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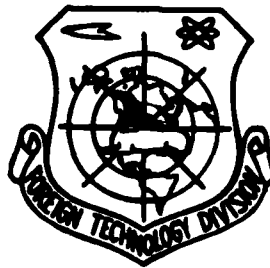


INTELLIGENCE INVESTMENT OF COMMUNIST CHINA

by

Wang Lingling

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Intelligence Investment of Communist China

Wang Lingling

"Four Modernizations" is considered the main driving force by Communist China that can strengthen the nation's power, and further to enable this country to walk forward together with advanced European countries and the USA. The government of Communist China has scheduled a two-stage plan for the next twenty years: In the first stage, it is planning to adjust the national economy, and to train talents before the year of 1990, and therefore prepare for the economic development of the 90s. In the second stage, it is planning to improve the economy and double the total output of industry and agriculture at the end of this century, making a sound foundation for the fulfillment of the final object of "Four Modernizations." Intelligence investment, therefore, is a major work in the scope of training of talents during the 80s.

In the third meeting of the Fifth National Congress of China, Hua Guofeng stressed, " We must pay attention to exploit intelligence," and he also said, "We must actively develop science and education. The development level of a country mainly depends on how to exploit the nation's intelligence resource. The development of all levels and all

kinds of education systems are closely correlated to the science and culture level of modernization. So we should promote the development of science and education through every kind of channel."^[1] This statement is the fundamental understanding and policy, in this field, of Communist China.

In the speech to the Twelfth Party Congress of the Communist Party of China, Hu Yaobang gave education the same priority as agriculture, energy, and transportation; they are all strategically important in economic development. Education is the weakest among these three strategic areas. This fact is even more prominent at a time when Communist China is endeavoring to push science and technology forward. More specifically, the resistance and difficulties of "Four Modernization" mainly come from people. This includes people's acceptance of the concept of the importance of knowledge, the quality of education, the distribution of educated manpower, the training and use of talents, etc. All these problems are closely related to education. With the elapse of time, such problems will become more serious. This paper will analyze the intelligence investment of Communist China regarding to these problems.

1. The calling for Paying Attention to the Importance of Knowledge.

Since the Communist Party's third plenary meeting of the Eleventh Central Committee, it has been pointed out

repeatedly that science and technology are the keys and education is the foundation. At the Twelfth Party Congress of the Communist Party of China, education and science were treated as one of the three strategic priorities. But in order to carry out such policies, a propaganda and education process is required to give the Party members, government employees, army, and people some degree of understanding.

Basically intelligence investment is an investment in education. In order to make people understand the functions of education, the importance of knowledge, it is necessary to eliminate the fear of knowledge among people. Such fear was cultivated during a long period. Therefore as a theoretical basis for intelligence investment, calls for paying attention to the importance of knowledge become louder day after day. Such calling is being done via two channels: one is through the propaganda of the functions of education and the position and functions of education in socialism modernization; the other is through public speeches made by leaders of the Communist Party to enforce the importance of knowledge and intellectuals. Under such situations, Marx's theory about the functions of education in the development of social production is naturally treated^[2] as a theoretical foundation. Mainly the following points are enforced:

- (1) Education can produce production power

"Education can produce production power" is an important theorem of Marx on education.^[3] Marx thought that the reproduction of productive force is a prerequisite for the existence of any society. Education and technical training are the main channels for the production and reproduction of the productive force.

(2) Education is a prerequisite of modern production

This is true because the objective characteristics of modern production require that all workers must have knowledge of modern science, technology, and culture.

(3) Education is a necessary channel for the transfer of science and technology to social productive force. Under the prerequisite that "Communist China has proved that science and technology are productive forces"^[4] naturally science and technology become the common basis of the modern production and education. Education is the bridge for applying modern science and technology to modern production. Without such a bridge, the productive force in the form of knowledge can not be transferred into a direct productive force.

With such theory as a basis, the strengthened points in the speeches of the Party leaders mainly follow two aspects: on the one hand, pointing out the importance and urgency to attach importance to intellectuals, on the other hand, criticizing the views and actions of anti-intellectual

tendencies. Beginning with the talks of Deng Xiaoping and Fang Yi at the National Conference of Sciences in March of 1978, a series of important meetings were held one after another, such as the National Conference on Education, the Fourth National Congregation of Literature and Art Workers, etc. Besides, a series of important documents on intellectual problems were issued and distributed intensively. All these tried to confirm the position and functions of intellectuals in the process of modernization. In March of this year (1983), Hu Yaobang gave a talk with the title of "The Light of the Great Truth of Marxism Leads Us Forward", at the meeting for the hundredth anniversary of the death of Marx. His talk further clarified the value of knowledge and the important position of intellectuals.

Communist China gives full trust to intellectuals in this stage. The difference between mental and physical labors is only a matter of social divisions of labor, and both of them are the depending forces of socialism. Because the rewards of intellectuals were lower before, raising their rewards is treated by the Communist Administration as one of the active means to arouse the enthusiasm of intellectuals.

The criticism of the anti-intellectual tendency pointed to the theory put forth by the "Gang of Four", that is: "The more knowledge one has, the more reactionary he will be." On

the contrary, it has been declared again that "the more knowledge one has, the more capable he will be to understand and improve the world." Besides emphasizing the value of knowledge for the progress of society, a great endeavor is being done to fight against the tendency to separate intellectuals from the working class, making them conflict with each other, and to treat intellectuals as a negative force. Therefore, how to establish intellectuals as part of the working class is being emphasized repeatedly.

In this aspect, the Communist administration exploits the viewpoints of Marxism over and over again. They explain that intellectuals are never an independent class. The essential difference between mental and physical labors will decrease and vanish eventually. But because the concept that "knowledge is sin" was already deeply accepted by people, the looking down on knowledge by Mao Zetong and the "Gang of Four" can not be eliminated within a short period. Among many people, especially among Party and government cadres, looking down on knowledge and intellectuals still exists in their minds and hearts. To oppose these people, the Communist administration has warned that disciplinary measures, from public criticism to even necessary attacks, will be taken. Such calling to attach importance to intellectuals represents an important change of Communist China's intellectual policy. It causes the need to replace

the inexperienced administration team with an expert team. Such guiding thought is already being manifested in the reorganization of the leading organizations of all fields. How to make the cadre team of all organizations knowledgeable and expertized under the prerequisite of revolutionization is a topic under special concern.

Paying respect to knowledge is also manifested in the new Constitution and the new Constitution of the Party. According to the new Constitution of the Party, the Party requires Party members to unite together with workers, farmers, and intellectuals. In the introduction of the new Constitution, it is written clearly that the socialist construction must depend on workers, farmers, and intellectuals. That is to say: intellectuals, together with workers and farmers, are three basic social forces. The Communist administration intends to use the articles of the law to eliminate the disbelief of intellectuals; such disbelief was cultivated over a long time. At the Congregation of National Congress, a geologist, Mr. Ying ZaiXiong said: "Since the third plenary Meeting of the eleventh Central Committee, the position and function of intellectuals have been raised greatly, but some are still worrying that the policy might be changed. Now that the position and function of intellectuals have been written into the Constitution, we can really trust it."^[5] These

words reflect the current feeling of intellectuals. In fact the so-called trust reflects the feeling of disbelief.

From the beginning of 1982 to the beginning of 1983, the Communist administration began to take some actions to carry out the policy of paying respect to knowledge. This reflected the resolution of Deng and his followers to carry out the new policies. If such a policy of paying respect to knowledge will meet resistance from Party members and cadres, how long will the guarantee of the Constitution last. It might be only an ideological route or a tactical mean.^[6] At least now is the time for exploiting intelligence and pushing education diligently by the Communist Administration. Such action represents their current policies.

2. The Quality of Education

The Communist administration understands fully that an important function of education is that the fulfillment of the tasks of this period depends on the endeavor of people. Without enough well educated talents, it is impossible to have fast development of all the other fields of Communist China.

As a matter of fact, all nations, either economically developed or undeveloped, pay attention to education. Emphasizing exploiting the intelligence of people and

enlarging the investment in intelligence have become a world-wide trend. According to the western view: modern civilization came from education; or according to Marxism: education can produce productive force. All emphasize the importance of education. Communist China wants to reach its goal, therefore emphasizing the investment in intelligence is a must.

Communist China feels more strongly about the importance of investment in intelligence than ever before. First, let us review its properties which can be used for education. About this aspect, the Communist administration itself admitted that education was not emphasized before for a long time.

According to the census of 1982 by the Communist administration, the illiterate and semi-literate population with ages above 12 years old is 235.82 millions, which is a quarter of the total population.^[7] Comparing this figure with the figure of the last census of 1964, the percentage of the illiterate and semi-illiterate population dropped, but because no compulsory education was enforced, the absolute figure has a tendency to increase. Therefore, if Communist China wants to raise the educational level, the initial work is quite difficult.

The reason for such an illiterate and semi-literate population is that there is no compulsory education system.

In order to enforce compulsory education, first of all the schools administered by communities themselves must be transferred into the public school system, and all the teachers who are not on the pay roll of the public education system should be transferred into formal positions of the public schools. All this needs a great amount of funds. This is a very heavy burden for the current financial situation of Communist China.

Recently, among the 202 countries and regions all over the world, only 33 did not enforce compulsory education systems. Among them, the United States, Soviet Union, France, Japan, and West Germany have already fulfilled 10-years of compulsory education. The United States, Japan, and the Soviet Union have already finished the popularization of the senior high school system. Even India and other undeveloped countries have fulfilled a 4-year compulsory primary education. From these data we can see the backward situation of Communist China's education. The situation in rural regions is the most serious. Some primary schools just function as a place to keep children; sometimes even that function is missing. But 80% of the population lives in the rural regions. If such situations continue to exist, how can one speak of exploitation of intelligence, not to mention other problems, such as the renewing of school buildings and educational equipment?

The Central Committee of the Communist Party and the State Council have already scheduled the popularization of primary education before 1990, with several different forms. And this should be fulfilled ahead of time in economically developed areas. Three years have already passed, but still no specific measures have been taken by the Communist administration. Thus it is doubtful if Communist China can fulfill the goal of popularizing of primary education.

Communist China's secondary education is a parallel structure of the common high schools and vocational schools. Because many vocational schools were closed during the Cultural Revolution, agriculture and some other vocational schools were almost totally destroyed as a result. The common high schools developed too much, and this made the structure of secondary education single-direction oriented.^[8] According to an investigation, 95 percent of high school graduates who obtained jobs could not apply their school knowledge to their work. In fact, the development of Communist China needs a great quantity of elementary and secondary level technicians and laborers. In order to avoid such unmatched phenomenon between education and the needs of society, the administration has been active recently in the reorganization of the structure of secondary education, especially emphasizing the training of technical and specialized personnel (Table 1). Besides, the

administration is preparing to test directional enrolment and directional job placement to improve the job assignment system of the vocational and technical schools, and to exploit the capability of education.

Table. 1 Enrolled Students of Higher Educational schools and high schools

年 份 ¹	單 位 ²	高等學生 ³	中等學生 ⁴
1976	萬 ⁵	56.5	69.0
1977	萬 ⁵	62.5	68.9
1978	萬 ⁵	85.6	88.9
1979	萬 ⁵	102.0	119.9
1980	萬 ⁵	114.4	124.3
1981	萬 ⁵	127.9	106.9

1 - year; 2 - unit; 3 - higher Education; 4 - secondary education; 5 - 10 thousand.

Source: Chinese Yearly Statistical Book, 1981, Edited by Chinese National Bureau of Statistics, Economic Review Publishing Company, Hong Kong.

As a matter of fact, high school students are an abundant source of talent. Vocational and technical schools

can absorb a part of high school graduates and are a reservoir of manpower for future social needs. But millions of graduates of senior and junior high schools become unemployed and wait for jobs, except for a small number of them who can enter colleges and universities to continue their study. Therefore the unemployment problem is a heavy burden of the Communist administration. The unemployed population is estimated from 10 million to 25 million according to different sources and the difference is quite big.^[9] This makes it difficult to estimate the rate of benefit of the investment in intelligence. But it is true that such a rate is very low.

The institutions of higher education are important bases to train talents. They have a lot of scholars and experts, library books and information, and instruments and equipment. They have good conditions for the development of intelligence. Therefore the Communist administration pays special attention to the development of these institutions of higher education. But similar to secondary education, all colleges and universities were damaged severely during the Culture Revolution, and have not yet recovered. The quality of higher education influenced by such damage is huge indeed.

The Communist administration is clear about this situation. But because the need for talent in the

modernization is so urgent, an increase in quantity is first being fulfilled. Since 1978, the number of enrolled students increased very fast, from 0.56 million in 1976 to 1.28 million in 1981 (Table 1). If calculated based on the ratio to the total population, there are 12.8 college and university students per 10,000 persons. This is still low even in the developing countries.^[10]

In order to improve the quality of education, the Communist administration first improved the recruiting system of higher education. In 1977 the abolished entrance examination system was reinstated and active planning work was done for talent needed in different fields. All these have played some active roles to stimulate young people to study hard. The structure of specialization of colleges and universities was also adjusted. The problems of such specialization structure were the aging problem of the speciality, too fine divisions of the speciality, and some fields which are blank. All these made a narrow spectra of knowledge for the students who found themselves facing difficulties to meet the needs of reality. To solve these problems, the Communist administration gradually adjusted some out-of-date courses, combining about 1000 courses into about 400 and opening some new branches of knowledge. But political courses are still reserved^[11] and with the deepening disaster of the "Three unbeliefs (unbelief in

Maxism, unbelief in Communist Party, and unbelief in the future of the Four Modernizations), there is a tendency to strengthen political education.

The Communist administration has hope in the future of higher education. But with a limited budget this hope seems difficult to becoming reality. Therefore the administration is trying to use key institutions of higher education and multiple forms of schooling to solve this problem. The so-called key institutions of higher education are some schools which have a good situation. Priority is given to these institutions, taking advantage of the resource of teachers and equipment to make faster development. It is hoped that these key schools will prompt development of the others, and the whole quality of education will be improved.^[13] Until now there are 96 of these key schools altogether. Among them science and engineering schools occupy the largest percentage.

The Communist administration intends to build these key schools into two centers, that is: an education center and a research center, hoping to use education to train talents of science and technology, and to use scientific research to improve the quality of education. Mr. Su Buaing, president of Fudai University, said that the institutions of higher education must be excellent both in education and research. This is the nation's need for the Four Modernizations and is

an effective way to train more talents and get more research results. [13]

The multiple form of schooling is in fact the same as the method of "walking with two legs" to develop education before the Culture Revolution. Recently the Communist administration established sub-campuses, part time colleges, short term colleges, company managed colleges, colleges without dormitories, broadcasting and television colleges, etc. In the higher education meeting of May this year, the minister of education He Dongchang emphasized that the development of higher education must be multiple. Schools with different levels and forms are needed. The percentage of 2-3 years of schooling should be increased to more than 30 %.

Let us review the teacher team, which is the weakest ring of the chain of the intelligence structure. The teacher team is the main factor directly influencing the quality of talents. The current problems of the teacher team are the complicated background, the aging problems, the unbalanced structure, etc. The worst situations exist in the team of high school teachers and primary school teachers. According to an estimation, about half of the primary school teachers did not reach the level of high school graduates or teacher school (secondary education level). [14] The percentage of high school teachers with college diplomas dropped from 14 %

before the Culture Revolution down to 39 % recently. [15]
According to Tianjing Daily: among the more than 100
thousand primary school teachers of the city, 40 % of them
are not qualified for teaching; some of them even can not
teach at all. [16] How can such kinds of teachers train high
quality students?

It is difficult to find qualified teachers. The basic
reason for this is that the reward for teaching is too low.
The rewards for teaching high schools and primary schools
are among the worst received by intellectuals. And the task
of teaching is not easy. This can be seen from the
comparison of student-teacher ratios with other countries in
the world. [17]

Table 2 The Student-Teacher Ratios of Some Countries

¹ 每個老師負擔的學生數 國家	² 初等教育	³ 中等教育
⁴ 法國	23.0	1
⁵ 日本	25.8	12.0
⁶ 英國	26.8	17.3
⁷ 美國	28.1	14.8
⁸ 西德	32.1	21.6
⁹ 中共	33.0	25.0
¹⁰ 印度	38.0	28.5

1-students per teacher; 2-primary school; 3-high school

4-france; 5-Japan; 6-England; 7-the United States

8-West Germany; 9-Communist China; 10-India

Source of information: Encyclopedia Britannica 1975.

The aging problem of the teacher team is another problem. This situation is more obvious in universities. The instructors who hold positions of lecturers or above have an average age 10 years older than those before the Culture Revolution, and 20 years older than those in 1949. Because of the aging of teachers, the aging of knowledge is also very serious.^[18] Other problems are that the teachers' knowledge is too narrow and only a few of them have commanded some knowledge out of their specialized fields; teaching positions are lifetime positions; teachers could

not move from place to place; etc. All these have weakened the team of teachers.

From the above listed data about the illiterate and semi-illiterate population, the backward situations of primary education, the single-oriented structure of secondary education, the measures for training more talents by higher education, and the low quality of the team of teachers, we can see the weak points of the intelligence structure of Communist China. These are the reasons why the Communist administration calls for further carrying out the "Eight Character Policy", that is: "Adjustment, Reform, Reorganization, and Improvement," and is active to make a reform in education.

3. Budget for Education

The negligence of education by the Communist administration is reflected in the budget of education. This budget is so small and is a rare case among all the nations in the world. According to the statistics, among the 151 nations in the world, the average cost of education for each person of Communist China is in the 149th.^[19] In most nations education shares more than 15 % of a nation's total budget; some even share more than 20 %. But Communist China's education budget only shares about 10 % of the total

budget. It was even lower than 10 % in 1983. Furthermore, if we compare the ratio of the educational cost to the national income, it is less than 3 % in Communist China, and this is about half of ratios held by the other nations.^[20] Some people attribute such backward situation to the poverty and weak economic basis. But the poverty and the weak economic basis can only explain that the absolute value of Communist China can not be compared with other nations, it can not explain that the ratios shared by education in the nation's budget and national income are lower than in the other nations.

The reason for such situations exist in the wrong concept and the poor understanding of education held by the leaders. The financial income of Communist China was about 110-120 billion Chinese yuans, (Comment of translator: 1 Chinese yuan is equal to 0.3 US dollar). Priorities were always given to the key projects of economic development, that is: consideration was first given to the capital investment of economy; only after that the budget increases in education, science, culture, etc could be considered. Therefore the budget of education, culture and other items was made based on the remaining funds available and this lead to the instability and lack of security. For example, if the leaders in some regions had paid some attention to education, then more funds would be given to education; but

in some other regions, if the leaders had not paid attention or paid little attention to education, less funds would be distributed to education, and the education budget even could be used for the spending on the other programs; this year the leaders might pay some attention to education, and therefore the education budget would be guaranteed; next year the leaders might not pay attention to education, then the education budget would not be guaranteed. Recently many far-sighted people are calling for correcting the understanding of education, that is: education should not be treated as a consuming project but an investment in production. According to the abroad information, they have clarified that: the productivity of a person will have an increase of 30 percent after he has finished his primary education; the productivity will be increased by 1.6 times for a technician after he has received a one-year full time technical training; the rate of giving rational suggestions will have an increase of 6 %, by a worker, for each one year of education he has received; the rational suggestions given by a worker who has received secondary education is 4 times more than that of the worker who has not received the same level education. They hope that these facts can arouse the attention of the administration.

The only method to solve these problems is to increase budget of education. although such budget of Communist China

had increased in the recent years, but the increase was very limited. We can see the general situation from the ratios shared by education in China's national budget and final accounts published by the Communist administration since 1977 (Table 3). [22]

Table 3 The recent year ratios shared by education, culture, science, and medicine in Communist China

Year	Total budget	Culture, Education, Science, and Medical spending		Notes
		Budget	%	
1977	84.353	9.2	10.7	Final account
1978	111.09	11.266	11	Final account
1979	127.39	13.21	10.4	Final account
1980	114.29	14.03	14.04	Final account
1981- 1985*	609.8	96.7	15.9	Budget
1981	111.4	17.14	15.4	Final account
1982	113.69	19.0	16.7	Final account
1983	126.2	20.4	16.16	Budget

* The Sixth Five-Year Plan

Source of information: Financial report of recent years by Treasure minister Wang Binquan and the 6th five-year plan.

Although the educational spending of Communist China has been increased recently, such increase is being canceled

by the fast increase of the population. This leads to the fact that the average increase rate of education budget is 19.54 %, which is higher than the rate of the total production, but the quality of the education of the population still has not been improved.

According to the statistics, in the one-billion population of Communist China, people who are 30 years old or younger share 63 % (about 0.6 billion) of the total population. The total population of students in the primary and high schools is 0.27 billion; the population leaving schools (between 18-30 years old) is 0.16 billions; there are 0.17 billion pre-school children. Such age structure of population belongs to the young. The future student body will reach more than 0.4 billion. This will make the education budget of Communist China far less than adequate.

The Communist administration talks about investment on intelligence loudly. But such an investment requires a large budget for education for a basis. According to the arrangement of the Sixth Five-Year Plan from 1981 to 1985, the budget for education, culture, science, medicine and athletics will share 15.9 % of the total national budget, in 1985 this share will reach 16.8%. The total budget of the Sixth Five-Year Plan is 609.8 billion and the average budget is about 120 billion for each year. The budget for the above five items shares 16 percent and it is still too small. How

to distribute this budget to the 890 thousand primary schools, 110 thousand high schools, and 704 colleges and universities is a problem of the Communist administration.

4. Training of Personnel

In order to meet the needs of the Four Modernizations, the Communist administration pays attention to the training of high level talents of science and administration. There are three channels. The first channel is the regular education, that is: 6 years of primary school education, three years of junior high school education, three years of senior high school education. This is the so-called "6-3-3" system. For higher education, the schooling years are prolonged to four years for social and humanity majors, five years for science and engineering majors, and six years for medical majors. Besides that, the most prominent aspects were the recovering of the graduate study and the establishing of an academic degree system.

The graduate study system was built in 1949 and interrupted during the Culture Revolution. It was decided to recover the graduate study system in the National Meeting of Recruiting of Higher Education System of October, 1977. Besides universities, the other institutions responsible for the graduate study system are the Chinese Academy of Sciences, Chinese Academy of Social Sciences, and the

research institutes under different government ministries and national committees. Until now four batches of graduate students had been enrolled. But the average age of the first two batches were older. Although their abilities of self-study were relatively high, their knowledge of the basic courses was unbalanced. This made it difficult to carry out the scheduled graduate programs. Professors had to give special guidance to their students according to their different backgrounds. With this as a lesson, more restrictive regulations have been made on the entrance examinations since 1981. The major source of students was the college graduates after 1977. These students entered college and universities after the entrance examination of higher education was reinstated. No reference books and examination scope were given to students; the minimum average scores are 60 (based on 100); etc. All these policies reflect the quality problems of the already enrolled graduate students.

The total enrolled graduate students were 43 thousand. At the Fifth National Congress Premier Zhao Ziyang declared that the new graduate students enrolled in 1985 would reach 20 thousand. Such technique of using quantity to make up the weakness of quality reflects the Communist leader's psychological feeling of "training talents earlier and faster." If the university graduates will become the core

force in ten years, then the corresponding time required by graduate students can be 4-5 years shorter. This shortened period will be very valuable for China, because they will be able to take over the relay rod in the early years of the 90s at a time when the disaster of the talent shortage will be in the most urgent situation.

The establishment of the academy degree system was a creative event for Communist China. The goal is same as in the recovery of the graduate study system; it is aimed to produce high level specialized talents and raise the current academic level. At the same time, the Communist administration is carrying out an open-door policy, emphasizing learning from the western countries. The establishment of the academic degree system also plays an active role to push international academic and cultural communication, and to send students abroad.

The Communist administration has approved temporary regulations of the academic degrees. According to these regulations, the academic degrees are divided into three levels: Bachelor, Master, and Doctor. In order to raise the academic level, the regulations require the Master thesis must give out new opinions on the research topic, and the Doctor thesis must make creative contribution to science or technology. [23]

Communist China had produced the first batch of Doctors

and Masters in 1982, with 10 Doctors and 15 Thousand Masters. People are interested in the quality of these Doctors and Masters trained in Communist China. Are they at the same level as those trained abroad? Will they play active roles in the Four Modernizations? Will they become the new leaders in the future and push the development of the whole society?

The second channel for talent training is sending students to foreign countries which have advanced science and technology. At the beginning such sending was arranged via the science and technology agreements signed with foreign countries. Recently active connections with universities of foreign countries are being established and students are being directly sent to these universities to do research or to pursue degrees.

The basic policy of sending students abroad is that under the prerequisite of assuring the quality, and according to the actual needs and possibility, more new channels should be exploited and as many students as possible should be sent. In the selection of candidates, The Communist administration insists on the "Three Principles"; that is: the selected candidates should mainly be teachers of universities, at the same time consider the needs of other fields; the students sent abroad should mainly study natural sciences, at the same time also send

some students to study social sciences and foreign languages; in the field of natural sciences, the priority should be given to technological sciences, but the needs of basic sciences and applied techniques should not be neglected. [24]

The personnel who were recently sent abroad were mainly visiting scholars and graduate students, but also some college students were included. The general tendency is that sending graduate students abroad will be the main form of talent training.

Since Communist China began to send a large number of students to many foreign countries in 1978, a total of 12 thousand students were sent. [25] The total number for each year is 480 in 1978, 2220 in 1979, 2400 in 1980, and 5000 in 1981. From these figures we can see that students sent abroad by Communist China are increasing every year. The figure of 1981 is almost the sum of the figures of the previous three years. The increase rates are quite big. In order to absorb the western knowledge of science and technology, the Communist administration has issued "the regulations about self-supported study abroad". Now the self-supported students are about 5,000 altogether.

Recently the first batch of students who just finished their studies abroad had already returned to China. The Communist administration is facing the problem of how to use

them. On the other side, baptized by the Western method of thinking, what kind of feeling will they have about the socialist system and the way of ruling? and what is the active functions of such policy of sending students abroad? All these problems are what the Communist administration has to solve. Because of the actions and speeches of these students who were sent abroad, there is rumour that the Communist Party is now reconsidering such policy. [26]

The third channel for talent training is the training of all level cadres and employees. Communist China recently has 21 million cadres. The general phenomena are: (1) the average age of these cadres at each level has been increased 15 to 20 years, compared with the situation before the Culture Revolution; (2) quite a number of cadres lack the basic knowledge of culture, science, and technology. Those having received systematic special training and are able to understand advanced science and technology are even fewer. [27] Such situations have lead to the sharp conflicts between the reality and the requirement of the modernization. In order to solve this problem, the Communist administration is now endeavoring to raise the quality of the cadres team.

Training in turn is one of the main forms which the Communist administration is using. Any person who holds a position but lacks the necessary level of knowledge required

by such position must receive adequate training in turn. Such training is being fulfilled at all Party schools, cadre schools, secondary technical schools, and universities.^[28] Such training programs are divided into long term and short term. The period of long term is two years. When the training is finished the education level can be equivalent to the two-year college level. The salary and other welfare during the training period are still the same as that obtained by those who are still in their positions. After the training is finished, the scores will be kept in one's personal record. This will be an important merit for the future promotion and position assignment. Besides, the School of Central Committee of Communist Party has established the Training Department of Young Cadres. The Party's Organization Department is responsible for selecting a part of young and middle age cadres who hold local leader positions and sending them to this school to receive further training for a period of one year.

In order to strengthen the cadre training programs, the Communist Party has issued "The Decisions About the Education of Cadres at the Organizations of the Central Committee". This document requires all cadres of the Party and government should receive training in turn. The Central Committee further requires all those whose ages are below forty and whose education levels are lower than junior high

school level must reach this minimum level by attending courses within 2 to 3 years. For those who have reached the level of junior high school but lack special knowledge, they should reach the level of technical school or even the level of two-year college in 3 to 5 years. In order to guarantee the quality of the cadres in the organizations of the Central Committee and the government, for any person to be transferred into these organizations, he must have at least the knowledge level equivalent to senior high school or secondary technical school, otherwise no permission will be issued for such transfer.

All the above regulations reflect that the Communist administration attaches importance to the quality of cadres at all levels. The Central Committee has already ordered the departments under the Central Committee, Provinces, and counties to make adjustment of the knowledge structure of cadres before 1990. The Central Committee is preparing to make other new policies and measures to guarantee the cadre training programs can become a regular, systematic, and formal course. Such policies include, for example, combining the cadre training programs with the plan of education of the nation; making the cadre training programs in the organizations a regular system; combining the cadre training and position together.

The team of employees is large. The total population is

about 100 million and the average level of knowledge is even lower than the level of the cadre team. 80 % of them have an education level below junior high school, 7.8 % of them are illiterate and semi-literate.^[29] This situation does not meet the needs of progress in science, technology, and modern production. It also causes difficulties in effectively absorbing and digesting advanced foreign technology and equipment.

Another aspect of this employee team is that the percentage of young and middle-aged people is quite large. Many of them are not on the level of high school graduates although they have high school diplomas. If no active training in culture, science, and technology is given to these people, then not only would current production be impeded, but also the economic development in the future 10 to 20 years would be severely influenced.

The productivity of Communist China is quite low. This is closely related to the above situation. In order to raise productivity, the technical training of employees must be strengthened, in order to turn potential productivity into real productivity. The employee training programs in Communist China have been recovered and developed to some degree. "Two Leg Policy" is still used. That is: on the one hand, using the teacher team and equipment of the regular universities, secondary technical schools, and research

institutes to offer service in technical training and to supply talents; on the other hand, to open new forms of education, develop different types of on job training. Recently about 50 % of the 400 thousand industry and mining enterprises have established different types of employee schools or training classes. About 10 million employees are involved in the training program.

Because the content of employee training is complicated, such training is related to the structure of the enterprises, the structure of products, the development of the national economy, and the movability of the working force; therefore it is difficult to match such training with the realistic needs.

Besides the above three channels for the training of talents, the Communist administration intends to use secondary technical schools and television schools to support the general training of the population. Other measures are also used to support the policy, for example: transferring people, who have special skills and knowledge but can not use these skills and knowledge in their former positions, to new positions; employing those who have special knowledge and skills and sending them to positions requiring such knowledge and skills; opening the door to and promoting talents; emphasizing not to observe the old rules of promotion and to select talents according to their real

values; paying attention to people between the age of 30 to 40; inviting foreign experts to help in research and teaching through all kinds of channels; accepting intellectuals to the Party; improving the working and living conditions for intellectuals; etc.

5. The Distribution and Use of Talent

Many Western observers think that the manpower problem is very likely the main limiting factor for future development, especially for the development of science and technology, of Communist China. Such judgment is based on the fact resulting from the inappropriate educational system of Communist China. At least the manpower problem has disturbed the Communist leaders since 1975 and the situation is even worse today.

From the viewpoint of the population, the increased rate of population in Communist China is large. The total population in 1949 was about 541 million. According to the third census the population had increased to 1,008.17 million in July of 1982, with a total increase of more than 460 million. This was an 84 % increase. Such a fast rate of increase has seriously threatened the Communist leaders. The only method to deal with the situation is to build more new schools to hold the rapid increasing population. Until the

end of 1981, the number of higher education institutions had increased from about 200 to 704, and the total number of students receiving higher education had increased from 110 thousand to 1270 thousand; the number of secondary schools had increased from 2500 to 1.12 million and the total number of students attending high schools had increased from about 1 million to 50.14 million; the number of primary schools had increased from 0.54 million to 8.90 million and the primary school pupils had increased from 60 million to 140 million.^[30] Although the total number of students had increased, according to the data for the number of students per 10 thousand persons and the structure of students of university, high school, and primary schools, (Table 4 Comment of translator: in the original article this is table 3, but it is a mistake) we can see that within the 30 years only secondary education has undergone a relatively fast development and the average quality of manpower is still quite poor.

Table 4 Number of students per 10 thousand persons and the student structure of universities, high schools and primary schools, of Communist China

1 年份	2 各級學校 在校學生 數占全 國人口 %	3 平均每萬人口中有：			7 學生總數中 所占%		
		4 大學生 (人)	5 中學生 (人)	6 小學生 (人)	8 大學生	9 中學生	10 小學生
1949	4.76	2.2	23	450	0.5	4.9	94.6
1952	9.47	3.3	55	889	0.3	5.8	93.9
1957	11.11	6.8	110	994	0.6	9.9	89.5
1962	11.65	12.3	124	1,029	1.1	10.6	88.3
1965	18.09	9.3	197	1,602	0.5	10.9	88.6
1978	22.28	8.9	693	1,526	0.4	31.1	68.5
1979	21.41	10.5	621	1,510	0.5	29.0	70.5
1980	20.78	11.6	578	1,489	0.6	27.8	71.6
1981	19.55	12.8	503	1,439	0.7	25.7	73.6

1-year; 2-student ratio to the whole population; 3-Number of students per 10 thousand persons; 4-university students; 5-high school students; 6-primary school students; 7-student ratio to the total students; 8-university students; 9-high school students; 10-primary school students.

Source of information: Statistical Year Book of China, 1981, Edited by National Statistics Bureau of China, Economy Review Publishing Company, Hong Kong, 1982.

As for the recently available manpower, Communist China had trained total 3.27 million university and college graduates from 1950 to 1980. They can be divided into three

groups according to their different situations. The first group consists of 2.024 million who entered universities from 1950 to 1963, with ages from 40 to 55. These people together with a small number of people who graduated before 1950 or returned from foreign countries form the core force of the Four Modernizations. But because of the bad conditions they suffered afterwards, their average level is much lower than what they could otherwise reach. Now is the time for them to play their roles. But many places already have begun to feel the shortage of adequate leaders.

The second group is the 1.25 million people who entered universities and colleges from 1964 to 1976. They should have become the second generation of the core force, but they were influenced severely by the Culture Revolution and only learned a few basic courses or did not learn anything at all. Therefore only a small number of them can become members of the core force. The third group is the students who entered colleges and universities since 1977. They have received formal and restricted education and have reached a certain knowledge level. But they entered colleges and universities so late that there were no graduates until 1982. They are the hope of the Chinese Communist Party. But unfortunately they can not begin to contribute to the Four Modernizations until the middle of the 80s, and only in the end of the 90s can they gradually become members of the core

force. Furthermore only 0.27 million students can be accepted by colleges and universities. This is too few for the 1 billion population of Communist China.

With respect to the speciality structure of manpower, in order to meet the needs of the Four Modernizations, the Communist administration gives priority to the talent training in science and technology. In the National Conference of Science, Fang Yi pointed out that the research staff of science and technology would be increased to 0.80 million. But at the end of 1979, the research staff was only 0.30 million. If these 0.30 million were included in the 0.80 million, it would mean that before 1985 Communist China should train half a million in science and technology. This task is very difficult to fulfill.^[31] In order to reach this goal, work is being done actively in all the institutions of higher education. Therefore "pay attention to science and neglect humanity" is a general phenomenon on all campuses. This leads to a higher regard for science majors and a lower regard for humanity majors. According to the statistics of 1982, the total number of students with humanity majors were only 0.126 million among the total 1.27 million university and college students. The ratio was only 9.9 % (Table 5).^[32] Among them, humanity majors held 5.4 %, economics and accounting majors held 3.75 %, law majors held 0.78 % (Table 5). The specialities of graduate students who

are in the universities or have finished degrees also reflect an unbalanced structure (Table 6 and 7).^[33] In fact, according to the goals set by the Communist administration we can see that the increased rate of supporting the development of science and technology is surprisingly high. ^[34]. Although the unbalanced distribution of talents caused by the "pay attention to science and neglect humanities" policy did not show its effect immediately, after 20 years, such an unbalanced distribution of talent will certainly severely influence the development of the nation's economy.

Table 5 Graduated, new enrolled, and total enrolled students of different majors in 1981

unit: 10 thousand

	1	2	3
	畢業生數	招生數	在校學生數
總計 ⁴	13.96	27.88	127.95
工科 ⁵	1.22	9.13	46.13
農科 ⁶	0.79	1.62	7.88
林科 ⁷	0.09	0.27	1.36
醫藥 ⁸	0.95	2.92	15.90
師範 ⁹	10.34	8.82	32.15
文科 ¹⁰	0.12	1.28	6.91
理科 ¹¹	0.20	1.89	9.98
財經 ¹²	0.21	1.24	4.79
政法 ¹³		0.38	1.00
體育 ¹⁴	0.01	0.19	1.12
藝術 ¹⁵	0.03	0.14	0.73

1-graduates; 2-new student; 3-total students; 4-total; 5-engineering; 6-agriculture; 7-forest; 8-medicine; 9-education; 10-literature; 11-science; 12-economy and accounting; 13-law and politics; 14-physical education; 15-art

Table 6 Speciality Structure of graduate students of 1980

科別 ¹	人數 ²
工科 ³	6,130
理科 ⁴	3,307
醫科 ⁵	3,168
文科 ⁶	1,986
師範 ⁷	1,704
農科 ⁸	544
財經 ⁹	300
體育 ¹⁰	193
藝術 ¹¹	164
政法 ¹²	140
林科 ¹³	92
總計 ¹⁴	17,728

1-major; 2-student number; 3-engineering; 4-science; 5-
 medicine; 6-literature; 7-education; 8-agriculture;
 9-economics and accounting; 10-athletics 11-art; 12-law and
 politics; 13-forest; 14-total

Table 7 Speciality Structure of graduate student who finished graduate studies before April of 1981

科別 ¹	人數 ²
工科 ³	1,331
理科 ⁴	335
醫農科 ⁵	160
藝術科 ⁶	103
文科 ⁷	88
師範 ⁸	56
總計 ⁹	2,073

1-major; 2-number of students; 3-engineering; 4-science; 5-medicine and agriculture; 6-art; 7;literature; 8-education; 9-total

Communist China produced about 0.6 million science and technology personnel in more than 30 years. For many reasons, the local and departmental distribution of talent is not rational. Institutions under the central government have more talent than local institutions; heavy industries

have more talent than light industries; and the Nationally owned enterprises have more talent than collectively operated enterprises. This situation has meant that some specialized personnel could not play their roles fully. This made the communist administration to take the following measures to use talent more reasonably, scientifically, and efficiently.

(1) The single-direction transfer of talent.

This is based on the fact that on the one hand the shortage of talent is very serious, on the other hand many could not use their specialities and the waste of talent is a general phenomenon. In 1982, the Bureau of Science and Technology Cadres under the National Council issued "the temporary methods to enforce the exchange of science and technology personnel". This is one of the measures enforced recently. The main principle of single-direction transfer is that the personnel in large cities and large institutions where talent densities are high should move to middle cities, small cities, and border areas where talent is in great shortage. The other method is the so-called "knowledge movement", that is: organizing some middle level science and technology personnel who have the potential to do more work by accepting part time positions, such as consultants, new technology promoters, in middle cities, small cities, and border areas. Such full use of talent and single-direction

movement of knowledge were mostly done in some middle and small cities recently.

(2) The invited position offering system.

This is aimed to change the former method of distributing personnel by cadre and personnel departments. Such invited positions are not limited by departments and regions. According to actual needs, talented people who are retired, resigned, or employed can also be invited to accept these positions. Contracts are signed between the institutions which offer the positions and institutions which offer the personnel, or between employers and employees directly. Both employers and employees have some independent right to make some decisions. Those whose performance of work is not satisfactory can be fired and those who do not like the type of work can resign at any time. The Chinese Academy of Science is preparing to enforce such methods before next year.

(3) Determining and assigning titles of technical position.

Since 1978, the National Council has issued, recovered, and approved some temporary regulations of technical titles in the fields of teaching, engineering, medicine, scientific research, statistics, etc. This was aimed to stimulate working enthusiasm and to encourage studying hard in specialized fields. It is an important renovation in the

cadre policy. The basic standard of determining technical titles is the real ability and contribution of their work. Until the end of 1981, more than 1 million people had obtained senior- and middle-level titles of lecturer, assistant research scientist, principle medical doctor, engineer, accountant, etc.

(4) The second job system.

This is: permitting scientific and technical personnel to give lectures, teach classes, sign design and technical contracts, etc, with the prerequisite that they must first fulfill their job assignments in their own institutions. Because the Bureau of Cadre of Science and Technology under the National Council has given some material reward in the two above mentioned documents about the second jobs and personnel exchange, there was serious argument within the Party. The Communist administration emphasized that under the prerequisite of fulfilling one's own work, obtaining material reward from the wealth created by a part time second job is consistent with the socialist principle of "every one should do his best and obtain his reward according to his contribution." This enable scientific and technical personnel to obtain some rewards from their part-time second jobs to improve their living conditions, and also to renew their knowledge. Therefore such a policy is warmly welcomed.

(5) Supporting the border areas and agriculture by talents.

According to the statistics of 1981, 600 cities and counties in the border areas have only 0.51 million scientific and technical personnel. This only includes 9 % of the total scientific and technical personnel of the nation. Senior and middle level personnel are even less.^[35] Such a situation can not match the needs of the economic and cultural development in border areas. Therefore the Communist administration encourages scientific and technical personnel to go to rural and border areas. It is thought that this will not only be helpful for the development of these regions, but also can lead to the use of resources efficiently.

In order to encourage scientific and technical personnel in cities to support agriculture and border areas, the National Council has already ordered responsible departments to make the necessary policies and measures, such as a floating salary system; retaining residence registration in their former cities; raising the allowance of work travel; improving working and living conditions of scientific and technical personnel who work in the rural and border areas; applying a multi-form reward and bonus system, etc. All these are under the consideration of the Communist administration. Whether a large quantity of city scientific

and technical personnel will be attracted to the rural and border areas, and make real contribution to these areas is a question. All these problems should be closely observed along with the development of the situation.

5. Conclusions

→ The Chinese Communist Party wants to pursue the "Four Modernizations" and therefore has to depend on intellectuals. But the transfer of knowledge and training of intellectuals must depend on education. This is the reason why today the Chinese Communist Party pays special attention to an investment in intelligence.

From recent actions by the Communist administration, such as: popularizing primary education; changing the structure of secondary education; developing the professional and technical education system in a large scale; recovering the recruiting system of higher education; selecting and sending students to study abroad; etc. It seems that the Communist administration has realized its mistakes over the past 30 years. The problem is that the mistakes over the past 30 years and the disaster of the Culture Revolution have deeply hurt Communist China. Without a long term project and continuous endeavor, it can not recover easily. Such a long term investment requires a huge

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budget. The current budget for intelligence investment is just like using a cup of water to extinguish a burning cart full of wood. The possibility of success is small. The "Four Modernizations" need talent, especially scientific and technical talent, although the talent training programs are already supported by every means available, but the number of talent people available is still far less than the increased rate of population. All these have put great pressure on the Communist administration. Intelligence is the weakest ring of the three strategic priorities and there are so many problems which need to be solved. Indeed, with the current resources of manpower, finance, and materials, success in this field can not be made within a short period.

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