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Moving Image and Sound: Basic Issue and Training

The Relationship Between Cultural Policy and Technology Obsolescence:

Introducing the History of 8.75mm Film in China

8.75mm film was not first introduced by Chinese technicians, but it became an isolated film gauge solely prevailing in mainland China¹. It was promoted by the government during late 1960s to early 1980s. Even 8.75mm film might have shortly appeared in other countries outside of China, this paper will mainly focus on the history and development of 8.75mm film in China.

The Chinese Civil War between Kuomintang (KMT) government and communist-led People's Liberation Army (PLA) (1927-1936, 1946-1950), the establishment of People Republic of China (1949), and the onset of Great Proletarian Culture Revolution (1966-1976) acted as stimulus to 8.75mm film. Combining these elements together, a self-sustaining environment was created to nurture 8.75mm film. Furthermore, the technical improvement in 35mm and 16mm film production and projection was like a double-edged sword – it gave birth, life and death to 8.75mm film. In addition, 8.75mm is the product of cultural policy, and political changes had direct impacts on its development. For almost twenty years, from central to local governments had put considerable amount of resource and time in

¹ Mainland China is referring to the geographic area under direct jurisdiction of the People's Republic of China, which excludes Hong Kong, Macau and Taiwan. Even Tibet is ruled by PRC government, 8.75mm film was not promoted in this area.

this special format and its related devices. Therefore, one can never divorce 8.75mm from its historical and political context.

After People Republic of China was established, especially after the inception of Cultural Revolution, the officials wanted to increase the screening numbers in rural areas, so the propaganda films and censored feature films could have the ability to reach more audiences. During the 50s, the tour projection crews used a 16mm projector² produced by the Nan'jin Machinery Factory of Film, and, in Tibet area, one crew would need 4 yaks to carry all their equipment for 16mm projection including projector, generator, screens and reels.³ Regardless of image quality, people started to feel urgent needs to produce smaller prints and lighter projectors. Base off various reasons, the government deliberately adopted a tailored film gauge to facilitate the task. Given the premise, 8.75mm film was not used by amateur filmmakers, and local companies never considered manufacturing either single-strip 8.75mm cameras or 8.75mm film stock.

This paper will first briefly introduce the historical background and the cinematic development during those periods. Because there is only a few English publications briefly mentioned 8.75mm, Chinese-written articles, publications and local government issued reports will be my main resources. Even not all of my reference was published by the governments, we simply can't neglect the fact that there is a censorship mechanism implemented in China. I will also use statistics to demonstrate technical improvement of 8.75mm film production; however, I will

² The factory used a Russian projector as the prototype model, and it is about 70 kilogram.

³ Guigeng Yu, "Looking back at the Unique Phenomena of the History of Chinese Film — 8.75mm Film" in *Motion Picture & Video Technology*, (2005, 11), 30.

leave the following questions unanswered – was the image quality radically improved over time; how often the overheating and projectors malfunction happened during projection; how widespread 8.75mm projector really was; and the lifespan of a 8.75mm projector. I believe that only remain skeptical, I will be able to discover how the history, the policy, the cinematic development and 8.75mm film had an intertwined relationship at a time when China had been through radical changes in its culture, politics and society.

Cinematographic development during 1937 to 1966

Under the leadership of Zhou Enlai, the first Premier of the People's Republic of China in fall 1939, the film director/actor Yuan Muzhi assisted the Eight Route Army General Political Department (the former of People's Liberation Army) to recruit members for the Yau'an Film Crew. He and the cinematographer Wu Yinxian purchased 16mm filming equipment and 16mm film stock in Hong Kong in order to document the Second Sino-Japanese War. When they produced *Combining Production and the War* around 1940, they use hand held camera to film on 16mm reversal film. During this time, they used Kodak D-76 Film Developer for negative and D-72 for positive. Besides, the crew only owned one 35mm projector, one 16 mm projector and 3 generators. In late 1940, the size of the crew grew from 6 members to 20, and they started training programs to educate future filmmakers in 1942.⁴

In August 1945, after the crew fulfilled their missions, the members were sent to East North Liberated Area to take over the infrastructure of 6 Japanese-owned

⁴ Qianlin Xu, *A Brief History of Technological Development in Chinese Filmography* (*Zhongguo dian ying ji shu fa zhan jian shi*), (Beijing: China Film Press, 2005), 30-31.

film studios⁵; they then changed it to the East North Film Studio in 1946. In the same year, with the support of the Kunlun Film Company, the Shanghai Venus Film Equipment Company use Mitchell NC camera as their study model, and successfully produce the first Chinese-made 35mm electronic sound camera in early 1947.⁶

In 1949, Yuan was appointed as the minister of the State Administration of Press, Publication, Radio, film and Television of the People's Republic of China (SAPPRFT). During 1949 to 1958, the government continued to make progress through taking over the Japanese-built and KMT-built factories⁷, initiating new constructions as well as setting up the first 5 year plan for the entire film industry in 1953. 16 Chinese organizations are the major stimulus of technical progress at this time; they are – Beijing Film Studio, Shanghai Film Studio, Chang'chun Film Studio, Beijing Film Developing and Printing Company, China Machinery Factory of Film, Nan'jing Machinery Factory of Film, Shanghai Eight One Machinery Factory of Film, Eight One Film Studio of the Liberation Army, Central Newsreel Film Studio, Shanghai Machinery Factory of Film, Shanghai Movie Technology Studio, Shanghai Film Studio of Scientific Education, Har'bin Machinery Factory of Film, China Film Distribution and Exhibition Corporation, China Agriculture Science Film Studio and China Research Institute of Film Science and Technology. They introduced products from western countries and Russia; in the meanwhile, they studied the equipment in hope to design new Chinese-made models. To name a few of these equipment, LP-C4 Compact Lighting System Controller, K3M-6 6.25mm mechanical recorder, Mitchell

⁵ Each of the studios is about 600 M², and sound-proof materials are applied to the walls and ceiling. There is a room for voice-over recording and projection, and the other room for music and sound recording.

⁶ Qianlin Xu, *A Brief History*, 32-35.

⁷ Because of the civil war, KMT government brought portable film equipment with them to Taiwan, which became the foundation of film development in Taiwan.

BNC Camera, printer and reduction printer from Bell and Howell, and Debie DUC 35mm film processing machine. During this period, they made substantial improvements including producing the first 35mm optical printer (1951), the first silver extraction machine (1953), 5000 Carbon rods (1954), Liberation 103 35mm portable projector (1955), and the first hand-held 35mm camera (1957).⁸

10 years after executing the first 5-year plan, the main concentration of film development channeled from technical improvement to standardization. In 1959, most of the studios finished their expansions, and began to invest on motion picture productions. By 1966, disregard the quality, local studios were somehow capable of using local products to produce, print and project films. For example, the Shanghai Film Machinery Design Institute successfully manufactured SH 35mm special effect camera, S16A 16mm camera, and lens for 16mm film camera. Nan'jing Huadong Electric Company produced movie camera lamp (2900K-3000K, 220V3000W), and most of the color prints were developed in China instead of outsourcing to other countries. The China Research Institute and the Nan'jing Manufacture worked together to design new prototypes of lightweight projector for 35mm, 16mm and 8.75mm. Furthermore, they started to explore new technologies such as 3D movie, and special effects.⁹

Developing 8.75mm film

Before the Culture Revolution, several important figures in the Ministry of Cultural Affairs such as Xia Yan¹⁰ and Zhou Yang¹¹ fell out of power, and Lu Dingyi, the Head

⁸ Qianlin Xu, *A Brief History*, 38-59.

⁹ Qianlin Xu, *A Brief History*, 81-88.

¹⁰ Xia Yan is a Chinese play and screen writer, and was the Deputy Minister of Culture in 1954-1965.

¹¹ Zhou Yang is a Chinese philosopher, and was the advocator of Maoism.

of CPC Central Propaganda Department (also known as the Publicity Department of the Communist Party of China), took direct control over the film/movie department in 1965. In response to Mao's cultural policies as "to destroy talented scholars and intelligent ladies (caizi jiaren)¹²" and "art should serve worker-peasant-soldiers (gongnongbing)", Lu requested Situ Huimin, a film director, to lead the China Research Institute of Film Science and Technology, and the Film Industry Department of the First Ministry of Machine-Building of the PRC to develop a lighter projector.¹³ In order to serve more peasants and promote Up to the Mountains and Down to the Countryside Movement (sahng shan xia xiang), the Ministry of Cultural Affairs hosted a forum for film production and machinery maintenance from March 30th to April 9th in 1965 to discuss issues in relation to mind emancipation, numbers of movie screening, lightweight projector, film equipment manufacture, and etc.¹⁴ During this period, movie screening in rural area was very limited, and the main issues were: it was too expensive for peasants to pay for a 35mm or a 16mm movie; the transportation to reach rural areas remained un-developed so they can't send the projectors; and there was no electricity.¹⁵ In terms of portability, shipping and

¹² In 1962, Mao purposed his concept of culture policy – "the past 13 years should be re-written, no destruction no construction", which means the topics of current prevail artworks need to be re-set in order to promote communist theories and serve the society. In 1964, Mao once said: "the opera haven't changed in the past 15 years, and they never get interested in worker-peasant-soldiers. They are only interested in the Capitalism and Feudalistic – the so-called emperor and elite, or the talented scholar and the intelligent ladies." Same year, Jiang Qing expressed her opinions about the same topic, she said: "we promote modern revolutionary play to reflect the realistic aspect of our life after the establishment of PRC. We should build up the idolized image for our contemporary hero of the revolution". To find out more about Chinese movies during this period, please read: Qizhi, *People's Movie under Mao's Leadership: 1949-1966* (Mao Zedong shi dai de ren min dian ying 1949-1966), (Taipei: Xiu Wei Publication, 2010), 466-471.

¹³ Zhang Huijun, *The Professional History of Chinese Movie – the Technology*, (Beijing: China Film Press, 2006), 133-134.

¹⁴ Jingqing Tian, *The History of Beijing Film Industry: 1949-1990* (Beijing dian ying ye shi ji 1949-1990), (Beijing: China film Press, 1999), 172.

¹⁵ Zhang Huijun, *The Professional History*, 133-134.

production coast, a small gauge projector became the rightful choice that represents a saving in weight and cost.

In November 5, 1965, the First Ministry of Machine-Building of the PRC and the Ministry of Cultural Affairs presented a conference to decide which small film gauge should be used in the suburb.¹⁶ Two formats were purposed here – Super 8 and 8.75mm.¹⁷ Two reasons 8.75mm was purposed during this period. First, the government officials claimed that they found an article on Society of Motion Picture & Television Engineers Motion Image Journal. In the article, a French engineer purposed to divide 35mm equally into 4 strips, and provided a standard gauge for 8.75mm film. (Fig 1)¹⁸ The second reason is to add sound track to the small film gauge without losing effective frame area.¹⁹

People spoke in favor of 8.75mm advocated that according to ISO 3026, the effective frame diameter of Super 8 is 24.43 mm², as opposed to 28.69 mm² of 8.75mm. Therefore, the effective frame diameter of 8.75mm is 18% higher than Super 8. If using ISO 3645 as the standard, the frame size of 8.75mm would be 30% larger than its Super 8 counterpart. Ideally, 8.75mm can effectively improve the image quality, and uses 35mm film stock as base to make reduction prints. After comparing many small gauge projectors from foreign countries, the government decided to copy the standard format of 8.75mm film gauge and invested on trial productions of smaller projectors as well as lightweight generators, which would be

¹⁶ Jingqing Tian, *The History of Beijing Film Industry*, 173.

¹⁷ Guigeng Yu, "Looking back at the Unique Phenomena, 30-31.

¹⁸ Zhang Huijun, *The Professional History*, 133-134.

¹⁹ Jingqing Tian, *The History of Beijing Film Industry*, 172.

used in rural areas.²⁰ According to Situ Huimin's speech at the National Conference of Film Technology Standardization on November 8th 1981, he said: "due to the large population, the enormous land area and Down to the Countryside Movement, we consider using 8.75mm in rural areas in China since it has the largest effective frame area than other small film gauge, but we would use Super 8 for international affairs."²¹ In November, the Logistic Command of Agriculture Support was formed; its main mission was to ensure the implementation of 8.75mm film.²²

In February 5th 1966, the China Research Institute Of Film Science and Technology joined the Beijing Machinery Factory of Film to carry out the task.²³ After the inception of the Cultural Revolution in May, Jiang Qing, known as the member of the Gang of Four, was appointed as the Deputy Director of the Central Cultural Revolution Group. She oversaw the entire film industry and in particular, showed her strong preference in developing 8.75mm film in the rural areas. In May 16th of the same year, the central government declared the *Announcement from the Central Committee of the Communist Party* (also known as 516 Announcement), where film industry was labeled as the product of Capitalism and Feudalistic.²⁴

In October 1967, the First Ministry hosted the National Forum for the *Standardization of 8.75mm Film Projector*; they concluded that the cinematic development in rural area would mainly focus on 8.75mm film, supplementing with 16mm film and 35mm film. In the same year, the Nan'jing Machinery Factory of Film

²⁰ Zhang Huijun, *The Professional History*, 133-134.

²¹ Situ Huimin, "Talk at the National Conference of Film Technology Standardization" in *Chinese Movie Chronology* (zhong guo dian ying nian jian), (Beijing: China Film Press, 1982), 516.

²² Guigeng Yu, "Looking back at the Unique Phenomena", 30-31.

²³ Qianlin Xu, *A Brief History*, 90.

²⁴ Qianlin Xu, *A Brief History*, 90.

produced the first model projector for 8.75mm film. In 1968, the Shanghai Film Technology Company build a factory specialized in Technicolor and 8.75mm film printing, whereas the Shanghai Machinery Factory of Film successfully accomplished the design of 8.75mm projection screen.²⁵

In November 15th 1969, 628 Conference was held in Beijing that heralded a new era in Chinese film history as it established the directions for the industry in the following 20 years. The conference was approved by Zhou Enlai and Jiang Qing, and was hosted by the Office for National Defense Industry of the State Council (guo wu yuan guo fang gong ye ban gong shi), the former of the Commission for Science, Technology and Industry for National Defense.²⁶ 628 Conference is the most participated, most influential, and includes the highest managerial level from many institutions in the film history²⁷. At this time, the government already discarded the possibility of adopting any international standards, neither 8mm nor Super 8 was mentioned, and demonstrated their strong interests in promoting 8.75mm in countryside. Under special political circumstances, people showed their inclinations of 8.75mm over Super 8 as a method to be politically correct. 8.75mm becomes a product of Culture Revolution and a brand of the Gang of Four.²⁸ To better understand the history, we simply can't ignore that 628 Conference has tremendous influence on 8.75mm and the entire film industry. Even I believe that only by reading the meeting minute of 628 Conference, we will be able to decipher the real

²⁵ Qianlin Xu, *A Brief History*, 98.

²⁶ Zhang Huijun, *The Professional History*, 137.

²⁷ Qu Jinkui, *Chinese Machinery History of Culture and Office Equipment* (zhong guo wen hua, ban gong yong ji xie shi), (Beijing: China Culture & Office Equipment Professional Association, 2004), accessed on October 30th, 2014. <http://www.ccoea.org.cn/standard/hyfzs20110704100839.html>

²⁸ Zhang Huijun, *The Professional History*, 135-137.

intention behind the decision-making process. However, due to the difficulties of locating the complete meeting minute, I can only provide translation of the summary in the following section.

Summary of the Meeting Minutes of the 628 Conference²⁹

During November 15th to December 11th in 1969, National Film Industry Conference (also known as the 628 Conference) was held in Beijing. 554 representatives from 303 departments participated the conference; they are the directors of the committees from 29 provinces, cities and the special purpose districts; the related subordinate of the State Council of the People's Republic of China; the technicians, the People's Liberation Army, the workers, and the supervisors of different divisions from the application, manufacture and research offices of the People's Liberation Army General Logistics Department.

During the conference, the representatives studied Mao's concept from the *Talks at the Yan'an Forum on Literature and Art* (Zai yan an wen yi zuotanhui shang de jianghui)³⁰, the objective of "being independent and self-sustaining", and the important directions provided by central government to develop our film industry. They researched the goal to develop our country's film industry, and set up the plan to do scientific researches, model testing, manufacture and construction. They were in an agreement that the conference follows Mao's significant objective for film development as "being independent and self-sustaining" as an attempt to push the discourse forward. The conclusion of the conference can be found here:

²⁹ The entire section is translated from Jingqing Tian, *The History of Beijing Film Industry*, 162-165.

³⁰ The Yan'an Forum was held at Yan'an city in May 1942, which is a one of the important event for the Yan'an Rectification Movement.

The film industry in our country is one of the important components of the entire Proletarian Revolution business. The purpose of the industry is to serve proletarian revolutionary movies, giving them the ability to create tangible products in order to promote spiritual ideas. Our film industry currently lags so far behind that they don't have the technology to meet the needs of movie production. The representatives said: "to face the international competitions, we must use the spirit of revolution to 'seize the day, seize the hour'³¹, racing against time to change the underdevelopment landscape of our film industry in the shortest period of time."

1. Schedule for 1970

The schedule for 1970 should take all the factors into account³², focus on the highlights, make sure the creation of revolutionary model opera (yangbanxi) movies and fulfill the urgent needs of military preparation. We need to cover several aspects as listed below:

1. We must put in all of our efforts to produce revolutionary model opera movie, and develop Technicolor and its film stock. Concentrate on improving the quality of color prints; devote to develop film stocks that would be used to produce the revolutionary movies such as color negative film, intermediate film, positive film, matrix film and blank receiver film for Technicolor, and reversal film for 8.75mm; take initiative to ensure that Boa'din Film Stock Company, Shanghai Photographic Material Manufacturer and Tian'jin Photographic Material Manufacturer are capable to increase their production

³¹ It is from Mao's poem in *Reply to Comrade Guo Moruo*, he said: "ten thousand years are too long; seize the day, seize the hour!"

³² In the *Ten Major Relationships*, written by Mao Zedong in 1956, he said, "the guiding principle of communist construction is to "take every factor into account, and make proper arrangement."

- quantity with stable quality; give necessary assistance to areas such as Liao'ning and Jiang'su, and aim to manufacture film stock in 1970.
2. We must fully develop optical technology for cinematography. Optical technology is now the weakest part of our film industry. It is lack of the design, technique and production of different lenses and the associated components as well as the variety of the optical glass. Therefore, we need to unify our forces, organize together and develop a standardized design. As an attempt to maximize the potentiality of the 15 subordinate agencies of the Commission for Science, Technology and Industry for National Defense, the Fifth Ministry of Machine-Building of the PRC, the First Ministry of Machine-Building of the PRC, and every province and city governments, each party should take upon the responsibilities for model-making and reproduction. In 1970, we need to overcome the technical difficulties. So we can produce lenses for revolutionary movie and military preparation, and start test production of the new optical glass models, such as the Lanthanum glass.
 3. We must fully develop the technology and equipment for Technicolor, light-equipped camera for military purposes, high-speed printer, sound recording equipment for 8.75mm film, and the new lighting tools and related components for creating reduction printings.
 4. Be mindful of the new factory constructions – the trial production of the essential equipment that will soon be used in two film studios and seven reduction-printing companies.

In our opinion, because our current on-duty projectors and the related mechanical parts for maintenance in the doctrine are coming from a fixed quota from the national production, our current production line can't meet the needs from military preparation. We should actively shift the production line for the breakable equipment to adjacent area. In this way, we can coordinate between province, city and special-purpose district to add regional production line. In the production arrangement, we must correctly address the relationship between the components and the body. During the trial production period of 8.75mm projector, the firms must first schedule to manufacture the maintenance parts, so the on-duty projectors can be operated in normal manner. We must control the product quality. Regarding the 8.75mm projectors production, since some of the provinces and special purpose districts don't have strong industrial infrastructure, they can temporarily skip the task. The central government will compensate those provinces and special propose district with requested 8.75mm projectors. However, other areas should continue model testing, and they can't mass-produce the product unless it meets the given requirements.

2. To change the landscape of film industry

In order to accommodate the needs of military preparation, all the representatives think that we should not only wholly utilize our established film studios in coastal areas, but also to accelerate the development of film industry in the inland. We must finish building the General Gan'su Photographic Material Manufacturer and the Second Branch of General Jiang'xi Photographic Material Manufacturer as soon as possible, and start to build new factories. Besides

Shanghai, we should vigorously support Jing'jing, Liao'ning and Si'chian to expand their factories on the existing industrial foundation. We need to take necessary procedures in hope to gradually form a few units that can produce basic equipment for film production. We plan to build factory for small film gauge production in Shan'xi and Si'chian areas.

3. Self-reliance – filling in the gaps to tie the chain

According to the instructions from the leaders of central government, we need to “have an independent and self-reliance foundation to fill in the technical gaps in the film industry as an attempt to tie the chain of production together.” Base on the current situation, the conference drafted *Catalog of Film Equipment, Forming a Complete Chain* as a reference resource. The initial step is to reverse the irrational distribution of resource in film industry by the end of 1972.

In order to succeed in 1970, we need to:

Politics first. Political work is the lifeblood of all the economic activities. Firmly follow and implement the principle, policy and instruction from the central committee of the party when you are developing the industry.

Persist in carrying out the guiding principle as “being independent and self-reliance” to pave the road for our own film industry; to liberate the mind; to break the boundaries established by the westerners; to devote to innovations; and to use the collective intelligence to produce better yet more popular film equipment for worker-peasant-soldiers.

Independence and self-reliance means frugal revolution – construct factories with modest funds, explore potentiality, continue local business without dramatic

transformation, combine the local with the west, process great business in small factory, be thrifty, and make the most achievements with the least resources.

Start to include the public. We want the spirit of the instructions to develop our film industry from the central government to be completely exploited by the general public; as a result, to generate tremendous physical forces.

Encourage the public. Use the combination of application, production and research to fully unfold the collective technology revolutionary movement. Emphasize the technical exchange between local institutions. Adopt new technology, craft, material, component, and product to critically absorb state-of-the-art technology from foreign countries. Form strategic team, the majority of which would be workers, to create technical breakthrough that will upend the field and supersede the current leading technology in the world in the shortest amount of time.

We believe that everyone, including the related departments within the State Council, the revolutionary committee of the provinces and special purpose districts, needs to thoroughly execute central government's instructions and the *Report of Film Production Management*, which was approved by the central government, to reinforce the leadership in the industry. We should supervise and examine everyone's work so that we can "vigorously collaborate to accomplish the task".

The Aftermath of 628 Conference

During the conference, many of the local factories showcased their own models of 8.75mm printer, 8.75mm projector and bicycle generator. With the assistance of Zhejiang University, the Zhejiang Machinery Factory of Film showcased Zhejiang I, the

model projector for 8.75mm film.³³ After the conference, the central government distributed a series of documents to local governments, and these documents became the untold golden principles in the industry. Nationwide, four strategic groups for film stock, film equipment, film lighting and sound recording on film were formed as a mean to collaborate with each other and make arrangement for designated trial productions.³⁴ In order to carry out the task, the local firms needed to manufacture 4 x 8.75mm perforator, 4 x 8.75mm reduction printer, 4 x 8.75mm printer, 4 x 8.75mm developer, magnetic oxide stripping machine, transcription machine, film slitter machine and projector. Because the reduction printing would be developed on 35mm film stock, a single-strip 8.75mm camera was never considered as an option.³⁵ From 1969 to 1975, Chinese government invested 65 million on the film industry with a focus on 8.75mm film development. They initiated six years plan to construct new production lines for 8.75mm projector in Hu'nan, Gan'su, Jiang'su, Chong'qing, and Beijing; and aimed to manufacture 10,000 projectors a year in those locations. In addition to new constructions, they also established several research centers for the development of 8.75mm film projector.³⁶

Procedure of 8.75mm Film Production

628 Conference roughly established the standard procedure of 8.75mm film production. Before 1969, a 35mm film stock, punched with two 8.75mm perforations in the center would be threaded on the optical reduction printer. Light

³³ Qianlin Xu, *A Brief History*, 98.

³⁴ Qu Jinkui, *Chinese Machinery History*, accessed on October 30th, 2014.

³⁵ Zhang Huijun, *The Professional History*, 135.

³⁶ Qu Jinkui, *Chinese Machinery History*, accessed on November 15th, 2014.

will go through a 35mm duplicated positive to produce the first generation print of 2 reduction negatives on a 35mm perforated film. 2 reduction images are exposed at 24 frames per second at the first pass in a modified optical printer imported from Germany. Through the lens, 35mm frame will be optically reduced into two 8.75mm frames on a 35mm perforated stock, then the 35mm perforations sides would be cut off during the end of production. The 35mm perforations allow the reduction print to be developed in a 35mm processor, and each 35mm stock can only generate 2 reduction prints.

In 1969, Shanghai Eight One Machinery Factory of Film decided to develop a 4 x 8.75 reduction printer that can create 4 reduction prints in one pass, and in 1970, the manufacture of the new reduction printer began. Chiaing Li from Beijing Six Zero Eight Factory invented the optical system for the 4 x 8.75mm reduction printer. In the printer, 4 lenses are interlaced with each other so that four 8.75 reduced images can be optically exposed on a 35mm raw stock in a single pass. After deriving the un-divided reduction negative, the reduction print would be contact printed onto a 35mm raw stock. Similar technique applies to sound recording, a mixed master sound track is made on a roll of 35mm magnetic perforated film, then it will be optical-reduced at 24 frame per second to 4 x 8.75 negative track on a 35mm raw stock. The print will run through a striping machine that can only accommodate 35mm, and liquid oxide would be applied between the frame and the edge. Sound would be transferred to the striped 35mm reduction prints; and the

striped print will be slit into four 8.75mm sound-on prints.^{37 38} An average 3,000m 35mm feature film can be reduced to 750m in 8.75mm.³⁹

8.75mm projector production and distribution

Before 1972, local factories had produced many 8.75mm film projectors under various brand names, and there is no standardized format. To list some of the models during this period, they are – Shanghai FL 8.75mm projector (Shanghai Film Projection Equipment Factory, 1966), Jiangzhun 8.75mm projector (An’hui Machinery Factory of Film, 1969), Fenglei 8.75mm projector (Shan’dong Machinery Factory of Film, 1970)⁴⁰, and Red Flag FL–8.75mm projector (Gan’su Optical Equipment Factory). In 1972, the First Ministry designated Lin’xia Research Institute of Film Machinery as the hub to form a united design team with technicians from Beijing, Shan’dong and Hu’nan Machinery Factories as well as the Gan’guang and Jiang’xi Optical Equipment Factories. In December 1973, the First Ministry release FL-8.75 I, and they further announced FL-8.75 I as the universal standard.⁴¹ (Fig. 2)

Besides 8.75mm projectors, local factories also devoted to design associated equipment including reduction printer, printer, and generator. In 1970, The Zhejiang Machinery Factory continued their researches from their first 8.75mm model

³⁷ Zhang Huijun, *The Professional History*, 135-136.

³⁸ Guigeng Yu, “Looking back at the Unique Phenomena”, 31.

³⁹ Guigeng Yu, “Looking back at the Unique Phenomena”, 33.

⁴⁰ Shan’dong Machinery Factory of Film showed Fenglei to Li Xiannian, the member of the National People’s Congress, and he praised their advance skills. In 1971, they started to manufacture Fenglei. In 1974, they produce 600 projectors base on the design of national collaboration model, and the quantity increased to 2,500 in 1978. In 1979, they stopped manufacturing projectors, and concentrated on generator development. To understand more about film development in Shan’dong, please read: Zhang Yukun, *Documentation of the Art in Shandong – the Film Industry* (wen yi zhi zi liao, dian ying zhuan ji), (Shangdong: Shandong Provincial Department of Culture, Office of Art and Culture, 1988), 140.

⁴¹ Guigeng Yu, “Looking back at the Unique Phenomena”, 31-32.

projector, which was shown during 628 Conference, to develop a 200 volts gas generator. In 1974, Huang Peisong, Young Yuanlin and Long Leihou designed M-8.75 projector for private airlines, and only produced 10 machines to be used in limited travel routes within Zhejiang Province. Their design was the recipient of the Technology Outstanding Award from the Ministry of Culture Affair. In 1978, the Zhejiang Machinery Factory manufactured 2,424 8.75mm projectors, and 504 gas generators. In 1979, they also manufactured 8.75mm filmsound amplifier and modified 8.75mm projector equipped with more efficient lamps.⁴² Furthermore, in 1969, Shanghai Eight One Factory completed their design for 4 x 8.75 optical intermittent printer, and Shanghai Machinery Factory released LC 34/4 x 8.75 sound transfer machine. In 1970, Shanghai Xianfeng Machinery Factory released YL-4 x 8.75 continuous printer, and Guan'su Optical Equipment Factory manufactured 8.75 perforator.⁴³

China Film Company's statistics will give us a sense of the how 8.75mm film impacted the industry after 628 Conference – only 20,808 projection units existed in China in 1965, and the number boosted to 103,214 in 1977. Many of the new projection units used 8.75mm.⁴⁴ We can find the same phenomena documented in some local government reports. In September 1969, the China Film Company started the 8.75mm projectionist-training program with trial projections across the country. Take Mudanjiang area in Heilongjiang Province as an example, 69 people, from 12 cities and counties, 23 people's communes (renmin gongshe) and 2 farms,

⁴² Jia Hongtu, *The History of Heilongjiang – vol. 46, The Art and Culture* (Heilongjiang sheng zhi. Di 46 juan, wen xue yi shu zhi), (Harbin: Helongjiang People Publisher, 2003), 298.

⁴³ Guigeng Yu, "Looking back at the Unique Phenomena", 32.

⁴⁴ Guigeng Yu, "Looking back at the Unique Phenomena", 33.

participated the program. Each unit was assigned a set of 8.75mm projection equipment after complete the training. Within two months, they hosted more than a thousand screenings and attracted about 500,000 audiences. In 1971, 8.75mm film was officially released in Heilongjiang Province, and most of them are revolutionary model opera. In the end of this year, there were 9,929 screenings at 77 locations. The number kept increasing over the course of 10 years – 25,116 screenings and 165 projection crews in 1972; 65,478 screening and 546 projection crews in 1975; 307,584 screening and 2,682 projection crews in 1978; and the peak was in 1979 when the number climbed to 511,622 screening with 3,320 projection crews. After 1980, the number of projection crew steeply decreased from 3,392 (1980) to 1,996 (1985).⁴⁵

Similar situation happened in Zhejiang Province. In 1970, the Zhejiang Revolution Committee demanded every people commune to form at least one 8.75mm projection crew by the end of 1972. The number of projection crew increased from 276 (1972), 474 (1975), 545 (1973), 883 (1974), to 1809 (1977). In 1983, half of the 8.75mm screenings were replaced by 16mm, and the number decreased from 1809 (1977) to 1185.⁴⁶

The disappearance of 8.75mm film

By 1979, there were 47,719 8.75mm projection crews in the nation, but there were more than 15,000 overproduction 8.75mm projectors sitting in the China Film Company's warehouse. More and more projection crew turned to use 16mm instead

⁴⁵ Jia Hongtu, *The History of Heilongjiang*, 643, 650.

⁴⁶ Zhang Hongwei, *Fim in Zhejiang Province* (Zhejiang sheng dian ying zhi bian zuan wei yuan hui), (Beijing: Chinese Book Publishing House, 1996), 41-42.

of 8.75mm. The China Film Company submitted a report to the Ministry of Cultural Affairs that consequently affected 8.75mm film equipment manufacture. Many of the 8.75mm factories were forced to abandon their production lines, or decrease the quantity.⁴⁷ Besides, the government had dedicated to improve the technical aspect in the film industry including production, printing, film equipment and film stock manufacture, and overlooked the importance of projection and distribution. That being said, the projection quality was not dramatically changed over time, and the nature of the screening (standing outdoor during nighttime) also worsened the situation.

After the 3rd Plenary Session of the 11th Central Committee of the Communist Party of China in 1978, the economy and the living quality in rural areas were gradually improved. Outdoor screening and small low-resolution motion picture can't satisfy the peasants, and they wanted to sit inside the theater for a movie. The touring projection crew started to settle in some villages, and assisted the residents to build local theaters. In 1980, 2000 new theaters were built, and in 1981, there were 4000 new theaters in the suburban areas in China.⁴⁸ Even the China Research Institute proposed new technologies to improve the image quality of 8.75mm projection in 1982, their attempts couldn't change the fact that 8.75mm were already superseded by 16mm and 35mm in rural areas. On April 8th 1984, China launched a communication satellite for the purpose of telecommunication, and it allowed more steady transmission of broadcast programs to the remote areas.

⁴⁷ Guigeng Yu, "Looking back at the Unique Phenomena", 34.

⁴⁸ Chinese Movie Chronology, 98, 222.

In 1986, most of the 8.75mm projection crews were disbanded, and it gradually disappeared in the market.⁴⁹

Conclusion

8.75mm film has an intertwined relationship with culture policies as it was born under the circumstances that the PRC government started to sense strong needs to promote new policies. After reading many documents, I found many government officials had emphasized the objectives from central authorities over and over during many different meetings – movie should serve the peasants, the party and the government. I assumed the real intention behind the implementation of this particular format was to build an invincible and invisible barrier that restricted entries of any alien powers or unpermitted thinking.

During the Down to the Countryside Movement, hundreds of thousands of students and scholars were sent to the countryside to be re-educated by the peasants. 8.75mm film became the tool government adopted to reform the mind and to revolute the culture. The government wanted to screen revolutionary model opera movies desperately in the remote areas when the to-be-reformed target groups were there. The onset of Culture Revolution brought 8.75mm to the center of attention. When Mao's death in 1976 brought Jiang Qing and other members of the Gang of Four's immediate downfall, consequently, the era of 8.75mm film came to the end. We can see the numbers of projection crew dropped in the end of 1970. Without the government's support, 8.75mm quickly lost its privilege in the market, especially after more and more theaters were built and televisions became common

⁴⁹ Guigeng Yu, "Looking back at the Unique Phenomena", 34.

in the early 80s. Despite the fact that revolutionary model opera were no longer needed after 1976, it took almost ten years to dismiss 8.75mm film in the market. Basically, it can not be swiftly replaced for a few reasons – China was not a free market and there was no other superior technology emerging in the market since all the factories had concentrated in developing 8.75mm for more than 10 years. The obsolescence of 8.75mm had demonstrated the relationship between technology, market and culture policy, whereas its birth displayed how the political forces can intervene the nature of supply and demand and create an unchallengeable monopoly.

Plates

Fig. 1, 8.75mm standard gauge

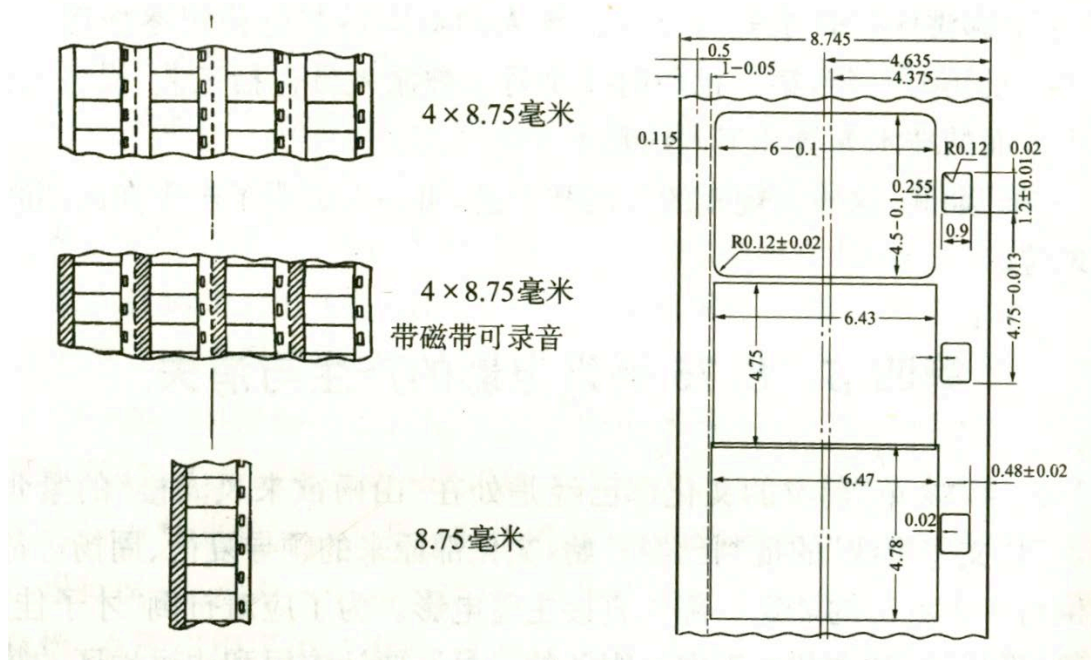


Fig. 2, FL-8.75 I

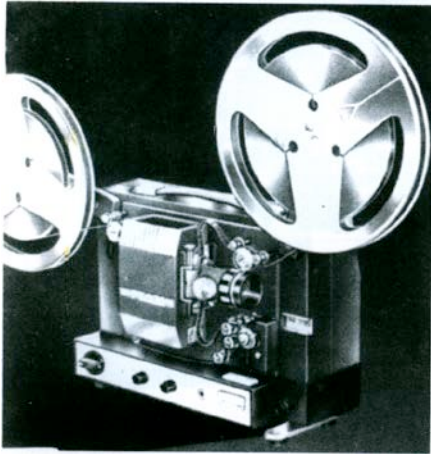
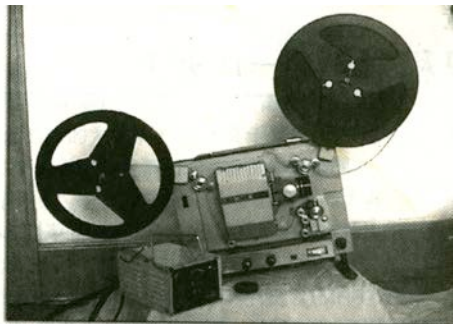


Fig. 3-4, 8.75mm projectors



Annotated bibliography

Yu, Guigeng., "Looking back at the Unique Phenomena of the History of Chinese Film — 8.75mm Film" in *Motion Picture & Video Technology*, 2005, 11.

I used this article for most of the technical detail and historic background information.

Xu, Qianlin., *A Brief History of Technological Development in Chinese Filmography (Zhongguo dian ying ji shu fa zhan jian shi)*, Beijing: China Film Press, 2005.

I derived most of the technical and historical information from this publication. Most importantly, the summary of 628 Conference is from this publication.

Qizhi, *People's Movie under Mao's Leadership: 1949-1966 (Mao Zedong shi dai de ren min dian ying 1949-1966)*, Taipei: Xiu Wei Publication, 2010.

This publication is my main resource to understand the genre of Chinese movies under Mao's leadership, and to understand his language.

Huijun, Zhang., *The Professional History of Chinese Movie – the Technology*, Beijing: China Film Press, 2006.

I find many of the statistic and technical information here.

Tian, Jingqing, *The History of Beijing Film Industry: 1949-1990 (Beijing dian ying ye shi ji 1949-1990)*, Beijing: China film Press, 1999.

I find many of the technical and historical information from this book.

Chinese Movie Chronology (zhong guo dian ying nian jian), Beijing: China Film Press, 1982.

I found 8.75mm film development after 1976 to 1981 in this publication.

Jinkui, Qu., *Chinese Machinery History of Culture and Office Equipment (zhong guo wen hua, ban gong yong ji xie shi)*, Beijing: China Culture & Office Equipment Professional Association, 2004. Accessed on October 30th,

2014. <http://www.ccoea.org.cn/standard/hyfzs20110704100839.html>

I found some of the supplemental technical information from this online article.

Yukun, Zhang., *Documentation of the Art in Shandong – the Film Industry (wen yi zhi zi liao, dian ying zhuan ji)*, Shangdong: Shandong Provincial Department of Culture, Office of Art and Culture, 1988.

Shangdong province's participation of developing 8.75mm projector is from this book.

Hongtu, Jia., *The History of Heilongjiang – vol. 46, The Art and Culture (Heilongjiang sheng zhi. Di 46 juan, wen xue yi shu zhi)*, Harbin: Helongjiang People Publisher, 2003.

This book provided me history of 8.75mm film development in Helongjiang province.

Hongwei, Zhang., *Fim in Zhejiang Province* (Zhejiang sheng dian ying zhi bian zuan wei yuan hui), Beijing: Chinese Book Publishing House, 1996.
This book provided me history of 8.75mm film development in Zhejiang province.

Cinematic Terminology in simplified Chinese and English. Accessed in October and November, 2014. <http://wenku.baidu.com/view/bb34cce39b89680203d825b4.html>
I use this document as one of my tools to do translation as I didn't grew up in mainland, and I was sure if I translated the technical term correctly.