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**Feeding China's One Billion: Perspectives From History**

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In April 1980 press reports revealed that in 1980 China suffered such serious damage from drought in the north and flooding in the middle Yangzi (Yangtze) valley that for the first time in thirty years it had to request international relief. It was estimated that 130 million people in nine provinces were "facing varying degrees of food shortages," and that 21 million had been "seriously affected." This news came as a surprise not just to the general public but even to many China specialists because it has been widely thought that the People's Republic of China had substantially solved the problem of hunger, and that this had been its single greatest achievement.

In contrast to the China of the past where beggars were a familiar part of the landscape and where massive famines raged, it has been held that in China today everyone has enough to eat. This achievement has seemed all the more remarkable in view of the fact that, measured by almost any standard, China is still a very poor country, and its agricultural output over the past thirty years has barely kept pace with its rapid population growth from about 583 million in 1953 to close to one billion today.

In China, the elimination of hunger has been achieved not so much through economic growth and gains in productivity as through more equitable distribution of food and income. Through the grain-rationing system, everyone is presumably guaranteed a subsistence diet. Unlike many or most developing countries where income distribution is very skewed, the leveling of income in China, combined with the control of food distribution, has prevented gains in agricultural output from accruing only to those in the upper-income brackets. It is this system of distribution that has been the aspect of the "Maoist" model of development most admired abroad.

Today, however, many aspects of the "Maoist" model are being discredited within China itself. Official pronouncements have been increasingly frank in their revelations of the extent of past agricultural disasters and food short-
ages and in assigning blame to erroneous Maoist policies, especially those during the ten years of the Cultural Revolution, 1966–76. In Sichuan province, for example, between 1957 and 1976 the population grew from 72 to 95 million, but grain output increased from 23 to only 25 million metric tons. This was said to have been the result of incompetent agricultural policy, which actually caused famine in 1976. The most notable accomplishment of the present premier Zhao Ziyang was that he restored agricultural productivity to this area when he was head of the Sichuan Provincial Party Committee. An even more serious revelation, however, is that conditions in the aftermath of the Great Leap Forward, 1959–62, were in fact as devastating as critics outside China have claimed, and others have guessed. The economist Sun Yefang acknowledged recently that in 1960, the worst year, the death rate rose from 10.8 per thousand to 25.4 per thousand, implying 10 million excess deaths due to starvation. Because of the overzealous policies of the Great Leap period, we know that total grain production dropped from 200 million metric tons in 1958 down to 150 million in 1960, and the 1958 level of production was not regained until 1964.

Even if we say that such extraordinary subsistence crises were due to terrible human errors of the past which are not likely to be repeated, recent frank admissions by party leaders that a substantial portion of the Chinese population is undernourished are harder to dismiss. In 1979 former Vice-Premier Li Xiannian was reported to have said that 100 million Chinese were undernourished. Another often-cited statement in a Hong Kong source said that 200 million Chinese live on less than 300 jin (150 kg.) of food-grain ration a year. Efforts outside China to estimate per capita food consumption on the basis of known production and population figures agree that the average per capita daily food consumption of Chinese is about 2,000 to 2,100 calories, and this represents no net gain over the best estimates for Chinese nutrition in the 1930s, when famine conditions were known to have been so grave. According to Nicholas Lardy’s latest study, the average Chinese annual per capita grain consumption in 1978 was only 196.5 kilograms which was 3.2 percent less than that for 1957.

By standards of body weights and energy needs, an average of 2,100 calories a day should probably be sufficient, but it leaves very little margin for waste or discretionary consumption. Moreover, the average Chinese diet is not only about as meager in caloric value as it was in the 1930s; it has not improved in its quality or variety either, being largely dependent on grains. About 90 percent of the caloric content of the Chinese diet is said to be from grains, and 80 percent of protein intake. The average Chinese eats very little meat, although there has been a significant improvement in this area over the last few years. In 1977, average per capita meat consumption was 7.5 kilograms, but in 1980 it was up to 12 kilograms. Staple products such as oil and sugar are also in short supply. Cooking oil is strictly rationed at 500 grams a month in Peking and below 300 grams in other areas. Sugar consumption is also very restricted. Although urban residents report that food products, especially poultry and vegetables, are more readily attainable with the revival
of free markets, there are still many bottlenecks and shortages for consumers, even in the most favorable urban environments.

If the system of food distribution were perfectly equitable, we might conclude that the average Chinese diet is adequate but rather uninteresting. However, it seems clear that a substantial sector of the population fails to receive this average diet, and that the distribution system is not perfectly equitable. There are two major sources of inequality, the first being regional. Although the evidence is partial, average per capita grain distribution—which is dependent on productivity—seems to vary greatly by province, with richer provinces such as Zhejiang receiving a significantly higher distribution than poor provinces such as Xinjiang. The second major source of inequality is urban-rural. The urban population, conventionally said to be 20 percent of the total Chinese population, is acknowledged to have a higher grain ration than the rural population, according to one estimate at least 25 to 35 percent higher on the average. Recently it has been shown that income levels within China are far more differentiated than previously thought, but income distribution in Chinese cities seems to be more equal than in cities in other developing societies, while income distribution in the countryside is less different from other developing societies. In rural areas, it has been shown that even production teams within the same commune can differ significantly in their grain allotment and work-point values.

Although China has thus far been able to regulate food consumption by guaranteeing a minimum standard of diet for the entire population, it now seems clear that limits of egalitarianism, and hence the prevention of hunger through the distribution system, have probably been reached. Over the next few years, the pressures on the distribution system can only increase. If the present economic policy continues, the use of material incentives in all economic enterprises, the expansion of the role of private plots, and the emphasis on the Four Modernizations (agriculture, industry, science and technology, and defense) may cause the distribution of income to become more uneven, and hence the demand for more and better food to increase. In the countryside the present movement to lower the unit of accounting from the production team to groups of households, single households, or even individuals, may produce the desired effect of increasing productivity, but this will almost certainly be at the cost of further skewing rural income distribution, which may well affect the level of food consumption. In the cities, the drive to encourage intellectuals and technical personnel to improve their training and to assume a leading role in the modernization process can only lead to expectations of a higher level of consumption, which the state will not be able to ignore. The demand for better quality and more varied food will almost certainly include a greater demand for meat, which will place an additional pressure on the agricultural sector for feedgrain as well as foodgrain.

Assuming that the current distribution system is about as equitable as can be achieved and is not likely to be improved upon, improvements in the food situation in China will be made only if gains in agricultural productivity ex-
ceed population increases. How likely is it that China can raise its agricultural productivity and at the same time keep its population growth down? Although Maoist policy toward population control was ambivalent or inconsistent in the 1950s and 1960s, during the 1970s there was a sustained birth control campaign, which has apparently been very successful in bringing down birth rates. John Aird, leading American authority on Chinese population, has recently written, “A demographic change that is without precedent in the human experience has apparently taken place within the last decade,” but he also cautions, “From the limited information available, it is impossible to trace its course, identify its causes, or reach firm conclusions about its significance.” In any case, although no official figures for national vital rates have been released, foreign analysts generally believe that in 1977 China’s birth rate was probably about 18 per thousand, its death rate 6.3 per thousand, yielding a 1.2 percent growth rate. Even if this low growth rate is correct—and it is a remarkable achievement compared with the rest of Asia, matched only by Hong Kong and Singapore and bettered only by Japan—by the year 2000, China’s population will still be well in excess of 1,200,000,000.

Between 1952 and 1977, grain production rose by 75 percent, at an average annual rate of 2.3 percent, barely keeping pace with an average annual 2.1 percent population growth. China’s current Ten-Year Plan calls for a growth rate of 3.5 percent per year in foodgrains, and a target of 400 million metric tons by 1985. Although most American analysts believe this target is too ambitious and cannot be met, they agree that a more modest target that will match China’s short-term consumption needs can be met. The 1980 production was 318 million metric tons, down from 332 million in 1979. Bruce Stone estimates that an additional 63 million tons will be needed, which includes increased demand from population growth, direct distribution to lower income groups, increased livestock feeding, stockpiling, industrial use, food processing, and brewing. In estimating future output, agricultural economists, however, disagree about the relative weight they wish to assign to technological and institutional factors. Some believe that better seed technology, increased use of chemical fertilizers, and expansion of irrigation can lead to continued modest improvement, but foresee serious technological and environmental constraints. Others, however, believe that more efficient planning, particularly the current transition to price planning, as opposed to production planning, in and of itself will lead to an increase in productivity. The two major components of this new policy are (1) the use of comparative advantage in cropping decisions in different regions, which was not possible under the previous policy of regional grain self-sufficiency, and (2) the use of price incentives in planning. Still others agree that better agricultural management will be the crucial determinant of future productivity, but are more cautious in their assessment of the magnitude of the results.

In short, although China can rightly claim that it has succeeded in feeding its population, which has grown at an alarming rate over the past thirty years, it cannot, and the present leadership does not, claim to have “solved” the
problem of hunger in China. Although most people seem to have a minimum subsistence, and the specter of large-scale famines has generally disappeared, nevertheless the margin in China is so thin that "man-made" crises such as the Great Leap Forward, or "natural" crises such as the recent drought and flood, could precipitate a disaster of sizeable proportions. For many foreigners, the news that China may not have found a permanent solution to its food problem may shatter some deeply held assumptions. Many Americans regard the People's Republic of China's ability to feed its population adequately as its greatest accomplishment, and some regard it as the sole reason for condoning a political system which they otherwise find distasteful. For some foreign critics, on the other hand, any sign of starvation or malnutrition in China is seen to be caused by the nature of the political system itself.  

This tendency to judge a political system on the basis of the success of its food policy is not, however, the unique creation of foreign China-watchers. It is, in fact, a reflection of the attitude of the Chinese themselves. Revelations about past agricultural disasters are being made by the present leadership in order to attack Maoist policies of the past, especially the policies of the "Gang of Four" during the years 1966–76. And before that, during the Great Leap Forward and its disastrous aftermath, it was Kuomintang propaganda from Taiwan that was the first to report starvation on the mainland, because it was regarded as prima facie evidence of the evils of the political enemy, and a sign of the failure of communism.

In fact, the attitude that natural disasters and political actions are intimately, and even causally, related has ancient Chinese roots that far antedate the twentieth-century political rivalries with which we are familiar. In the traditional Confucian political ideology, a dynasty was said to have received the "Mandate of Heaven" because it was morally fit to rule, but it would lose that mandate if it should lapse in its moral rule. In the downward swing of the so-called dynastic cycle, floods and droughts, together with rebellions, were taken as visible portents of the dynasty's impending loss of the Mandate of Heaven.

It is my view, however, that the "politicization" of the food question in China, both past and present, has been very much overdone. In the long historical view, it can readily be seen that there are certain fundamental problems with which all Chinese governments have had to contend, and that the range of possible solutions to these problems has perhaps been narrower than they, or we, would like to acknowledge. For the historian, in other words, there are certain continuities between the past and present which seem salient and which serve to put into perspective the role which the state can play in influencing the food/population problem.

The first thing to bear in mind is that China was not always a land of the starving masses, characterized by chronic suffering and periodic famines. Although there are records of famines dating back to ancient times, and although famines were recognized phenomena to be dealt with, the scale and frequency of famines in the nineteenth and twentieth centuries up to 1949
were probably unmatched by anything in the past, and may have been caused by extraordinary new factors: (1) population pressure, (2) internal disorder and dynastic decline, and (3) Western imperialist encroachment, the three being difficult to distinguish in their results. That conditions in modern China were more difficult than before will be hard for historians to prove definitively, but it may be well to emphasize the fact that China's population explosion did not occur until the eighteenth century, when its population apparently doubled from 150 million to over 300 million. The reasons for this eighteenth-century growth were various. It was a century of unprecedented internal prosperity and external expansion for the Chinese Empire. The Manchu dynasty encouraged the settlement of marginal or frontier lands by the population. In agriculture, two alternative, but not mutually exclusive, theories have been proposed: one that the population was able to expand because increasing traditional inputs of labor, irrigation, and better seeds permitted a substantial rise in rice yields, and the other that the introduction of new world crops—peanut, corn, and sweet potato—permitted the feeding of a larger population with nutritious crops which could be grown on poor soil.

More recently, some colleagues of mine have been working on yet another type of explanation, namely, that the Chinese population could grow rapidly in the eighteenth century, even in the absence of a real agricultural revolution, i.e., a technological revolution, because the state possessed the institutional and financial means with which to counteract wide fluctuations in grain prices and to alleviate or prevent large-scale subsistence crises. Although this is a daring and controversial idea which needs a great deal more historical research before it will be widely accepted, it is undeniable that the eighteenth-century Chinese state, which represented the traditional Chinese state in its strongest form, did possess remarkable instruments of influence and control, especially considering that the Chinese Empire extended for thousands of miles with only a primitive transportation network linking most places.

Among these were several tools by which the Chinese state could try to prevent or control famines. First, it had a bureaucracy which possessed a common Confucian educational background, which was selected by merit, and which served impartially all over China. One of the duties of the provincial governors was to present monthly reports on weather and grain prices to help monitor those conditions which might indicate an impending crisis. Governors were also supposed to contribute funds toward river conservancy in order to prevent flooding along major waterways. Secondly, there was a state granary system, which helped stabilize prices through sales and loans, and provided famine relief. During the eighteenth century it is estimated that these state granaries held about fifteen to twenty days' supply of grain on the average, not a bad record for a pre-modern state. Thirdly, the government possessed a battery of techniques for famine relief. Although quite often the central government preferred to leave famine relief to local initiative, in case of large-scale crises in key areas, it could and did mobilize very effective
famine relief campaigns. In one case in 1743–44, studied by two of my colleagues, a potentially large-scale famine was averted when the government moved into the drought-stricken area with emergency grain supplies, conducted house-to-house registration of famine victims, gave out emergency relief, and opened up soup-kitchens. Because of the efficacy of such efforts, one scholar has termed the eighteenth century "the golden age of famine relief" in China.30

The actual effectiveness of Qing bureaucracy in famine prevention and relief will continue to be a subject of study and debate among historians, and no doubt some will continue to argue that many of the administrative measures which we find described in the historical record were probably never put into practice. The point I wish to make here is that the present government of the People's Republic of China was not the first in China to try to improve agricultural productivity and to avert crises, and moreover, like it or not, it inherited a bureaucratic tradition. It has also inherited problems that are of very ancient origin and defy any permanent solutions. The fundamental problems with which the PRC has had to contend are hardly new and certainly not of its own creation. Here I will have time to discuss only two broad problem areas.

The first area is that of regional differentiation, or put it another way, interregional coordination. One of the most obvious things you can say about China is that it is a very big country, but from that simple fact come many profound and complex implications. China is a very big country, but its natural resources are very unevenly distributed. Only 11 percent of its land is arable, and most of it is concentrated in the eastern half of the country, while vast expanses of the northwest and southwest remain uncultivable. Moreover, even within the arable regions of China, there are wide disparities in productivity due to different climatic conditions, soils, and water resources. A traditional problem of the Chinese state was how to balance the resources and interests of various regions. During the middle period of Chinese history, for example, the politically powerful north was balanced against the economically prosperous south. The shipment of grain tribute up the Grand Canal from the lower Yangzi valley, the most productive agricultural section of China, was a material expression of this trade-off, as the grain was largely intended to feed the court at Beijing (Peking). By the eighteenth century, the lower Yangzi valley itself became a grain-importing region because it had shifted to a significant degree to the planting of cash crops. The bulk of the grain deficit was made up by imports from the central Yangzi valley, a region of rising agricultural productivity. While from an economic point of view this was fundamentally a mutually beneficial exchange, from a political standpoint this growing interregional grain trade posed basic policy problems for Qing officials. Local Hunan and Hubei people complained that in times of poor harvest, the continuation of the grain export trade caused local prices to reach a point where real hardship was felt, and they advocated the prohibition of exports.31 Confucian political theory tended to favor the idea of local
agrarian self-sufficiency and had traditionally been hostile to mercantile activity and to merchants as a group, seeing them as basically unproductive, parasitic members of society. However, the statesmen of the eighteenth century were not unaware of the benefits of trade and comparative advantage, and we see throughout this period their very deep ambivalence on this question.

It might be said that this deep ambivalence has persisted to this very day. Although it has been a key policy of the Chinese government to encourage the settlement and development of border areas, it is nevertheless the case that enormous regional disparities still exist. In fact, agricultural productivity has grown least rapidly in these border areas, at the same time that their populations have experienced the highest rates of growth. During the period of the Cultural Revolution, regional self-sufficiency in grain became a major policy objective, and in some regions much land that had previously been planted in cash crops was converted to the growing of grain. The reckless pursuit of this policy has apparently led to some serious imbalances. At the present time the idea of regional grain self-sufficiency, as well as the goal of local self-sufficiency embodied in the Dazhai model, have both been rejected, and crop selection decisions are now being made along the lines of comparative advantage. To handle this, between 1977-78 and 1979-80, the state increased by 20 percent the amount of grain that it procured for redistribution to grain-deficit areas. But it is clear that such policies may also tend in the long run to accentuate the wide difference in natural resources and other endowments of the different regions of China, and balancing their conflicting interests will continue to pose a major dilemma for the central government.

A second, and perhaps even more fundamental, problem area is that of environmental deterioration. It is well known that China has been burdened with several particularly intractable natural problems throughout the centuries. In the People’s Republic of China, water control projects of mammoth proportions have been undertaken to try to bring China’s rivers and other waterways under control. The building of large and small-scale dams, the cutting of diversionary canals to the ocean, and the continued building of dikes have all been undertaken on a most impressive scale and have done a great deal to bring the worst problems under some control. However, it is also clear that China’s major environmental problems persist despite the attempts to alleviate them. The Yellow River, for example, has historically been China’s single most dramatic natural problem. With a shallow bed running the course of over 3,000 miles, the Yellow River carries about 1.6 billion metric tons of silt each year, a quantity said to be seventeen times larger than the Nile and six times that of the Mississippi. Over the centuries as it has run its course, the bed of the river has been built up so that it is now as many as ten meters higher than the surrounding countryside in some places and is retained only by very high dikes. When the summer rains are excessively heavy and these dikes break, as they have many times in China’s history, the countryside, extremely flat at the North China Plain, becomes
flooded on a very large scale. A few times in the past century the Yellow River has even shifted its route and caused extensive damage. Work on the Yellow River has been impressive, but major problems persist, and the current press still contains discussions and proposals for a “permanent” solution.34

The recent drought in north China is also the repetition of a familiar historical pattern. Although it was described as the worst drought in thirty-eight years, north China is, however, subject to frequent droughts, as the rainfall is concentrated almost entirely in the three summer months. Although many tube-wells have been sunk along the north China plain, and other irrigation measures have been taken in the past thirty years, a recent Chinese press report admits that the problems of drought, waterlogging, alkalinity, and salinity still persist, and yields are much lower than the national average.35

The flood of the Yangzi River in Hubei, although the worst in 26 years according to press reports, is also part of a familiar historical pattern. In this area the likelihood of flooding has over the past few centuries been greatly exacerbated by a continual process of land reclamation, which started in the fourteenth century, and which by the nineteenth century had made a virtual internal delta of this area.36 Reclamation and intensive cultivation of this rich land made possible the interregional grain trade mentioned earlier, but it also made the area more vulnerable to flooding. Although in the PRC much attention has been paid to control of the Yangzi, what is surprising is not that there was such a flood in 1980 but that it did not happen earlier.

The pressure of population on the land was responsible for this drive to reclaim land, and it continues unabated today. For every such effort, however, it seems that an ecological price has to be paid. The drive toward regional grain self-sufficiency, for example, has prompted the conversion of grasslands in the border areas of China—Inner Mongolia, Ningxia, Gansu, Xinjiang, and Tibet—and this has resulted in destroying the balance of the ecosystem. Soil erosion and desertification have taken place at an alarming rate.37 Deforestation, another serious aspect of environmental deterioration, is also a centuries-old problem. Although massive campaigns for reforestation have taken place, at the same time the loss of forestland through legal and illegal means is taking place at a disturbing rate.38

Historians, of course, are professionally predisposed to see the continuities in the course of human events. By no means do I wish to leave you with the impression that I think nothing has changed in China for the past two or three hundred years. On the contrary, the China of today is strikingly different from the China of 1800, 1900, or even 1949. For one thing, there are more than three times the number of people in China today than there were in the year 1800. For another, the problem of environmental deterioration is potentially more serious now than it was then. At the same time, however, the technological resources available to deal with agriculture and the environment are also much greater. All I have meant to suggest in this talk is that in dealing with the challenge of feeding a billion people in a large, complex
country of many regions and in an environment with many dangers, the Chinese government today faces a problem of such large dimensions that politics, policy, and human will alone cannot be expected to account for everything or take care of all problems. Does this mean that politics does not count, or that policy does not matter? On the contrary, it puts a greater premium than ever on policy, as there is a narrower margin for human error, but at the same time the limits of human and political action must always be kept in perspective.

NOTES

8. Lardy, “Food Consumption,” pp. 12-12b. This calculation is based on processed or fine grains; also Smil, “China's Food,” p. 72.
10. Ibid., p. 69.
17. A recent article in Beijing Review, January 19, 1981, entitled “Let Some Localities and Peasants Prosper First,” addresses this problem, but denies that it will be serious. At the same time, however, it points out that the state has set up a development fund to aid poor brigades, teams, and peasants who have fallen behind.
18. The consequences of this change in diet, and China's larger role in the international grain market, especially the corn market, are analyzed by C. Peter Timmer, “China and the World Food System” (unpublished paper, 1981).
20. Ibid., p. 140.
23. This is generally the view of Randolph Barker, Daniel Sisler, and Elizabeth Rose, "Prospects for Growth in Grain Production," in Barker and Sinha, The Chinese Agricultural Economy.
24. This is the basic thesis of Nicholas Lardy, in his "Planning and Productivity in Chinese Agriculture."
28. This was an idea discussed at the Workshop on Food and Famine in Chinese History, held at Harvard University in August 1980. Several members of the workshop are preparing a handbook on grain supply and granaries in China during the Qing period.
31. Roy S. Y. Yim is also working on the 1743-44 crisis in his dissertation for Oxford University.