

TRADITIONAL CHINESE DIET  
AND ITS RELATIONSHIP TO HEALTH

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Introduction.

The study of dietary habits is of concern to anthropologists because interest in food production, preparation and consumption is common to all cultures. Moreover, not only does food satisfy human physical needs, but food has always been associated with all major social and religious events, and performs the function of reinforcing social unity within a social group.

In the study of diets, two approaches are currently used. The professional nutritionist is primarily concerned with the biochemical aspects of food and assumes that the study of nutritional requirements, as determined by science, is an end in itself. The social scientist, on the other hand, studies the institutional setting, the food practices and the food beliefs of the target group. He takes a more relativistic position; food needs and beliefs are based on the interrelationship of climatic, geographical, historical factors with the physical, economic, social and psychological needs of the people. Thus the nutritionist emphasizes the physiological basis of dietary needs whereas the social scientist's research is based on the assumption that behavior, environment and cognition all influence one's nutritional "needs".

As a social scientist, I hope to present a holistic analysis of Chinese food habits and show how diet is related to Chinese social organization, land use patterns, beliefs and methods of health maintenance, and demographic features. Many of the cultural patterns of food use and beliefs discussed here are applicable to food customs found in other Asian socie-

ties. The following study is based on seven years of residence in Taiwan and more intensive research, participant observation and unstructured interviews conducted on Chinese food habits during the summer of 1973.

Social function of food in Chinese society.

Food is a topic of great interest to all Chinese. "Good food is an end in itself, and feelings about it are strong among all individuals." I found that conversations were often totally concerned with food, for example: where good restaurants are located, where one can buy the best quality foodstuff for the cheapest price and how to prepare certain dishes. Therefore, the Chinese seem to see good food as one of life's basic positive rewards. Food is used as a reward for good behavior among children, for success in the economic world and for enhancement of prestige.

The importance of food among the Chinese is also apparent in economic terms. Rural populations in Mainland China spend about 60% of their total capital on food.<sup>2</sup> Taiwanese have also been found to spend some 62% of their household budget on food.<sup>3</sup> When the major expenditure of a family is on food, then the selection and management of food becomes of great concern to everyone in the family.

Even the well-to-do classes spend a large proportion of their income on food. These expenses are not only due to the higher quality and quantity of foodstuffs that they can afford to purchase, but also to entertainment requirements. Chinese social gatherings always center around a meal, and the wealthier people are constantly involved in banquets which are usually held in well-known restaurants. A wealthy household head may sponsor a banquet, which usually consists of a minimum of 12 major courses and 10 guests, as often as twice a week. Since attending a dinner party

as a guest also obligates one to invite others in return, an upper class husband may be out to dinner four to six times a week. This kind of frequent outside dining creates a highly prestigious image for a family. Participants are given the opportunity to become acquainted with other powerful or wealthy people, people who may be able to grant favors when needed. Also, these busy diners are admired or envied by people who are not able to indulge in such extravagance.

Chinese of all economic stations attend banquets sometime during their lives and this communal eating reinforces social ties, social unity and social status. Poorer people may only be able to afford them when celebrating major milestones in the life cycle: birth, marriage and death. Others celebrate festivals, birthdays or any notable occasion with such a meal. Because this type of entertainment is universal among the Chinese, then it also becomes apparent that it is crucial for participants to be properly socialized into the methods of eating and informed about the foods to serve, the order of serving the foods, the symbolic meaning of the dishes and the health effects of certain foods by themselves or in combination with other foods.

Recognizing the social importance of food, I shall now pursue the topic of diet and nutrition among the Chinese. This paper will describe the types of foods consumed by the Chinese, sources of protein in their diet, foods that are considered to be delicacies, food preparation and planning, nutritional evaluation of Chinese diets and a brief discussion of "hot" and "cold" foods and their relation to Chinese conceptions of health and illness.

## Chinese diets.

### 1. Typical meals.

The types and variety of food that are eaten by the Chinese are a function of the economic station of a family and of the region in which the family resides.

Northern Chinese meals usually consist of bread, hot garden vegetables and occasional meat slices. Grains such as wheat, millet and kaoliang\* provide the bulk and the calories in the diet.<sup>4</sup> These are made into breads of millet-kaoliang-soybean flours, noodles, unleavened pancakes, steamed wheat rolls, millet porridge, and deep fried salty doughnuts. For the common rural dweller, salted peanuts, pickled turnips and carrots, sweet potatoes, boiled or stir-fried vegetables and soups with meat or eggs and vegetables may be selected to provide occasional variety.<sup>5</sup>

The Chinese anthropologist, Martin Yang, found that villagers living in north China could be divided into four economic classes on the basis of their staple foods. The lowest, most impoverished group was limited to sweet potatoes as their daily food source.<sup>6</sup> The next group consumed a mixture of sweet potatoes and millet. The third group ate both wheat and millet and the wealthiest group of villagers consumed mostly wheat-based staples. Flesh foods and eggs were usually available to the villagers only during festivals and harvest time.<sup>7</sup>

Southern Chinese diets, which include the foods of the Cantonese, Fukienese and Taiwanese subcultural groups, are more variable because the land and climate in the south are more suitable for growing a variety of crops. The usual southern Chinese fare consists of steamed rice with some type of meat and vegetable topping.

Although "wheat is a dietary staple consumed by two-thirds of Chinese families",<sup>8</sup> the Chinese term for eating meals, ch'ih fan (Cantonese sik<sub>3</sub> faan<sub>3</sub>), literally means "eating rice". Hence, southern Chinese meals are characterized by the consumption of rice, whereas snacks are not. Between-meal foods, e.g., fruit, confections or foods bought from a local street vendor, usually do not entail much cooking and can be eaten at any time or place by oneself. Meals usually require the gathering of the whole family and thus have social value because they reinforce the unity of the family group and facilitate intra-familial communication. Many of the important family plans and decisions are made during the evening meal.

Tea-drinking is universal among the Chinese. This practice originated in the late Han dynasty (1st century) and by the 4th century had become universally popular in China. Tea was probably first introduced as a drug for inducing transient insomnia. Because the preparation of this beverage required boiling water to steep the tea leaves, tea-drinking brought with it protection from water-borne diseases. This effect was widely recognized by the 12th century; Chuang Chho from that period noticed that "Even when the common people are travelling they take care only to drink boiled water."<sup>9</sup> It is possible that tea-drinking also helped preserve the teeth since tea leaves do contain some amounts of fluoride. Furthermore, the practice of serving tea after dinner also cleans and rinses the entire mouth since Chinese do not usually drink liquids other than soup during meals.

Stronger drinks may be served to commemorate a notable social occasion,<sup>10</sup> but the wines and liquors are only served after the meal has begun. This custom perhaps evolved out of a concern to reduce the inebriating effect of such beverages, since Chinese people as a race seem to be particu-

larly susceptible to intoxication after only a small amount of alcohol.

It is tea which is served as an appetite stimulator before dinner.

## 2. Holiday meals.

On the average, it has been estimated that 98% of the diet of rural Chinese people throughout the provinces comes from plant sources, especially rice, wheat, millet, soybeans, beans, peas, etc., and only 2.3% comes from animal sources such as meat, eggs, fowl and fish.<sup>11</sup> It is not surprising, then, that the foods served during feasts tend to reflect the reverse proportion of animal to vegetable foods. These elaborate meals may contain animal products in 80% of the dishes, with rice traditionally served only at the tail end of the banquet to signify that the meal has ended.

In addition to banquets, more than a dozen religious or social holidays dispersed throughout the calendar year provide the Chinese diet with much additional nutrition and variation. For example, during Chinese New Year, a festival comparable to the Western New Year and Christmas combined, meat and vegetable raviolis (chiao tze), beef cooked in soy sauce (hung shao rou), meat balls and vegetable combinations, or "fire pot" (see p. 12) are very popular. In fact, it has been said by many Chinese informants that the Taiwanese are very faithful in celebrating their many religious holidays (on the average twice a month) because it provides a good excuse to eat high quality foods and meats.

## 3. Sources of protein.

Of the small amount of meat that the average Chinese does manage to consume, most comes from fish, pigs, chicken and ducks because these animals are part-time scavengers and do not require the type of grazing land needed by cattle or sheep.<sup>12</sup> China only devotes 1.1% of her farmland to

pasture for grazing animals, whereas, in contrast, the United States uses some 47% of her arable land as pasture grounds.<sup>13</sup> This situation in China developed because of the ever pressing problem of high population growth on a limited area of arable land.

The low meat intake pattern has not always been true in China. During the Chou dynasty (1100 B.C. to 300 B.C.) the Chinese were heavy meat eaters. From 400 B.C. to 100 B.C. the consumption of beef and mutton was greatly reduced due to the need to convert the grazing lands to more productive and efficient methods of food production, such as the cultivation of vegetable and cereal crops. Wheat became the main staple for most of the population and cattle breeding was limited to a minimum of one plow-pulling animal per farm.<sup>14</sup> The ox was bred in the northern provinces for this purpose while the water buffalo was preferred in the south because the latter was better adapted to the warmer, more humid climate, and because it could do more work for a smaller maintenance cost.

The second major change in Chinese diets occurred between 300 and 600 A.D. when rice became the staple for people living in the southern provinces. Since rice contains less protein and vitamins than wheat, it was fortunate that these deficiencies were compensated for by the increased consumption of vegetables, legumes and sea foods.<sup>15</sup>

Although pork has been the most popular meat in the Chinese diet, pigs are raised not only for their meat, but also for their ability to produce rich fertilizer from a diet of discarded waste. The typical pig changes owners three times before he is finally slaughtered. A special producer raises the piglets, gelds them at a few weeks of age, and then sells them at the local market. The farmer who buys a piglet feeds it on

garbage, bran and soybean waste for six to ten months. During this period the pig matures to adulthood and produces a large quantity of organic fertilizer which the farmer spreads in his fields. The farmer then sells the pig to a third owner who has the food supply necessary to fatten the pig for two months before it is finally sold to the butcher. Noting that the farmer (the second owner) makes little or no profit after he sells the pig, we can see that pigs must provide him other invaluable "recycling" functions.<sup>16</sup>

The consumption of dog meat also became popular in the Han dynasty (200 B.C.), because this creature, too, did not require extra land for its maintenance. According to Eberhard (personal communication), the Chinese conceive of the dog as a smaller and inferior version of the pig. Dogs are fed scraps deemed undesirable by humans and perform the function of killing various small wild creatures (rats, fox, rabbits, etc.) which are pests for the farmers. Their meat is considered to be inferior to pork because there is less fat in the tissue, and the resulting flesh is usually tougher than pork. Among the Southerners, the practice of eating dogs and cats is also associated with the idea that these types of meat ensured health and strength.<sup>17</sup> For a diet low in protein, one can see that this belief has some foundation in scientific fact.

In Taiwan I found that dog meat was most commonly consumed in the winter because it was reputed to help keep the body warm. This dietary practice was recently declared illegal in Taiwan because the government realized that visiting foreigners were shocked by this dietary custom, and the government was very concerned about the image they were presenting to the West. At present, dog meat is still available in Taiwan but is not



openly sold on the market. The fact that there is no stray dog problem in the Taiwanese streets, and that dogs are frequently stolen, attests to the fact that the consumption of dog meat is still quite popular.<sup>18</sup> It is interesting to note that black dogs command a higher price, perhaps related to the idea that blackness is associated with strength and virility. Chinese gods that are considered to be powerful male figures are frequently depicted as having black faces and thick black facial beards. This representation is also found in Chinese opera and stage performances. Thus, in terms of symbolic meaning, a Chinese feels he gets more energy and nutrition from black dogs because such dogs are believed to be inherently endowed with more vitality and strength than non-black dogs.

The flesh of mice and rats is also consumed by the Chinese for food as well as medicinal purposes. In Taiwan about ten years ago, it was widely rumored that the sausages sold by street vendors were sometimes partially filled with rat meat because of its cheapness and availability. Old women were also found by Williams to be particularly prone to eating rat meat due to the belief that its consumption would induce hair to grow thicker and darker.<sup>19</sup> Since a protein-deficient diet may result in hair discoloration and hair loss, the popularity of this folk belief may have some validity.

Cow's or goat's milk, butter, or cheese never seemed to have been cared for by the Chinese although they were exposed to such dairy products during various periods in history, for example, under Mongol and Manchu rule.<sup>20</sup> This disinclination to eating dairy foods seems to contradict the Chinese belief that milk was supposed to be very nourishing. Lactating women of the poorer classes sometimes sold their milk to feed infants and invalid old people; it was widely acknowledged that milk was particularly

nutritious for the aged.<sup>21</sup> Although the wide prevalence of lactase deficiency, approximately 95%, in Oriental populations may account for part of this avoidance of dairy products, I think that the Chinese conceptions of taste and pollution have a great deal to do with the rejection of milk products as food. Milk is seen as a secretion from the cow, just as urine is a product passed out of the cow. Moreover, many informants stated that they dislike the "stinking" smell and taste of milk, butter, cheese, etc. This great abhorrence of dairy foods was well demonstrated when the cook we had in Taiwan would run out of the kitchen because she found the smell of cooking butter too overpowering.

The last, but most important protein source for the Chinese is tofu (or bean curd), a soybean product. The manufacture of this foodstuff involves grinding the soybean, rinsing it to remove the starch, and then suspending the resulting substance in water to precipitate it into a cheese-like mass. Further preparation, such as fermentation, the addition of salt, pressing, or drying produces the many hundreds of different kinds of bean curd products available in the market. "Mixed with vegetables or made into soup, these curds are the Chinese poor man's meat."<sup>22</sup>

#### 4. Chinese delicacies.

Any discussion of Chinese food cannot fail to describe some of the more exotic substances that are highly valued among the Chinese. The list of such foods is almost infinite. In fact, one Western observer commented that from his study, he found that the Cantonese ate almost anything that was conceivably edible. Thus, he was not surprised to find no linguistic category for edible foods that were not eaten.<sup>23</sup> In the following paragraphs I will describe only a few of the food delicacies commonly encountered

at Chinese banquets and well-known among connoisseurs of Chinese food.

The famous bird's nest soup and sea cucumber (or trepang) dishes are occasionally served at expensive dinner parties. The former is actually prepared from the nest of a swallow (Collocalia esculenta) that lives on some islands of the Indian Archipelago.<sup>24</sup> The high value of the soup derives from the relative scarcity of these nests and the tremendous amount of labor required to remove all the dirt and feathers from the nest. Both the sea cucumbers and bird's nest soup are reputed to have aphrodisiac qualities, necessitate extensive preparation and have a highly-valued crunchy texture.

These two delicacies characterize a class of Chinese delicacies that includes shark's fin and beef tendons or sinews. They all share these qualities: (1) require a tremendous amount of preparation time and other expensive ingredients; (2) have their inherent flavors disguised or enhanced by sauces and other additives; (3) are believed to be highly nutritious or able to increase sexual capacity; and (4) are substances that possess a crunchy texture and translucent appearance. Therefore, it appears that the inherent taste of these foods is not valued as much as the prestige associated with offering guests such expensive delicacies, the highly valued crunchy and translucent character of these foods and their purported sexual and nutritional qualities. The belief that these foods are very nutritious and invigorating may be related to the fact that these foods contain significant amount of protein and calcium, which were the major nutrients lacking in the rural diet.

##### 5. Preparation and cooking.

Chinese meal planning and cooking revolves around the "minimax"

principle. All Chinese housewives strive to maximize the qualitative, aesthetic, nutritional and health characteristics of the foods for a minimum amount of money. The most popular method of cooking, stir-frying, exemplifies this principle because it only requires a very hot flame for a short period of time and thus conserves fuel energy.<sup>25</sup> Preparation of dishes by this method also requires cutting meat and vegetables into very thin slices so that there is greater exposure of surface area. The practice of combining meat with vegetables in most dishes also extends a little meat a long way.

Recent studies prove that Chinese methods of cooking are unsurpassed for the preservation of vitamins, because vegetables are never permitted to linger over the fire or in water. Perhaps these quick-cooking methods are in part a result of the type and scarcity of fuel, but from the point of view of taste and, accidentally, nutrition, the method is excellent.<sup>26</sup>

The general Chinese dislike for raw or cold foods, except fruit, were probably powerful hygienic factors in preventing the spread of disease. In a treatise of the early Han period (c. 200 B.C.), the Li Wei Han Wên Chia, it was stated that: "It was Sui Jen [one of the legendary Chinese heroes] who first drilled wood to obtain fire and taught the people to cook food from raw materials in order that they might suffer no diseases of the stomach, and to raise them above the level of the beasts."<sup>27</sup> Needham believes that the popular proverb, "Anything thoroughly boiled or cooked cannot be poisonous," probably has its roots in the earlier Han dynasty beliefs about food such as is evidenced in the above quote. Thus, the Chinese have been aware for at least 2000 years that cooking reduces the population of disease-causing agents in food.

The foods served when one is dining with guests emphasize diner participation<sup>28</sup> and, thus, develop social communion among the diners. The

famous "fire pot", in which each person cooks his own meat and vegetables in a large boiling pot of broth set at the center of the table, the use of separate dips and sauces, the separation of breads from their fillings and the Mongolian barbeque are all very popular because they allow the consumer to "do it himself".

One can conclude, as did Arthur Smith, that "there is very little waste in the preparation of Chinese food, and everything is made to do as much as possible."<sup>29</sup> But, in times of prosperity, freshness and quality of the foods are a big concern among shoppers. They can afford to be selective, and it is not uncommon for housewives to pay double or triple the normal price for live fish or other sea foods. Vegetables and fruits are always carefully scrutinized for freshness before they are bought. The Chinese believe that freshness gives the foods better flavor, taste, juiciness, and nutritional value. The sanitary value of this belief is obvious.

Unfortunately, because of the food shortage crises in 19th and 20th century China, food practices and hygiene inevitably became sloppy as millions each year died of starvation and malnutrition. Meat was so much in demand that it was "the general practice eat all of these animals"<sup>30</sup> as soon as they expire, no matter whether the cause of death be an accident, old age or disease."<sup>31</sup> Although diseased meat was sold at a cheaper price, there really was no alternative for the bulk of the population who could not afford more expensive and sanitary meats. Thus, the dietary habits of a population are intimately related to its economic status.

#### 6. Nutritional evaluation of Chinese diets.

From 1800 to 1950, a large proportion of the Chinese population was living on marginal diets. Lacking adequate amounts of protein, vitamins

and minerals, the general population had almost no resistance to disease and people fell like flies when any epidemic swept through the countryside, as is evidenced in the high death rates and short average life expectancy rates found at that time.

During peacetime, China's death rate in the 1930's was calculated by Winfield to be about 30 per 1000. This rate was  $2\frac{1}{2}$  times higher than that found in the U.S., and was the highest rate among the large nations in the world. Life expectancy at this time was estimated to be about 36 years. These high death rates were attributed to fecal-borne diseases (hookworm, liver fluke, blood fluke, intestinal fluke) which caused about one-fourth of all deaths. Tuberculosis caused 10-15% of the deaths; death from child-birth contributed 6-8%; insect-borne diseases (malaria, typhus, bubonic plague, relapsing fever) caused 3-5% of all deaths; venereal diseases (syphilis, gonorrhoea) some 2-5%, and the remainder were due to miscellaneous causes such as cancer, suicide, accidents, etc.<sup>32</sup> From these figures it is apparent that 75% of the deaths in China were due to diseases that were preventable. If the population had been in better nutritional health, then a large number would not have succumbed to the widely prevalent infectious diseases.

To get some idea of the types of foods that were eaten and their proportion in the diet, the following table contrasts the diets of Americans and Chinese in the late 1940's:

<u>% of Calories in the Diet</u>	<u>CHINA</u>	<u>UNITED STATES</u>
Grains	91.8%	38.2%
Animal	2.3	39.2
Vegetables	5.2	9.0
Fruit	.2	3.0
Sugar	.5	10.1

China's heavy reliance on grain and vegetable products has been a dietary adaptation to her high population density and scarce farmland. It was more efficient for the Chinese to be primary consumers (eating vegetable foods) than to be secondary consumers (eating animal foods). During impoverished times, the Chinese adapted physically to the deterioration of general nutrient intake levels by having smaller body heights and weights, and by reducing physical activity. Oshima has pointed out that:

Experience shows that human beings have a remarkable adjustment to restricted calorie intakes. This is to some extent the result of physiological adjustments, for example, in the form of low body weight and low basal metabolic rate. Social adjustment is, however, perhaps even more important in such circumstances. The whole manner of life is adapted to an insufficient supply of calories, with results that are socially undesirable: lack of initiative; avoidance of physical and mental effort; excessive rest. Further, resistance to some types of disease and the power of recuperation after illness may be impaired.<sup>33</sup>

A general scrutiny of all the nutritional deficiency diseases observed by Western scholars revealed that calcium deficiency was the most commonly spotted illness in China. "It seems probable that the average diet suffers from a calcium content too low for maximum growth" states Latourette, because the Chinese do not consume dairy products, a major source of calcium, and their intake of greens is not sufficient to provide the necessary amounts.<sup>34</sup> Winfield reported that rickets was common in central and south China because the diet contained only small amount of calcium and the persistent cloudy weather reduced the production of vitamin D.<sup>35</sup> The role of cultural taboos also played a part in this disease pattern. Mothers in particular, were prone to suffer severe cases of osteomalacia because of the local custom in some provinces (e.g., Shansi) which limited the mother's diet to the rice porridge during the first month

after giving birth. Because the calcium from her bones was used to maintain the calcium levels of her milk, it was common for the mother to develop soft and deformed pelvic bones. In other parts of China the local customs reduced the incidence of osteomalacia by advising the mothers to eat pork ribs cooked in vinegar and sugar. The vinegar dissolved some of the calcium from the bones so that this provided a good way of supplying calcium to the nursing mother.<sup>36</sup>

In recent years, the more severe nutritional problems have been alleviated in both the People's Republic of China and Taiwan. Yeh and Chow report that "We have heard from our reporters and visiting scientists that no frank malnutrition is seen in China today . . . overt nutritional deficiency and acute food shortage are no longer present in China."<sup>37</sup> Lack of available data prohibits any further elaboration on the nutritional state of Chinese living in mainland China. But some studies carried out in Taiwan may give an indication of the basic trend, since the nutritional problems in Taiwan are basically similar to those found in mainland China. Both countries face the problem of food shortages and lack of inexpensive animal foods and mineral and vitamin sources. However, Taiwan's nutritional health may presently be slightly better than that found in the People's Republic because of the great amount of foreign aid given by the United States to improve living conditions there in order to strengthen the Nationalist government's struggle against Communist domination.<sup>38</sup>

Norman Jolliffe in 1954 conducted a nutritional survey of Taiwan and found that 70% of the population suffered from riboflavin deficiencies, 60% from low thiamine levels, 13% from anemia, 10% from vitamin A deficiency, 10% from niacin and 3% from hypoproteinemia.<sup>39</sup> Since that survey



was conducted, the various nutritional deficiencies have been greatly reduced in the Taiwanese population as part of the rise in living standards. With higher incomes, the Taiwanese can afford to buy larger portions of meat, vegetables and fruit. These dietary improvements are also apparent in their caloric intake, most of which comes from rice.<sup>40</sup>

"Taiwan has the highest per capita consumption of calories in Asia, about 2400, which is about 15% higher than other Asian countries, as estimated by the FAO."<sup>41</sup> The extensive use of multiple and intercropping methods of agriculture in Taiwan has increased some 50% or more in the last 40 years, so that the average farmer now has 305 days of crop-related labor instead of 220 days, and he is able to produce not only two crops of rice per year, but also two crops of vegetables on the same plot of land.<sup>42</sup> One can thus see how ecology, farming technology and nutrition interrelate to affect a population's health levels. It is also interesting to note that Asian countries with Chinese populations, that is, Taiwan, Singapore, and Malaya, show the highest calorie levels (2300 to 2400 Kcal).<sup>43</sup> Larger body size and higher activity levels of the Chinese, in addition to higher purchasing power, allow these Chinese populations to consume some 300 calories more per day than the peoples in the Philippines, Thailand, Vietnam, India and Indonesia.<sup>44</sup>

My own observations during seven years of residence in Taiwan can also attest to the great improvements in nutritional intake among the population. I rarely saw children or adults with obvious signs of severe nutritional deficiencies such as edema, discolored hair and skin, excessively thin bodies. It was the extremely marginal people, cripples, widows, orphans, beggars, etc., who were likely to be suffering from a lack

of proper nutrients in their diets. The Taiwanese government's aid to impoverished families, in the form of "low" quality rice (i.e., brown rice) and cooking oil, has improved the nutritional health of the general population.

Therefore, we can see that the dietary improvements among the Taiwanese have also enabled workers to have higher activity and productivity levels. A positive feedback effect is then set into motion: rising incomes allow families to eat better, to grow larger (to grow to their genetic potential) and, therefore, to work harder, which in turn allows them to earn higher wages. The importance of recognizing the interrelationship between nutrition and diet in health and economic planning then becomes apparent.

#### "Hot" and "cold" foods.

While I was in Taiwan in 1973, I discovered that the women, in preparing meals and discussing health problems among themselves, were very conscious of what could be labeled as the "hot-cold" food dichotomy. This humoral system resembles systems prevalent among peoples in Mexico, the Mediterranean, India and most of Southeast Asia.

Margery Topley in her study of childcare among Hong Kong residents also found a similar concern with "hot" and "cold" foods. "All mothers saw well-being as depending in part on a balance between what they called 'heat' and 'cold'."<sup>45</sup> Her informants believed that one of the causes of too much "heat" or "cold" is diet. These concerns are reflected in the development of an elaborate Chinese system of food and drink classifications which relate and define these beliefs.

The Chinese "hot-cold" system is related to the hwo chi energy

system in the body. The hwo means fire, and chi means life-giving force or body energy. One way of understanding this functional system is to equate hwo chi to the metabolic system in the body. "Hotness" would then mean a quickening of the pace at which the bodily metabolic systems are at work, or an excess of Yang energy. In an illness, "hotness" implies that a strain has resulted from too much "heat" which has caused some of the body's systems to be overworked and which has aggravated the normal functioning of the other bodily systems. "Coldness" means a reduction in metabolic activity, and thus underwork of certain body systems, or an excess of Yin qualities. Some of the physiological processes believed to be affected by the "hot-cold" principle are digestion, respiration, perspiration, hormone production, sensitivity, thinking, sexual activity, reproduction and the functioning of all the major Yin and Yang organs within the traditional medical system.<sup>46</sup>

Chinese informants seemed to agree on the characteristics of three major categories of foods: "hot", "cold", and neutral (see Table I). Foods that are spicy, take a long time to cook, include much fat, are hard to digest, or tend to "excite" the consumer are considered to be "hot". These would include strong alcoholic drinks, deep-fried foods and rich foods. For example, fried foods and foods with much fat in them were classified as "hot", because they are generally considered to be harder to digest. This idea has some correlation with Western nutritional theory; the combination of fat and protein generally takes the most effort and time for the body to break down and absorb as nutrients. Thus, the Chinese idea follows quite logically; such foods are "hot", since they force the body to work harder.

The sickness which results from a diet with an excess of "hot" foods may include any combination of these common symptoms: sore throat, fever, cough, bad breath, ague, flushing, diarrhea, constipation, white film over the tongue, skin or mouth inflammations, or pimples. If a person is seen to be suffering from any of these ailments, then he is immediately advised to reduce his intake of "hot" foods and concentrate on "cold" foods. This rule is also true for diseases which exhibit symptoms similar to those listed above, e.g., smallpox and measles.

The concern with too much "hotness" varies with the weather and the climate. In the summer, in the southern provinces, or on hot days, everyone is concerned with excess "heat". This idea seems to be related to the theory in the Huang Ti Nei Ching Su Wen<sup>47</sup> which states that Yang (correlated with "hot") diseases originate in the summer whereas Yin (correlated with "cold") diseases originate in the winter.<sup>48</sup>

"Cold" foods are characterized as being bland, bitter, having a laxative effect, or being of herbal origin. They generally include green or yellow vegetables and all types of melons. Although F. P. Shen, professor of medicine at the National Yunnan University told Francis Hsu that the foods classified as "cold" were probably "diarrhea causing foods", my research indicates that this is too simplistic an explanation.<sup>49</sup> It is true that the Chinese when suffering from diarrhea avoid "cold" foods because some cases of diarrhea are believed to be caused by an excess of "cold" foods, and "cold" food generally has a high fiber content which has a laxative effect. But, when the Chinese are ill with diarrhea, they avoid "hot" foods too. The diarrhea sufferers are advised to eat neutral foods instead. Thus, affliction with diarrhea and its treatment should be distinguished from the "usual" symptoms of people suffering from excess

"coldness" and the methods used to treat these people. The usual sign of too much "coldness" is body weakness, immobility, or dull pain which comes from the loss of chi (life-giving force, strength). This state of extra-normal "coldness" is of special concern to Chinese during the cold season in the South, and throughout most of the year for residents of the northern provinces. These illnesses, of course, are treated with "hot" foods.

Since Yin corresponds with the female elements, women are inherently supposed to be "colder", and thus have to be careful of over-eating "cold" foods. This caution was found to be particularly important when women were at their peak periods of femininity; i.e., during pregnancy and during the menstrual period. Topley reports that mothers "agreed in pregnancy a woman should avoid 'cold' foods because they tended to cause miscarriage, but that this resulted in a baby being born too 'hot'."<sup>50</sup> To counteract the "hotness" most mothers gave "cooling" medicines to the premature newborn within a few days of birth.

The category of neutral foods includes starches in general and most other foods not already categorized as "hot" or "cold". Neutral foods are reputed to stabilize a person's balance between "hot" and "cold" foods and thus are good for maintaining health. One informant said that since the bulk of the Chinese diet usually consists of neutral foods (especially rice and wheat) then it is an easier task for the household cook to plan a meal so that neither "hot" nor "cold" foods are in excess and produce an imbalance of hwo chi among the members of the household.

In addition to the three major classifications discussed above, there are also classes of foods which may be "hot", "cold", or neutral, but in

addition are deemed especially "nutritious" or particularly "poisonous" when one is ill. "Nutritious" foods include the Chinese delicacies that I described in the section on Chinese diets. It is interesting to note that some of the foods listed in the "nutritious" category are red in color: carrots, tomatoes and red crab. It is possible that these foods have such a positive connotation because the color red is considered to be a happy, joyous color, always used in decorations for marriages, births and other celebrations to denote prosperity, good luck and happiness.

"Poisonous" foods are believed to aggravate an illness either directly or by interfering with the action of Chinese drugs by stopping the efficacious effects of the drug or causing the drug to have a deleterious effect on the illness. For example, the consumption of such "poisonous" foods as crab and shrimp is believed to slow down the healing of an open wound or to aggravate a patient's case of venereal disease. But, if one is in good health, the consumption of "poisonous" foods is believed to cause no harm.

Some foods are also classified on a symbolic or psychological basis. Squid is considered to be non-nutritious because this creature, without red blood or tears, is believed to have no emotion. The reasoning then follows by an extension of the values in Chinese interpersonal relationships that the squid is of no worth for the person eating it. Topley also found that the Chinese suffering from measles or smallpox were prohibited from eating sesame seeds because the pustules that develop when a person is suffering from these diseases resembled the appearance of such seeds. A final interesting example is that the Chinese believe that eating soy sauce will turn the skin darker. Soy sauce should be particularly avoided,

they say, when one has a healing wound. If very much soy sauce is eaten during this time, the resulting new tissue will have a darker tint than the surrounding skin.

In summary, we can conclude that the "hot" and "cold" food system is one way to emphasize the importance of diet for the maintenance of health. Although semi-religious and symbolic elements lie behind some of the food beliefs, this classification system does seem to have some physical and psychological validity. Francis Hsu, from his study of a Chinese town's reaction to a sudden cholera epidemic (considered to be a "cold" disease) is of the opinion that these food classifications and rules may be of some value in reducing the disease rate. At the onset of the epidemic, the local police of West Town, Yunnan Province, prohibited the sale of cold pea curd, raw fruits and fresh meat in the town. The townspeople themselves were found by Hsu to avoid all "cold" as well as cold foods. Thus, Hsu concludes that "the taboos on a large number of ['cold'] vegetables and fruits, while considered part of the effort at pleasing the gods, or at avoiding abdominal 'cold', might actually prevent the spread of the epidemic."<sup>51</sup> These taboos have sanitary value too, because they restrict the common practice of eating fruits with their skins on, and of cleaning the vegetables in a stream which may be polluted, before they are eaten raw or only lightly cooked. The taboo on meat and fish also may have some preventative value because the cholera bacillus is recognized in the West as being able to reproduce best on meats and potatoes. By restricting their sale, the chances for infection are reduced.

## Conclusion.

For the Chinese as well as for other people, food beliefs and practices are an important element in a holistic concept of health. Human beings can control diet more easily than they can control other forces which affect disease, such as evil spirits, sorcerers, loss of soul, or cold winds. Thus, food can play an important role in preventing illness or curing illness.

In general, many social scientists have found that food classifications do seem to be effective in improving the health of a people living in a culture that uses them. A heavy cultural emphasis on food rules, most of which advocate quite well-balanced diets, causes the participants to be careful about what they eat, and thus these people often maintain a good state of nutritional health.<sup>52</sup> Latourette noticed that "in spite of their independence of flesh and animal products, the Chinese have achieved a fairly well balanced diet."<sup>53</sup> The typical Chinese laborer with his bowl of rice, vegetables, bean curd and tidbit fried in oil has an adequate but marginal portion of needed nutrients. The bean curd supplies protein, vegetables provide vitamins, roughage and some salts, the rice supplies carbohydrates and the vegetable oils provide fat.

The importance of a complete and balanced diet was fully recognized in the earliest medical classics of the Han dynasty. Written during that period, the Huang Ti Nei Ching Su Wen (The Yellow Emperor's Classic of Internal Medicine) is considered to be the most famous and oldest Chinese medical classic that has survived to the present. Its holistic approach to health and medical care was based on the idea that health was the result of a balance of Yin and Yang forces, a concept which perceived the



universe as composed of dualistic forces. Yin represented the female, cold, passive, "bad" elements of nature, and Yang symbolized the male, hot, aggressive, "good" forces. Recognizing that "within every Yin there is Yang," and "within every Yang there is Yin" so that without Yin there is no Yang and vice versa, the Chinese did not attempt to destroy all the "evil" disease causing agents in their environment. Such an approach to health was seen as a futile battle.

We can contrast this view of health with the Western perspective. Personnel in the public health and medical sciences see health and disease as lying on a continuum. HEALTH-----DISEASE A patient is defined as being more or less healthy, or more or less diseased. Good health is seen as the absence of the presence of disease agents in the environment. Thus, Western medical science is engaged in the task of removing, destroying these disease agents. The implicit goal is that when all the disease agents in the world are "conquered" or removed, then everyone will enjoy good health.

Thus, it can be hypothesized that societies with a food classification system usually have an equilibrium model of health rather than the antiseptic Western view. This situation holds, for example, in the peasant societies of Mexico and Burma as well as in China. Manning Nash reports Burmese villagers as saying: "Nature is our king, and if we violate its laws by getting too hot or too cold, eat improper foods, get too tired or sleep too little, then the balance is upset and nature makes us sick until we restore the proper balance."<sup>54</sup> Their medical system, like that of the Chinese, uses a series of techniques to restore harmony and balance with nature.

TABLE I

Chinese Food Classification System

<u>"HOT"</u>	<u>NEUTRAL</u>	<u>"COLD"</u>
Beef	Rice	Jellyfish
Mutton	Wheat	Crab
Lamb	Dates	Tofu
Dog meat	Chicken meat	Almonds
Snake meat	(and most other	Papaya
Chicken skin	common foods)	Taiwan pears
Fatty foods		Lemon
Fried foods	<u>POISONOUS</u>	Watermelon rind
Peanuts	Eggplant	Yellow watermelon
Cashews	Bamboo	Grapefruit
Mango	Goose	Orange
Lichee	Duck	Plums
"Dragon eyes"	Duck eggs	Sugar cane
Red watermelon	Pheasant	Persimmon
Banana	Crab	Pumpkin
Pineapple	Shrimp	Potatoe
Onion	Carp	Mung beans
Garlic	Wine	String beans
Chili peppers		Fungus
Ginger	<u>NUTRITIOUS</u>	Waterchestnut
Cabbage	Carrots	Watercress
Black beans	Tomato	Bittermelon
	Sugar cane	Bok Choy
	Fresh fish	Cucumber
	Red crab	Spinach
	Sharksfin	Turnip
	Sea cucumber	Carrot
	Birdsnest	Asparagus
	Ginseng	Wintermelon
		Napa cabbage
		Beer
		Ice
		Seaweed (long & wide)

## NOTES

<sup>1</sup>Anderson, 1969, p. 114.

<sup>2</sup>Winfield, 1948, p. 78.

<sup>3</sup>May, 1961, p. 54.

<sup>4</sup>Kaoliang is a type of grain-bearing sorghum.

<sup>5</sup>Winfield, 1948, p. 67.

<sup>6</sup>By the pound in dry weight, sweet potatoes contain two-thirds the amount of protein in unenriched white rice, and less than one-half the amount of protein of all-purpose flour. Thus, sweet potatoes are not considered by the Chinese to be a very nutritious food. Moreover, sweet potatoes are the cheapest starch available because they are grown on "inferior" land; i.e., lands on which rice or wheat cannot be grown. The fact that a larger quantity of edible food could be produced on land planted with sweet potatoes than with rice also contributes to their cheapness.

<sup>7</sup>Yang, 1945, p. 32.

<sup>8</sup>Winfield, 1948, p. 68.

<sup>9</sup>Needham, 1970, p. 362.

<sup>10</sup>Drinking by oneself is rare. Thus, the recognition and incidence of alcoholism in the Chinese population is almost nil.

<sup>11</sup>Winfield, 1948, p. 63.

<sup>12</sup>Latourette, 1946, p. 566.

<sup>13</sup>Wittfogel, 1960, p. 65.

- <sup>14</sup>Eberhard, 1971, p. 155.
- <sup>15</sup>Eberhard, 1971, p. 155.
- <sup>16</sup>Winfield, 1948, p. 65.
- <sup>17</sup>Williams, 1883, p. 777.
- <sup>18</sup>My family lost more than 20 dogs over a five year period.
- <sup>19</sup>Williams, 1883, p. 778.
- <sup>20</sup>Latourette, 1946, p. 566.
- <sup>21</sup>Williams, 1883, p. 776.
- <sup>22</sup>Winfield, 1948, p. 68.
- <sup>23</sup>Anderson, 1969, p. 110.
- <sup>24</sup>The nest is constructed from the bird's saliva and the fibers of the Gelidium seaweed. See Williams, 1883, p. 780.
- <sup>25</sup>In contrast, the use of a low but long-lasting flame would consume several times more fuel.
- <sup>26</sup>Winfield, 1948, p. 68.
- <sup>27</sup>Needham, 1970, p. 364.
- <sup>28</sup>Anderson, 1969, p. 112.
- <sup>29</sup>Smith, 1894, p. 20.
- <sup>30</sup>These animals included camels, donkeys, goats, oxen, water buffalo, sheep and horses.
- <sup>31</sup>Smith, 1894, p. 21.
- <sup>32</sup>Winfield, 1948, p. 105.

<sup>33</sup>Oshima, 1967, p. 386.

<sup>34</sup>Latourette, 1946, p. 567.

<sup>35</sup>Rickets is caused by a lack of calcium, phosphorous or vitamin D.

See Bogert and others, 1966, p. 162.

<sup>36</sup>Winfield, 1948, p. 72.

<sup>37</sup>Yeh and Chow, 1973, p. 217.

<sup>38</sup>May, 1961, p. 53.

<sup>39</sup>May, 1961, p. 62.

<sup>40</sup>It has been estimated that each person consumes an average of 390 pounds of rice a year in Taiwan. The rice that is consumed is of the white variety milled to 93% extraction. Calcium carbonate is added as a whitening agent, but this additive is washed out before the rice is cooked. Approximately one milligram of calcium for each gram of rice does remain when the rice is eaten, but these amounts from rice are not sufficient to satisfy the body's need for calcium.

<sup>41</sup>Oshima, 1967, p. 390.

<sup>42</sup>Oshima, 1967, p. 390.

<sup>43</sup>I am excluding mainland China because of the lack of available data on nutrition for that country.

<sup>44</sup>Oshima, 1967, p. 388.

<sup>45</sup>Topley, 1970, p. 425.

<sup>46</sup>Yin organs include the systems of the liver, heart, spleen, lungs and kidneys. Yang organs include the systems of the gall bladder, small

intestine, stomach, large intestines and bladder.

<sup>47</sup>This book is translated as The Yellow Emperor's Classic of Internal Medicine. It was first published in the Han Dynasty (206 B.C. to A.D. 220). See Veith, 1972.

<sup>48</sup>Veith, 1972, p. 207.

<sup>49</sup>Hsu, 1952, p. 45.

<sup>50</sup>Topley, 1970, p. 426.

<sup>51</sup>Hsu, 1952, p. 86.

<sup>52</sup>I am assuming that the culture has not been drastically affected by outside forces, and that the population has adequate income for a moderate standard of living.

<sup>53</sup>Latourette, 1946, p. 566.

<sup>54</sup>Nash, 1965, p. 94.

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