

CHANGING RICE BOWL

Economic Development and Diet in China

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香港大學出版社

HONG KONG UNIVERSITY PRESS

Hong Kong University Press

14/F Hing Wai Centre

7 Tin Wan Praya Road

Aberdeen

Hong Kong

© Hong Kong University Press 2005

ISBN 962 209 723 5

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Secure On-line Ordering

<http://www.hkupress.org>

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available
from the British Library.

Printed and bound by Kings Time Printing Press Ltd., in Hong Kong, China

The image shows the words 'HONG KONG UNIVERSITY PRESS' written in a highly stylized, square-shaped calligraphic font. Each character is contained within a square frame, and the overall style is reminiscent of traditional Chinese seal script but adapted for English characters. The characters are arranged vertically in four columns: 'HONG' (top), 'KONG' (second), 'UNIVERSITY' (third), and 'PRESS' (bottom).

Hong Kong University Press is honoured that Xu Bing, whose art explores the complex themes of language across cultures, has written the Press's name in his Square Word Calligraphy. This signals our commitment to cross-cultural thinking and the distinctive nature of our English-language books published in China.

“At first glance, Square Word Calligraphy appears to be nothing more unusual than Chinese characters, but in fact it is a new way of rendering English words in the format of a square so they resemble Chinese characters. Chinese viewers expect to be able to read Square Word Calligraphy but cannot. Western viewers, however are surprised to find they can read it. Delight erupts when meaning is unexpectedly revealed.”

— Britta Erickson, *The Art of Xu Bing*

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1

Diet, Economic Development, and Culture

Everybody eats. Food is necessary for biological survival; all people must somehow obtain it, whether by collecting it, producing it, or purchasing it. It is, therefore, an item in every household budget.

The initial range of potential foods is a matter of various ecological and environmental constraints (Chang, 1977b: 6). From this range, people, although omnivorous, make choices among many available and potentially nutritious possibilities. K. C. Chang (1977b: 3) says, “For survival needs, all men [sic] everywhere could eat the same food, to be measured only in calories, fats, carbohydrates, proteins, and vitamins ... but no, people of different backgrounds eat very differently.”

The reasons are only partly biological; cultural, social, and economic factors shape the selection of foods, and, thus, diet and nutrition. “Nowhere is food value-free,” says Reid (1986: 51). “The ways in which it is obtained, prepared, presented, and shared are determined as much by cultural prescriptions and emotional association as by the physiological need to eat.” Food and “foodways” (customs associated with food) vary as much as any other ways of satisfying human needs (Young, 1986: 111.)

China is an excellent example of the central cultural element of food, including nutrition, and the economic and cultural forces that impinge upon it. In a world where reports of famine, eating disorders, and overeating pepper the pages of newspapers with numbing regularity, the Chinese feed one-fifth of the earth’s population on about 7% of its farmland. According to its own reports, China has managed to provide its 1.2 billion people with a diet that is, on average, adequate in energy content (Calories). Thus, the Chinese situation has the potential to be an example to other crowded, hungry people (Anderson, 1988: ix). China’s continued ability to feed its population generates growing controversy as farmland is converted to other uses, the population continues to grow, and rising purchasing power encourages the Chinese to demand more luxury foods (Brown, 1995; Brown and Flavin, 1996; Heiling,

1999, Stover, 1996, Yang and Li, 2000) Set against these concerns is the value of reclaimed land, better farming practices, and an import/export regime that exploits China's comparative advantages (*Beijing Review* 2000, Paarlberg, 1997, Rozelle and Rosegrant, 1997, Smil, 2000)

In addition to the fascination of Chinese cuisine for outsiders, food is of central importance to the Chinese themselves, K. C. Chang comments, "few other cultures are as food oriented as the Chinese" (1977b 3) The details continue to change because the Chinese have borrowed almost all Western foods that will grow in their country (Anderson, 1988 116) The continuing adoption of new elements produces spatial variation, as different elements penetrate different places at different times and different rates of acceptance Even in the same culture, not everyone has the same food habits Within the same general food style, details vary (Chang, 1977b 3) Because food and economic and cultural forces vary over space, the comparison of their spatial patterns shows how changes in any of them, including economic development, affect food and nutrition as a component of culture

China also represents a unique history of economic development As a Communist (in Chinese terms, socialist) country, it has taken a top-down approach to development, directing its economy through central planning Since the Third Plenum of the 11th Central Committee of the Chinese Communist party under Deng Xiaoping launched a series of economic reforms in 1978, this central direction has opened the country to new economic strategies, including some experiments with free markets It has also permitted freer movement between city and countryside than had been possible under the rule of Mao Zedong The mix of continued central planning and free markets also varies spatially An examination of how these forces are affecting the diets of people in Liaoning Province can illuminate our understanding of development processes and their impact on diet in general For example, in Western countries, Engel's Law and Bennett's Law have been found to be generally valid They focus, however, on the economics of dietary choice Some particular economic conditions and cultural factors could cause exceptions and violations

We focus here on the Northeastern province of Liaoning China is a huge and varied country, and no one province is truly representative of the entire country Even one province contains great differences from place to place How this spatial variation works, even within one province, is an important element to understanding the entire country

Influences on Diet

Diet must supply nutrition, but it is more than just biochemical substances In the Chinese context, culture has shaped diet over several millennia, and

economic development, including urbanization, has brought new modifications. Always, the details vary over space.

Diet and Nutrition

Nutrition involves the biological and chemical processes by which the body receives substances (nutrients) from food and then uses these nutrients to promote growth, maintenance, and repair. Essential nutrients are those that the body itself cannot manufacture and, thus, must receive from food. Food must also provide energy, which is measured in kilocalories, more commonly called Calories. Kilocalories are a measure of the heat energy that is available to the body from a particular food.

Nutrition scientists calculate how many Calories and how much of each nutrient are present in different kinds of food, and how much of each is necessary for human life and activity. Because foods offer these nutrients in a wide variety of combinations, the specific assortment of foods one can choose to meet the requirements is almost unlimited. Not surprisingly, it varies a great deal over space. Nutrition scientists evaluate the quality of diets by comparing the nutrients in the diet to a standard recommended requirement. Many such standards have been developed by national governmental agencies and by international organizations. For many reasons and no matter what the standard, the degree to which diets meet its recommendations also will vary from person to person and, more broadly, from region to region.

Economic Development and Urbanization

Economic development, which also shows a wide spatial variation, is defined most simply, for example, by Todaro, as “the capacity of a national economy, whose initial economic condition has been more or less static for a long time, to *generate and sustain* an annual increase in its gross national product of perhaps 5 to 7% or more” (1989: 86; emphasis original). Alternatively, the definition is modified to require that per capita gross national product (GNP) grows faster than the population (1989: 86). “During the 1970s *economic development came to be redefined in terms of reduction or elimination of poverty, inequality, and unemployment within the context of a growing economy*” (1989: 87; emphasis original). In other words, it involves raising the standard of living of the people. Because food is a basic need and closely related to general health, such a rising standard of living should include greater attention to biological survival and the well-being role of food, that is, better nutrition.

Urbanization is a *sine qua non* of economic development (Berry, 1962). Even China, which for a long time tried to avoid much urbanization, has been

forced to this conclusion (Pannell, 1981, 1984, 1986, 1992, Pannell and Leppman, 1997)

Terry G McGee (1989, 1991a) has developed a spatial model of urbanization that is tied to a specific form of Asian development. This model posits an implicit urban hierarchy, by its series of regions exhibiting a continuum of different degrees of urbanization, as a subset of economic development.

Culture

Food selection frequently is based on other considerations in addition to purely nutritional or economic matters. The reasons for such choices must be considered in any evaluation of whether, in fact, economic development and urbanization do lead to changes in nutrition. Why these choices are made and what determines them are among the first questions in any study of food consumption, this research concentrates on those that fall within the general realm of *culture*. Culture is the pattern or style of behavior of a group of people who share it (Chang, 1977a: 3). People who share the same culture tend to share the same food habits. Food preference and preparation are crucial to a people's *genre de vie* or way of life and, thus, a key cultural marker (Sorre, 1962, Vidal de la Blache, 1903).

Food and its associated customs are important parts of culture and comprise a large complex of ideas, behavior, and attitudes. The diet itself has enormous repercussions for our relationships with our environment and with other people near and far. The selection and procurement of food lies at the heart of a group's cultural ecology. We can, in fact, organize studies of human groups and their activities around the theme of their food customs (Zelinsky, 1985), and the study of food habits can be the entry point for examination of a wide range of problems (Bennett, 1946: 554). As with other cultural elements, food customs vary geographically across space (Hilliard, 1972, Kariel, 1966, Shortridge and Shortridge, 1989). Geographical studies of diet and food choices have been based on concepts of cultural ecology (Simoons, 1980, 1994), dietary regions (Bennett, 1946, Kariel, 1966), relocation diffusion (Zelinsky, 1985), hierarchical diffusion (Shortridge and Shortridge, 1989), or economic geography (Hilliard, 1972). *Foodways* (the anthropologists' term) or *food habits* (the nutritionists' term) are the customs of a group that reflect the way a culture standardizes behavior of its members in relation to food, with the result that the group develops a common pattern of eating (Lowenberg et al., 1968: 85).

In traditional China, as in most folk societies, there was a cleavage between the elite culture, or Great Tradition, which was geographically widespread and interconnected over great distances, and the peasantry, or Little Tradition.

(Redfield and Singer, 1954), or what Stover (1974) calls the Green Circle, which turned inward and was oriented locally. The Great Tradition/Little Tradition comparison forms a useful baseline to examine the penetration and acceptance or rejection of new food ideas and new sources of information in modern China. While the Communist state apparatus has controlled peasant lives and marshaled peasant labor, the question remains as to whether it has really changed the desires of individual peasants, especially as expressed in something as basic to Chinese culture as food. Furthermore, have these desires and aspirations changed in some places more than others? Specifically, have they changed in some of the regions of the McGee (1989, 1991a) model more than in others? Cities can be expected to be most exposed to new ideas, including new foods. Maoist ideology would even have urban residents “learn from the peasants” (Murphey, 1980), which, if implemented, would result in city dwellers receiving information from rural peasants.

Organization of This Book

The remaining chapters in this book examine diet from the point of view of nutrition, economics, and culture, as well as the survey of Liaoning Province and its results that highlight what Chinese people eat today.

Chapter 2 deals with the concept of culture, especially cultural contrasts between city and countryside. It then discusses nutrition (supplemented by Appendix A) and food, and the mechanisms by which individuals and cultures select what they regard as appropriate foods from the vast array that is available. Applying these concepts to China, it uses a materialist, cultural-ecological approach to review the Chinese diet and the foods that figure prominently in it.

Chapter 3 deals specifically with the foods of China, organized according to the structure of Chinese meals. It then offers an assessment of this dietary regime in terms of its cultural ecology.

Chapter 4 summarizes the vast academic area of economic development. It then explains Terry G. McGee’s (1989, 1991a) spatial model of development and urbanization in the Chinese context before focusing on Chinese development, particularly as applied to food.

Chapter 5 provides the geographical and historical background about the study area of Liaoning Province and the application of McGee’s (1989, 1991a) spatial model to this region. It also surveys the overall provincial situation of food and diet in the province.

Chapter 6 describes the field survey that was carried out in Liaoning Province in 1994. Its results provide more detailed information at the household level of what people actually eat on a day-to-day basis.

Chapter 7 proposes a modification of McGee’s (1989, 1991a) model of

spatial development in East Asia to reflect specifically food-consumption patterns. The chapter then reviews what the eating patterns of Liaoning residents indicate in terms of cultural meanings of foods and possible changes in diet, changes that potentially have a great impact on food supplies throughout the world.

7

China's Changing Rice Bowl

China's last great famine was from 1958 to 1961, the result of the failed campaign of the Great Leap Forward. The next major political upheaval, the Cultural Revolution (1966–76) did not produce widespread starvation, although diets were terribly unbalanced and lacked important nutrients. In promoting economic development and unleashing the energies of China's farmers, the Dengist reforms undoubtedly improved the quantity and variety of food available to the Chinese people.

After nearly two decades of Deng's reform, development and modernization programs — both Engel's and Bennett's laws — operate in China with two exceptions: first, government intervention in food markets (rationing and subsidies) and, second, the restrictions on crops that farmers can grow. Engel's Law and Bennett's Law also are violated in times of prolonged inflation. Such conditions begin to impact Bennett's Law when families economize by reducing their consumption of expensive foods. After such "fat" is trimmed from the diet, if inflation persists, the household has little choice but to increase the proportion of income that is spent on food, so this percentage increases although incomes are rising.

The McGee (1989; 1991a) spatial model, based on levels of urbanization with an emerging regional urban hierarchy, posits a hierarchy of city and rural areas in regions of dense pre-existing agricultural populations in East Asia, as they evolve in response to forces of economic development and industrialization. Life-style or *genre de vie* cultural factors, such as diet, were not applied in the creation of McGee's model. As we have seen, clear and striking differences in nutritional levels and food choices are evident within the same province in China, and more between cities and the countryside than among rural regions. The Dengist Opening to the World has brought in Western supermarkets and fast-food outlets, further differentiating urban and rural diets.

Nutrition, Economic Development, and Culture in China

Long ago, China developed a dietary regime and a farming system — a cultural ecology — that is capable of feeding a large population on a small amount of land. In the Chinese conceptual scheme or conceptual map of food, the centerpiece of a Chinese meal is grain, which is lower on the food chain than meat that Westerners regard as the main dish. The Chinese staple grain of choice — rice — requires tremendous amounts of labor, but it feeds those laborers by providing high levels of nutrition per unit of land. In lands that are too dry for paddy rice, wheat produces abundant Calories and protein. Millet, sorghum, and maize, following its introduction in the Columbian Exchange, provide supplements.

Grain in a Chinese meal is supplemented and enhanced by vegetables and small amounts of meat. The most common meat is pork. Pigs contribute to the Chinese farming system by consuming what otherwise would be discarded as waste, and turning it into food in the form of pork and ham. Chickens and ducks perform a similar function because they produce not only meat but also eggs; however, because they are smaller, they provide less meat per animal than pigs. The traditional Chinese attitude that large herd animals are “barbarian,” coupled with the Chinese lactose intolerance, reduces the cultural desire to allocate large amounts of land to pasture. A great variety and large quantity of vegetables are produced on small garden plots and in greenhouses, and fruits occupy some of the land that is unsuited to rice and vegetable farming.

This pattern of the central role of grain (*fan*), with vegetables and meat as a condiment, has persisted in China over hundreds of years. Rice became the dominant grain, especially in the south, before the Song dynasty was confined to rice-growing regions by the Mongol conquests in the north. The agriculture that supplies this dietary regime has been amenable to intensification, most recently under the reforms of Deng Xiaoping.

New foods have been added to the Chinese diet throughout this long history. Wheat itself was an early import, but most of the additions have been supplementary, rather than staple, foods. Maize is an exception. Nevertheless, although it can form *fan* in a meal, it is not favored in this role. Once the Dengist reforms and technological improvements made rice available in Liaoning Province, corn declined greatly in importance as a staple food, in favor of more traditionally used grains. Supplementary foods, such as tomatoes, peanuts, chili peppers, and, more recently, Coca-Cola and ice cream, have enjoyed considerably more success. They enter the system at a less basic point and, therefore, one that is more amenable to change. Furthermore, their acceptance has been primarily urban, where Western products and ideas are prestigious in the new Opening to the World and developmental policies of the Dengist era: “To get rich is glorious.” To consume these products symbolizes prosperity and “modernness,” as does dining at a fast-food outlet.

Nutrition in China

These findings in Northeast China confirm the conventional knowledge and research in medicine and anthropology (Croll, 1983; Morgan, 2000; Piazza, 1986; Shen, Habicht, and Chang, 1996) that nutritional levels remain higher in the city than in the countryside by virtually every measure, just as they have for hundreds of years. The major divide is between city and countryside; suburbs are more similar to other rural areas than they are to the city. McGee's (1989; 1991a) model dealt with economic matters. The regions it sets out are determined on the basis of demographic and economic measures. In terms of nutrition and food, however, there are only two regions: city and countryside.

Although on average, rural Chinese consume adequate Calories (energy), urban people eat as much as one-third more than the minimum daily recommendation. National and provincial statistics and results of the field study confirm that rural Chinese still eat much more grain than urban people and much less meat, eggs, and other high-protein food. While still less than the recommendation, protein and calcium consumption in urban areas is higher than that in the countryside. Both deficiencies relate to the small quantities of meat in the diet and even smaller amounts of dairy foods.

Because of heavy consumption of vegetables and fruits, vitamin consumption in urban and rural China is generally adequate, but fats are still very low because stir-frying requires so little oil and people eat so little meat. Most Calories come from carbohydrates (mostly grain), with the ratio of Calories from carbohydrates to Calories from fat following the urban hierarchy; the highest ratios are in the most rural areas.

Urban families eat a greater variety of foods than do rural families, making the provision of complete nutrition more certain. The more varied diet is partly the result of the purchasing of food in the market, which offers a greater variety than a farm family can produce by growing its own food. It is also a result of a greater willingness to try new and different foods. In terms of Maslow's Hierarchy of Human Needs (1954), urban families have had basic food security for a much longer time than rural families because the government has provided their food at subsidized prices. They have reached the level in the hierarchy where they can use food for self-expression and be creative with a wider variety of foods, including foods that are not traditional to China.

Economic Development and Nutrition

According to Todaro's (1989: 87) definition, economic development includes an increase in the well-being of ordinary people. Because food is a basic need for survival and good health, it is a very important component of well-being. Economic development should bring improvements in nutrition.

Popkin's (1993) Nutrition Transition (Chapter 4), was based on the Western, especially European, experience. The "fit" with Chinese history and China's current situation is less certain. Nevertheless, urban and rural China clearly exhibit different patterns. Rural China, as indicated by national and provincial statistics and the data from the food diaries, is in Pattern 3, Receding Famine, in which better technology and transportation make a wider variety of foods available, and rising incomes enable people to purchase them. This assessment considers the Dengist reforms to be the "Industrial Revolution" because previous efforts to industrialize China affected only limited areas or precipitated such major disasters as the Great Leap Forward. Since China began embarking on widespread development under Deng, the conditions for Pattern 3 have penetrated the countryside: a greater variety of foods, rising cash incomes to purchase them, new food-processing technology, and improved cooking technology. Nutritional deficiency diseases have decreased, and life spans have lengthened. The Chinese population control policies have reduced the population explosion that accompanied this pattern in the West, increasing the aging of the population because fewer babies are born.

Urban China is entering Pattern 4, Degenerative Diseases, as people are starting to eat more meat and, thus, more fat, along with more processed foods, including Western fast foods. Although the Chinese have remained more active than most Westerners, even in cities, fewer urban Chinese do heavy manual work, and more and more of them enjoy the convenience of home appliances. Obesity, especially in children, is appearing.

These transitions involve a reduction in the amount of grain consumed in favor of other foods: meat, vegetables, and fruits. China has followed Bennett's Law (1941), and the urban-rural contrast demonstrates it. National and provincial statistics clearly show much greater grain consumption in the countryside than in cities, and the field data confirm this difference. Rural people obtain a much higher proportion of their Calorie intake from grain and less from fat than do urban residents. Consequently, a rapid increase in the price of grain can force rural families to spend an increasing proportion of their income on food despite rising incomes, which violates Engel's Law. It also can prompt them to purchase more grain (less favored than vegetables and meat) despite rising incomes and rising prices — the Giffen effect. Because urban families are less dependent on grain, a rise in its cost is less likely to increase their food expenditure as a proportion of income or to produce the Giffen effect. In fact, in 1994, the Liaoning government sold grain to urban residents at subsidized prices to avoid this effect from the flood-induced inflation of that year and the social unrest that it feared such sacrifices might provoke.

Although Mao Zedong's oratory glorified the peasants of China, and his revolution depended on their support, he also used the countryside to supply the needs of the favored city residents, in line with Mintz's (1979; 1996)

description of capitalists. The household registration system, which gave urban residents subsidized food (and housing and other services), actually increased the disparities between urban and rural areas. The Chinese leadership was and remains urban. Urban people even speak rather disparagingly of peasants — at best, they are child-like individuals who must be looked after — and Chinese who have left the countryside for the city have no desire to return. Deng's economic reforms have increased the status of the city, as is evident in the large number of illegal migrants who flock to urban areas. As imperial China, Socialist China is ruled by urban people from cities. Cities still have the political and economic clout to draw what they need from the countryside, which is required to produce food to feed the cities. The countryside receives technology, as well as fertilizer in the form of night soil in return, but the terms of trade are still uneven. City residents, on average, still eat and live better.

Culture and Nutrition

Each culture makes choices about which substances will be considered appropriate as food. Initially, such choices involve foods that naturally occur in the environment; with farming and animal husbandry, the application of technology ensures that the chosen foods will be available and increases the inventory of potential foods.

The impact of technology is readily apparent in the dietary regime of the people of Liaoning. Millet and sorghum were the initial staple grains; they later were supplanted by maize and, most recently, by wheat and rice. The latter development has depended upon large-scale irrigation works, but answers a strong cultural demand of Han Chinese migrants to the region, for whom rice was symbolic of adequate food in general. Increased rice consumption has improved the nutritional status of the people of the region, especially as the population density has increased. Today, a few urban families eat maize as a nostalgia and variety food; millet and sorghum are almost exclusively rural foods because they symbolize poverty. Thus, cultural preference of in-migrants has prompted the application of technology to change the dominant grain in the diet and impose an inferior status on formerly dominant grains. Wheat, the staple grain of Western Europe and North America, has long been a staple in northern China as well, but its use lags behind rice.

Meat choices continue to be more traditional everywhere, although urban families eat more meat in total and a greater variety than rural families. Pork is still, by far, the meat of choice. As China faces greater challenges in providing food for its people, pork probably will retain its importance because of its cultural-ecological niche in the Chinese farming system and its consequent symbolic importance as a sign of prosperity and well-being. The necessity to free land that is suitable for rice growing, because of its high per-land-unit

Calorie production, may promote more raising of animals that are fed from fields in areas that are not suitable for rice cultivation. It is uncertain whether this government-supported trend will lead to an increase in consumption of such range-fed animals as beef and lamb. At present, it is minuscule in both urban and rural areas. Such animals are still symbolic of what the Han agriculturalists regard as an inferior culture, that of nomadic-herding "barbarians."

Similar to pigs, chickens and ducks are scavengers, but, because they are small, they are less efficient as meat-producers and, thus, are valued mostly for their eggs. Turkeys, despite their larger size, are not raised in China, but ducks and geese are and, occasionally, are eaten.

Chinese eat fish, but much of China is far from the sea. Improved transportation and storage for fish has made seafood more widely available, and aquaculture in inland areas is increasing the supply of freshwater fish. Fish are used interchangeably with other animal foods. Neither chicken nor fish shows distinct urban-rural differences.

Combinations of meat and grain, including dumplings, filled buns and pancakes, and wonton soup, are traditional foods in China. Because they use meat, the popularity they enjoy in the countryside today is probably recent. As casseroles in the West, they provide an economical way of serving meat because the filling is made from ground or very finely chopped meat, which can start as an inexpensive part of the animal. There is no great rural-urban divide in the use of these foods.

The greater reliance on grain and lower consumption of meat in rural areas, as compared with urban areas in China, is partly economic: meat costs more than grain. It may be cultural as well. Rural people have grown up with the cultural food concept that meals should be based on grain and that meat is an expensive luxury to be savored only occasionally. Rural people tend to be conservative, bred by centuries of isolation, a precarious existence, and resulting reluctance to take great risks.

Even in the countryside, however, culture does change. Most likely, diet changes in times of large-scale innovations in other areas of life. Certainly, the changes in Deng Xiaoping's China have been momentous, and they have affected the countryside greatly; in fact, the first reforms were rural. Agriculture is the first of the Four Modernizations. As with all the other campaigns and movements that have affected the Chinese countryside since 1949, the current economic reform is directed cultural change (Naylor, 1996). It has been directed by city people, down the hierarchy of urban areas, to rural areas. As far as food is concerned, the main official thrust of the reforms has been to produce more of it, but efforts of government health workers and educators also have been directed toward getting peasants to eat better. And they probably, on average, eat better than at any previous time in Chinese history. They, however, have not enjoyed food security for a sufficiently long time, so

many of them are unwilling to venture into major changes in their diet, that is, to change the basic map of the concept of food. A persisting barrier of low educational levels, particularly among women, hinders dietary change because women do most of the food-related chores and, thus, are the main “gatekeepers” in the channels through which food reaches the family table.

The choice of foods to be eaten on specific occasions also shows a marked rural-urban divide. Urban families retain the traditional foods for Chinese New Year, but they also add more foods, many of them luxury foods that are a treat for the holiday. Rural families, whose diet is generally less imaginative and, hence, less risky, stick with the “tried and true.”

Similarly, urban families’ breakfasts show a much greater variety and the acceptance of a more Western-style menu of milk and yeast bread or cake, at least some of the time. Most rural families overwhelmingly eat the same foods for breakfast that they do for any other meal.

As economic development — including urbanization — proceeds, farmers become more commercial. They produce crops to sell in the market (primarily in cities) and purchase their food in stores like non-farmers. Chinese farmers still rely on their own production for a major portion of their needs, but they are developing more commercial specialties, such as fruits, dairy cows, and new kinds of vegetables. Because they eat some of their own crop, these specialties change their diets, and urban food preferences, thus, spread to rural people.

Advertising is another form of directed cultural change by which urban preferences penetrate the countryside. As time goes on and rising incomes permit, the few rural families in the field study who ate newly introduced foods may be the beginning of the necessary nucleus of innovators from whom changes in diet will spread to others. Of course, if the foods that are being adopted are mostly candy and ice cream, nutritional levels will not benefit, but such choices do signal cultural change and are in line with the shift to Pattern 4 of Popkin’s (1993) Nutrition Transition.

Economic Development and Culture in China

Deng Xiaoping’s reforms, especially the household responsibility system that returned land to the control of individual peasant households, has brought great changes to the Chinese countryside. Once they meet the terms of their contracts, households have the freedom, to grow what they want to eat and what they know will sell well in the market. They are enjoying unprecedented prosperity, and their diets reflect this improvement in their lives in general.

Nevertheless, farmers still make a living supplying what city residents want. As John Lossing Buck (1937) described before the establishment of the People’s Republic, Chinese peasants sell a high-value product in the market and purchase something else for their own use.

Living standards in urban areas remain much higher than they are in rural areas, and the gap is growing. Urban nutritional levels and dietary quality and variety remain better than those in the countryside. Urban families have higher incomes, and they purchase their foods in markets that can and do offer more choices than any one farmer can grow.

The divide between city and countryside is more than purely economic, however. Urban areas, by nature (Wirth, 1938), bring together a variety of people, who rub shoulders and generate new ideas. Although China's cities historically have been centers of conservatism compared to Western cities (Murphey, 1954), they drew people and ideas from a much broader area and range of interests than a rural village. In Stover's (1974) terms, they were and remain part of the elite.

Urban areas also amass both economic and political power, which they can use to influence what goes on in the countryside. They are the market for rural production, and the market determines what will be produced. In this way, at a minimum, ideas from the city will be felt in the countryside.

The countryside may have to produce for the city, but rural people are traditionally conservative. They are isolated by distance and (historically) by illiteracy and lack of mass communications. Their world is local and circumscribed — Stover's (1974) Green Circle. Life is precarious; any new innovation may produce disaster, a belief that the Great Leap Forward did nothing to dispel. Therefore, although the current life is spartan, it is relatively assured. Life has always been the way it is now, and, as far as anyone knows, it probably will never be any better. And because it could get worse — much worse — no one dares to make changes, lest they lead to starvation. Although Mao Zedong's government reached the level of the villages and the peasants, probably for the first time in Chinese history, his most enduring effect was to bleed the countryside, just as his imperial predecessors did. His first priority was the development of heavy industry. The famine of the Great Leap Forward hardly made peasants want to take major risks!

The Dengist reforms have brought urban functions and landscape features to the countryside in a way that is somewhat unique to East Asia (McGee, 1989; 1991a). Because the agricultural population is already dense, manufacturing concerns take advantage of available labor and locate along transportation routes in rural areas, leading to rural urbanization (Zhao, 1994). Away from these corridors, development and urbanization are less, declining to almost none in the regions farthest from cities and transportation.

Economic development, with its attendant opportunities for manufacturing and service employment, brings changes in ways of life. Farmers, or members of their families, are employed for cash wages, rather than working the land to produce food directly. In many Chinese families, one or more members work off the farm, while others continue to work the land. Some of these families do continue to produce their own food, but more and more families are buying, rather than growing, their food. Similar to

families in the cities, they are now buying food in the market, using cash and enjoying a greater variety of choices.

Diet, however, has remained rather resistant to change. Staple foods are especially persistent. Even families whose lifestyle becomes more urban-like, due to livelihoods shifting to manufacturing or services, may continue to eat the same dietary regime. National and provincial statistics and the food diaries indicate that this is happening in China. Although the government of the People's Republic has reached the local village and changed many aspects of peasants' lives several times, it has not changed one of the most fundamental, central parts of their culture: their dietary regime — their conceptual map of food. The same dietary regime continues to symbolize well-being. In terms of nutrition and diet, the main divide remains between city and countryside.

Despite the enormous changes that the People's Republic has wrought in the countryside and despite rhetoric that China must "walk on two legs," and that the city and countryside are equal, there remains a great difference between the two types of regions. The real contrast is between the city and the countryside, rather than among the rural areas. In other words, the suburbs are more similar to other rural areas than to the city. Robert Redfield's folk-urban continuum, as applied to China by Stover, is alive and well in Liaoning Province.

The persistence of this rural-urban contrast, despite government efforts to develop the countryside, shows that culture is a force that runs deeply in the people who hold it. The dietary regime, which is especially central to the Chinese, is particularly resistant to change, and, even more so, in the rural population, which tends to be conservative. Whether rural residents will become more venturesome in their food choices will depend on China's ability to continue to supply its citizens with adequate amounts of food and, thus, to provide food security. With a growing population and land being converted to urban and industrial uses, food supply in China remains a challenge.

If the rural Chinese do begin to adopt a conceptual map of food that bears a greater resemblance to urban choices, including Western additions, the change will have great implications for China's — and the world's — economy. It will mean satisfying a greatly increased demand for meat, which is higher on the food chain and, thus, more costly in terms of capital and of land to produce. Use of more processed and manufactured foods will divert resources into their production without necessarily improving nutritional levels in China or anywhere else. Because China's population is so large and its rapid economic growth is giving its people more purchasing power, what its people choose to eat can have a great impact on the entire world.

Notes

CHAPTER 2

- 1 The classic fictional account is Pearl S. Buck's Nobel Prize-winning novel, *The Good Earth* (1930)
- 2 Overeating is also a form of malnutrition — over-nutrition

CHAPTER 3

- 1 The first record of its cultivation in the United States, where it was regarded as a botanical curiosity, was in Savannah, Georgia, by Samuel Bowen in 1765 (Wittwer et al., 1987: 184)

CHAPTER 4

- 1 Promotion of *agriculture*, not manufacturing — the “Food First Hypothesis” — leads to development in the form of better nutrition. See Cheng, 1989
- 2 The Four Modernizations are, in order of priority, Agriculture, Industry, Science and Technology, and the Military

CHAPTER 5

- 1 A *jin* is a little more than a pound, 2 *jin* equal 1 kilogram

CHAPTER 6

- 1 According to the Wilcoxon Signed Rank Test (used because of non-normal distribution), with $W = 153.0$, $T_+ = 203.0$, and $T_- = -50.0$. In other words, the changes in households that increased consumption totaled 203, the changes in those that decreased consumption totaled 50, and the total change was 153. Testing variation by season does not appear in the literature of foodways and nutritional studies. Because the paired-*t* test examines changes before and after some intervention to see whether the intervention had a significant effect, it was chosen for this purpose in cases where the data were normally distributed. Specifically, this test calculates changes resulting from a “treatment”, here, the “treatment” is

the change of seasons. Examining the changes, rather than the values themselves, removes the differences that result from individual responses, producing a more sensitive and powerful test. The t -test statistic is a ratio of the mean difference of the subjects (households in this case) before (in the spring) and after (in the fall), divided by the standard error of the mean difference (a measure of the approximation with which the mean computed from the sample approximates the true population mean).

If the data were not normally distributed, a Wilcoxon signed ranks test was used in place of the paired- t test. The Wilcoxon test statistic W is computed by ranking all of the differences before and after the treatment (in this case, the change of seasons) based on their absolute value, then attaching the signs of the difference to the corresponding ranks. The signed ranks are then summed and compared. A large W statistic indicates that there was a significant change because all of the changes were in one direction. By the same token, a small W statistic indicates that there was a mixture of positive and negative changes, and they cancelled each other out.

2. The paired- t test ($t = 2.95$) shows a decline. The power of the test with alpha at .05, however, is slightly below the level needed to give complete confidence to the results.
3. Using the paired- t test ($t = 3.52$).
4. The paired- t test shows $t = 2.8$; however, the power of that test with alpha .05 was lower than desired for full confidence in the results.
5. The paired- t test for the percentage of the recommended consumption of protein was $t = 3.26$, with a power high enough to lend confidence to the results. By the same test, Vitamin C consumption also declined ($t = 2.13$), but the power of the test was too low to be used with confidence. The change in the consumption of Vitamin A was even greater ($t = 4.89$), and the power of the test was high enough to be used with confidence. Because of non-normal distributions, the change in percentage of recommended Calorie consumption was tested using the Wilcoxon Signed Rank Test, with $W = -186$, $T_+ = 2.00$, and $T_- = -188$. Likewise, the Wilcoxon Signed Rank Test was used for the ratio of carbohydrates to fats, with $W = -104$, $T_+ = 43$, and $T_- = 147$.
6. According to the paired- t test, the change was statistically significant ($t = 3.54$), with a power high enough to be used with confidence. Because the distribution is non-normal, the Wilcoxon Signed Rank Test was used to compare the ratio of Calories from carbohydrates to Calories from fats and showed a statistically significant change: $W = -89$, $T_+ = 8$, and $T_- = -97$. The change in Calories from fats in this equation was too small to be statistically significant, but Calories from carbohydrates declined significantly ($t = -1.59$), although the power of the test is low, requiring caution in the interpretation. For protein consumption, $t = 3.33$ with a power to allow confidence in the results.
7. ($t = -2.76$); the power of the test is low, requiring caution in interpretation.
8. ($t = 4.51$).
9. ($t = -2.31$). The power of the test, however, is also low enough to require caution in interpretation.
10. ($t = -3.32$).
11. ($t = -4.49$).

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