THE MAGNIFICENT UMBERS: TECHNICAL AND ETHICAL ISSUES IN ANIMATION RESTORATION

STEPHANIE SAPIENZA
FINAL PAPER MIAS 210
CONTEMPORARY RESTORATION
STEVEN RICCI

The issues involved with restoring animated titles are particularly complicated because, among other reasons, of the problem of determining the films' audience. Animated films traditionally serve a youth-dominated market, but the youth that enjoyed many of these films when they were young are now film literate adults in a demanding consumer culture. So the question becomes whether the purpose of the restoration of these films is to satisfy nostalgia for older folks who want to remember and collect classic animation, or to introduce a new generation of children to an older set of classics. The other major audience for restored animated titles include art house and cinematheque patrons who want to see and enjoy abstract and experimental animation.

These myriad priorities splinter into different restoration schools of thought, and are the reasons that diverse strategies are employed by different studios and archives to restore these titles in terms of aesthetics, approach, and priorities. Is a new wave of young consumers weaned on Pixar and computer animation fully able to appreciate a Looney Tunes cartoon with visible grain, YCM pocking and audible clicks and pops? Will this take them out of the viewing experience? Should all restorers of animation approach their projects like Disney, whose aim is to "take the camera out of the equation," so that the film most closely resembles the original cel art? The ethics of working with animation and making these choices should only be addressed by preservationists and restorers who have both a firm grasp of the historical development of animation filming technologies, and an informed sense of who their audience is. Furthermore, they need to understand how to balance the needs of that audience with the broader philological questions of authorial intent and authenticity. This paper aims to analyze a set of problems that are specific to the preservation and restoration of animated titles, and to propose a philological construct for the aesthetic judgment of such projects.

Back to Restoration School

The case studies that will be detailed below focus mainly on two entities who frequently undertake restorations of animated titles – Walt Disney Pictures and the Academy Film Archive – as representatives from two very different schools of thought in restoration. Although not inclusive of all animation restorations, the goal is that their juxtaposition will serve as evidence of the broad range of possibilities represented at various types of studios and archives. The reading of the "texts" of these films is varied and complicated due to differing interests and public demands. The priorities of studios like Disney are market-driven, while archives like the Academy preserve films they feel are empirically important to fulfill their mission and enrich their collections. Studios tend (mostly) to work with elements they have in-house, while archives often have to utilize compromised material that isn't pre-print. A major decision that these factors lead into is the question of photochemical versus digital restorations.

Eileen Bowser, in attempting to outline several "schools of thought" in restoration, would probably have categorized Disney in the "improved version" school, which is "a film that keeps in mind a modem audience."[1] Since the restoration of Disney titles is market-driven, this definitely describes the paradigm from which they work, and explains the rationale behind their obsession with using ultra-clean digital processes, a practice for which they have received both praise and criticism; "with all of the time, technology, money and work that went into the digital version of *Cinderella*, the film now looks like it went through Photoshop, frame-by-frame. The film feels and sounds almost like it was made yesterday. Perhaps that's great for the little children of today's digital age, but not for those of us who originally saw it in a theatre."[2] Disney has boldly straddled the realm of digital restoration as soon as the technology has been available. This has ironically created

[1] Eileen Bowser, "Some Principles of Film Restoration," *Griffithiana* 38 (October 1990): 172.
[2] William Kalley, "Magically Pristine *Cinderella* DVD" *From Script to DVD* Review, November 9, 2005 www.fromscripttodvd.com/cinderella_dvd.htm+%22backstage+disney%22+restoring&hl=en&ct=clnk&cd=11&gl=us (accessed June 5, 2007)

an "archive" of past failures, in the form of previous Laserdisc and VHS releases, as Disney's chosen restoration lab, DTS Digital Images (formerly Lowry Digital Images) has taken its time perfecting these technologies; "The 1997 [Laserdisc] restoration of *Bambi* was an abomination. They replaced each background with a composite still image, complete with grain frozen in place. Big, unmoving chunks of grain now part of the background artwork. An incredibly boneheaded approach."[3]

As evidenced by forum threads like the one above, Disney's aesthetic judgments through their collaborations with DTS have been controversial. Part of this stems from the fact that Disney is publicly stating that their aim is to, as DTS Project Manager Alexis Ross states, "take the camera out of the equation."[4] Likewise, Disney's Director of Library Restoration Theo Gluck openly states that "The determination has been through various tests involving feature animators, senior executives of feature animation; the prevailing wisdom is that the films just look better with all the grain removed."[5] The implications of this aesthetic are interesting, and raise many questions about whether it adheres to the established entertainment priorities throughout Disney's history. For one example, Disney stated outright in a color scheme meeting in 1936 that his colors for *Snow White* (1937) should display a certain level of realism; "I think we are trying to achieve something different here. We are not going after the comic supplement coloring. We have to strive for a certain depth and realism … through the use of colors – the subduing of the colors at the right time and for the right effect."[6] This statement points to the idea that Disney's aesthetic sensibility would have had him resisting digital enhancement and overly clean color schemes. As a counterpoint, Disney was also a constant innovator, always seeking to find and corner the market on new technologies, which

---

[3] Jay Pennington, "Disney 'Digital Restorations'" Home Theater Forum, February 22, 2007 http://www.hometheaterforum.com/htf/archive/index.php/t-252551.html (accessed June 2, 2007)
[4] Alexis Ross (Project Manager, DTS Digital Images), in discussion with the author, May 2007. All other quotes attributed to Ross are derived from this interview.
[5] Theo Gluck (Director of Library Restoration, Walt Disney Pictures), in discussion with the author, March 2007. All other quotes attributed to Gluck are derived from this interview.
[6] Transcript, Walt Disney Studios Color Scheme Meeting (December 1, 1936). From the John Canemaker Animation Collection, NYU Fales Library.

historian Richard Schickel has said defines his very oeuvre, and is fueled by the very efforts towards realism that Disney addresses in the quote above. Schickel says:

> The desire to reproduce nature more accurately led, at first, to a higher quality of work at every stage of the filmmaking process, and the Disney Studio must receive credit for seizing upon technical advances of all kinds, developing many of its own and then synthesizing all the discoveries in the field into a method of production that was commercially viable and wildly attractive to the public. Indeed, Disney's position became so dominant so quickly that it is fair to say that without his efforts it would not now be possible to call animation either an art or a profession; it would still be merely "the cartoon business."[7]

If this voracious quest for new technologies helped shape Disney into the empire it has become, then it only seems logical for the home video and restoration team to latch onto DTS as innovators of the latest and greatest digital restoration software.

By direct contrast, an archive like the Academy Film Archive, charged with the preservation of the work of such experimental animators as Oskar Fischinger, Hy Hirsch, John Whitney and John & Faith Hubley, utilizes only photochemical restorations and only showcases their work through exhibitions as opposed to DVD releases. Their school of restoration thought would most probably be the "original experience" school, described by Bowser as "the film as it was seen by its first audiences […] To understand an old film, we try to get into the skin of those who saw it in its time."[8] The Academy most frequently begins their restorations with a search for elements, since they often only have prints or damaged copies that have trickled in through deposits or donation. According to preservationist Joe Lindner, their particular problems (with all titles, not just animation) lie in this fact of not having a preponderance of original material.

For the animated materials, the collections of works by Oskar Fischinger, Hy Hirsch and Harry Smith all had extremely limited pre-print materials – the John Whitney collection had some but not much. During his inventory of the titles in the Fischinger collection, preservationist Joe

[7] Richard Schickel, *The Disney Version* (New York: Simon & Schuster, 1968): 200.
[8] Eileen Bowser, "Some Principles of Film Restoration": 172.

Lindner discovered that two versions of the film *Allegretto* (1936-1942) existed, which they eventually referred to as *Allegretto – Early Version* and *Allegretto – Later Version*. The two versions existed because Fischinger had re-shot the film using new cels painted over the original cels , because the original negative from the first version had shrunk in only four years. Lindner discovered the reason for this from an article in which Fischinger discussed the rephotography of the film. He said that the revelation was particularly interesting, because he hadn't been able to pinpoint why the films were different; "When you looked at the animation, there were scenes that were the same but they had different parts to them with different movement. And there's just no way to take the same elements and do that. I mean, you could cut them and you could rephotograph them, but you can't change the actual animation."[9] The story with *Allegretto* points to one particular problem with restoring animation photochemically, which is that any splicing or removal of frames will interrupt the carefully timed movements in the frame.

The schools of restoration thought that each of these archives belongs to provides a foundation for some of these particular problems, and this paper will now attempt to specify and elaborate on more of these problems in two areas; dirt and grain, and color integrity.

The Nitty Gritty – Dirt and Grain Issues

Using cels to animate a film creates a level of control that is specific to animation. Typically "the cel factor" is a negative one. Some of the most grievous problems in the treatment of animated titles for restoration lie in the use of cels, as well as glass panes and panels, and intricate camera devices used for spatial effects during the shooting process.

The Academy is forthcoming about the fact that they do not deal extensively with these issues; "sometimes we do have timing issues, color issues, that's a limitation of photochemical

[9] Joe Lindner (Preservationist, Academy Film Archive), in discussion with the author, May 2007. All other quotes attributed to Lindner are derived from this interview.

[preservation]. There's so little that you can do photochemically. So in those terms, yes, we run up against problems. But in terms of dirt or anything else you could be manipulating in the digital realm, we don't even address that." Because of their choice to adhere to the "original performance" school of thought, issues of cel dirt and grain are a non-issue for the Academy, since they seek to preserve the films as they exist. As Lindner mentions in this quote, the Academy's particular problems with animated titles come into play with discussions of color, which is discussed at length later. For this section, the focus on dirt and grain will be concentrated on Disney, since it is a much bigger factor in their restorations.

Any film created by a process like three-strip Technicolor which involves color separations is faced with the issue of triple the amount of grain upon the recombination of those elements. However, the levels of grain and dirt in animated titles are multiplied far beyond this, in that cel dirt will exacerbate the problem with 5-6 times more dirt that can be photographed-in. Traditional cel setups involved background layers that were topped with sometimes five or more layers of character and effects cels:

> First the background is laid down. Then a cel with Mickey, another with Minnie, a third with the villain and a fourth that is blank are slipped over the pegs, which hold them in perfect register … Compressed air clamps a glass pane over the drawings to remove wrinkles, the operator's hand touches the control button of the camera, the lens shutter blinks, the air lifts the glass and the photographer removes the cels and replaces them with the next set.[10]

The sense of automation felt in this description, as well as the amount of cel and glass material being handled, creates an image of an atmosphere whose cleanliness can only be controlled to a certain extent.

Another issue that comes with dirt and grain is what Theo Gluck calls YCM pocking, which is "flecks of red, green and blue depending on what dirt is on what record of the original [successive exposure] negative. So there's one shot of the owl in *Bambi* where it looked like someone had taken

[10] Richard Schickel, *The Disney Version*: 195.

soap bubbles and rubbed them throughout the entire image, red green and blue." Although this type of dirt is not photographed in, the fact that many of the prints that used this technology are up to 70 years old means that this dirt is imbedded in the negative. When you compound this with the amount of photographed-in dirt and ash that the image contains due to cel layers, the issue of grain gets compounded.

In addition to pocking and the inevitable dirt that was caught and photographed in between cels and glass panes, shots that utilized multiplane cameras have multiple glass panels that are each separated by several feet. Although this problem may appear to be specific to the restoration of Disney animated films since their use of the multiplane camera was highly publicized, variations of their patented version were utilized by other studios including Iwerks Studios and Fleischer Studios.[11] In a large room, with each panel being moved in and out between setups, the amount of dust in the image was difficult to control. The shooting of a scene using a multiplane camera took much longer than a traditional cel-animated scene, especially during the advent of the technology when operators were still working out the kinks.[12] Alexis Ross has pointed out the particular problems with multiplane dirt as it applies to their proprietary grain removal software. The software attempts to differentiate between background and foreground layers of animation and remove the dust from each section independently. When the multiplane camera shots are particular complex and involve many layers, the software must be continuously tweaked to adjust for the increasing complexity.

One interesting point that Ross pointed out is that during the DTS grain removal process, the grain from the color separations is actually easier to deal with, because of the fact that it was all shot on one strip of film as opposed to traditional three strip processes, where the grain on each separate

[11] Dave Smith, "New dimensions – beginnings of the Disney Multiplane camera" in *The Art of the Animated Image*, Charles Solomon, ed. (Los Angeles: American Film Institute, 1987): 37. Fleischer's version is called the Tabletop.
[12] William Stull, "Three hundred men: and Walt Disney" *American Cinematographer* 19 (February 1938): 49

strip can be drastically different; "Its different from normal film, where the grain on the red, green and blue channels are all really different. The blue channel has the most grain and the least amount of detail. But when you're doing it from these separations, all the channels are the same level. ... [the color] is more evenly dispersed throughout the image." In this case, aside from the instances of pocking, the successive exposure process makes grain reduction in digital restorations easier for animated titles. The exception is when one color level fades more than another; "it also has to do with how much the color has fluctuated from the beginning, and … because sometimes certain parts will fade and we'll have to move the colors around and you'll end up with one really grainy color, which is pretty difficult to fix sometimes."

Gluck also stressed that certain types of dark shots make dirt and grain much more noticeable, which was the case for all the dark, climactic underwater scenes during the climax of *The Little Mermaid*, the last Disney film that utilized true cel animation before the advent of the CAPS Digital Ink and Paint system. However, this was not due to the recombination of color separations, since *Mermaid* was shot on 5247 color negative stock. The problem came with the specific fact that the animators had become accustomed to the use of successive exposure, which worked so comfortably with cel animation. In working with color stocks, "they had polarizers on the lights and on the camera lens to try and knock down the dirt and the dust, but they could never get the color separation and saturation they wanted. They then took that negative, made new optical YCM separations, tweaked the gammas on each, put them back together and got even a worse-looking image." Gluck said no one except *Mermaid*'s director and the technicians at Technicolor had ever seen the picture as it existed from that original camera negative, and since they worked off that negative (and not the YCM separations) for the restoration, the audience is seeing a version of the film that original audiences in 1989 were never able to see. This certainly ties into the Disney school of "improvement of the original".

The issues that arise when the film's image captures individual cels that show mottled paint and paint crawling also stem directly from processes used in cel-based animation. Understanding the cause of these two problems requires a bit of historical knowledge about the use of different paints over time at a particular company. In the case of Disney, the studio switched the type of paint they used over time, beginning with the use of store-bought paint from a place called Morgan and MacManus on 3rd Street in Los Angeles, through the late 1930's. At that point, Disney hired chemist Emilio Bianchi, who started making a more humectant-heavy paint at the studio which would cause the paint to adhere more reliably to the cel. There was a period of two years where a different chemist, Steve MacAvoy, came in and mixed paint a bit differently. Bianchi came back and the formulas stayed fairly consistent all the way through *Oliver and Company*.[13] However, because of all these shifts, the paint issues for each individual film still vary greatly, so the restorers have to be fairly savvy to how these painting processes changed over time. This also affects how they interpret their color reference (often times original cel art), to determine the correct color that the character should have throughout a particular scene.

According to animation archivist and cel art conservator Stephen Worth, for each film Disney mixed up a new batch of paint with new pigments in it and new balances of pigments to create individual colors.[14] Gluck also points out that "the animators would dip their brushes into the paint, stir it, then paint [the cels]. But on some of the darker earth tones, the pigment and the binders would separate. So unless you constantly stirred them and kept them going, the paint wouldn't be even, and you'd get this weird mottling happen." Ross gave specific examples from the 1955 film *Lady and the Tramp*; "the browns are just a nightmare and never dry evenly, like on Trusty and on Lady. And gray also has problems drying, so in the end, we're having to smooth that out."

[13] Ron Barbagallo (Animation Cel Art Conservator), in discussion with the author, February 2007.
[14] Stephen Worth (Director, ASIFA Animation Archive), in discussion with the author, February 2007. All other quotes attributed to Worth are derived from this interview.

The question of what color to choose for the "smoothing" Ross refers to becomes tricky with all these different equations. At this point, a large cross-section of the cel art references for a particular character is surveyed to arrive at a comfortable medium. Nevertheless, the question of color integrity that this particular case illustrates brings up a whole other set of concerns related to color.

How Green is My Peter

Getting the color levels right is perhaps the trickiest part of the restoration process in animation, since the colors are not photorealistic and often have less of a basis in reality. Even though this can be an issue for any live action color restoration, at least there is a basic idea of how a lake, flesh tone, or sky is supposed to be colored. This concept could conceivably be applied (to a degree) on some animated shorts with a certain amount of realism, but other more stylized or abstract animation can be completely subjective. In these cases, restorers definitely need a color reference. For the 1959 Oscar-winning animated short *Moonbird* by John and Faith Hubley, Lindner had a 1959 nitrate negative element to work with. He did have a color reference which he thought completely reliable since a) it was printed in 1993, b) it came from the collection of John and Faith's daughter Emily Hubley, and c) it was printed when Faith was still alive. Thinking this was a fairly straight-forward preservation project, Lindner matched their original 1959 negative to the colors in the 1993 print, made a copy, and even screened it at an Academy event. No one caught it, but after seeing a different print of the film years later, Lindner realized that the main color scheme in the film should have been blue instead of the prominent greens in his preserved version. He consulted several people with a memory of the film, and the owners of the new print, and determined that he had indeed timed the print incorrectly. He now keeps both versions of the film for educational purposes.

Lindner's problem with assessing color primarily stems from the nature of the fact that he is not working with a commercial or studio collection, where all of the elements from the films would be at his disposal. For animated titles at major studios like Warner Brothers and Disney, they almost always have pre-print elements to work with. Of these materials, the brass ring is a dye transfer or Imbibition Technicolor (short handed as IB Tech) print. Rob Hummel from Warner Brothers says that "as often as we can, we try to reference dye transfer prints from the era, so we're getting the right color correction and contrast, and that we're putting exactly in there what was originally intended by the animator and the filmmaker."[15] This seems to be the collective understanding among most restorers. IB Tech prints are made by bringing dyed matrix prints (one each for cyan, blue and magenta) onto a black and white blank printing film, much like a stamp. The blank pulls in the dye one color at a time, creating a final combined image. This process makes the print extraordinarily resistant to fading. Besides this, the prints also most accurately represent the final color timing decisions of the filmmakers, as ASIFA archivist Stephen Worth explains, "They may have adjusted the Technicolor process to correct for errors. They may have deliberately manipulated the color in a certain way for a certain scene for a particular effect."

Lindner qualifies the broadly-accepted notion that the IB Tech print is infallible as a color reference, "there is no guarantee that they're exactly how the filmmaker really intended it to look, or how an audience saw it. I mean there's tons of variables there – how is it projected, the lamphouse, we don't project nitrate prints anymore so the screens are different, all those issues. Setting all that aside, there's still an authenticity you're look for to reproduce how it looked on the screen." Lindner's paradigm comes from trying to reproduce how the films looked on the screen, since, as discussed previously, the Academy's school of restoration thought prioritizes the "original performance." But if the film is going to be released on DVD, the restoration most certainly falls

[15] Rob Hummel, as quoted in "Fine Tooning: Restoring the Warner Brothers Cartoons," seen on *Looney Tunes Golden Collection*, Volume 3, Disc 2 (Burbank: Warner Brother Home Entertainment, Inc., 2005).

under the "improvement of the original" school of thought. This school is unapologetically espoused by nearly all the major studios who seek to re-release their animated titles; as Warner Brothers VP George Feltenstein has said, "The clarity of DVD provides us an ability to see these films in a way with such crisp picture and sound that was not possible, except maybe when they were originally released, and maybe they weren't even that clear when they were first released because of the advance of technology." The fact that this is one of the first things we hear on the DVD featurette "Fine Tooning: Restoring the Warner Brothers Cartoons" speaks to how important the studio feels it is to relate this philosophy to their audience.

When speaking about color references, Gluck speaks of their Disney's final decisions as "an informed, educated, non-combative guess." Contrary to what might be expected, Disney does not often have IB Tech prints to reference, although Gluck will go so far as to reach out to the collecting community when he can procure one. When these prints are not to be found, Gluck's team, headed by historian Dave Bossert, makes ample use of the cels and backgrounds at the Animation Research Library (ARL). Both Bossert and Gluck recognize that the cels at ARL aren't completely accurate records either, since they were made with the Technicolor process in mind;

> It's interesting that when they painted backgrounds, they compensated for what it would look like on film, knowing that the contrast and saturation would be boosted … We were fortunate to have a full range of backgrounds available representing the full color palette. So what we did was we re-photographed those onto successive exposure film stock that was close to the chemistry that they used back then. We used this as our baseline for color correcting the film. That is why the color is so accurate.[16]

Bossert's comments here, made for *Animation World Magazine*, should be taken with a grain of salt, since any polyester stock that is available today could not possibly be "close to the chemistry" of a an early 1940's nitrate stock. In addition, telling the reporter "that's why the color is so accurate" is

[16] Quoted in Bill Desowitz, "Bambi: Restoring the Original Circle of Life on DVD" *Animation World Magazine* (March 1, 2005) http://mag.awn.com/index.php?ltype=search&sval=&article_no=2413&page=1 (accessed June 11, 2007)

misleading, as the reporter presumably would have no idea how to define "accurate" if the very people in charge of determining this accuracy have to go to such lengths to assess it. Still, Disney's fortitude in pinpointing these color levels is admirable, and Gluck's comments about the same subject are always qualified with a level of modesty.

Animation cel art conservator Ron Barbagallo agrees that the only way to ensure a level of color accuracy using cels is to test the way the colors imprint on the film by using wedge tests:

> The art created for principal photography bears a strong relationship to the original negative and positives created specifically for each film. The colors chosen for opaquing and inking and for the backgrounds have a greater role in how they appear on projected film than most people know. And it was all very intentional. […] Restoration for film almost always ignores that fact, isolating colors instead of looking at the big picture and the way the colors were originally tested to reproduce on an individual film stock.[17]

The disconnect here lies in the fact that Disney is doing what Barbagallo says they should do, but he is, because of his background and his set of restoration aesthetics, still completely critical of the results of the process. He is particularly critical of the restoration of *Snow White*, the cel art for which he is intimately familiar and works with every day. He says that the colors represented in the cel art are in no way reflected in either the 2001 DVD or the released print; "With *Snow White*, it's all about the local color, its all about the umbers, and the original negative and positive showed that."

Barbagallo is not alone in his criticisms. The problem may well lie in the fact that people like Bossert and Gluck, who are fully versed in the historical and technical issues that led to the production of these films, aren't creating the best flow-through to pass that information along to their vendors, a notion that historian Jerry Beck has pointed out; "The marketing people who create the product concept, and the engineers who master the videos, don't talk to each other. One hand doesn't know exactly what the other hand is doing." When asked whether she gets to see the cels

[17] Ron Barbagallo (Animation Cel Art Conservator), in discussion with the author, February 2007. All other quotes attributed to Barbagallo are derived from this interview.

and wedge tests, Ross replied that unfortunately Disney not bring that information in at the beginning. In fact, they never see the tests or the color research because that information is only used to correct problems during various stages of the digital process. So Bossert may be using all of this intensive research to give Ross guidance, but if she doesn't actually SEE the tests, what level of accuracy can she really achieve? Ross knows how a color separation master looks once it comes to her workstation, but when asked about specifics related to the shooting of a particular film, she was not aware of the issues at hand. For example, she said, "In *Lady and the Tramp* they had this glare in the middle of the camera a lot where it would just be faded in the center or the side or sometimes on the bottom." I asked whether this was an effect of early Cinemascope lenses, and she said "I don't really know much about film stuff." I asked Gluck about this phenomenon with Lady, and he instantly knew that it had to do with "hot spots" of light that undoubtedly occurred because the lighting technicians weren't used to shooting such a wide image. This makes complete sense, but begs the question – why aren't Gluck and Ross having this conversation?

The goal here is not to criticize these miscommunications, but to bring them to light so they can be rectified. There is a very critical online animation community, full of enthusiasts as well as working animators, that unfortunately does notice when incongruities or over-correction takes place; "Colors have been changed and an effort was made to make them more uniform throughout the films - but different lighting situations and scenes and such means they wouldn't be the same at all. […] The DVD's of many of these films no longer look like films - they look like made-for-video "product". Cinderella III looks like the DVD of the first Cinderella, and that should not be the case."[18] What is very, very unique about these discussions is just how many people participating in them are completely savvy to all of these processes, suggesting that the "public" that studios like Disney must impress is far too varied to please it its entirety. Two posts later on the same Disney

[18] Chuck Pennington, "Disney 'Digital Restorations'" Home Theater Forum, February 22, 2007 http://www.hometheaterforum.com/htf/archive/index.php/t-252551.html (accessed June 2, 2007)

thread discussion as the post above, another participant countered with "I don't have a problem with the restored versions in any of these examples. When an image goes from original negative to dupe negative to release print (and sometimes more stages between), all kinds of things can happen to colors. I don't think the colors of any release print (and the video transfers of same) can be taken as gospel."[19] Warner Brothers' George Feltenstein recalls instances where consumers complained that they could see the built-in dirt, which, unlike Disney, they had made an aesthetic choice to leave in for the sake of authenticity; "We don't want to go in with a computer and mess with what was originally photographed. When we restore and preserve, we restore, we don't alter." Clearly, both of these studios have chosen schools of restoration – although by the very commercialism of their mandate, they both choose the "school of improvement", Warner also takes up a "school of archaeology" approach with sticking to certain limits in regards to digital alteration of the original. They have stuck with these paradigms, and defended their actions publicly.

Ironically, the pressure that Disney's restorers undoubtedly feel about these challenges is also felt by restorers like Lindner who work with obscure, independent and experimental titles. However, Lindner feels this pressure in a completely different way, as the community at large typically does not catch his color mistakes; "you think someone is going to jump on you and say you made this decision arbitrarily, but the truth is most of the time no one asks. If you show a new print to an audience, they will accept it and they will never question. You have a lot of responsibility. And the responsibility to be authentic really has no consequences for your job – if anything, it makes it harder." Lindner came into this problem with *Moonbird* as detailed previously, but the question of color integrity was particularly emphasized on the Fischinger film *Squares* (1934). The film was an experiment in questioning the very limits of the possibilities of color combinations that come with

[19] Jay Pennington, "Disney 'Digital Restorations'" Home Theater Forum, February 22, 2007 http://www.hometheaterforum.com/htf/archive/index.php/t-252551.html (accessed June 2, 2007) I think it is pure coincidence that these two share the same last name, as I inquired with Chuck and he does not know Jay personally.

separation printing processes; "Fischinger had 271 drawings photographed and loop-printed so that they appeared several times in the same and different colour combinations, positive and negative (which was easily possible by manipulating the filters used to print out the three-colour separation master)."[20] This made the restoration process a unique challenge.

Lindner had the original black and white successive exposure negative, but without a reference there would have been no possible way (with 256 options) to tell how to recombine them:

> One thing we could say is that there was a standard way to recombine the YCM successive exposures, so when you recombine them the standard way, that was the original look. But the original look doesn't mean anything if that's not how he did the print. […] You have like 12 or 15 color combinations, but he only chose four. And were any of those four the way the original cels looked? We wouldn't have known without a print.

Luckily, the Academy came across a nitrate print which was marked "NG" for no good due to a light leak. But because Fischinger kept the print, it was valuable to them as a reference on how to recombine *Squares* the way Fischinger intended. He had the lab match the colors on the print (still not an easy task, although he claims they enjoyed the challenge), and *Squares* now exists in its correct, original form at the archive.

Sometime during the interview with Theo Gluck, he became inspired and began to wax philosophic about the melding of the technical and the aesthetic aspects of his career; "I think you could point to any artistic endeavor, whether it is by a temple carver or someone who is getting Michaelangelo's paint for the Sistine Chapel, and at some point, an artist has gone to a technician and said 'Can you help me realize this vision?' At another point, a technician has gone to an artist and said, 'How can this thing I've developed help you further your vision?' And where the twain meet is something that has always intrigued me." In a similarly inspired moment two weeks later, Ron Barbagallo, said the following in his discussion of how to treat the restoration of classic animated titles, "I really think

[20] William Moritz, *Optical Poetry: The Life and Work of Oskar Fischinger*: 221.

they need to stop working from within a box … this has become such a plastic medium. Everyone purports to want to be Leonardo da Vinci or Michelangelo, but unfortunately most people don't have the patience to put in all the groundwork necessary to get there. They end up being Salieri rather than Mozart." Barbagallo and Gluck are as eerily similar in their lucid and inspired expressiveness as they are different in their approach to their work. Gluck has harnessed the world's most advanced digital restoration technology and applied his acute knowledge of the technical history of the film medium to approach his work, and Barbagallo's restoration of the same cel art that comprised these films is blisteringly intricate, organic and based on the same level of knowledge about ink and paint formulas, color fading and the visual integrity of an image. This begs the question – when shall the twain meet?

The answer, of course, is that the technician and the artist that Gluck mentioned need to move past the initial conversation that involves the simple sharing of expertise. In the case of most of these films, when the actual artist has passed on, the restorer acts as a proxy on their behalf to ensure the project's aesthetic integrity. The collaboration between the preservationists and the technicians, whether they are lab technicians or digital colorists, needs to extend into every aspect of the restoration of an animated title. The restorer must have a background steeped in the historical knowledge of the issues that led to the production of these films, and he or she needs to fully communicate those issues to the technicians. As Walt Disney once said, "When we do fantasy, we must not lose sight of reality."[21] And the restoration work afforded to an animated fantasy deserves just as much respect and integrity as any other project.

[21] Quoted in Richard Schickel, *The Disney Version*: 200.