909): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-2-on-the-reef-1910
Clip 3. *The Sealed Room* (Biograph, 1909): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-3-the-sealed-room-1909
Clip 4. *The Call to Arms* (Biograph, 1910): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-4-the-call-to-arms-1910
Clip 5. *The Drunkard's Reformation* (Biograph, 1909): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-5-the-drunkards-reformation-1909
Clip 6. *On the Reef* (Biograph, 1909): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-6-on-the-reef-1910
Clip 7. *On the Reef* (Biograph, 1909): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-7-on-the-reef-1910
Clip 8. *On the Reef* (Biograph, 1909): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-8-on-the-reef-1910
Cinemetrics: *The Sands of Dee* (Griffith, 1912): https://cinemetrics.uchicago.edu/movie/a43b77b0-45aa-4717-a452-a621b7857827?returnTo=%7b%22search%22:%22sands%22,%22page%22:1,%22field%22:%22date%22,%22order%22:-1%7d
Cinemetrics: *Twilight of a Woman's Soul* (Bauer, 1913): https://cinemetrics.uchicago.edu/movie/0cfad0ef-aa31-4e50-9541-121e612eb3f3?returnTo=%7b%22search%22:%22twilight%20o%22,%22page%22:1,%22field%22:%22date%22,%22order%22:-1%7d
Cinemetrics: *Daydreams* (Bauer, 1915): https://cinemetrics.uchicago.edu/movie/1e612de7-7bbe-4693-adb3-a674bddf7515?returnTo=%7b%22search%22:%22daydre%22,%22page%22:1,%22field%22:%22date%22,%22order%22:-1%7d
Barry Salt, "Comments on *Attention and Hollywood Films*": https://cinemetrics.uchicago.edu/article/7026830d-73a7-4b27-b8fe-41ebe823589b?returnTo=%2Farticles
James Cutting, "In Reply to Barry Salt": https://cinemetrics.uchicago.edu/article/590235ff-85aa-4714-9553-71d4c44fd61c?returnTo=%2Farticles

Barry Salt, "Some More Thoughts on the Cutting Article": https://cinemetrics.uchicago.edu/article/33518c1b-7a1f-495d-a5a8-7ac372e72223?returnTo=%2Farticles
James Cutting, "On Salt II": https://cinemetrics.uchicago.edu/article/39af4abd-7e2a-4e93-a002-fa2b9ee084d7?returnTo=%2Farticles
Clip 9. *The Unchanging Sea* (Biograph, 1910): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-9-the-unchanging-sea-1910
Clip 10. *The Unchanging Sea* (Biograph, 1910): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-10-the-unchanging-sea-1910
Clip 11. *The Call to Arms* (Biograph, 1910): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-11-the-call-to-arms-1910
Clip 12. *The Sealed Room* (Biograph, 1909): https://pub.dartmouth.edu/journal-of-e-media-studies-vol-7-issue-1-early-cinema-compendium/clip-12-the-sealed-room-1909
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