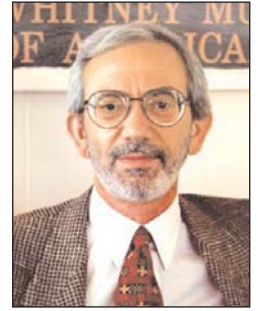


A Review of Survey Responses to High Quality Digital and Film Presentations

By Charles S. Swartz, Education Co-Chair, Hollywood Section



Charles S. Swartz

In addition to regular monthly section meetings, the Hollywood section for several decades has presented one or more all-day Saturday seminars annually. In recent years, the goals have been to tackle a burning issue of the day within the entertainment industry and provide fundamental understanding and insight into its future development. In contrast to monthly meetings, which often assume a base of technical knowledge, these seminars assume intelligence but not knowledge of the issue. They are intended for a wide audience from the production and business segments of the entertainment industry, as well as the technical side: the typical breakdown is 60% technical; 30% production; and 10% business.

2001 Seminar

This year's seminar was titled *The Cinema—Now and the Future*. Paid attendees numbered 375, plus approximately 50 speakers, Education Committee members, and guests. The theme was as follows:

"In the past year, the popular press has discovered digital cinema, confounding the facts and confusing public expectations. This year's SMPTE Seminar is devoted to the following premise: it is neither possible nor desirable that film will disappear in

the next ten years. On the contrary, film and digital technologies will continue to advance and enhance each other. How can industry professionals manage these advances in order to obtain the greatest quality, speed of operations, and cost efficiencies?"

Digital Cinema Laboratory

The Spring Seminar is traditionally co-presented with the University of Southern California School of Cinema-Television. This year, a new co-presenter was included: USC Cinema-Television's Entertainment Technology Center. For the first time in many years, the seminar was held off-campus in the Entertainment Technology Center's Digital Cinema Laboratory, located in the former Hollywood Pacific Theater.

This venue was built by Warner Bros. and opened on April 29, 1928, as the Warner Theater. In 1954, it was converted to the Cinerama venue and remained so until 1963, when the Cinerama Dome was built on Sunset Boulevard. The theater was closed to the public after the Northridge earthquake, but not before the Entertainment Technology Center negotiated an agreement to use it as their Digital Cinema Laboratory.

The Entertainment Technology Center has done extensive work to create a high-quality test-bed environment for both film and digital presentations. With generous help from manufacturers, the theater is now equipped with the following:

- Stewart UltraMatte perforated screen, 51 x 24 feet, 1.3 gain.

On May 18 and 19, 2001, the Hollywood section held its annual Spring Seminar in cooperation with USC Cinema's Entertainment Technology Center. The theme was "The Cinema—Now and the Future." Because the event was held in the Entertainment Technology Center's Digital Cinema Laboratory, it was possible to show a wide variety of high-quality presentations, both 35mm film and digital material, to an industry audience of more than 400. Following the Seminar, an online survey was posted and its link sent to every attendee's e-mail address. Out of 375 paid attendees, 110 responded over the next month. The responses provide insights into how industry professionals view the strengths and limitations of cinema digital in its current form compared with film display at its best. Overall, they rated film as superior, but digital performed well, especially considering the immaturity of its technology compared with that of film.

- Christie DLP digital cinema Mark V prototype projector.
- QuVIS QuBit digital server with 72 GB drive.
- Panasonic D-5 model AJ-HD3700.
- Kinoton 35mm PK60E projector on a Simplex Lamphouse.
- Dolby CP650 digital processor.

The Seminar Program

A review of keynotes and panels

This report was also presented at the 143rd SMPTE Technical Conference and Exhibition (paper no. 63A) in New York City, November 4-7, 2001. Charles S. Swartz is a Consultant in Sherman Oaks, CA. An unedited version appears in *Pixels, Packets, Processing, and Infrastructure*, SMPTE 2001. Copyright © 2002 by SMPTE.

provides the context for the screening demonstrations.

Jerry Pierce, Universal Pictures, delivered the keynote speech, “The Big Picture.” In “Creating the Images, Choosing the Medium,” *Allen Daviau*, ASC, was joined by a panel of experienced cinematographers to discuss the creative and technical choices confronting the cinematographer and production company. SMPTE Film Steering Committee Chair *Thomas A. Scott* presented a status report on the work of the Digital Cinema Technology Study Group (DC28). *Leon Silverman*, Laser Pacific, set the context for a panel of directors and visual effects supervisors who discussed “The Extension of Cinematography Beyond Production,” followed by a technology status report on “Film and Digital Projection” by *Ira Lichtman*, Walt Disney Imagineering; *C. Chapin Cutler*, Boston Light and Sound; and *Bill Werner*, Texas Instruments. The final presentation “Is There a Business Case for Digital Cinema?” was moderated by *Bob Lambert*, Walt Disney Studios, with *C. Wayne Anderson* on behalf of NATO, *Mats Erixon* representing European developments, and *Thomas McGrath*, Viacom.

Screening Presentations

Equally important to attendees was the opportunity to see both film and digital display presentations. Presentation elements are shown in Fig. 1. To take advantage of having high-quality projection in both formats, a Friday night screening was added to the seminar, where a complete motion picture was presented in film and digital formats, believed to be for the first time anywhere. With the cooperation of Warner Bros. Pictures and Malpasco Productions, Clint Eastwood’s *Space Cowboys* was shown, alternating formats with every reel change. Attendees saw reel 1 in digital, reel 2 in film, and so on, providing a unique opportunity to compare formats not just in a test setting

Segment	Clip Title	Acknowledgment	Source Element	Aspect Ratio	Playback	Format	Audio
Opening	<i>Visions of Light</i>	20 th Century Fox	HDD 1000	1.85:1	D-5 – 3700 DLP Cinema™	720P 1280 x 720	LTRT
Keynote	None						
Image Acquisition	Various film demos				Kinoton		
DC28 Report	None						
Lunch Demos	<i>Making of O Brother Where Art Thou?</i>	Touchstone Pictures ©2001	Digibeta – upconverted	1.33:1	D-5 – 3700 DLP Cinema™	720P 1280 x 720	LTRT
	<i>Little Buddha</i>	Miramax Films ©1994	65mm – reduction to 35mm IP	2.35:1	QuBit DLP Cinema™	24P 1280 x 1024	6 track discrete
	<i>Cider House Rules</i>	Miramax Films ©1994	Super 35mm IP				
	<i>American Beauty</i>	Dreamworks SKG ©1999	Super 35mm IP	1.85:1	D-5 – 3700 DLP Cinema™	23.98 pSF 1920 x 1024	6 track discrete
	<i>Spy Kids</i>	Miramax Films ©2001	35mm IP				
Post Production	<i>All the Pretty Horses</i>	Miramax Films ©2000	35mm work picture & electronic opticals	2.35:1	D-5 – 3700 DLP Cinema™	23.98 pSF 1920 x 1080 Letterboxed	6 track discrete
	<i>Heartbreakers</i>	MGM ©2001	35mm negative to 24P HD dailies	2.35:1			Mono
	<i>Legally Blonde</i>	MGM ©2001	35mm cut negative to 24P HD cut sequence	1.85:1		23.98 pSF 1920 x 1080	6 track discrete
Projection: Status Report	<i>Pearl Harbor</i> trailer	Touchstone Pictures & Jerry Bruckheimer Films ©2001	Anamorphic 35mm neg	2.35:1	Kinoton	Anamorphic 35mm film	Dolby Digital
	DLP™ Cinema Montage	See below	35mm & digital files	1.85:1	QuBit DLP Cinema™	23.98 pSF 1920 x 1080	6 track discrete
Distribution & Exhibition	None						
Best of Film & Digital	<i>Little Buddha</i>	Miramax Films ©1994	65mm reduction to 35mm	2.35:1	Kinoton	Anamorphic 35mm film	Dolby SRD
	<i>Pearl Harbor</i> trailer	Touchstone Pictures & Jerry Bruckheimer Films ©2001	Anamorphic 35mm IP & data files	2.35:1	QuBit DLP Cinema™	23.98 pSF 1920 x 1080	6 track discrete
	<i>Pearl Harbor</i> trailer		Anamorphic 35mm neg	2.35:1	Kinoton	Anamorphic 35mm film	Dolby Digital
	<i>Shrek</i>	Dreamworks SKG ©2001	Digital files	1.85:1	QuBit DLP Cinema™	24P 1280 x 1024	6 track discrete
	<i>Apocalypse Now Redux</i>	Zoetrope Studios ©2001	35mm neg	2.35:1	Kinoton	Anamorphic 35mm dye transfer print	Dolby Digital

Figure 1. Presentation elements.

but in a real motion picture situation.

Throughout the Saturday session, many examples were screened with the goal of showing the best of film and digital. The trailer for *Pearl Harbor* and clip from *Little Buddha* were shown in both formats. Digital clips included *Spy Kids*, *Shrek*, and *American Beauty*; film clips included *Snake Eyes*, *Carlito’s Way*, *Conspiracy* (an HBO Film shot in Super 16mm and mastered digitally), and *Apocalypse Now Redux*.

Online Survey Design

Experience has shown that few attendees complete evaluation forms after these seminars, so a way was

sought to capture detailed responses, especially to the screening presentations, that would include a sizeable percentage of attendees. Using InfoPoll, one of many services providing online evaluation, a survey was created and posted on the Web on May 30, and a link was sent to each attendee. By midnight May 31, 41 attendees had responded, with a total response of 110 when the site was closed, representing a substantial 29% of paid attendees. Of these, 69% were SMPTE members and 31% non-members.

Using a rating scale of excellent, good, fair, or poor, respondents were asked to rate film and digital screen-

ing presentations using four criteria: color balance, brightness, contrast, and sharpness, and then to assess the overall experience. The question was posed for digital and film three times: for *Space Cowboys*, for the *Pearl Harbor* trailer, and for all Saturday clips as a whole. The criteria were always listed in the order shown, but digital and film were alternated, with digital first for *Space Cowboys*, film first for the *Pearl Harbor* trailer, and digital first for all other clips. In addition to constrained answers, respondents had the opportunity to write a free-form comment after each question. Finally, they were asked to assess the overall experience of viewing 35mm compared with DLP.

Online Survey Results

Figure 2 summarizes the constrained responses to *Space Cowboys*.

Within each cylinder, the percentage of respondents choosing excellent is shown at the top, those choosing good next, and so on down the scale. Taking excellent and good together, it can be seen that while film leads digital on every criterion, the differences vary significantly. On the criterion of brightness, film exceeds digital by only 3%, which may be within the margin of error. The largest gap is for contrast, where film surpasses digital by 18%.

Results are presented in the same way in Fig. 3 for the *Pearl Harbor* trailer. Again film leads digital, here by more considerable margins. The closest gap is for color balance, where film is ahead by 14%. The largest difference, as with *Space Cowboys*, is for contrast, where film exceeds digital by 34%.

Figure 4 shows the results for all

other clips. As with *Space Cowboys*, the closest gap is for brightness, where film leads by 5%, and the largest difference is for contrast, where film is ahead by 32%.

Another way to gauge respondents' opinions is to look at the percentage that chose excellent and fair for each of the four criteria and compare it with the percentage that chose excellent and fair overall.

Color Balance Ratings

Figure 5 shows the results for color balance. Notice on the left that the percentage of respondents who rated digital as excellent overall is considerably greater than those who rated the three screening presentations as excellent for color balance. Conversely, those who rated film excellent overall are fewer than those rating the *Pearl Harbor* trailer and

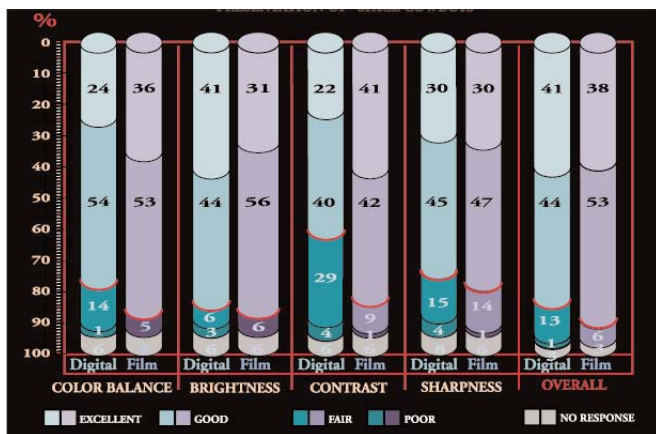


Figure 2. *Space Cowboys* presentation.

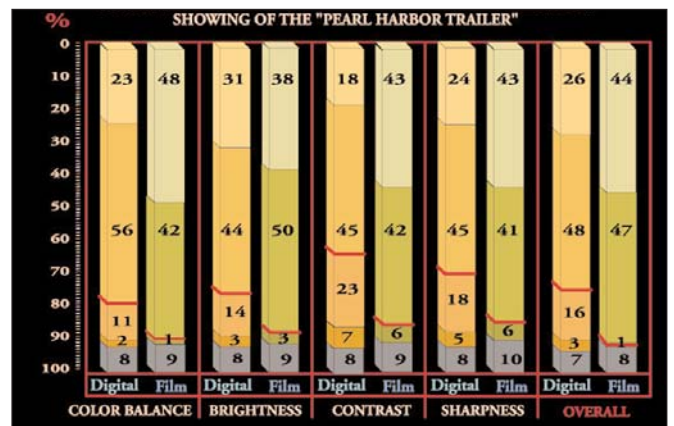


Figure 3. *Pearl Harbor* trailer presentation.

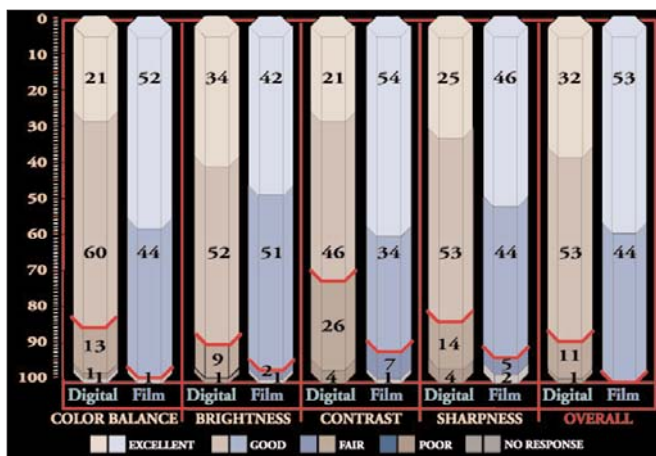


Figure 4. Clips presentation.

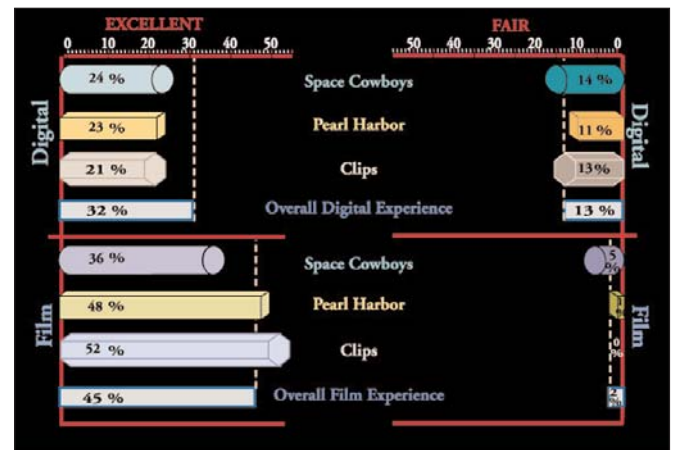


Figure 5. Color balance ratings—excellent and fair.

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the clips excellent for color balance. On the other hand, the respondents selecting fair produce consistent results.

Contrast Ratings

In Fig. 6, those rating digital excellent for contrast show the same pattern as for color balance. But in this

case, those rating digital fair produce an inverse result, so that the percentage of respondents who selected fair for contrast is significantly higher

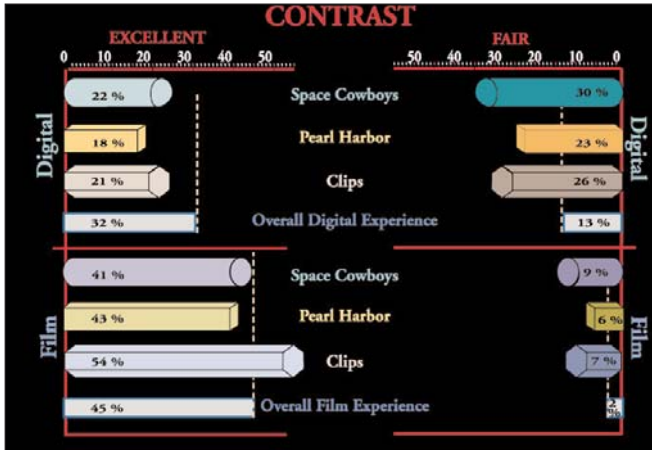


Figure 6. Contrast ratings—excellent and fair.

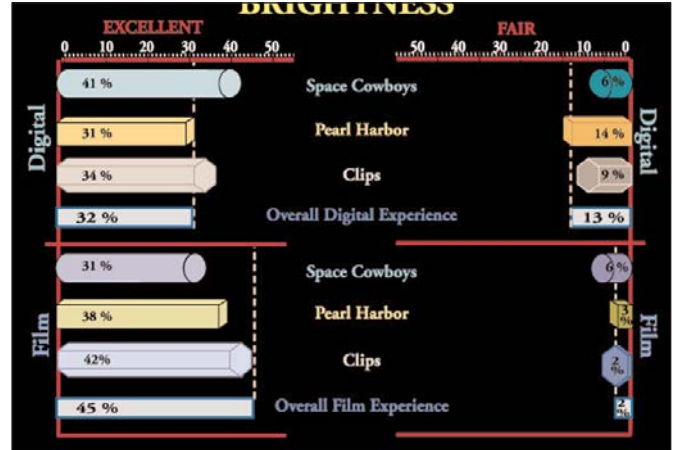


Figure 7. Brightness ratings—excellent and fair.

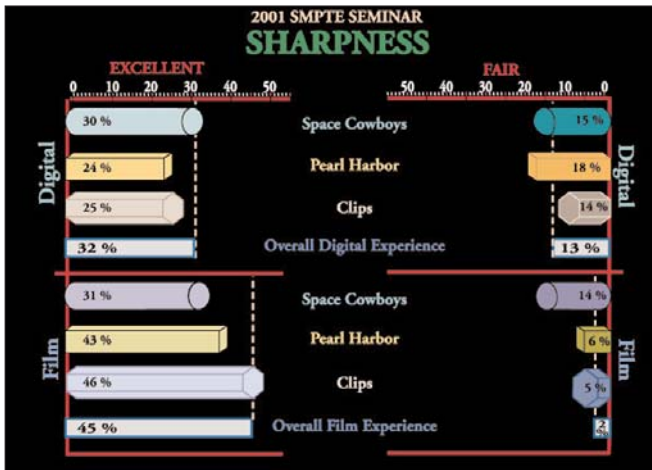


Figure 8. Sharpness ratings—excellent and fair.

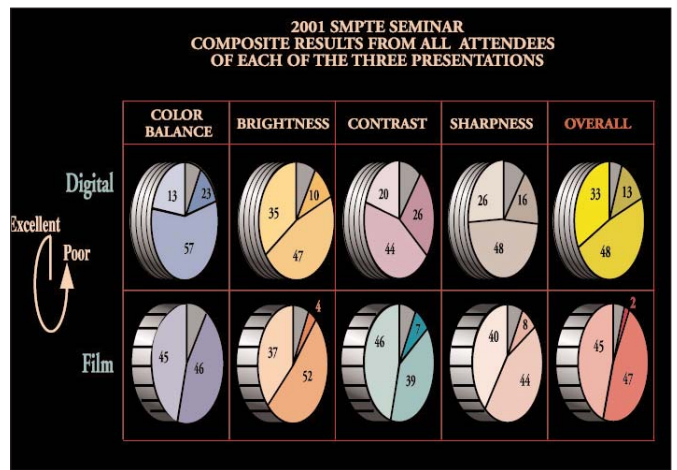


Figure 9. Composite results from all presentation.

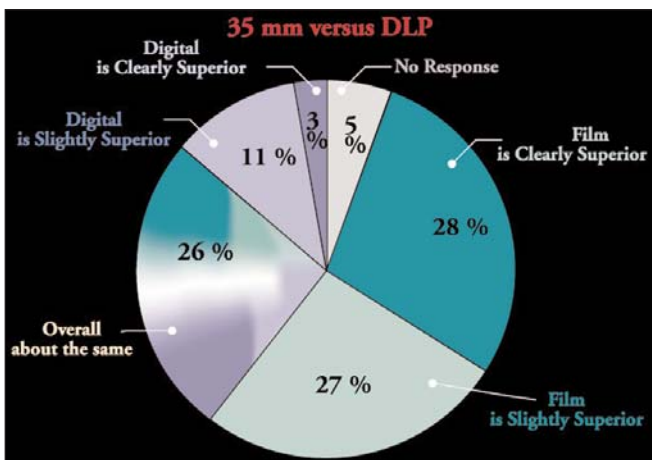


Figure 10. 35mm vs. DLP overall.

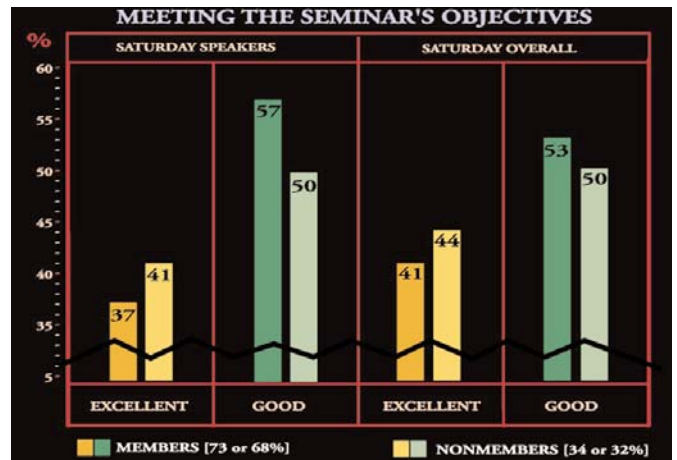


Figure 11. Assessment by SMPTE members vs. nonmembers.

than the percentage selecting fair for digital overall. This reflects the earlier conclusion that respondents view contrast as the criteria on which digital is weakest compared with film.

Brightness Ratings

Figure 7 shows the same responses for brightness. Here the excellent ratings are fairly consistent, except for *Space Cowboys*, where one-third more respondents judged digital brightness to be excellent than those judging film brightness to be excellent. Several free-form comments also noted that the projectors seemed mismatched in terms of brightness.

Sharpness Ratings

Responses for sharpness are shown in Fig. 8. Digital equals film in excellent ratings for *Space Cowboys*, though it trails film for the other presentations.

Composite Results

A summary of all results is shown in Fig. 9. Combining excellent and good, film leads digital by 14%.

After rating the presentations in detail by criteria, respondents were asked to assess the overall experience of viewing 35mm compared with DLP. Figure 10 shows the results: 26% gauged film and digital about the same, while 27% judged film slightly superior, and 27% clearly superior. Eleven percent found digital slightly superior and only 3% clearly superior.

Figure 11 compares the responses to the Saturday portion of the seminar from SMPTE members compared with nonmembers. First, the percentage of members and nonmembers rating excellent or good combined is about the same. This supports the view that the seminar met the expectations of both groups, which was a key goal of the Education Committee. Second, nonmembers found both

Saturdays's speakers and overall program to be excellent by a margin of three to four percentage points more than members, while members delivered more good scores. These results suggest that a nontechnical seminar such as this may be simultaneously of benefit to nonmembers and members. Furthermore, nonmembers who attend these events may be a fruitful target for recruitment into SMPTE membership.

Conclusion

Statisticians sometimes find that the narrower the focus of the question, the more representative of the responder's unalloyed view is the answer. Similarly, the broader the scope of the assessment, the more emotions can color the response. So Fig. 10 suggests a more negative view of digital than one would conclude from Fig. 9. Even more focused questions sometimes place the formats closer together.

If one compares the technology for cinema display of film with that of digital in terms of maturity, then digital's overall score here is indeed encouraging. While the results shown in Fig. 10 capture respondents' assessments of the experience of viewing film and digital today, the promise digital holds for improvement is not reflected in the constrained answers.

Comments from Respondents

Many attendees addressed this question in their free-form comments, however. The following are selected comments that state views echoed by others:

"As the film [*Space Cowboys*] progressed, I needed to look back at the projectors to see which was being used at any time, except a few times where the pixels of the digital projector became visible due to the specific picture material." Will consumers

notice the lack of film defects and wear? Maybe not. Will they complain about presentation issues with digital? Maybe one in a million.

"Hard for me to criticize a genre [film] I've loved for so long. Let's face it, [digital] looks pretty terrific, doesn't it?"

"The perfect new copy of film is very slightly better than digital for nonanimated material. However, the fact that the digital version does not deteriorate with multiple playings makes it a better option for real world applications."

"Under perfect viewing conditions like we had, [film and digital are] overall about the same. But under real world conditions, with dirt and wear and tear on the film, digital is a clear winner."

"The screening of *Space Cowboys* in 35mm and digital convinced me that we are on the cusp of high-quality digital projection in cinemas. The danger will be, as with poor film projection, low-quality digital-projection equipment that cinema owners may use to save money."

Acknowledgments

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