

Before the

U.S. COPYRIGHT OFFICE, LIBRARY OF CONGRESS

**In the matter of Exemption to Prohibition on Circumvention
of Copyright Protection Systems for Access Control Technologies Under 17 U.S.C. 1201**

Docket No. 2014-07

**Response of Electronic Frontier Foundation and Organization for Transformative
Works to June 3, 2015 Copyright Office Questions on Proposed Class 7**

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1. Whether the exemption should include videos made for educational purposes.

Proponents believe that the exemption should use the current formulation “noncommercial,” which inherently includes numerous educational uses. This fact could be clarified in commentary, just as the Office has previously clarified that nonprofit entities can pay to create noncommercial videos. Opponents provided no evidence that the current noncommercial exemption is functioning poorly.

There are at least three reasons the Office should leave “noncommercial” as it is in the current exemption: First, students don’t leave their fair use rights any more than their other First Amendment rights at the schoolhouse door. *Tinker v. Des Moines Independent Community School District*, 393 U.S. 503, 506 (1969). In fact, they are particularly likely to produce commentary when they are engaging in studies such as those promoted by media education classes, as Professor Hobbs explained in her submissions and her testimony.

Second, excessive wordsmithing to deal with posited overlaps has clear negative consequences:

(a) It is likely to heighten the difference between “providing guidance” and “narrowing.” As discussions at the hearings indicated and experiences in other fields such as tax law demonstrate, a very narrow exception is likely to be very unclear, whereas an exemption focused on fair use can take advantage of the guidance provided by decades of cases, best practices guides, and other resources.

(b) Separately, narrowly written exceptions attempting to avoid overlaps run the risk of excluding uses the Office meant to include but inadvertently wrote out. For example, National History Day videos are usually not part of any specific instructional program because they are an extracurricular activity—but they are also educational and schools do sponsor teams. Likewise, students routinely post their final projects on YouTube to show friends and family their work, and their fair uses are equally entitled to the “noncommercial” exemption covering other YouTube posters like NCAI. Moreover, a young woman such as the vidder Professor Coppia discussed, who was an experienced vidder before entering college, might on her own initiative make a vid critiquing the male gaze in a popular television show. She is currently entitled to the noncommercial exemption, but a poorly worded restriction could cause her to lose it. Opponents have not identified *any* noncommercial educational fair uses that qualify for the noncommercial exemption that ought to be excluded in the future.

Third, overlaps in exemptions are often warranted, precisely in order to remove doubt and ensure that conduct worthy of protection is protected. For example, the exceptions to the federal trademark dilution statute have clear redundancies. *See Radiance Foundation, Inc. v. N.A.A.C.P.*, — F.3d —, at *12 (describing the exemptions as “overlapping”). Sections 108, 110 and 121 of the Copyright Act likewise protect conduct that could also qualify as a noninfringing fair use. *See Authors Guild, Inc. v. HathiTrust*, 755 F.3d 87, 103 & n.7 (2d Cir. 2014) (copying for print disabled was fair use, though 17 U.S.C. § 121 was also argued as independent basis for defendant’s victory). That said, if the Office determines that a noncommercial fair use exemption makes a separate educational exemption for K-12 students unnecessary, we would welcome such an explicit finding.

2. The quality of the audiovisual exhibits submitted by the opponents at the hearing, Exhibits 31-34.

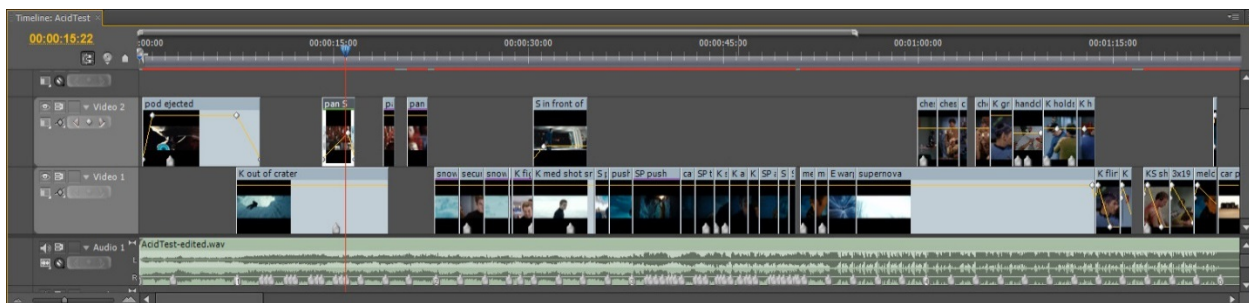
Given the opportunity to elaborate regarding the exhibits submitted at the May 27 hearing, Professor Tisha Turk offers the following comments:

Exh 31 *Matrix MP4 720x486 23.97 fps.mp4*: The most obvious problems with this video clip are the frame size (720x486) and a non-standard aspect ratio somewhere between standard TV (4:3) and widescreen TV (16:9). Capturing the DVD as-is should result in a frame size of 720x480 with letterboxing at top and bottom, for an aspect ratio of 16:9. Resizing to the correct film aspect ratio of 2.35:1 would result in a frame size of 848x480 (with letterboxing) or 848x360 (with letterboxing cropped out). I can’t tell whether the dimensions of the exhibit clip should be attributed to the capture software or to user error, but the result is that all the characters are vertically stretched, or horizontally squished, to the point that even a casual viewer must notice the problem (as indeed some members of the Copyright Office did notice when the exhibit was presented at the hearings). For someone who works closely with video, the incorrect aspect ratio is the visual equivalent of the sound of nails on a chalkboard.

Exh 32 *Premiere Demo Matrix.mov*: The producer of this video has

1. used Premiere's razor tool to splice a clip;
2. spliced four frames of The Keymaker into a different part of a single scene;
3. resized and recentered two clips; and
4. added cross-dissolves to clip segments that were already next to each other in a scene.

Using the razor tool, creating cross-dissolves, and resizing clips are indeed important basic moves for beginning video editors. However, a vid typically contains one to two hundred separate clips, requiring substantially more processing and initial quality. Compare, for example, the rough cut of the first minute and fifteen seconds of the Adobe Premiere timeline for an actual vid ("The Test," available at the OTW's Fair Use Test Suite):¹



In many cases, most if not all of those clips have been modified, often in multiple ways. Vidlers change scale (zooms) and opacity (dissolves), but also speed; change color balance, levels, saturation, and gamma; flip clips horizontally; add glow, lens flares, and text; carefully keyframe and manipulate blurs; layer multiple clips on top of each other; apply masks and mattes in order to insert part of a frame seamlessly into another frame. Some effects are applied to specific clips; others are applied to the vid as a whole. Heavy use of effects is especially common among newer vidlers, as exemplified by *Worthy* [Exhibit 28]. As Professor Coppa noted in her testimony, young women are often among the most aesthetically savvy and technically demanding vidlers.

In short, opponents were able to successfully import a single clip into Premiere and perform a few very basic operations on it (with decidedly mixed success). The exhibits prove nothing about the ability of captured video to stand up to the real-world aesthetic and technical demands of a vidler creating a full-length vid for an audience knowledgeable about vids.

Exh 33 *Side_By_Side_Matrix_Comparison_Long.mov*: The difference in size between the original video capture on the left and the edited version on the right demonstrates one problem with screen capture: because captured footage seldom conforms to standard frame sizes (and in this case has the additional problem of incorrect aspect ratio), it does not fit any of Premiere's standard export profiles, and so the exported video's width and height are both reduced from the original video capture.

¹ <http://transformativeworks.org/projects/vidtestsuite>. For a screenshot of a vid timeline in Cinelerra, see <https://beccatoria.dreamwidth.org/111857.html>.

This video also demonstrates one of our main concerns about the visual quality of screen capture. Resizing any clip reduces its quality, which only exaggerates the initial quality loss produced by capturing rather than ripping. The difference at 0:05 is difficult to see because the video cuts to the Keymaker for only four frames, but if you manage to pause the video during those frames, the degradation of definition and clarity are apparent. The loss of quality is easier to see at 0:17, where Morpheus and Neo have even less definition in the resized clip than the already-flawed original. The problems would be even more obvious in a video with correct aspect ratio; in the exhibit, the actors' unnaturally narrowed faces already look so strange that the quality reduction is less glaring than it might otherwise be. Compare the following stills taken from Exh 33 as-is and corrected so that it has the proper aspect ratio:



(All images are shown at 50% of their original size in order to fit this page.) For reference, the same still from the original DVD:



Again, as-is and corrected to proper aspect ratio:



Exh 34 *Family Guy Images.pptx*: It is telling that opponents chose for this exhibit to use frames from *Family Guy* rather than from *Matrix Reloaded*. The exhibit shows reduced aliasing and visual noise (most visible around diagonal and curved lines) in individual frames of animated footage. However, a close look at any of the slides, especially 4, 5, and 6, shows that this process works in part by making large areas of a single color more flat and consistent. This trick works only for very simple animations with little shading or color gradation: it can fix Peter Griffin's skin, but not Keanu Reeves'.

Proponents also consulted with vidder Ian Roberts, who has extensive experience working with media footage including traditional animation, 3D and computer generated animation, and live-action film, including considerable experience remastering footage to showcase his transformative art. He has worked with all kinds of source quality from early silent film to modern ultra-high resolution computer generated footage. He is the author of a series of technical guides that detail techniques for enhancing visuals, particularly 2D animation.²

Mr. Roberts offers the following general comments:

with 2D animation, because of the simplicity of the image, software can restore parts of the image where the pattern has been disrupted. 2D animation contains simple shapes that can be detected by software. Furthermore, 2D animation is created frame by frame and many of these methods operate spatially — on static images — one at a time. In restoration terms, it is, for these simple images, as easy to restore as it would be for someone to restore a smudged line on a dry-erase board. The principle is the same - erase the smudge and fill in the line to sharpen the edge.

Live action footage relies on fine details — individual hairs, wrinkles on skin, a blizzard of falling snow, ripples in water. These common real-world visuals do not respond well to the remastering techniques employed for line art. Spatial smoothing simplifies the image and any simplification of important details in live action footage results in a poor looking image with lost fidelity. In live-action footage, camera apertures capture light over time and many of the details of this source footage are captured temporally, not spatially. The temporal nature of the footage means that even the best spatial image improvement algorithms react inconsistently between frames, causing unreal-seeming effects in moving subjects such as shifting skin tones (giving the impression of 'crawling' skin) and shimmering edges where the minute but important differences between frames are exaggerated by algorithms designed to simplify static images. The more realistic the source footage is, the more sensitive a viewer is to missing details and irregularities.

3D animation is very similar to live action, as it simulates the filming of a live scene. A 3D scene is created by creating objects, lighting those objects and storing the light that reaches a virtual camera after it reflects and reacts to the objects in the scene. The virtual camera has an aperture where the light is sampled for the duration of that aperture's opening over time to create the final frame, just like a real camera. This produces realistic motion blur on objects in the scene — storing details in the temporal motion rather than the still frames of 2D animation. Likewise, the lighting in these scenes

² See <http://www.animemusicvideos.org/guides/avtech31/index.html>.

creates complex gradients, not solid colors. Furthermore, the objects in the scene have intricate surfaces and image textures which are highly detailed, often taken from real life photography. All these qualities in 3D animation react much like live-action footage and respond poorly to techniques used to restore and enhance simple 2D animation.

Analogue sources, such as film, can be digitally sampled several times and the differences between the each attempt at sampling a frame can be analysed to eliminate inconsistencies caused by reproducing the analogue image by keeping details common to all versions of an image. However, with digital images, subsequent screen captures of the same frame do not yield different results and cannot be used for image improvement. Screen capture does not help reproduce quality images of digital video.

Ultimately, the best way to have high-quality live action and 3D animated footage is to have access to high quality, high-resolution, source material where no frames have been dropped (as is common with screen capture) and where the original details are present and clearly visible.

No amount of post-processing work will be able to restore lost details in images that are more complex than computer algorithms are able to understand.³

Proponents finally note that animated television series such as *Family Guy* are typically animated at 12 or even 6 frames per second,⁴ then converted to 24 frames per second and (for broadcast) telecined to 29.97 frames per second. Not only is there less visual information per frame than there is in sophisticated animation or live-action video, there are far fewer frames per second to fix.

³ Communication from Ian Roberts, June 11, 2015 (on file with OTW).

⁴ http://en.wikipedia.org/wiki/Frame_rate#Digital_video_and_television.