Report on the Internegative and Positive Film Production of Rikuro Miyai's *Shadow* (1968)

This report analyzes the production of the internegative and release prints made from the original positive 16mm film for Miyai Rikuro's *Shadow* (1969, two-channel 16mm, b/w), by comparing the following three materials and work flows.

1. Produce a Kodak 35mm blowup internegative film from the original 16mm print, and create a 16mm release print from the negative.

2. Produce an internegative by using ORWO 16mm B&W duplicate negative film, DN21, and create a 16mm release print from the negative.

3. Using a 16mm positive film, make a negative with a process known as negative development. Create a 16mm release print from the negative.

The material used for the tests was 16mm B&W positive film about 1 minute long, which shows buildings and landscapes in the open air during daylight. The exposure is correct, and the contrast is in a normal range.

● The impressions from consecutive viewing of the results from the three flows.

The ① flow
The positive film made from ① flow has a slightly rougher image compared to the original. This is because the gradation of the intermediate colors became weaker/lighter, and the overall contrast appeared slightly more pronounced. However, such a change is inevitable from the process of making a duplicate negative, and it is within the acceptable range. When the positive film is viewed alone without the original, we did not feel it was off/odd as a motion picture.

The ② flow
The images from the positive film produced by the flow ② is slightly harsher compared to ①. This seems to be due to the fact that the contrast is greater in ② because the subtle gradation of intermediate colors did not reproduce as well as those of ①, and the film grain is somewhat more prominent. ① flow using the 35 mm film has larger volume of visual information and may have finer reproduction of the details. However this is also the impression from being compared to ①, and when viewing ② alone, it does not feel off/odd as a motion picture. The degradation from the negative duplication is within the acceptable range, and depending on the cost and the taste of the viewer, this option may be selected.

The ③ flow
Perhaps due to the timing of the development, the positive film from the ③ flow was overexposed compared to ① and ②, and it differed the most from the original. When making internegative from positive films, there is a process known as "negative development," which generally produces too great of a contrast. The contrast was reduced by applying IMAGICA's special process. For this test, we think this process did not function well. By performing a few tests, we think it is possible to raise the quality, however because it requires IMAGICA's particular technology and sensitive work, it may be difficult to achieve.

● Advantages and disadvantages of each flow

The ① flow
Disadvantages
This process requires enlarging the original to 35mm and then downsizing to 16mm for printing, and there are costs associated for each step. As a production cost, this is the most expensive among the three.

Advantages
In terms of image quality, there is a lot of information and the gradation seems to be rendered well. Since the negative film used is polyester, we are able to avoid vinegar syndrome from aging.

The ② flow
Disadvantages
Since the film used is made in Germany, there is not many use cases at Japanese processing laboratories, and it is necessary to prepare nearly twice the actual amount of film used as spare material. Importing small lots each time of use may become expensive and time-consuming. Compered to ①, the contrast seems stronger and the grain stands out more so the picture appears harder. Depending on the image quality of the original, the difference is noticeable. The film is acetate, so depending on the preservation condition, there is a risk of vinegar syndrome as a result of aging.

Advantages
Currently, this film can be procured although the 16mm B&W Internegative by Kodak cannot easily be obtained. There is a possibility that if there is going to be a good amount of 16mm B&W internegative production in Japan, a large order may be imported and stocked, therefore lowering the cost. There is also the possibility to raise the image quality by repeating the tests at the laboratory and building the knowhow.

The ③ flow
Disadvantages
For this flow, the process known as “negative development” is necessary, which requires IMAGICA’s unique method. Because of this, this method is inapplicable at other laboratories. Since it goes through the special process to adjust the contrast, it may be necessary to make subtle adjustments several times. We did not achieve a great result this time, perhaps due to our time constraint

Advantages
The material is easily obtained as this flow uses positive film stock. It may be possible to achieve a better result by building the knowhow and if there is enough time to make the adjustments.

After performing the above comparative analyses, we have decided to use the ① 35mm enlargement flow for the “Shadow” print production.

● About the production of *Shadow* new prints

*Shadow* is a B&W two-screen work. The work has images of shadows on the ground and walls, with relatively high contrast and coarse grain. The negative and the positive of the same image are placed side by side for screenings.

The condition of the original prints and the preservation work

- Film: 16mm B&W, A-wind print, Kodak (Made in 1968?)
- Film condition: Shrinkage -1.5%, Film damage (many overall perforation damages)

The following risks were assessed due to the progression of the physical damage to the perforations from usage, and degradation such as shrinkage from aging. (Refer to the attached photographs for the condition of the film.)

- The risk of causing physical damage such as breakage of the perforations, scratches on the film, tearing and cutting of the prints when the perforations pass through the sprockets, registration pins, and claw pins during the duplication process.
- The possibility of the finished product having image distortion or focus disturbance due to the deterioration or damage.

Therefore, after the film repair and cleaning, we have decided to work by a method of printing each frame one by one with a special printer, instead of the usual duplicator with film feeding.

About the prints produced

By selecting the above describe flow for the production of the internegative, we were able to avoid potential image distortion and focus disturbance potentially caused by the damages on perforations of the original print.

In terms of image quality, it did not deteriorate much partially due to the fact the original image does not contain a lot of delicate gradation.

However, as a result of having to adopt the method of printing each single frame with a special printer, fine abrasions on the original prints caused by projections were also duplicated and reflected in the prints. Especially for the positive film, the scratches become noticeable because the image is realistic. For the negative film, it is not very noticeable.

• About future production of prints for archiving

For *Shadow* the effect of having multiple images from the two screens that project negative and positive images side by side, is more important as an element of the piece than the beauty of individual images. Considering this aspect, the production of the internegative was meaningful.

However, with respect to the production of internegative, if the original film was in a good condition, it would have been possible to eliminate the original's fine scratches in the process of working with an aqueous solution and using a standard film duplicator. The quality of the internegative will change depending on the selected flow, which is determined from the state of the original film. Therefore, it is important to prepare an original print that is more suitable for duplication.

Additionally, it would be very helpful if the use of ORWO film became more common for internegative production, given that KODAK's B&W internegative film is difficult to procure. However, for production within Japan, there are many issues to be resolved including the lack of use case examples, the necessity of backup stocks because of the lack of use cases, and the cost of importing small lots each time as necessary. While the future demand for 16mm B&W internegative is uncertain, we think if it will be useful it is possible to import a certain amount and stock them.

Although the flow of the 35 mm enlargement is the most realistic option at present in terms of image quality and work performance, there is not only the cost for the production of the internegative, but also for downsizing to 16mm each time to make new prints. It is problematic that when printing a large volume, the cost becomes expensive.

Since there is also difference in the knowhow by each laboratory, we hope to construct a more effective flow through the exchange of information.