

Bernardo Bertolucci filming in Morocco:
" The Sheltering Sky " in 65/70 MM!



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"Extracts from the Newsletter of the International Cinerama Society"
Entertaining a whole new generation.

The Future of the 65mm and the 70mm Formats: A Hollywood Perspective

by J. L. Baptista and J. T. Ellington*

The question of whether the 70mm format will ever be the principal feature release format is explored. A set of conditions that are predicted to be necessary before this could occur are set forth. 65mm origination is also discussed including quotes from the three major camera manufacturers who have introduced or are about to introduce new 65mm cameras.

At the 10th BKSTS International Film and Television Conference in June of 1987, the authors presented a paper (Paper 201) giving their views of what would be necessary for a motion-picture laboratory to be successful in the 1990's. Since that time, as part of Consolidated Film Industries' (CFI's) general plan to become a more significant part of the Hollywood release print business, an in-depth study of the 65mm and 70mm market has been completed. Also an assessment has been made of the equipment required and of the cost to build a modern, efficient facility to process and to print these formats. Since the question as to whether or not the 65mm and 70mm formats become a more important part of the industry is not just a technological one, but also an artistic and economic one, interviews were conducted with some of the primary suppliers of the tools and services necessary for the use of these formats. Included in this paper are pertinent quotes from some of these industry leaders.

The Current Status of the 65mm and 70mm Formats

In discussing the status of the 65mm and 70mm formats the real question that needs to be addressed is: "Will we ever see the time when the 70mm format is the principal feature release format and the 35mm format is the supplementary one?" Based on today's marketplace, the authors feel that you could safely predict that the answer to this question is *NO* for two very different reasons. Is it *no* because the cost of making a 70mm print is too high both in dollars and in time? Or, is it *no* because even though the sound in a 70mm print is better, the larger image (a blow-up from the 35mm original negative - refer to Figure 1) is no better than the one in the 35mm print? Having studied the possible reasons why the answer to the above, posed question is probably "no" leads one to the following two requirements:

- 1st - The cost of making a 70mm print vs a 35mm print must be lowered from its current 8x-10x greater cost to at least half of that;
- 2nd - The original photography must be shot in the 65mm format so that the movie-goer experiences the full potential of the 65mm and the 70mm system.

What the authors contend is that without the reduced cost of 70mm prints and without 65mm original photography the 70mm format will never be the principal future release print format. What is *not* being predicted (and will not even be guessed at) is *whether* or *at which rate* the motion-picture makers would switch to the 65mm and 70mm formats if technicians could offer them the necessary technology at a reasonable cost.

While the improved resolution resulting from using 65mm negative film can be easily demonstrated in an analytical manner by photographing a resolution test chart, many of the readership already may have experienced it recently in a practical way by having viewed the re-release of "Lawrence of Arabia". This feature was photographed on 65mm negative film and released on 70mm print film. However, it must be considered that the emulsion technology used in the negative films in "Lawrence" has been significantly improved in the 20 plus years since this feature was photographed. Therefore one must really view one of the new 70mm systems (such as IMAX or Showscan) to appreciate fully the ultimate quality levels that can be achieved in the 65mm and 70mm formats with today's film products.

The Creative Aspects

As food for thought, it might be interesting to examine the last five years' Oscar winners for "Best Picture" (Table 1) and the last five years' top box-office attractions in the United States (Table 2) and see which of them had some 70mm release. Now put yourself

Table 1. The "Best" Picture

Year	Feature	70mm Prints
1988	Rain Man	No
1987	Last Emperor	Yes
1986	Platoon	No
1985	Out of Africa	Yes
1984	Amadeus	Yes

Table 2. Top Box Office Attraction

Year	Feature	70mm Prints
1988	Who Framed Roger Rabbit	No
1987	Beverly Hill Cops II	No
1986	Top Gun	Yes
1985	Back to the Future	Yes
1984	Ghostbusters	Yes

in the role of armchair motion-picture mogul and try to determine:

- 1st - Were these features successful because of their 70mm release?
or
- 2nd - Would any of these features have enjoyed greater success if they had been photographed in the 65mm format and released in the 70mm format?

In summarizing the authors' look into the creative aspects of the 65mm and 70mm formats, it suffices to say that the task of the technician and the laboratory manager is to provide the creative decision-maker with the necessary tools, at a reasonable cost, so that he or she can choose the format that will be best for the project without cost being a totally overriding factor.

A Study of a Successful User of the 65mm and 70mm Formats

It was felt that it would be instructive to take a look at the IMAX Systems Corporation, the world's most successful special venue user of the 65mm and 70mm formats, and determine if there is a lesson in their success that can be applied to the use of these formats in feature films.

The IMAX film format premiered at the 1970 World's Fair in Osaka, Japan. Today, there are 61 IMAX and OMNIMAX installations in 14 countries. By the end of 1990 there will be approximately 84 installations worldwide, and also in 1990 there will be a new world's fair in Osaka, Japan. At that fair, IMAX will premiere a new state-of-the-art 3-D technology never before seen. Of course, the heart of the IMAX/OMNIMAX system is the projector with the key to its superior performance and reliability being the unique "rolling loop" film movement

which is not used in any other projector. This projection technology in combination with the large size of an IMAX/OMNIMAX frame (10 times larger than a conventional 35mm frame) results in the extraordinary sharpness and steadiness of the system.

To quote Mr David Keighley, President of the Post Production Division of the IMAX Systems Corporation, "Our success, in part, is also due to our specific attention to the quality assurance of picture and sound, down to the smallest detail. Clean, steady, evenly processed prints with very good color control are essential ingredients for all our films. There is no room for the so-called 'small-town' print in our business."

Superior projection, outstanding film quality, and an uncompromising approach to quality assurance are attributes that would support and help continue the success of any venture. Since IMAX is financially successful, this also means that the creative part of the corporation is meeting or surpassing audience expectations and that the corporation has been successful in dealing with the cost factor of the 65mm and 70mm formats versus the admission price. It appears that the most valuable technical lesson to be learned from the IMAX success story and applied to the 65mm and 70mm formats in feature films is their approach to quality assurance. Quality assurance in the sense of doing things right the first time and being sure that your equipment and personnel are capable of achieving the required quality level at an acceptable cost.

The Equipment and Facilities Study

Since CFI did not have any tradition or equipment in the 65mm and 70mm formats area, it could take a completely fresh and objective view of what would be necessary to serve this market in the 1990's. Also CFI was able to benefit from what was learned during its recent modernization of the 35mm release print area. Thus the following were looked at very closely: work flow, high-speed processing, high-speed printing, speciality printing, and ancillary equipment.

WORK FLOW - Fortunately, CFI has a good-sized area which can be dedicated to the 65mm and the 70mm operations. This area will permit the establishment of an excellent work flow pattern (refer to Figure 2).

HIGH-SPEED PROCESSING - One of the reasons that a 70mm release print costs 8-10 times as much as a 35mm release print is that a 70mm print is labour intensive at every stage. While large volume 35mm release print processing is done at speeds in excess of 400 feet/minute (fpm) at most release print laboratories, 70mm prints are processed in the 100-125 fpm range. CFI commissioned Technical Film Systems (TFS) to undertake a development project to design a processing machine drive and

rack system that would result in a 70mm processing machine capable of at least 300 fpm. TFS succeeded in this task. While this project just proceeded to the test stand stage, the engineering staffs of both TFS and CFI feel confident that this development work proves that a 300 fpm 70mm processing machine can be made and that it would treat film at least as safely and as gently if not more so than the existing 70mm processing machines. An interesting point is that one such machine would increase the total Hollywood processing capacity for 70mm print film by more than 50%. There is probably no doubt that all laboratories interested in staying in the 70mm release print business or getting into the 70mm release print business in the future will have to consider higher speed processing machines. Of course, the question is when. At CFI the decision was made to purchase the newer (built in 1985) of Metrocolor Laboratories' 70mm processing machines and modify it to run at 125-140 fpm. This will allow CFI to have a machine operating by the spring of 1990; however, the TFS 300 fpm 70mm processor is still part of its overall plan if and when the capacity demands of the marketplace justify it. A logical extension of the 70mm print film high-speed processing development work would be higher speed 65mm negative film processing. Development work already completed by TFS indicates that it should be possible to build a 65mm processor capable of running at 150-200 fpm with at least as much safety as today's 65mm negative processors which typically run at less than 100 fpm. However, no further work is planned until sufficient experience is gained with 70mm high-speed processing or there is a clear-cut market need for high-speed 65mm negative processing.

HIGH-SPEED PRINTING - Currently, 70mm release prints are typically made from a 65mm duplicate negative on a Bell and Howell Model "C" type printer at 180 fpm. Aside from the significant thread-up waste, the through-put is operator dependent and probably is in the range of 80-110 fpm. Experience with the two Technical Film Systems' Continuous Feed Printers (CFP's) over the last four years lead the authors to believe that a 70mm CFP could be built with a throughput of approximately 500 fpm. Of course, this would be a significant investment and would require considerable faith in the 70mm market of the future.

SPECIALITY PRINTING - At CFI's request, BHP Inc. has investigated the possibility of building a 70mm version of its 35mm modular printer. BHP has designed and is ready to build a 70mm modular printer which would print wet/wet at 120 fpm and dry/dry at 480 fpm. This printer would serve two important functions. It would provide the necessary wetgate capability needed in a 65mm and 70mm operation, and it would also provide dry printing

throughput which would be approximately twice that which typically exists today. Thus, this printer probably will become an important part of any laboratory doing 65mm/65mm and 65mm/70mm printing.

70mm Sound

One area that must be considered in 70mm release prints is 70mm sound. While everyone agrees that the quality of the current 70mm sound is excellent, getting single system sound on a 70mm release print is expensive, requires extra time, and is the cause of potential film damage because of all the additional handling. These extra steps include:

1. Post-processing magnetic stripe application;
2. Check of the quality of the applied magnetic stripe, and sound-track laydown in real time;
3. Real-time projection of the print to check sound quality and to re-inspect the print to insure no film damage occurred in the post-processing steps.

Several years ago, Mr Ron Uhlig of the Eastman Kodak Company introduced the concept of single system optical digital sound on motion-picture film. This would be a "dye track" so no sound application would be required. The authors recently asked Eastman Kodak for an update on their digital sound studies, as they related to 70mm print film. To quote Mr Richard Schafer, Manager, Motion Picture Film, Eastman Kodak Motion Picture and Audiovisual Division, "Our studies show it is quite feasible to develop the technology into a practical, commercial system. The added value digital sound can bring to 70mm exhibition is especially appealing. The key challenge in implementing this technology is the 'chicken-and-egg' situation of equipping theatres and, at the same time, assuring a supply of product for them. Therefore, a strong project relationship must exist among the producer, laboratory, distributor, exhibitor, and equipment supplier." Several months after these comments were made by Mr Schafer, there was an announcement in the trade press that the Optical Radiation Corporation (ORC) of Azusa, California had developed an optical digital sound system for film based on the Kodak technology and would have systems available for theatre use in the near future. The system is proprietary, and therefore no public disclosure of the technology has been made. One of the authors (Mr. Baptista) has attended a demonstration of the sound quality of the ORC system and is of the opinion that its quality will meet or exceed audience expectations of "CD-type" digital sound quality for the motion-picture theatre. It is also interesting to note that both TFS and BHP Inc. have done the necessary engineering to incorporate the appropriate sound head in their 70mm

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Entertaining a whole new generation.

In the Newsletter from "The International Cinerama Society" we read that plans are in a final stage for an original Cinerama theatre as part of an already existing Film Museum in England:

The National Museum of Photography, Film and Television in Bradford, England have obtained the theatre in which we hope to instal 3-Strip Cinerama. An orthodox flat screen will also be fitted, dropping down in front of the Cinerama curve, giving the theatre the world's most comprehensive and versatile projection system, permitting virtually any process or movie to be shown as originally intended. Already equipment to present Cinerama, 70mm Cinerama, UltraPanavision, Flat 70mm, VistaVision and any 35mm system is to hand.

The last items of missing Cinerama hardware have now been found, the legendary louvre guide boards, and retrieved from an abandoned European theatre. All we need now are the prints.

To be viable, the project requires that we use new, mylar-base prints. Even if original Technicolor IB prints in mint condition could be traced, it is unlikely that now over 30 years old they would survive continuous usage at Bradford. This brings us to the last major obstacle as, despite our approaches, Cinerama Inc still seem reluctant to discuss permission to reprint from the master negatives, even though we have indicated that Cinerama Inc need not necessarily be involved in financing these. Currently the ball is in Cinerama's court as their cooperation is crucial. It is hoped that offers of sponsorship will cover the laboratory costs. Steps are now underway to transfer the rapidly rotting sound masters to new stock.

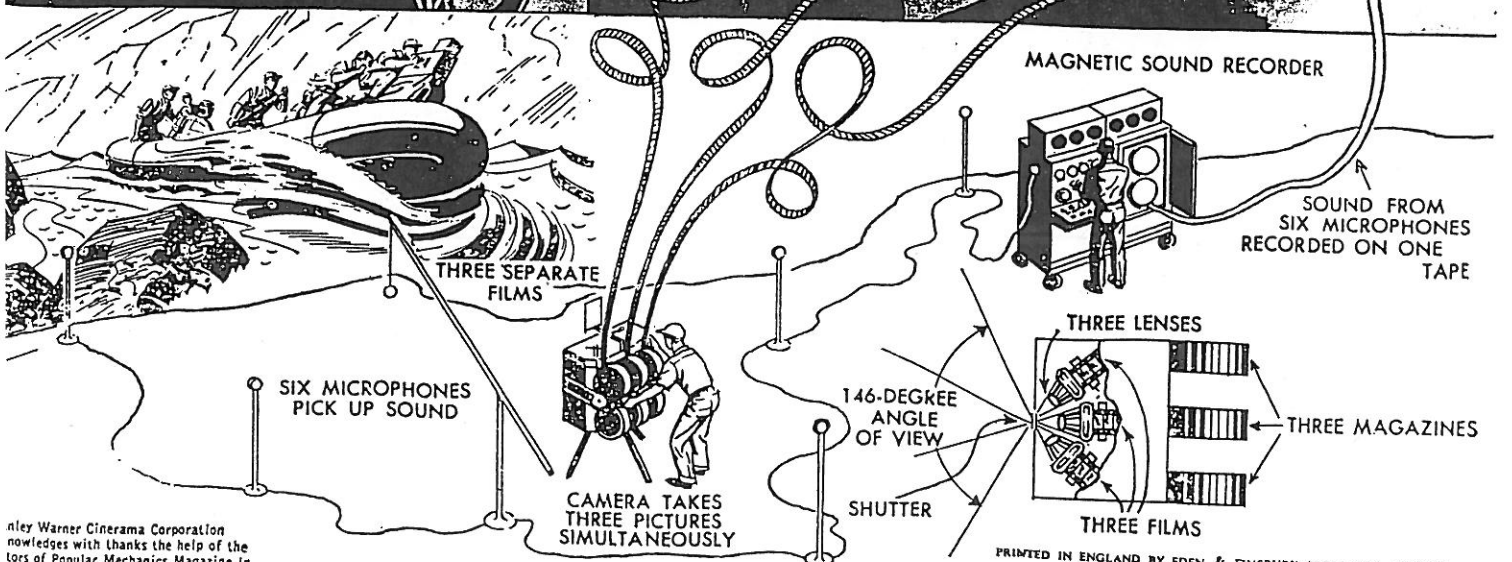
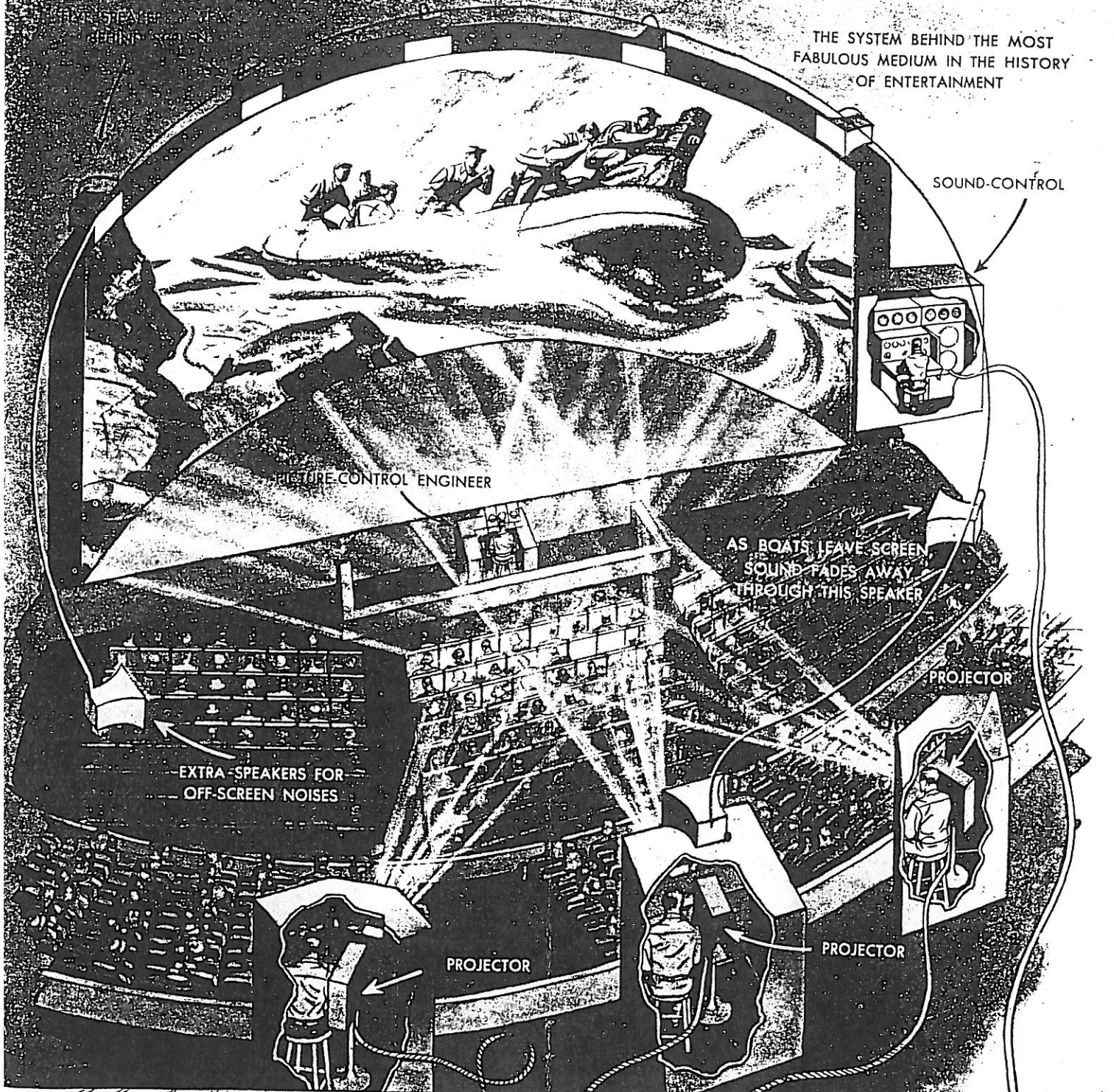
In Essen, West Germany, there is a Cinerama theatre which still retains all the projection equipment in situ. All it lacks to present 3-strip is the louvred screen. Unfortunately this has been removed and the louvre guides destroyed. Given reinstatement of the louvred screen, this theatre could add to the revenue needed to defray the enormous costs of the new prints. Strangely this theatre does not appear on any of the official Cinerama Inc lists now in the I.C.S. archives.... Maybe that is why it survived? Very rarely, it has Phillips Cinerama projectors, only the second set known.

But the most amazing find at Essen is a previously unknown 3-strip short, running about 20 minutes and featuring footage of Austria with links by Lowell Thomas. Does anyone know anything about this film?

The Renault Dauphin commercial is now running in private demonstrations in Paris using new prints produced from the privately preserved only known print. A French enthusiast has restored the Century projectors being used but, regrettably, an incorrect screen is being used. Subsequently Renault via the I.C.S. have approached Cinerama Inc for the loan of one of the cameras to shoot new sequences destined for the 1992 Spanish World Fair.

So far Mr. Keith H. Swadkins, European Representative of the International Cinerama Society and he is looking forward to the opening of the Cinerama theatre in early 1991 !

THE SYSTEM BEHIND THE MOST FABULOUS MEDIUM IN THE HISTORY OF ENTERTAINMENT



Wm. Warner Cinerama Corporation acknowledges with thanks the help of the editors of Popular Mechanics Magazine in preparing this pictorial description of the Cinerama process.

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printers discussed earlier in this paper. It is the opinion of the authors that single system optical digital sound is a "must" if 70mm is ever to become the predominant release format.

70mm Exhibition

Exhibition is an area of concern for the proponents of 70mm as the predominant feature film release format. There are over 22,000 35mm screens and less than a 1,000 70mm screens in the United States. The significance of this is that the only way 70mm will ever become the predominant release print format is if production companies shoot in 65mm original and release both in 70mm prints and in 35mm prints with better than normal picture quality because of the 65mm original photography. If features photographed and released in this manner do well, then the distribution companies and the theatre owners perhaps will be enticed to build more 70mm screens.

65mm Origination

While there are no feature films being photographed in the 65mm format at this time, the three major camera manufacturers have or are about to introduce new 65mm cameras which incorporate all the new technology that has been developed for 35mm cameras over the last 30 years. Whether they are being "bullish" or whether they have some special insight and are on the leading edge of a renaissance in the 65mm and the 70mm formats, they are to be commended for their leadership. The following quotes from each of them give some insight into their thinking:

THE ARRIFLEX CORPORATION - A quote from the presentation given by Mr Volker W. Bahnemann, the President of Arriflex, at the introduction of the new

ARRI 765 at the American Society of Cinematographers in Hollywood, C. A. "...a standard, large production and presentation format for both theatrical motion pictures and special venue product will form a creative and economic bridge between the two markets, allowing special event type presentations to reach the large number of profitable regional theatrical markets, and creating a broader variety of product for special venue exhibitors... The camera is the key technology for transforming the script to the screen, and it must be able to do so by minimizing the technical limitations to dramatic interpretation. With the introduction of the ARRI 765, we believe that we have significantly expanded the envelope of creative possibilities available to producers today."

THE CINEMA PRODUCTS CORPORATION - Mr Edmund M. DiGiulio, the President of Cinema Products (which was the first of three major camera manufacturers to introduce a modern 65mm camera suitable for the Showscan process as well as standard 65mm cinematography) put it very succinctly when he said: "...65mm cinematography is an idea whose time has come."

PANAVISION, INC - A quote from Mr Moe Shore, the Vice-President of Product Development at Panavision. "The question is, 'why now?'. There are contributing factors like the introduction of HDTV and the success of speciality venues like Imax and ShowScan...but the renewed interest in 65mm is almost cyclical in nature...a new generation of filmmakers wants to create the spectacle of 65mm. The challenge for the industry is to make the 65mm format not only feasible, but practical. Specifically, for us at Panavision, the goal is to provide 65mm camera equipment that incorporates all of the advances in camera technology made over the past 30 years. From reflex

viewfinder to video assist to reasonable size and weight...Panavision is committed to reaching that goal."

Conclusion

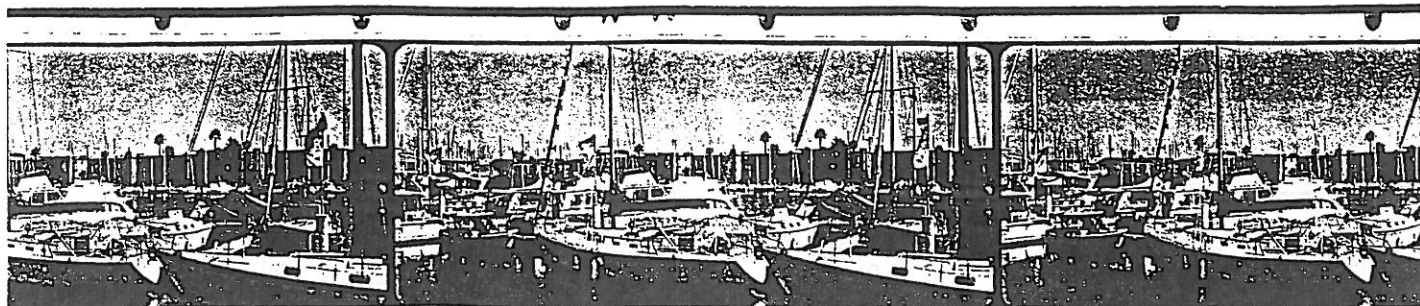
All the technical pieces of the puzzle are falling into place. Mr DiGiulio's comment that 65mm cinematography is an idea whose time has come may be the most prophetic of all. We engineers and equipment and service providers must remember that no matter how good a job we do in providing the necessary tools and services for the 65mm and 70mm formats it will be the creative decision-makers of our industry, who will make the ultimate decision. We should take heart, however, in remembering that we are in an industry where one person, one movie, or one idea can set the trends for years to come and that is what makes this industry so exciting and so enjoyable.

Acknowledgements

The authors would like to thank all those individuals who took time from their busy schedules to discuss the future of the 65mm and the 70mm formats with us. We especially wish to thank Mr David Rabin, assistant head of CFI's Engineering Department for his editorial efforts and advice on this paper. Also we wish to thank Mr Ron Little of CFI and Mrs Cybal Braasch, secretary to Mr Baptista, for their assistance in the preparation of this paper. □

**J. T. Ellington is the President of Consolidated Film Industries of Hollywood, CA, and J. L. Baptista is its Vice-President of Engineering and Technical Services.*

Clip from test film of Imagination 7012 35mm horizontal system. (Not to scale).



Jim Martin and Don Fergus introduced their new 7012 Camera System, a horizontal 35mm, 12-perf format giving an aspect ratio

of approximately 2.25:1, which permits a shoot on 35mm with release prints on 70mm. Production cameras and optical

printing services, they said, will be available in early Spring 1990 through their company, Imagination in North Highland Avenue Hollywood.

Bernardo Bertolucci filming in Morocco: " The Sheltering Sky " in 65/70 MM!

After "The Last Emperor" Bernardo Bertolucci didn't want to make a big budget film but his producer Jeremy Thomas had another opinion and he raised the budget for "The sheltering sky" to twenty million dollars ! And the decision had been taken to film the entire production in 65 MM ! On exotic locations in the North African countries Morocco, Algeria and Nigeria. Director of photography is Vittorio Storaro, who has also worked with Bertolucci in "The Last Emperor".

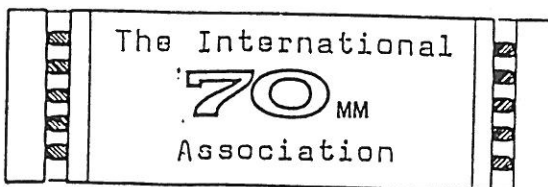
"The sheltering sky", based upon a novel of Paul Bowles, who will play the role of a narrator, is the story of two people who have lost the confidence in their relationship and then decide to look for it somewhere else, accompanied by a friend.

The main characters are played by: John Malkovich, Debra Winger and Scott Campbell. So far the news about Bernardo Bertolucci.

At the same time it seems that director Wim Wenders is still busy with his production "Until the end of the earth!" also announced as a 65 MM production ! When there is more news about it you will certainly read it in the next Newsletters !

But it looks as if 70 MM is back !!

The 70 MM Newsletter is published bi-monthly and sent free to the members of the International 70 MM Association .



Membership : The Netherlands and Belgium :
Dfl. (NLG) 20.= per year. Rest of the world:
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Results of the Inquiry in the December Newsletter

"which original 70 MM film would you like to be restored or re-issued after "Lawrence of Arabia" in the next Newsletter !

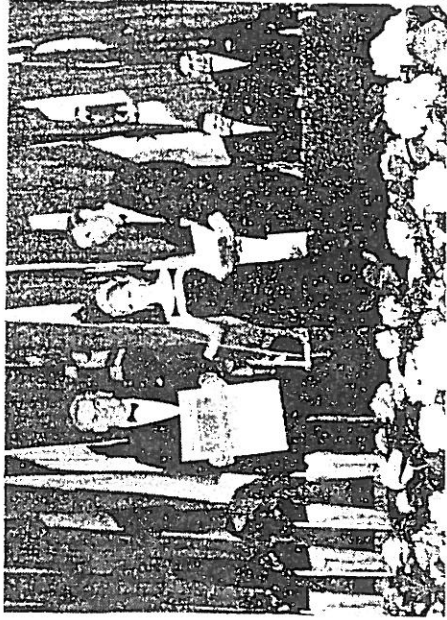
„Sky over Holland” kreeg een ovatie

"SKY OVER HOLLAND" had an ovation !

A newspaper head-line from 1967, when this first and only Dutch documentary film made in 70 MM, directed by John and Douwes Fernhout, got an award in Cannes, France. "The Golden Palm" for the best short film of 1967.
(French title: "Ciel de la Hollande").
Running time: ± 20 minutes.

In January of this year, 1990, we phoned with the Dutch Government Information Service to hear if there was still a 70 MM copy of this film. The answer was: "Yes, but we have no 70 MM projector over here, so we don't know anything about the condition of this copy!". At last we got permission for a private screening in the Rotterdam Imax theatre.

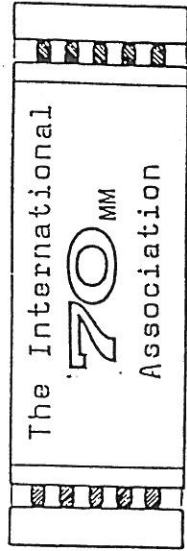
After one hour of repairs the film went through the projector: some colors were alittle faded, the sound was still very good and on the whole the film looked quite well. The Management of the Imax decided to put the film in their next program in April of this year !



Filmstar Virna Lisi introduces John and Douwes Fernhout to the public at the Cannes Festival.

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