

## Deformin' in the Rain: How (and Why) to Break a Classic Film

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### Abstract

Digital source materials such as films can be transformed in ways that suggest an innovative path for digital humanities research: computationally manipulating sounds and images to create new audiovisual artifacts whose insights might be revealed through their aesthetic power and transformative strangeness. Following upon the strain of digital humanities practice that Mark Sample terms the “deformed humanities,” this essay subjects a single film to a series of deformations: the classic musical *Singin' in the Rain*. Accompanying more than twenty original audiovisual deformations in still image, GIF, and video formats, the essay considers both what each new version reveals about the film (and cinema more broadly) and how we might engage with the emergent derivative aesthetic object created by algorithmic practice as a product of the deformed humanities.

On its face, film and media studies would seem to be a natural space for digital humanities to grow and thrive, as it studies cultural objects that are either born digital in origination, or digitized from cinematic or analog video originals for contemporary distribution. Additionally, dedicated departments of film and media studies often include video production in their scope, meaning that there are usually more digital resources and expertise available than in other humanities departments. But in reality, most of the methods that have been adopted in digital humanities pose challenges to apply to moving images and sounds as an object of study, as with tricky technicalities of text mining from audiovisual sources or copyright restrictions curtailing expansive digital editions of films, or seem to work best when analyzing data outside of the media objects themselves, as with mapping exhibition patterns or doing network analyses of actors across films. But the existence of films and media texts as already-digital objects suggests another path for digital humanities research away from quantitative data analysis: computationally manipulating sounds and images to create new audiovisual artifacts whose insights might be revealed through their aesthetic power and transformative strangeness.<sup>[1]</sup>

I have previously written about how we might consider videographic criticism as a digital humanities research method, manipulating moving images and sounds to create new audiovisual texts that convey arguments and ideas that would otherwise be impossible to generate or articulate via the written word [Mittell 2019]. In that essay, I extended Mark Sample's “deformed humanities” to the videographic realm, proposing three deformative techniques and applying them to a range of films to seek discoveries within my research laboratory of Adobe Premiere. Such deformations apply patterns and parameters to cultural works, looking to “break” the bound object of a poem or film and create something new from the broken parts. As Sample argues, the resulting deformations, which typically defy norms of sense and logic, do not need to be returned into the rational realm of analysis to provide insights about the original's design or meaning; instead, the strange deformed version can function as a new media object, with aesthetic power and cultural resonances that are not circumscribed by their relationship to their original. As he writes, “the deformed work is the end, not the means to the end” [Sample 2012]; see also [Samuels and McGann 1999] [Ramsay 2011].

Building upon my previous essay as well as other scholars' deformative videographic work [Ferguson 2019] [O'Leary 2019], this “sequel” takes a different approach: subjecting a single film to a broad range of deformations as a way to explore the wide array of deformative practices that might yield interesting results on a single object. *Singin' in the Rain* is a particularly apt film to repeatedly deform for a number of reasons. Few films are as well-known, beloved, broadly-taught, and widely regarded as historically significant — if one effect of deformative work is to make the familiar strange,

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it's useful to start with a film that is quite familiar. Additionally, the film itself is about cinema at a moment of technological transition from silent to sound, and thus it is thematically resonant to place it into a technological laboratory to perform experiments with sounds and images, even if the film's diegetic technologies are resolutely analog. *Singin'* also features a broad array of reflexive formal techniques and moments, including color, black-and-white, dialogue, singing, dancing, film-within-film, and fantasy sequences, whose range and variety encourages a playful approach via deformative operations, and thus might be instructive and inspirational for other potential case studies. Finally, it is an unusual film because it contains its own internal deformative moment: during the test screening of *The Dueling Cavalier*, a synching glitch in the nascent sound film technology causes the dialogue of two characters to swap; the diegetic audience's reaction to this deformation via laughter and surprise highlights the pleasures of strangeness that hopefully some of my deformations will provoke.

In providing an inventory of deformative practices, I do not aim to suggest comprehensiveness nor a progression toward “better” methods and revelations. This is a provisional list of techniques that I have found productive in creating new cultural objects that seem meaningful and/or pleasurable, but I fully expect many will find some of them uninteresting or unpleasant. I have thrown many techniques at the proverbial wall, but will not inventory the failures that did not stick — except one that might exemplify what a “failure” might mean in this context. Inspired by the film's internal deformation of unsynched sound, I experimented with “re-synching” that moment in *Dueling Cavalier* to line up the proper dialogue, and then playing the rest of the film with this new sonic synchronization — effectively making the strange moment normal, and the rest of the normal moments strange. But the result was neither sufficiently strange nor interesting — watching the film's dialogue and musical numbers with the sound lagging around two seconds behind was simply annoying, not revelatory nor pleasurable. Thus the bar that each of my subsequent deformations clears (at least to me) is to create something interesting and/or enjoyable to watch and hear. I hope the same holds for all who proceed through this strange wilderness of a broken classic film.

I fully admit that these resulting works are difficult to categorize. Are they acts of scholarship? Do they contain or provoke arguments? Or are they creative works, more akin to experimental films? Certainly there are many parallels with the latter, where the use of algorithms and parameters on pre-existing footage creates new artworks, as with Martin Arnold's glitchy remixes of cinematic fragments or Cory Arcangel's collages of YouTube musical clips (see [Bering 2014] [Zryd 2004] [Enns 2012]). I present these deformations here not in the context of an art gallery or film festival, but rather embedded within a written scholarly essay, clearly signaling them as academic expressions over artistic works. As I previously wrote regarding the possibilities of videographic criticism, such works can embrace the poetic and experimental scholarly impulse of Robert Ray's writing [Ray 1995], joining “scientific quantification and artistic poeticization together, creating works that transform films and media into new objects that are both data-driven abstractions and aesthetically expressive” [Mittell 2019, 230]. While each deformation falls short of the bar for a piece of rigorous argument-driven scholarship, taken together I believe they do create an argument for approaching an audiovisual work as a site of experimentation and play, offering the possibility of revealing new dimensions and facets of a highly familiar text.

## #1: Still Frames

One of the first (and most inspirational) examples of filmic deformations I know of is Kevin Ferguson's “summed frames” project. In a wide-ranging website and associated scholarly publications, Ferguson publishes still images of films that are derived from his deformative manipulations. Using Quicktime, he exports a feature film into an image set, typically a set of still frames sampled every few seconds of a film; Ferguson then repurposes the open-source medical imaging software ImageJ to overlay all of these still frames into a single “summed frame” image visual that distills all of the light and color typically experienced flickering in front of our eyes over the course of watching a film [Ferguson 2016].



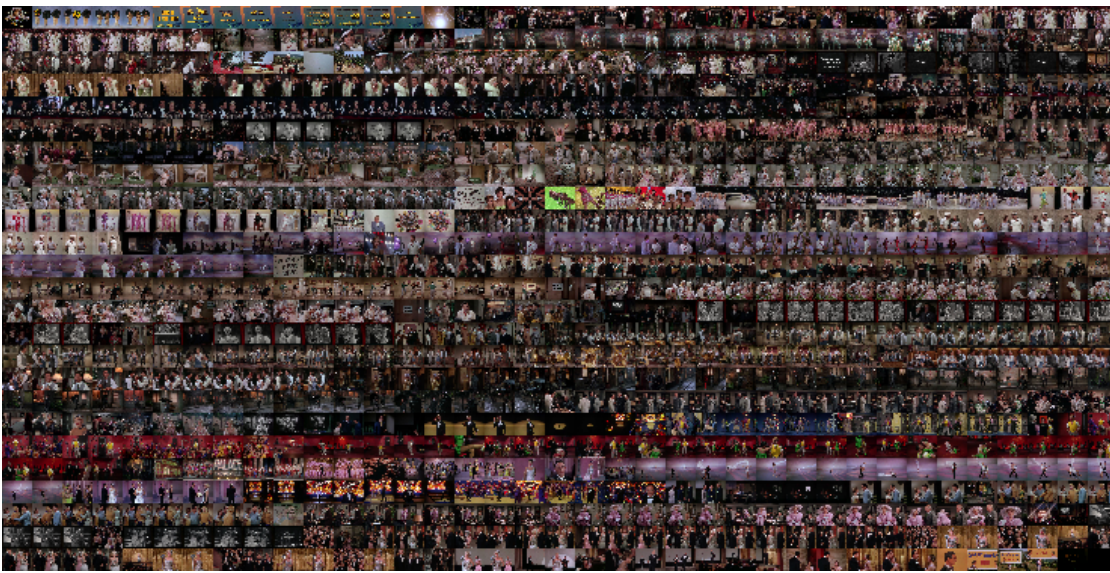
**Figure 1.** Kevin Ferguson sums the frames of *Singin' in the Rain* into one still image, with subtle details referring to the original's composition.

Ferguson's summed frame image of *Singin' in the Rain* (see Figure 1) is both beautiful and interesting. It presents an impressionistic residue of the film's composition, lighting, and production design that would be unidentifiable without context. Knowing the source material, we can see details that resonate with significance, as with the outline of the screen-within-a-screen image and red-tinted curtains on the margins that highlight the importance of cinematic presentation within the film. Ferguson's work becomes more meaningful in comparison, as the visual patterns and contrasts reveal insights into a corpus of films, as seen in his collection of summed images of Disney features, Westerns, and gialli films [Ferguson 2016]. Thus we could compare this image to those produced by summing the frames of other MGM musicals, Gene Kelly performances, or Hollywood films from 1952. But for the purposes of this project, I am less interested in using deformations to take us outside *Singin' in the Rain* than to revel in the strange versions of the film that such methods produce.

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Once we have broken the film into its component parts of still frames — in this case, a folder of 925 still images sampling every six seconds of the film — we can perform other operations to see what they might yield. Fellow deformation-minded digital humanist Zach Whalen has developed *imj*, a tool that allows for straightforward web-based graphical analytics from a corpus of images using three basic tools: plot, montage, and barcode [Whalen 2016]. Plot is by far the most analytical tool, offering data visualizations to plot an image corpus on a grid with a range of variables to map onto the X and Y axes, including brightness, hue, saturation, and luminance. Not surprisingly, the results create data-driven charts that reveal tendencies and patterns within the film's imagery, but do not produce compelling aesthetic objects in their own rights. The other two tools are more deformatively effective — the montage tool creates a visual grid of the film's frames laid out sequentially. The resulting distillation offers some analytical insights into the scene and shot breakdowns, but moreover it creates an experience that evokes *Singin'* as we have never seen it before, simultaneously watching all scenes at once but with a different visualization of temporality than Ferguson's summed frame (see Figure 2). If you know the film, you can identify scenes, dance numbers, and narrative moments from this image, but you can also admire designs that you could never see while watching the film.

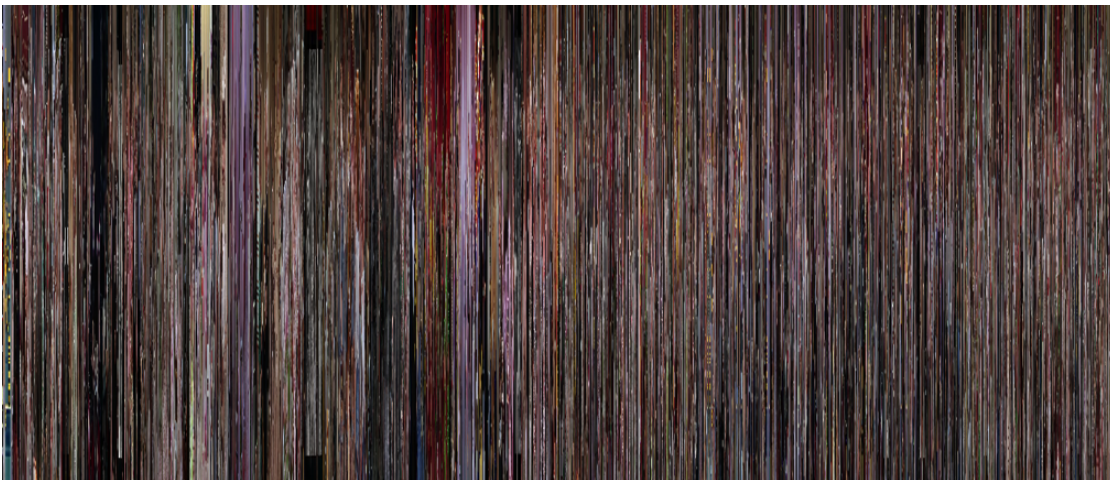
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**Figure 2.** The montage tool in imj creates a simultaneous view of the entire film from a distance.

The third tool in Whalen's software package is the most deformative, presenting the sum of the film's frames, but from a sideways perspective to create a barcode. The resulting image certainly bears markers from the film, and knowing the source allows viewers to identify scenes and even characters. But without knowledge of the source, it becomes a work of abstract art — generated algorithmically from another work of art (see Figure 3).

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**Figure 3.** imj's barcode offers a way to watch *Singin' in the Rain* from the side of the image

Of course, algorithms can be altered to create different results. Whalen's tool can create a barcode that reduces each frame to its average or dominant color instead of maintaining its core image pattern, as with the above image. The resulting barcodes, as with this one below based on average colors of each frame, are much more abstract and completely unidentifiable as a derivative work from one of Hollywood's most iconic films. While such a barcode might be a more attractive pattern for a poster or pillowcase, as an online shop does sell merchandise based on movie barcodes, it falls outside of the nexus of aesthetic appreciation and analytic possibility where I contend most effective deformations can be found (see Figure 4).

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**Figure 4.** The barcode version with average colors becomes more removed from the source film, sacrificing analytic possibilities for a more accessible aesthetic.

A still frame itself could be thought of as a kind of manipulation of a film — even though *Singin' in the Rain* was originally composed of approximately 146,000 still images projected sequentially, these frames were all designed to create the illusion of movement. The deformations I've presented thus far have all excluded movement as a design element, raising the question of how we might deform this set of still images by reintroducing movement into their aesthetic. This question arose in a conversation I had with Ferguson, as we brainstormed how to visualize the process of a summed frame accruing over time. Most processes we explored via video editing programs were underwhelming, as the accumulating image would coalesce into a composite blur after a few seconds, with subsequent developments building up too subtly to notice.<sup>[2]</sup> It became clear to me that a more compelling version would require the images to slowly fade out, creating the effect of a rolling accumulation of images that was too complicated for me to figure out in Adobe Premiere. My solution, like with Ferguson's use of medical imaging software, involved repurposing a tool designed for far different purposes — StarStaX, an image blending program designed for star trail astronomical photography, proved to be the right tool to create the desired effect, and then screen capture the process to create a videographic deformation (see Figure 05).<sup>[3]</sup>





## SINGIN' IN THE RAIN summed in two minutes

from Jason Mittell

02:12



**Figure 5.** A videographic summed frame demonstrates the process of overlaying images using StarStaX, along with a sonic rendering of such accumulation.

The resulting video summing the film's frames creates a hypnotic tour through the film's images in two minutes, creating an impressionistic collage effect that highlights color and composition over plot and character. But the image-only version seemed lacking without sound, so I tried to determine what the equivalent for "summed frames" would be for sound. This challenge highlighted a core differential that creates challenges for deformative videographic work: sound lacks clear units like "frames" or "shots," meaning that the entire soundtrack is more continuous and fluid than the image track. My colleague David Miranda Hardy helped me design a soundtrack that mimicked the frame sampling idea by isolating sounds sequentially from the film, and using reverb effects to evoke the blurred overlapping images. Together, the video creates an evocative experience that clearly derives from the sequential film source, but creates far different aesthetic and affective responses. As with any successful deformation, the work builds on the source material in unexpected ways to create something that feels both derivative and original.

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## #2: Motion

Motion is a powerful transformative element in videographic deformations, whether imposed upon still sources, as with the previous summed frame video, or harnessed from a film's own motion. In thinking how to extract motion from a film as a deformative act, we can look to one of the most widespread formats to disseminate motion: GIFs. As a short repeating distillation of a moving image, a GIF can offer a tremendous tool for film criticism via digital publication, as argued by Michael Newman, where both form and affect can be captured for analytical purposes [Newman 2016]. For

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instance, this GIF of one of *Singin' in the Rain*'s most iconic shots provides an opportunity to analyze the coordination between camera movement, dance choreography, props, sets, and special effects to create a breathtaking affective moment (see Figure 5).



**Figure 6.** Gene Kelly's endless spinning reinforces the GIF's looping aesthetic.

But just as staring at a repeated word or phrase for long enough will cause meaning and sense to start to break down, the repetition and abstraction of this GIF eventually encourages a sense of disorientation, unfamiliarity, and strangeness that is familiar to the realm of deformations, as Gene Kelly spins endlessly and breathlessly in the rain. Thus choosing looped segments that promote such a sense of the strange can make new deformed objects out of more conventional moments (see Figure 7).



**Figure 7.** Donald O'Connor's manic dance becomes even more extreme on an infinite loop.

In the midst of his show stopping number “Make ‘Em Laugh,” Donald O'Connor's roll across the room is one of many entertaining moves that does, indeed, make us laugh. As an endlessly repeating decontextualized GIF, it suggests something more manic and disconcerting — perhaps an enchantment that O'Connor is doomed to roll with an astonished grin for all eternity, or a curse on us the viewer to watch his gleeful twirl for an equally long time. Other GIFs can capture a moment that is itself already innately odd (see Figure 8).





**Figure 8.** A moment from “Beautiful Girl” becomes a decontextualized loop of cheer.

A tiny excerpt from “Beautiful Girl,” one of the film’s most idiosyncratic numbers, creates a GIF that evokes no narrative, performance, or character resonances; instead, it just captures pure style and tone, poised to circulate in today’s natural habitat for GIFs: as an affective response on social media, disconnected from its cinematic source.



**Figure 9.** A shot-reverse shot of mock dance at the film's climax builds on character relationships.

My personal favorite *Singin'* GIF captures a moment of fake dance, as Don, Cosmo, and Simpson mock Lena's attempt to perform a musical number (see Figure 9). As the interchange between the two shots repeats endlessly, the expressions feel more exaggerated, the mockery more pointed and severe. I can imagine ways to exaggerate and further deform the image, but the effect remains strange and off-putting even as the source material is left intact.

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A single GIF can transform a moment by repetition and decontextualization, but combining GIFs offers new deformative possibilities via spatial montage. Back in 2001, Lev Manovich predicted that “broadband cinema” of the internet era would foreground the multiplicity of frames and screens by juxtaposing images spatially as an alternative to temporal montage [Manovich 2001, 322–326]. More recently, Catherine Grant has theorized the function of spatial montage in videographic criticism, exploring how the meanings and signifiers coexist and resonate through juxtaposition via split-screen designs [Grant 2018b]. But applying spatial montage to GIFs pushes away from signification and meaning, as the decontextualized looping images bounce off one another to create affecting, engaging, and surprising compositions; as Jennifer Malkowski has productively analyzed, such compositions are popular in fan communities in the form of GIFsets, where users of sites like Tumblr create and curate carefully arranged groupings of GIFs to express affective connections between looping motion sequences. As Malkowski suggests, “Spatial montage displays multiple moving images on screen at once, granting the work's maker new powers of artistic juxtaposition and its viewer access to a broader and more complex visual field” [Malkowski 2017]. Thus we might imagine a GIFset as a site of deformative possibility to create new ways to experience *Singin' in the Rain's* motion.

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**Figure 10.** To view this GIFset in motion, follow this link.

I created a number of GIFs of dancing loops from across the film, each designed to approximate continuous motion (see Figure 10). In arranging them in a three-by-three GIFset, I focused on juxtaposing modes of motion that seemed to interact in interesting ways, considering both camera movement and the choreographed bodies of the performers. One of the interesting effects of the GIFset results from the varying lengths of each GIF, creating a phase effect among the repetitions of the loops that diverges over time. As the loops shift their sync, we can see unexpected resonances between the motions in neighboring frames, making the viewing experience quite variable, as spatial montage structures the productively arbitrary temporality.

Of course, GIFs extract moving images from the film, discarding the soundtrack. Using the logic of the GIFset, I created a simulated GIFset within Adobe Premiere by arranging the video in a grid and copying clips to mimic the looping effect, thus providing an opportunity to add a soundtrack. Given the choreographic content of the GIFs, I excerpted, looped, and layered one of Gene Kelly's "Gotta Dance" lines from "Broadway Melody" to create what feels like a hypnotic, if arrhythmic, sonic collage to accompany the grid of dancers (see Figure 11).

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## SINGIN' IN THE RAIN - Gotta Dance long version

from Jason Mittell

01:21



**Figure 11.** A simulated GIFset with accompanying audio looping interweaves unexpected beauty and chaos.

Following the GIFset logic to its most chaotic conclusion, I created another simulated set of GIFs to loop both video and audio within a three-by-three grid. The opening to the musical number “Beautiful Girl” is the film's most chaotic, random, and arbitrary sequence, with snippets of technicolor dancing and singing to a patchwork of early movie musical numbers, created in tribute to 1930s Busby Berkeley musicals. I chose nine different visual moments and created a looped grid, allowing the audio to loop in a cacophonous sonic overlay (see Figure 12). By making the film's strangest moments even stranger, the effect is certainly overwhelming and not necessarily pleasant, but seems to capture something of the original's disorienting tone.



## SINGIN' IN THE RAIN "Beautiful Girl" montage simulated GIFset

from Jason Mittell

00:30

**Figure 12.** The Busby Berkeley aesthetic emphasizes spectacle, taken here to its illogical conclusion.

There are certainly other means to emphasize and deform motion beyond extracting sequences into GIFs. Kevin Ferguson offers another instructive example in his video “Edge” (see Figure 13).





## Edge

from Kevin L. Ferguson

06:05

**Figure 13.** Kevin Ferguson's "Edge" deforms the still images and reassembles them into a musical number that feels like it came from an abstract animated film.

Following from his summed frame work, Ferguson exported the frames of the musical number "You Were Meant for Me" and the opening credit sequence at twenty-four frames-per-second grouped into folders for each shot from the film. He then experimented with ten different ImageJ algorithms to perform "edge detection" operations on each set of stills, creating a variety of effects that resemble hand-drawn animation and other abstractions that emphasized the edges of the characters and set. Ferguson reassembled the video by placing the grouped still frames in sequence on top of the soundtrack in a video editor, literally animating the edge-abstracted images to reconstitute the film. The effect is a marvel of motion and blank space, provoking thoughts on how we perceive and constitute movement via cinema, while creating moments of expressive beauty hidden in the original film. Additionally, knowing the underlying process helps us remember the materiality of moving cinematic images as successive still frames, a digital transformation that evokes the analog original.

Focusing on motion in a dance-centered film also raises questions about what movement in a cinematic dance sequence entails. Certainly much of the beauty in *Singin' in the Rain's* choreography involves the coordination of moving bodies and moving cameras, as many of the GIFs highlight. But what if we force ourselves to focus more on bodies, and specifically body parts in motion — what will we see differently? With that question in mind, I deformed one of the film's most iconic dance numbers, the title track, by masking the image to only include Gene Kelly's hands and feet (see Figure 14).

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## "Singin' in the Rain" with only Gene Kelly's hands and feet

from Jason Mittell

04:05



**Figure 14.** The film's iconic title number remains intact, but by only being able to see Kelly's hands and feet, our attention is directed to the motion of his extremities that is otherwise invisible in the original.

As the extremities of Kelly's body, his hands and feet explore the staged space most broadly, while eliminating his face and torso directs our attention to these abstracted movements in rhythm to his disembodied voice. To me, the effect of the video is cartoony, bringing out the animation inherent in dance, but in a more playful and almost inhuman way than Ferguson's "Edge" video. While we watch these body parts in motion, we see them as animated shapes on a black background, where the edges of the mask become noticeable much like Ferguson emphasizes the edges of the dancers' bodies. I find the captivating simplicity of his moving hands and feet to simultaneously capture and deny the beauty of Kelly's mastery of cinematic dance.

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### #3: Shots

Returning to the fundamental elements of film, we can look at specific shots as another type of raw material to create deformations. In my earlier essay, I suggested some deformative possibilities tied to shots, including a videographic version of Nicholas Rombes's "10/40/70" project [Mittell 2019] [Rombes 2014]. Rombes's protocol juxtaposes three still frames from a feature film, from the arbitrary 10, 40, and 70 minute marks, to see what meanings and insights might emerge; my videographic version compiles the shots that occur at those minute markers to create a short film composed of three arbitrary but chronological shots (See Figure 15).

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## SINGIN' IN THE RAIN 10-40-70

from Jason Mittell

03:14



**Figure 15.** The videographic 10/40/70 demonstrates the possibilities of arbitrary juxtapositions at the core of deformative work.

The three shots do present an effective mini-narrative, focused on Don's romantic life starting with the flashback scene of Don initially meeting Lena and her rebuffed attempt to silently court him once he is promoted from stuntman to movie star. The next shot is coincidentally the longest take in the entire film, as Don and Kathy escalate their romance while walking across the studio lot and he assures her that he's not involved with Lena. The sequence ends with a shot of Don gleefully dancing in the rain, celebrating his joy over finding love with Kathy. While this brief deformation lacks the interesting insights that some of the other videographic 10/40/70 examples I discussed in my earlier essay, it does highlight how the combination of arbitrary shots can create meaning and resonances.

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A more holistic approach to deformation considers how the film in its entirety is organized into shots. In Premiere, I segmented the entire film into its component 376 shots (splitting dissolves and wipes in the middle of the transition) to create a corpus to experiment with. Although we don't typically think of a video editing platform like Premiere as a database, it effectively is — subclips are actually just metadata entries referencing the original video to indicate timecode in and out points, as well as any other effects or transformations. Because Premiere can include some of this metadata in its view of a folder of clips, it was easy to sort the 376 shots ascending by length with a single click; then I gathered the clips into a sequence that re-organizes the entire film by ascending length of shots (see Figure 16).

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## SINGIN' IN THE RAIN ascending length

from Jason Mittell

1:42:45



**Figure 16.** The entirety of *Singin' in the Rain*, rearranged in ascending length of each shot, creates a whirlwind marathon of a viewing experience.

The resulting edit forgoes narrative coherence for another organizing principle driven by shot length, yielding some intriguing moments. The video certainly starts frenetically, with fifty-nine shots in the first two minutes — many of these come from the “Beautiful Girl” number, the film's most disjointed, chaotic, and quick-cut sequence. The early moments are often amusing, with massive tonal shifts and odd juxtapositions, such as the audience reaction shots responding to random dance moves or lines; at around 1:30, a number of shots from *The Dancing Cavalier* premiere create a disjointed version of Lena's attempt to sing in front of an audience. As the shots increase in length, some of the arbitrary juxtapositions become more interesting, as with the cinematically reflexive sequence starting at 9:50, featuring shots of *Variety* newspaper headlines, the closing “The End” title, the opening credit of *The Dueling Cavalier*, and the MGM lion, all intercut with random shots from the film lasting around seven seconds each. At 43:00, a sequence emerges with shots lasting around twenty-six seconds that sandwich two moments from Kathy and Don's first tempestuous meeting around their final kiss, contrasted with Don performing with the film's other two fictional romantic partners (Lena and the unnamed dancer played by Cyd Charisse), and the film's final shot of the happy couple looking at their own billboard for the film-within-a-film; while not narratively coherent, these arbitrary juxtapositions driven by shot length create a more compelling set of contrasts than the 10/40/70 sequence.

The full recut film is hard to watch except as a detached analyst looking for patterns, as the feeling of random disjuncture overwhelms any sense of continuity. However, for some reason this is by far my most-watched video on Vimeo with over 15,000 views as of February 2021, vastly exceeding full-fledged video essays that have been broadly

disseminated and shorter experiments that seem more poised to go viral. It's hard to identify what the appeal of this deformative take on the entire film might be, but seemingly it has attracted an audience — the one theory I can imagine is that people are stumbling upon it while searching for an online version of the full film, although that does not explain how the video registers an average of 20% of the 100 minutes viewed and more than 190 “finished” viewings.<sup>[4]</sup>

The biggest insight that I gained from this experiment comes toward the end of the video — prior to sorting by shot length, I had assumed that the longest takes in *Singin'* would be within dance numbers, as the moving camera would capture the choreography without frequent editing.<sup>[5]</sup> However, only one of the nine longest shots to conclude this video is from a musical number; the rest are lengthy dialogue sequences. The longest shot of almost two minutes, as mentioned before, follows Don and Kathy through the studio lot and thus feels choreographed without music, but the others (all longer than a minute) include Kathy driving Don in her car, Don and Lena's red carpet interview at the start of the film, the cast rehearsing the dialogue scene in *Dueling Cavalier*, and numerous discussions behind the scenes debating the film studio's next moves. I decided to capture this insight by creating another deformation highlighting these nine longest takes in tandem (see Figure 17).

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## SINGIN' IN THE RAIN - 9 Longest Takes

from Jason Mittell

01:55



**Figure 17.** The nine longest takes in the film surprisingly include only one dance sequence, with the rest featuring dialogue sequences that foreground other forms of movement.

When arranged next to each other via spatial montage, organized by when they appear in the film chronologically, we can see shared traits in the film's cinematography and blocking, highlighting how movement is featured within many scenes even without dancing. This grid highlights how *Singin' in the Rain* functions as a long-take film, with an average

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shot length of 16.4 seconds, a cutting rate comparable to many filmmakers renowned for their long-take styles, such as Max Ophüls, Stanley Kubrick, and Michelangelo Antonioni.<sup>[6]</sup> Few critics would place Stanley Donen and Gene Kelly in such company as masters of a long-take aesthetic, as their films are best known for cinematic movement more than duration. But as this experiment reveals, *Singin'* is anchored by many long-take shots and single-take scenes that run longer than the dance sequences it is most renowned for, suggesting the film and broader genre may be due for a formalist reappraisal.

## #4: Speed

As the discussion of shot length suggests, timing is a central facet of film technique, and thus a realm ripe for deformation. Since video editing platforms like Premiere can easily change the duration of a video by speeding it up or slowing it down, this is a useful tool for deforming footage. As I outlined in my 2019 essay, one way that speed can deform a film is by creating an “equalized pulse” that remaps the time of every shot to match the sequence’s average shot length [Mittell 2019]. In that essay, I deformed a number of films and scenes this way to chart a range of outcomes; here we can look at a number of different sequences from a single film whose equalized pulses are suggestive.

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### SINGIN' IN THE RAIN equalized pulse

from Jason Mittell

1:34:06



**Figure 18.** The entire film equalized to its average shot length of 16.4 creates a truly strange effect that is hard to endure.

We might start by watching the entire film equalized to its shot length of 16.4 seconds, but this is a true endurance test (see Figure 18). Many of the moments are overwhelmingly strange, such as the opening sequence of the “Beautiful Girl”

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number starting at the thirty-three-minute mark, where the montage of quick shots that runs just fifty seconds in the original film drags out in super slow-motion over five minutes. Other segments provide compelling contrasts, as the sequence starting at the thirty-one-minute mark: Don and Lena are shooting the silent version of *Dueling Cavalier* as Simpson runs in to announce the transition to sound in hyperspeed. The film cuts to Lena speaking in super slow-motion, distorting her already unacceptable voice before lingering on the dismayed reaction of the male characters. Another interesting sequence is at the fifty-three-minute mark, as the test screening deforms the audience members mocking the glitchy film, making their reactions even more strange and unexpected than the failed screening itself. This deformation can also redirect our attention, as at the forty-three-minute mark in the lead-up to the “You Were Meant for Me” number — the longest take in the film flies by, which draws our attention to the movement through the studio space rather than the dialogue or performances. In the soundstage, some slow shots highlight Kathy and Don’s emotions as they launch into the song and romance, but the sped-up song, compressing a four-minute number into a single minute, directs our attention to the camera movement and blocking within the space, more than the subtleties of the song and dance.

The equalized pulse approach yields the most interesting outcomes when applied to musical numbers, where the tempo and rhythm of visual editing overrides those elements in the music and dance. When each shot conforms to a single length, the music contracts or expands to fill the equalized length, and thus creates strange and often compelling moments of unintended oddity.



## SINGIN IN THE RAIN "Broadway Melody" deformed and equalized

from Jason Mittell

13:56



**Figure 19.** “Broadway Melody” equalized makes an already experimental sequence even more unusual.

In my 2019 essay, I wrote about the equalized pulse version of “Broadway Melody,” where stark contrasts between long and short takes result in radical juxtapositions, as with the opening few shots where the opening shot of Don’s singing sprints through at 387% speed, followed by a pan through the crowd at a glacial 12% speed (see Figure 19). These strange contrasts highlight the artificiality and lack of narrative coherence already present in this number.



## SINGIN' IN THE RAIN title song equalized

from Jason Mittell

04:50



**Figure 20.** The equalized pulse version of “Singin’ in the Rain” provides moments of insight into movements via their deformed speeds.

A more typical musical number is the title track, which uses long takes with an average shot length of twenty-nine seconds for the sequence (see Figure 20). When equalized to this rate, the contrasts are less severe, but still highlight how there is some editing variability in the original sequence — the famous shot of Kelly twirling on the street gets drawn out to 35% speed, allowing us to linger on his expressions and command of the space. This shot is followed by Kelly dancing along the curb at 128% speed, highlighting the playful comedy of his joyful splashing. While this deformed version is not particularly compelling on its own, it does allow us to see an incredibly familiar sequence in a new light.



## SINGIN' IN THE RAIN "Make Em Laugh" Equalized

from Jason Mittell

03:40



**Figure 21.** "Make 'Em Laugh" equalized to its average shot length reveals details about gesture, expression, and energy.

The "Make 'Em Laugh" number is driven by Donald O'Connor's physical comedy and energetic performance. When equalized to the number's average shot length of twenty seconds, each shot reveals something about the original, with sped up shots capturing O'Connor's frantic energy, while the slower moments highlight his more subtle facial expressions (see Figure 21). But what none of these equalized musical numbers do is create a clear rhythm through the equalized pulse defined by the tempo of the shots — the average shot lengths are too long to convey such a pulse through the cutting speed, an outcome that I've only found through very fast cut sequences, as with the "Roxanne" number in *Moulin Rouge!*, as discussed in my 2019 essay.

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Equalized pulse videos make the video track dominant within the sequence, as the visual edits dictate the speed and pace of each deformation. As discussed with the summed frames approach, sound does not conform as easily to manipulable units like frame or shot, as the audio track is continuous and unbroken, and thus hard to quantify. One way that audio might guide a similar equalization experiment would be to focus on the number of words spoken or sung, and then equalize a sequence to a standard number of words per temporal unit. How might such an audio-driven equalized pulse differ from one based on video edits?

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## SINGIN' IN THE RAIN "Make 'Em Laugh" - Compared Equalized Pulses

from Jason Mittell

03:49



**Figure 22.** Equalizing the pulse based on number of words rather than by visual edits allows us to experience how lyrics are unequally distributed across a musical number.

I performed such a comparison with “Make 'Em Laugh,” by equalizing twenty-four words to the same pulse as the film's average shot length of 16.4 seconds — twenty-four words was an arbitrary number, but inspired by the film's twenty-four frames per second rate. Thus I broke up the sequence into subclips by cutting after every twenty-four words in the scene (using the caption track to help quantify words), and then treating each subclip as a “shot” to be equalized. By juxtaposing these two equalizations, where the speed of each subclip changes at the same time every 16.4 seconds, we can contrast the relative rates of video editing and audio speaking/singing in this number (see Figure 22). Most notably, the word rate is faster than average for most of the song, as every clip is slowed down on the audio equalized pulse for the first three minutes of the video; however, the final three shots compress the final 2:20 of the number into only fifty seconds, with one dance-heavy clip playing at 619% in order to squeeze twenty-four words into 16.4 seconds. While this experiment helps highlight how words are distributed unequally in a musical number, ultimately the deformative impact is not significantly different than the equalized pulse driven by visual editing.

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Manipulating speed can be used to deform films in many ways beyond equalized pulses, as changing a clip's speed is a noticeable and often playful deformation. Many deformative possibilities are already widespread in the wilderness of online meme culture, where fans mess with popular culture in transformative and imaginative ways; while such memes may not be designed to lead to scholarly insight, like with GIFs, we can adopt such pre-existing fan strategies to see what deformative possibilities might arise. One meme that I felt could be aptly applied to videographic deformation is what might be called the “but faster” video: a film or music video gets faster every time something specific is said or

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happens onscreen. Allegedly started by a video called “The Entire *Bee Movie* but every time it says ‘bee’ it speeds up by 15%”, the trend has been applied broadly to many sources to create a range of playful and often silly deformed videos [Dahir 2016].



## SINGIN' IN THE RAIN's "Broadway Melody," but faster everytime someone sings "Dance" (constant audio pitch)

from Jason Mittell

06:14



**Figure 23.** Playing with speed following the logic of an online meme highlights some temporal contrasts as well as creating a distinctly goofy experience.

I applied this meme logic to “Broadway Melody,” but speeding up by 10% every time somebody sang the word “dance.” The result is frantic by the end, reaching 350% speed as Kelly and company flail to keep pace with the manic music. The result is definitely more fun and goofy than deep or insightful (not that there’s anything wrong with fun and goofy), but at high-speeds, the video highlights the different modes of dance embedded within this long number, as the slow and sultry segments with Cyd Charisse feel almost normally paced compared to the frenetic group dances throughout, even though the lengthy ballet segment is sped up to 300%. This video is certainly among the more frivolous of the deformations I have made, but given that the thirteen-minute “Broadway Melody” number is the one part of the film that some viewers find too slow, this six-minute version might be more palatable as an alternative.

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## #5: Space

Just as video editing can easily play with time, manipulating spatial relations can create videographic deformations as well. Catherine Grant is a leader in this work, especially in thinking about the role of spatial montage in videographic expression. I was inspired by her video “Fated to be Mated: An Architectural Promenade,” which deforms a Fred Astaire

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## FATED TO BE MATED: An Architectural Promenade

from Catherine Grant

04:36



**Figure 24.** Catherine Grant's “Fated to be Mated” creates an innovative effect of spatial montage within a dance sequence.

Grant's video remakes the space of the dance sequence via a simple manipulation: splitting the frame vertically and reducing the scale of the left half (see Figure 24). She further deforms the sequence by slightly slowing it down and replacing the original music with contemporary electronica, but the core visual deformation of scale has the most notable impact — we see the dance space as fractured and made strange, while the duo navigates the space by transforming their relative scale. The most notable moments are when Astaire and Charisse are on opposite sides of the split, thereby shrinking one of them until they swap sides to rescale themselves, as at the four-minute mark. When I viewed this, I immediately began to apply Grant's concept to *Singin' in the Rain* (see Figure 25).



## SINGIN' IN THE RAIN: "Good Morning" scaled triptych

from Jason Mittell

04:23



**Figure 25.** The “Good Morning” number deformed as a “scaled triptych” highlights some of the ways that the choreography interacts with the setting as well as resonating with various character and performer power dynamics.

I chose “Good Morning” to deform through Grant's scaled approach because it was the dance number that most consistently matched her design, with multiple dancers distributed horizontally across the frame in an interesting architectural space. Because this trio required a triptych approach, I broke the frame into thirds and scaled them proportionately to mimic Grant's effect. The resulting deformative video is particularly satisfying when the three characters line up evenly into the scaled zones, as at the three-minute mark, or when they cross between zones to grow and shrink, as at the one-minute mark. The choreography places Kathy in the center for most of the number, with the two men orbiting around her with more advanced dance moves (as Debbie Reynolds was a novice dancer when cast in the film). Aptly Gene Kelly towers over his co-stars at the largest scale for most of the number, as he was not only the film's star but also its co-director and choreographer — and he was particularly unkind to Reynolds in rehearsing and shooting this number, with harsh criticism of her dancing and a late-night shoot that caused her feet to bleed [Saunders 2016]. This scaled triptych calls attention to the relative power of the performers in the frame in a way that maps the behind-the-scenes struggles onto the effortless footage.

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Grant's scaled approach makes onscreen spatial relations strange to create something new. Another approach seeks to use deformative methods to reconstruct the space as it was during the film's shoot. A version of this deformative method can be seen in Jeff Desom's impressive “*Rear Window* Timelapse” [Desom 2012]. Whereas Desom reconstructs that film's apartment building as a compiled static image with embedded footage throughout the film's run, I am more

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interested in simultaneously visualizing the film footage and camera movement to create an original spatial reconstruction. I applied this method to “You Were Meant for Me,” the musical number that takes place in a mostly empty soundstage and with fairly simple choreography (but complex camera movement) through that space (see Figure 26).



## "You Were Meant for Me" - spatial deformation

from Jason Mittell

04:33



**Figure 26.** Deforming a dance number to keep the soundstage static with a moving frame reveals how camera movement and choreography are navigating the set.

I find the effect quite startling, inverting our standard understanding of camera movement and cinematic space. By moving the frame through the cinematic space as it follows the dancers, it disrupts our perception of camera movement — the viewpoint feels fixed with a variable frame, rather than our standard perception of a fixed frame with a moving camera viewpoint. The frame moving through cinematic space directs our attention to the soundstage more than the dancers, as we come to expect the sparse props to appear in the same spot on the screen (which is also how I mapped the shots to reference points like the ladder and fan). The choreography becomes about moving through the space and guiding the frame, rather than the camera following the dancers.



## "You Were Meant for Me" - Side by Side spatial deformation

from Jason Mittell

04:33

**Figure 27.** Juxtaposing the original and deformed versions of “You Were Meant For Me” highlights how the deformation works and what is particularly revealed and concealed by each version.

Based on a number of people I have shared this video with, this spatial deformation is challenging for most viewers to truly intuit that it is remapping the camera movement as a shifting frame visualizing the soundstage. Thus I created a side-by-side version, comparing the original footage with the moving frame deformation (see Figure 27). Although this juxtaposition loses the disorienting power of the standalone video, it does highlight the analytical dimensions of the deformation, revealing the camera movement in ways that are hard to discern in the original. While it is hard to imagine such a deformation working for most scenes, it is well suited to reveal the spatial possibilities of the empty soundstage in this number.

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### #6: Sound

Most of the deformations I've documented thus far prioritize the visual channel over audio, whether via camera movement, editing pacing, or single frames. Largely this emphasis stems from the difficulty in breaking the audio channel of a film into discrete units that might be algorithmically manipulated; despite the fact that the production and post-production of a film actually uses separate tracks for audio much more than video, the final product provides only a sophisticated mix of audio elements that are challenging to separate. The mixed audio track is easy to manipulate, as editing platforms offer dozens of effects we might apply to the soundtrack, from equalization to reverb to distortion. However in my experiments, such manipulations do little than create a sonic mess without revealing any insights into the clips or creating a compelling aesthetic object on its own. But I certainly believe that sound is the realm of deformation that needs more expansion and development, and I offer two more experiments with the caveat that these are far from exemplary of the wide-ranging possibilities of sonic deformation that might be explored in the future.

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Similar to the “but faster” meme, we can take inspiration from online remix culture to deform films. One sound-driven remix protocol focuses on alphabetizing footage by the words spoken and/or sung to create an algorithmic pattern that is both predictable and arbitrary. An early example of this approach is “Of Oz the Wizard”, an alphabetized version of the entire *The Wizard of Oz* which Matt Bucy first made in 2004, but became an online sensation in 2016 [VanDerWerff 2016]. While watching the entire film this way is an endurance challenge, there are moments where the effect is truly impressive — for instance, the section for W starting at the 1:31:00 mark charts through many iconic words (“wicked,” “witch,” “wizard”) as well as common ones (“we,” “with”) to create a mosaic of the film that has some coherence but also reveals new rhythmic patterns and intriguing juxtapositions. Similar full-film effects can be seen in “ARST ARSW: *Star Wars* alphabetized”, as well as smaller-scale alphabetized songs, such as Toto's “Africa” or, because it's meme culture, Smash Mouth's “All Star”.

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## "Moses Supposes" alphabetized

from Jason Mittell

01:32

**Figure 28.** Rearranging the song “Moses Supposes” in alphabetical order creates an even more tongue-twisting version as inspired by meme culture.

I chose “Moses Supposes” as the number to alphabetize, as the tongue-twisting song about wordplay seemed best suited to reorganize in a way that plays with words (see Figure 28). The effect is certainly playful, as common short words like “a” and “his” blur into a rapid-fire hard to discern sequence, especially because in the original song such words are practically swallowed in the fast-paced patter rhythm; however, longer repeated words like “erroneously” or “supposes” stand out in pleasurable sequences charting their different articulations in the song. To me, the effect of this alphabetized video is to highlight how the words and their performance create the playful tone of the number, deemphasizing the excellent choreography that more obviously drives the energy of the original.<sup>[7]</sup>

Another model of audio-driven deformation is the “Listen to TV” project by Casey McCormick and Eric Powell, which takes advantage of the layering possibilities of sound. McCormick and Powell take a full season of a television series and simultaneously play the audio of all episodes at once, creating a chaotic experience of simultaneity. While most of these sound collages foreground dialogue and sound effects, musical moments shine through the chaos, as with the phased instances of Iris DeMent’s theme song “Let the Mystery Be” toward the start of their deformation of *The Leftovers* season two. For a comparatively sparse sonic series like *Leftovers*, many lines of dialogue or sound effects stand out in this layered deformation, triggering memories for fans who know the season well. *Seinfeld* season nine offers a very different experience, as the sonic layers are far messier, with the iconic bass riffs and audience laughter sufficiently obscuring nearly all recognizable dialogue, until the twenty-three-minute mark when most episodes end, but the extra-long series finale endures alone to be heard clearly.

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A film lacks the multiple episodes of a television season to open up such layering possibilities, but I considered the individual musical numbers as a comparable unit to an episode to create a layered version from *Singin'* (see Figure 29). With fourteen discrete numbers (including multiple versions of the title song) playing at once, we experience sonic chaos punctuated by some sounds that stand out, such as the high-pitched singing in “All I Do is Dream of You,” the loud repeated calls of “Moses” at the one-minute mark, or periodic refrains of “Gotta Dance.” The instrumentation can also become notable, when brass or drums burst through the chaos to offer recognizable fanfares and beats. The sonic collage becomes more discernible as each number ends — by the three-minute mark, only seven songs remain, allowing us to hear more details from the performances, and creating more specific interplay between numbers. By the four-minute mark, all songs have ended except “Broadway Melody,” which I stopped at the next cadence to avoid another eight minutes of that number playing solo.



## SINGIN' IN THE RAIN: Layered Musical Numbers

from Jason Mittell



**Figure 29.** Layering the film’s musical numbers creates an intense sonic collage that becomes clearer as each song ends.

While “Listen to TV” is an audio-only project, I wanted to incorporate visuals into my layered musical number deformation, allowing the sound design to reveal potential visual insights. Given that layering video is much more difficult than audio, and my attempts to create layers of opacity resulted in simply an undistinguished blur, I decided to create video “ribbons” of each number’s visuals, arranged chronologically across the frame. This approach reveals some of the dancing and physical performance presented within each number, yet makes the individual sequences hard to discern until adjacent numbers end to reveal more of each sequence. There are some fun juxtapositions, as at 1:55 when Kathy and Don appear to be dancing together in adjoining clips from “Good Morning” and “Singin’ in the Rain,” but

in general the visual effect is less interesting than the sonic collage.



## SINGIN' IN THE RAIN - Layered Musical Numbers, additive version

from Jason Mittell



**Figure 30.** The layers of musical numbers can be shifted to be additive over time to conclude all at once, revealing different juxtapositions.

The “Listen to TV” collages all start simultaneously, with the episodes ending in a more staggered timing, an approach I mimicked for my layered numbers deformation; however, I also made an “additive” version where the fourteen numbers all end simultaneously instead, and thus appear in order of descending length (see Figure 30). The effect of this version is to start with more comprehensible moments, emphasizing the interplay between “Broadway Melody” and “Beautiful Girl,” until new layers emerge over the course of the video. At the one-minute mark, we start to hear more from “Make 'Em Laugh” and “Good Morning” before the sonic chaos becomes overwhelming. The closing seconds are rewarding, as we hear how many numbers end with boisterous cadences out of the polyrhythmic stew of the final minute. Neither of these two versions is “correct,” but highlights how changing one variable or parameter in a deformation can create another iteration that is potentially as impactful as the original.

## Conclusion:

This litany of experiments in deforming *Singin' in the Rain* are not offered as a comprehensive list of what might be done with the film or any other source text. I offer them each as small (or sometimes long) curiosities that might inspire future experiments or provoke insights into a familiar film. In teaching and presenting videographic criticism, I often suggest that one key impact of any successful videographic piece is to help people see and hear a source film through the eyes

and ears of the critic, conveying a new perspective on a text. Deformative videographic work also allows us to see and hear a familiar film in a new way, but one that reveals new perspectives to both the critic and the audience. I did not perform any of these experiments with a clear idea of how they might turn out, and I was usually surprised at what was revealed (or what did not work at all). As critics, we too often approach a case study with our conclusions already drawn, eager to apply existing theoretical paradigms or critical assumptions to a new instance that proves our predetermined point. Deformative criticism is a reminder of the joys of discovery, finding something distinct and refreshing even within the most familiar film, breaking apart our critical preconceptions to point us toward new, strange pathways. That seems like an apt mission for digital approaches to audiovisual criticism.

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## Notes

[1] Such deformative videographic works seem to be a clear example of fair use transformations under U.S. copyright law, a topic I've discussed more in depth in "But Is Any of This Legal?" [Keathley et al. 2019]

[2] See Ferguson's video summation of *The Searchers* for an example of this effect: <https://vimeo.com/170473567>.

[3] StarStaX is available at <https://markus-enzweiler.de/software/starstax/> - special thanks to Ethan Murphy for suggesting this tool.

[4] I also uploaded this video to my YouTube account, curious if it would gain an audience there as well, but it was immediately blocked by copyright bots, highlighting the different approaches the two sites take to copyright enforcement.

[5] I asked a few other film scholars what they thought would be the longest takes in the film as well, and they all likewise presumed they would be musical numbers, a useful confirmation of my assumptions.

[6] See <http://www.cinemetrics.lv> for data on average shot lengths for thousands of films.

[7] Since the final two minutes of the number are solely dance without any singing until the concluding "A", I excised the dance sequence from this deformation, leading to a much shorter version as alphabetized.

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