

THE MUNNS REPORT

Release Number 1A - The Film Genealogy

This Report reflects an ongoing analysis by Bill Munns
of the 1967 Patterson - Gimlin Film.

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PG Film copyright: Patricia Patterson

Released May 27, 2009

The Munns Report Release 1A - The Film Genealogy

This report release focuses on the physical film itself, and two specific issues of the film which factor into any analysis. One is film cropping, and exactly what constitutes "full frame" (which is necessary for photogrammetry analysis) and the other is film copying processes and results.

This is an ongoing investigation and I will report now as much as I have determined, and I will update it as new information becomes available to me.

Issue One - Film Cropping

If you are not familiar with the term, "cropping" (in photography) refers to trimming, reducing or altering the apparent photo image edges, so the resulting image is not the same in its content as the original source camera original.

For example, if you had your picture taken with a standard 35mm film camera (or equivalent 35mm digital camera), the camera original image would have a ratio of width to height of 3:2 (or 2:3, for a vertical composition). If you wanted to print a picture 8" high, in a horizontal format, it would be 12" wide. But picture frames come in standard 8" x 10" sizes, so to fit that standard frame, you would crop the original 8" x 12" picture to 8" x 10", cutting off a total of 2" from the side or sides.

In the Patterson Film, there has been both "process cropping" (automatic and arbitrary) and "deliberate cropping" (requiring a person's decisions). Both are reasonable actions for some intended result. To appreciate both, I will begin with a basic description of copying processes for films.

Contact Printing

Generally, film may be copied in two ways. First is a contact print, whereby the master film (already developed with an image on it) is run through a film printer continuously with a copy rawstock (undeveloped film) held in direct contact to the master film. A light is shined through the master film onto the copy rawstock and that copies the film's images, frame by frame, onto the copy film stock. The copy stock is then developed and yields a copy of the master. The contact print process may allow the light to shine through every bit of the master film, edges and sprocket holes included, and this is done when there is a printed edgecode on the master which the copy stock should have as well. This is common for assistance in editing film.

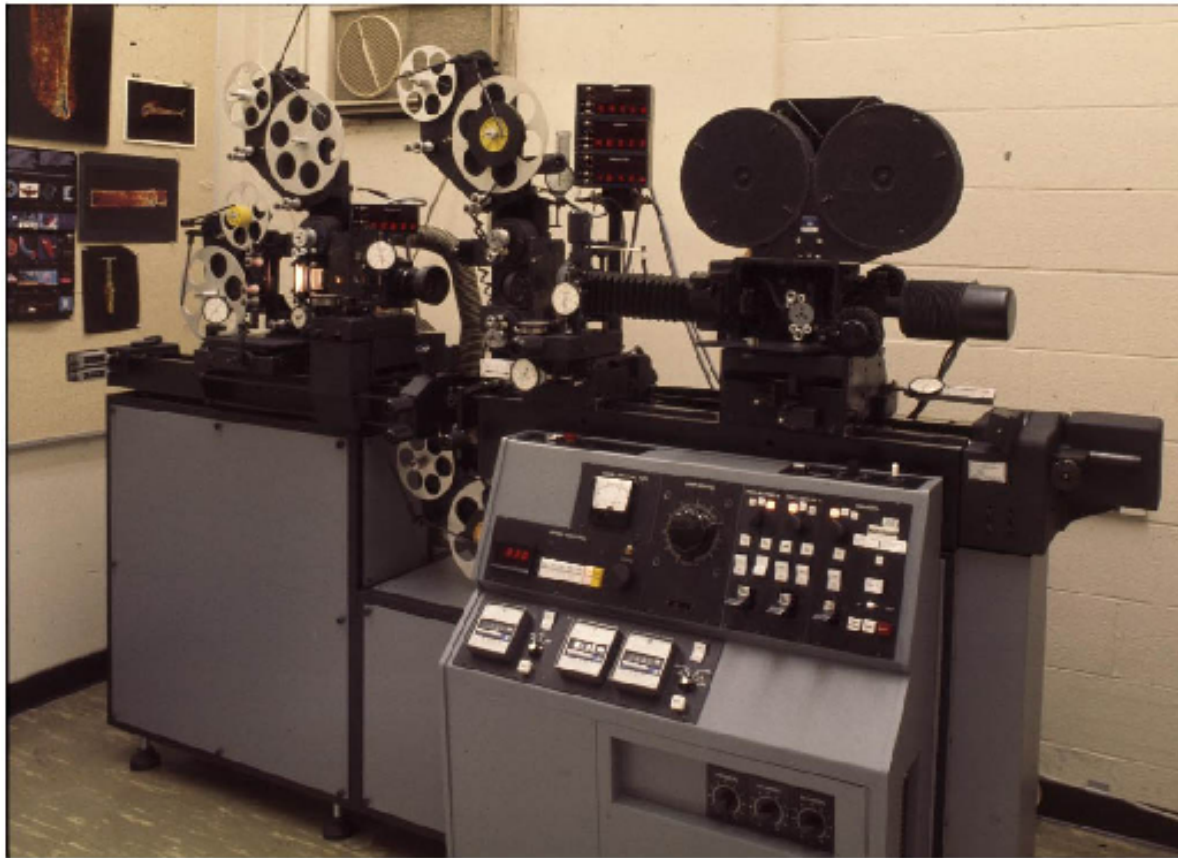
Or a contact print may mask off the area of the edges and sprockets so no light hits those parts of the copy stock, to preserve the latent image film stock identification the manufacturer puts into the film rawstock. Shining a light through the master film edges would print the master film's edge film identification on the copy, and create confusion.

Both processes are common, depending on the intended uses of the film copy being made.

In the case of the Patterson film, the true first generation master copies reportedly made are contact prints, but with the side areas masked off. This will be described and illustrated in more detail further in the notes.

Optical Printing

The second copying process is to use an optical printer. The optical printer is a device that has , in simplest terms, a film projector pointing into a film camera.



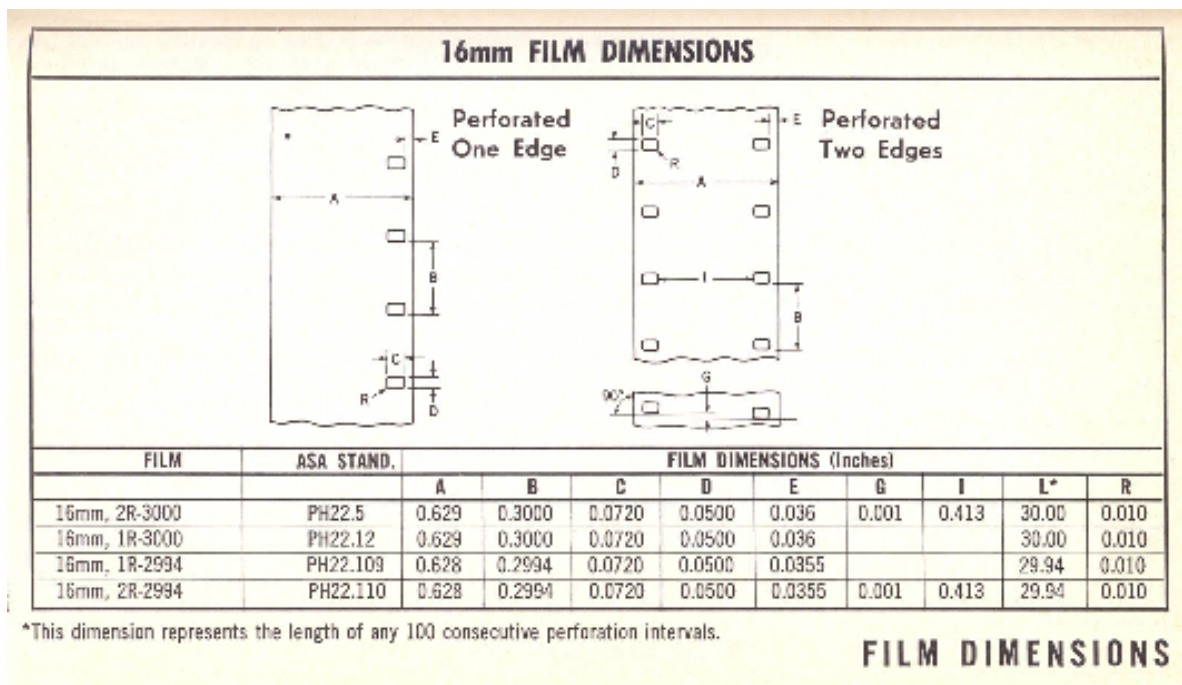
The master film is loaded into the projector side (the left, above), and the copy rawstock is loaded into the camera side (the right, above). The light shining through the projector and master film projects the film image into the camera side, where it is captured on the copy film. The reason for this more complicated process is that you can copy the film in a variety of ways, and the PG Film was copied by this process in several ways. For example, you can copy 1:1 and the copied image on film is about the same size as the projected image. Or you can copy 2:1 (zoomed in) so the copied film image is an enlarged version of a part of the original film. Or you can freeze frame, by printing the same single master image frame over and over, frame after frame, on the copy stock. Or you can print the master film images twice or three times on the copy stock, to make a "slow-motion" version of the film. All for of these examples were done to the PG Film.

Each of these copying processes has some distinctive characteristics, and understanding those, we can better sort out the copying genealogy of various film or film frame versions.

Full Frame Ambiguities

Full Frame - This term is widely used, more often incorrectly than correctly, so I'd like to clear this up first. In general terms, it means the total film image taken by the camera onto the original camera film stock. And there is a common assumption that there is one standard image size for "full frame 16mm film". This is incorrect. There are several variations of this term, largely dependent on the camera used.

The American Society of Cinematographers, the Hollywood professional association for cinematography, publishes a book called the ASC Manual, informally called "the cinematographer's Bible". It has all the information one could want about cameras, lenses, film stocks, photographic and lighting principles, etc. The ASC Manual lists the industry standard specifications for 16mm camera film, as shown here:



The ASC Manual also lists a standard 16mm full frame aperture size (the "window" shape opening on the camera which controls what part of the film has light shine on it to make the film's image) as 0.402" wide by 0.292" high. It is highlighted below with a red line, for reference. So in general principle, this is "full frame".

16mm CAMERA DEPTH-OF-FIELD, HYPERFOCAL DISTANCE & FIELD OF VIEW									
LENS FOCAL LENGTH: 25mm					Circle of Confusion = .001" (1/1,000")				
(Field of View is based on FULL 16mm Aperture: .402" x .292")									
Hyperfocal Dist.	38'8"	28'10"	20'2"	14'5"	10'1"	7'4"	5'0"	3'8"	
	f/2	f/2.8	f/4	f/5.6	f/8	f/11	f/16	f/22	
LENS FOCUS (FEET)	NEAR FAR	NEAR FAR	NEAR FAR	NEAR FAR	NEAR FAR	NEAR FAR	NEAR FAR	NEAR FAR	FIELD OF VIEW
50	22'9" INF.	19'6" INF.	15'1" INF.	11'8" INF.	8'8" INF.	6'5" INF.	4'8" INF.	3'6" INF.	14'2"x18'9"
25	16'5" 16'1"	14'8" 13'F.	12'1" INF.	9'8" INF.	7'7" INF.	5'11" INF.	4'4" INF.	3'3" INF.	7'1"x9'5"
15	10'8" 25'2"	9'11" 30'11"	8'8" 58'9"	7'5" INF.	6'1" INF.	5'0" INF.	3'10" INF.	3'0" INF.	4'3"x5'8"
10	8'0" 13'9"	7'5" 15'2"	6'9" 18'6"	5'11" 31'6"	5'1" INF.	4'3" INF.	3'5" INF.	2'8" INF.	2'10"x3'9"
8	6'7" 10'2"	5'3" 11'0"	5'9" 13'1"	5'2" 17'6"	4'9" 35'10"	3'10" INF.	3'2" INF.	2'9" INF.	2'3"x3'0"
6	5'2" 7'2"	5'0" 7'6"	4'8" 8'5"	4'3" 10'1"	3'10" 14'3"	3'4" 29'4"	2'9" INF.	2'4" INF.	1'6"x2'0"
5	4'5" 5'9"	4'3" 6'0"	4'0" 6'7"	3'9" 7'6"	3'4" 8'7"	3'0" 14'8"	2'7" INF.	2'2" INF.	1'5"x1'10"
4	3'7" 4'5"	3'6" 4'7"	3'4" 4'11"	3'2" 5'5"	2'11" 6'5"	2'8" 8'9"	2'3" 16'9"	1'11" INF.	1'1"x1'6"
3	2'10" 3'2"	2'9" 3'4"	2'8" 3'6"	2'6" 3'9"	2'4" 4'2"	2'2" 5'0"	1'11" 7'1"	1'9" 8'2"	9"x12"
2	1'11" 2'1"	1'11" 2'2"	1'10" 2'3"	1'9" 2'4"	1'8" 2'5"	1'7" 2'8"	1'5" 3'3"	1'3" 3'10"	6"x8"

16 DEPTH OF FIELD

However, various 16mm cameras have their own aperture size, and may expose more or less of the film image, depending on their design.

So the following images show the true camera apertures of various camera, some of which I have identified and some I have not yet identified. In each case below, on the left is an actual frame of film from the camera, and to the right is the outline of the frame image shape as compared to the film and sprocket holes.

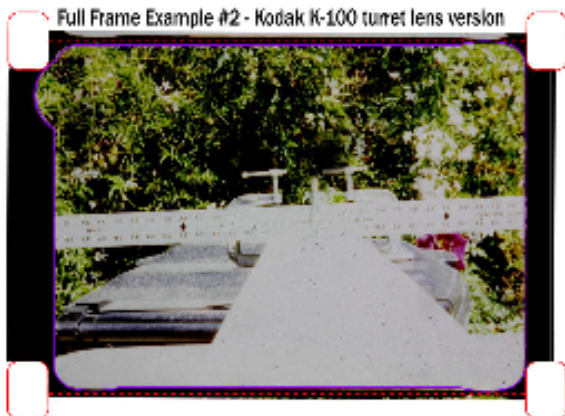
Note that I have shown a double perf film diagram (perforations on both sides of the film). Camera stock is generally single perf (holes only on the left), while copy film stock may be double perf stock (perfs on both sides).

Example #1 - A Kodak K-100 camera, with single lens (owned by Chris Murphy and loaned to me for filming tests). This is the type camera all reports say Roger had at Bluff Creek for the PG Film. A very curious feature of this camera is a distinctive circular notch in the upper left corner, near the upper perforation, which likely was made as part of the machining of the aperture mechanism metal part. So far as my research has determined, no other camera has this distinctive feature.



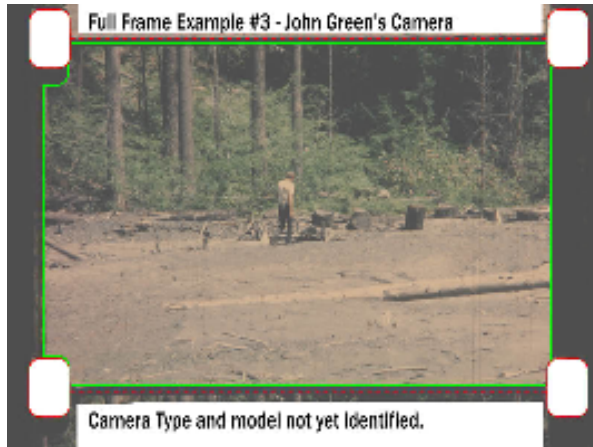
Notch The Blue Outline is the true full frame shape of a camera original film shot with the K-100, single lens version (actual camera owned by Chris Murphy) Note the distinctive notch in the upper left corner.

Example #2 - A Kodak K-100 camera, with a three lens turret, (owned by Daniel Perez and loaned to me for some filming experiments).



Notch The Purple Outline is the true full frame shape of a camera original film shot with the K-100, turret lens version (actual camera owned by Daniel Perez) Note the distinctive notch in the upper left corner, plus the curves on the other corners as well.

Example #3 - John Green's camera used for filming the McClarin tests at Bluff Creek. This camera make, model, and lens specification are not yet determined, but may have been a 16mm magazine camera (which takes a 50' magazine load instead of a 100' daylight spool load, as the K-100 does.) And the lens may be a zoom lens, as suggested by photos of John Green in August 1967 at Blue Mountain, investigating a possible sasquatch occurrence, and he is seen with a film camera that has what appears to be a zoom lens on it.



The Green Outline is the true full frame shape of a camera original film shot by John Green for his recreation of the filming with Jim McClarin seen in picture. This camera is believed to be a 50' magazine load type camera, based on frame shape. Make, model, and lens are not yet determined.

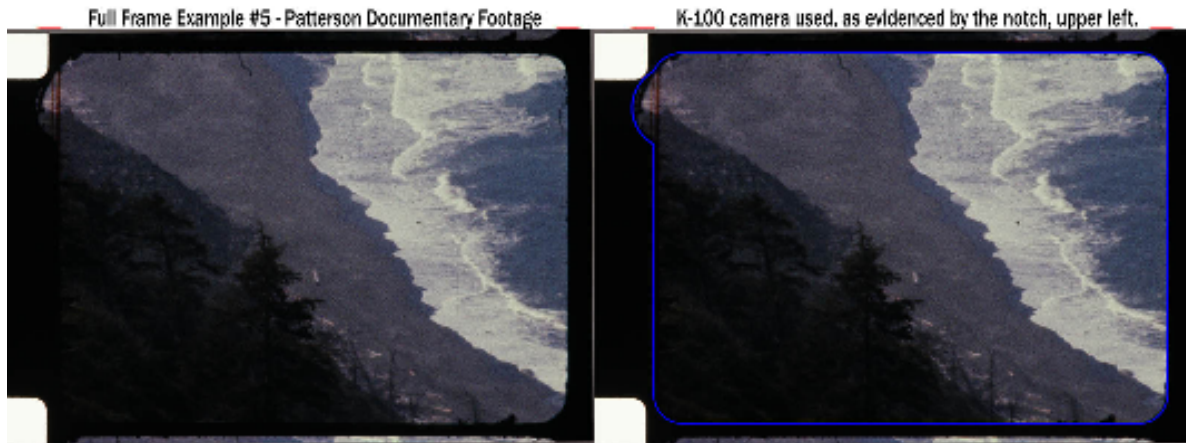
Example #4 - A camera used by Roger Patterson in 1967 before the Bluff Creek filming, when he was apparently filming his documentary. It clearly is not the Kodak K-100, but no data has yet confirmed the specific make and model we can say it is.



Camera type and model not yet identified.

The Yellow Outline is the true full frame shape of a camera original film shot by Roger Patterson for his documentary film. This was not filmed with a K-100 camera because the frame lacks the notched area, but captures more image into the perforation zone, which a K-100 does not.

Example #5 - A frame from Roger Patterson's documentary, filmed with the K-100, as evidenced by the distinctive notch in the film in the upper left corner.

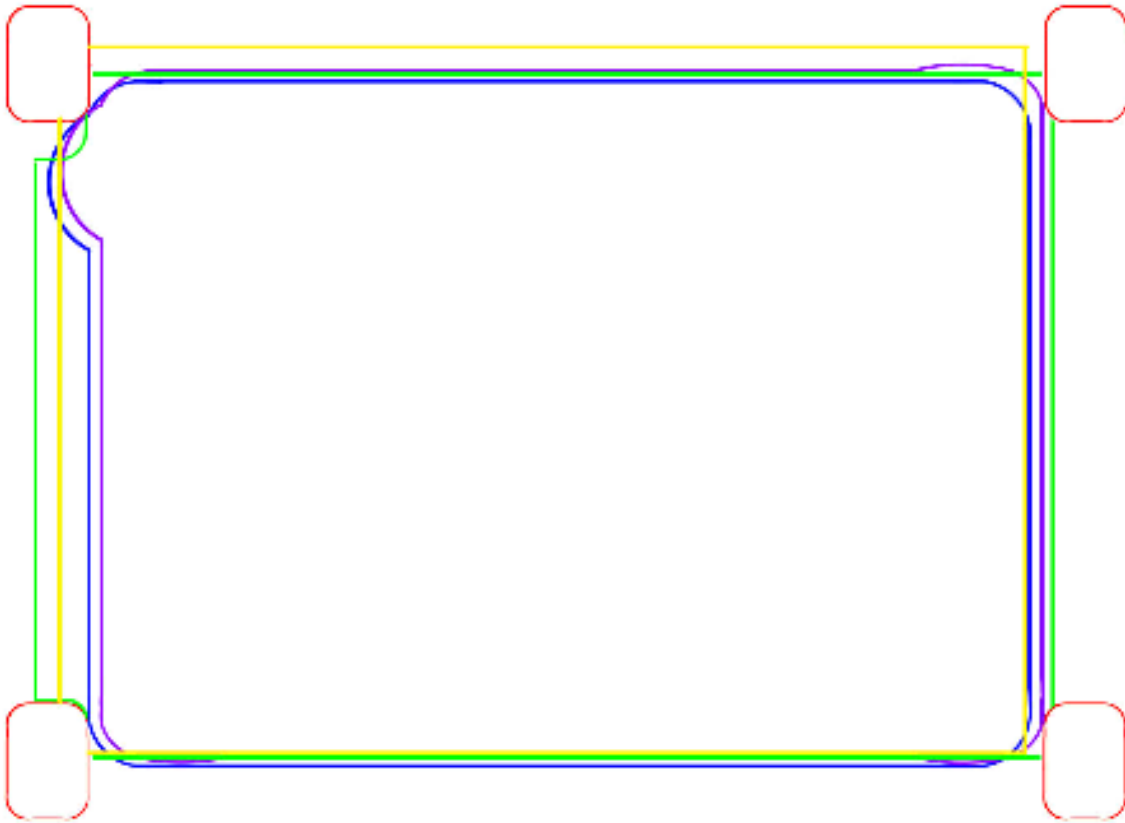


For the above five examples, items #1 and #2 were filmed and scanned by Bill Munns.

Item #3 was filmed by John Green and scanned by Bill Munns

Items #4 and #5 were filmed by Roger Patterson, and scanned by Bill Munns

Comparing the frame outlines together, you can see how the designation "full frame" becomes dependent upon determining the camera used, and the dimensions will vary from the ASC generic standard size of 0.402" x 0.292".



For the PG Film analysis, the Example #1 above, the K-100 camera with a single lens configuration, is the presumed match to the PG Filming. by all reports, so that becomes our reference "Full Frame" for PG Film analysis from this point on.

Once we have established what a PG Film "Full Frame" is, we can identify cropping to image shapes other than the original true full frame, and that will help sort out what types of copying were done on the film versions we see.

The following chart (next page) shows some known croppings of the film. The characteristic curved notch in the left edge near the higher sprocket hole is reconstructed for illustrative purposes, because we have not yet located a true full frame image scan of the PGF camera master which included this notch. I have, however, found evidence of the notch on an apparent true first generation contact print copy, which will be described later in this report material.

For the chart that follows, the five images shown represent the following:

#1 - True full frame for a Kodak K-100 camera, including edge notch.

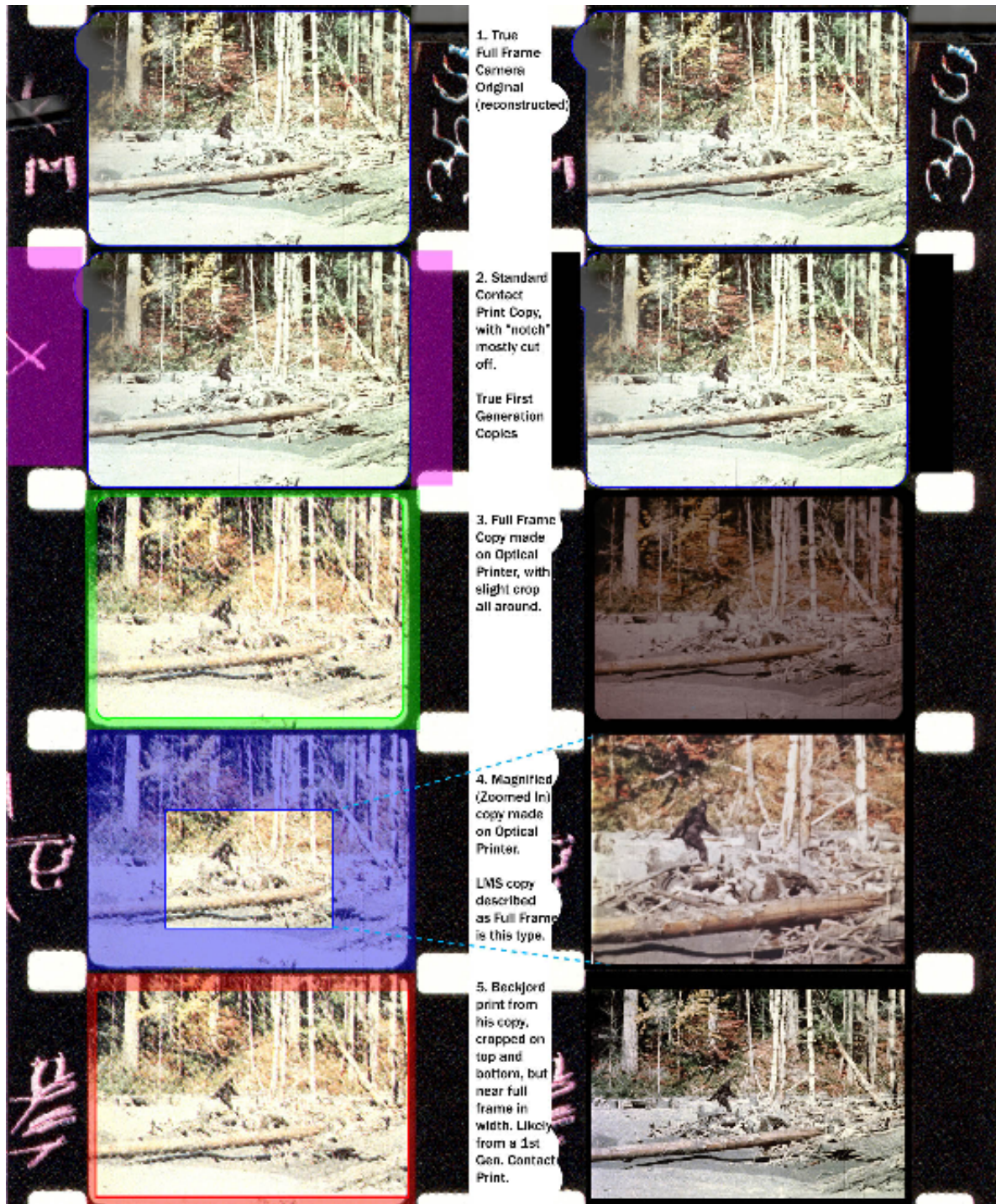
#2 - True full frame, contact printed (cutting off most of the notch, but otherwise intact.)

#3 - Optical printing copy, which has a aperture gate window on the camera side, slightly smaller than the original full frame, thus cropping a small percentage of the frame border areas. My scan of John Green's film is this version.

#4 - Zoomed Optical Printing, which enlarged the center area by about 2x, making a "zoomed in" copy. This is the LMS version which is credited as being "Full Frame" in the LMS DVD. It was apparently mistaken to be full frame because the image spanned the width of the film and showed the sprocket holes, so the video scan was a full frame scan of this zoomed in version.

#5 - A frame 352 still (which is actually frame 353, not 352) widely circulated on the internet as a "full frame" version, but it is slightly short of full width, and very short of full height. It comes from a frame scan of a film copy Erik Beckjord possessed, possibly a true 1st generation copy.

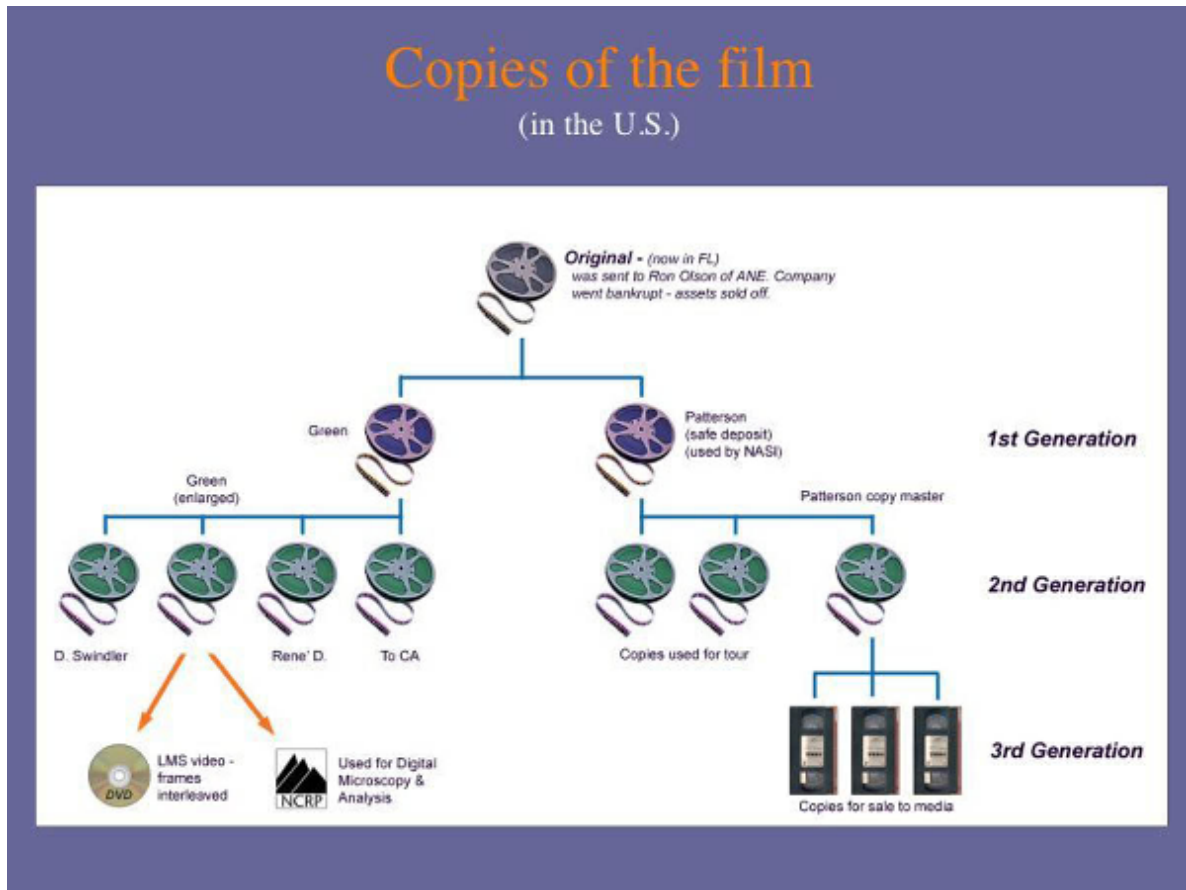
For each below, on the left side is any indication of the cropping areas, in a colored section, and on the right is the same image showing how it appears once it is cropped.



Suffice to say, there are a multitude of other croppings of the various still images posted on the internet and in books on the PG Film.

Film Genealogy

The chart below has been widely circulated as illustrating what film copies exist and who has them. For a long time, I relied on this chart, as did most other people, for our understanding of the film copying history.



However, I now know this chart is incorrect, with no disrespect to whoever made it. The film's copy history is very confusing, and sorting it out is a work in progress for me. The following description is what I know so far:

1. The camera original - which nobody can get access to today. If it could be located and scanned, it would look like the reconstructed image below (with the distinctive notch of the K-100 camera). Perhaps the most intriguing thing, for me personally, from this research, is the thought that if the camera original were to miraculously be available, this research on the edge notch would be one excellent manner to authenticate it as actually being the true camera original.



2. True First generation contact print copies - Various reports say anywhere from two to five were made from the camera master. Patricia Patterson verifiably has one now, in a safety vault, and this copy was reported scanned by Jeff Glickman for the NASI Report. That is the only known scan of this particular film copy, and the scan data is known to still exist, but is in the possession of a person (not Glickman) who has no apparent interest in making it accessible. Given it was scanned over 10 years ago, the scan data format may not even be used today if it were accessible.

A 2nd true first gen copy is reported in the top chart to be held by John Green, but I have personally met him and evaluated his film inventory, hoping to scan that version, and he does not possess it as reported, and has no knowledge of ever having had it in his possession. So that is incorrect.

A true first gen copy is believed to be in the possession of Eric Beckjord's relatives, and a scan from that film of frame 353 (mistakenly called frame 352) indicates a near full frame width (more than an optical printed copy) and a higher quality image than the optical printed "full frame" versions I have inspected, so I believe the Beckjord copy may indeed be a 2nd true first gen contact-printed copy. Efforts to get access to this copy have so far been unsuccessful.

3. In the book "Mysterious Monsters" published by Time-Life in 1988, page 118, there is a photo of a film strip of the PG Film (shown below). I believe this is a photo of a true first gen contact print copy, full frame except for the notch, because the images in it equal the widest full frame versions I have located in any other image source. And it has a subtle remnant area of the aperture notch, as would be found on a contact print with the sprocket areas masked off in the printing. The numbering, however,(the 350 and 360) appear to be one frame off our traditional frame designations, and there's no scratching markers on 352, but are on 351 and 353-354. That discrepancy has not been resolved yet.



Below is an enlarged area of the lowest four frames, explaining in more detail why I feel this is a true 1st generation contact print.



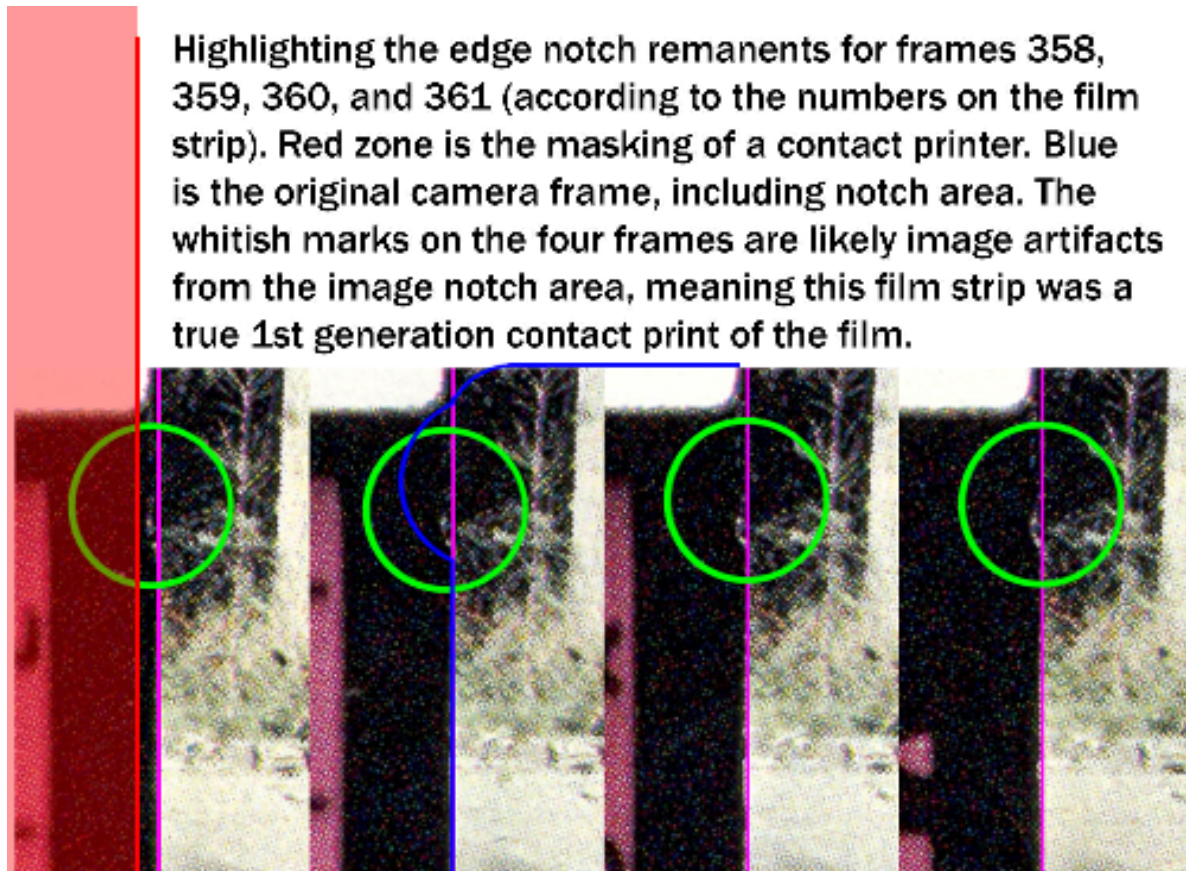
This film strip appears to be one of the few images of a true 1st generation contact printed film copy. It has the largest film image area, in terms of content, of any known frame images.

It was not cropped on an optical printer, as most known copies are.

And it has trace image marks (circled in green) on four frames outside the normal left vertical frame edge, exactly where the distinctive notch is located on the Kodak K-100 camera.

And the notch area has been almost, but not fully, masked off by a contact printing method which prevents printing into the sprocket areas of each side.

The following chart now enlarges the four green circled areas, where the whitish image artifacts are visible.



So based on a combination of frame size (a larger area of image content than I find on the optically printed version I scanned from John Green's archives) and the evidence of image content in the notch area, which is totally lost in an optical printer version but partially preserved in a contact printer version. I believe this film strip was one of the 1st generation copies originally made. The edge numbering scratched on it (specifically the "350" and "360"), suggests this was the copy the frame count was made from, resulting in the frame numbering system we use today.

It should be noted however, that the edge numbering appears off by one frame, and the famous frames copied to Cibachrome may be the frames marked with a scratched "x" or similar shape in the left side sprocket zone, if the one frame offset is correct.

Optical Printed Versions - As noted above, an optical printer was used to make several versions of the film, several but not all of which are shown on the LMS DVD. The four known optical printed versions are :

- A. "Full Frame" - which is actually slightly cropped.
- B. Zoomed In - The most common version shown, because it enlarges "Patty" well.
- C. The Slow Motion Version - printed to repeat frames and slow down the film pace
- D. The Frame 352 Freeze frame - essentially printing that single frame over and over so even when projected, the image seems still.

So, at some point in time, a master or copy was sent to a lab for all the above optical printing versions. The questions still unanswered are:

1. Was the camera original or a first gen copy used as the source? The original film history chart shows a first gen copy as the source for the optical printed copies. I have not yet been able to verify this, or determine if the true camera original was used. Investigation of this continues.
2. Was one optical printed "master" of the four versions done, and all subsequent copies made from this master, or were several optically printed masters made? So is there (or was there) one best optical printed "master" or several equally high quality masters made? This also I have not yet determined. John Green possesses multiple copies of all the four types of optically printed versions, but none is the "master" as much as we can determine. So the where-about of the Optical printed master (or masters) is currently not known to me.

From this one or more optically printed copies, multiple copies were made and also copies of copies were made.

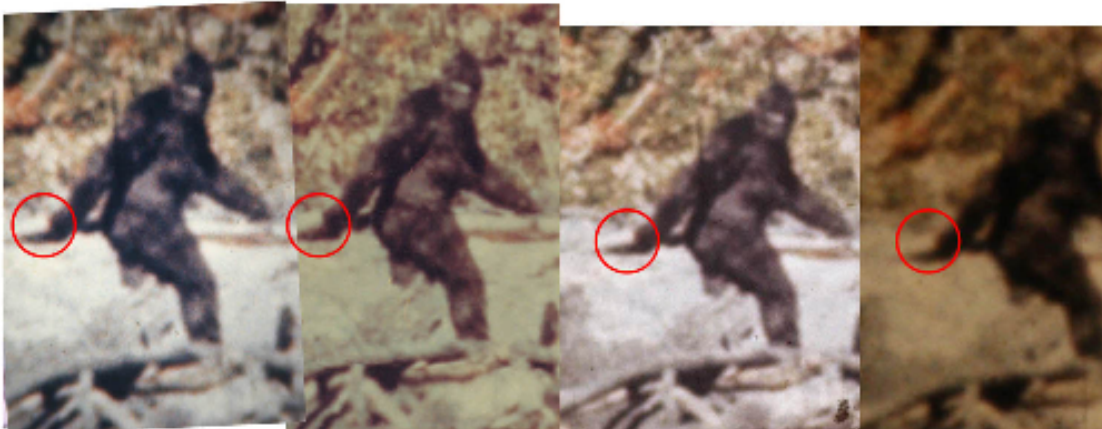
Genealogy by Image Artifact Analysis

Another method I am using to try and organize the film's genealogy is to look for flaws or artifacts which tend to copy over into all their derived copies. The best example is the rearward hand of the subject in frame 352, where the Cibachrome image made picked up a strange artifact many people have mistaken for a hand, fingers and thumb. So we can easily divide F352 images into two families, those derived from the Cibachrome original (because they too have the hand artifact), and those images derived from the true film, which do not have the artifact.

Film Genealogy Study - F352 artifact on hand - the above four images all have the artifact which makes the hand appear to have a thumb and curled fingers, so they all derive from one source image that has that artifact.



All the images below do not have the hand artifact, so they all derive from a source image that does not have the hand artifact. So the two groups represent two distinct branches of the film image family tree.



Other scratch marks and artifacts can be used in various frames, to see if the copies are related, because if they have a common scratch or artifact, they have a common copy heritage to some extent. I tend to use F352 because there are more versions of it than any other single frame of the film.



Above left, the magenta lines show scratches on F352 that are consistent across all copies I have inspected. And these scratches are different from the green lined scratch marks for F353. So a F352 can be separated from an F353 by this study of scratch artifacts.

Given the scratches seem to be on all copies, including the very fine Beckjord frame (lower right image, above), I believe these scratches were on Patterson's camera original from the early projection of it before any copies were made. Thus all copies have this scratching as well.