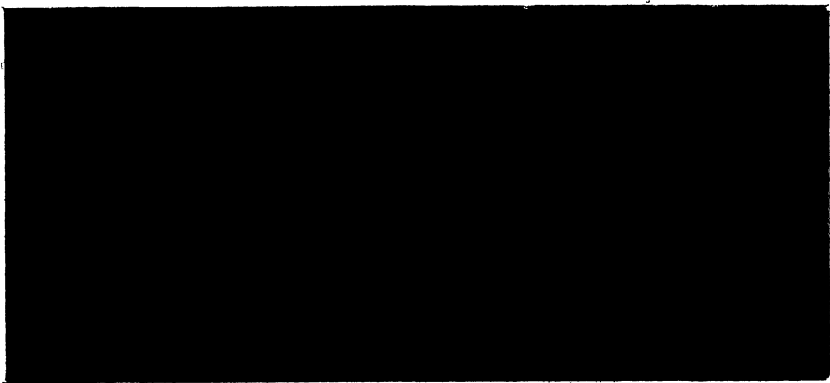


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The Strategy of Health-Sector Planning

in

The People's Republic of China

by

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## I. Introduction

A compelling aspect of the proclaimed development strategy of the People's Republic of China is the importance attached to an improvement in the health status of the Chinese people. Perhaps nowhere else in the less developed world has the role of health as both a means and an end of economic development been trumpeted so loudly and consistently.

The Chinese emphasis on health is of more than academic importance in the light of the failure of health programs throughout the underdeveloped world to deliver effectively health services to a large proportion of the population or to eradicate many infectious and parasitic diseases for which well-developed preventive measures exist.<sup>1</sup> In this paper we shall examine the Chinese strategy for the delivery of preventive and curative health services and evaluate its potential importance for other less developed countries (LDC's).

There are two questions which immediately emerge. First, what is the nature of this strategy for health, and its role within the context of Chinese development program. Second, what has been the impact of these programs on the health of the Chinese people. The latter is obviously critical, for if we cannot demonstrate that the Chinese approach has had a substantive impact, its relevance is muted.<sup>2</sup> Yet this would require an examination of the degree of improvement in the health status of different demographic and socio-economic groups in the population. This is a task for which we lack sufficient data. Thus, our focus shall primarily be on the first problem. We shall draw attention to studies and observations that would support the assertion that the Chinese have made significant inroads into their health problems. Although full documentation is not possible, we will argue that there is a presumption that the Chinese health system's capacity to meet the demand for health services is substantial.

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<sup>1</sup>See John Bryant, Health and the Developing World (Ithaca: Cornell University Press, 1969), pp. 1-55.

<sup>2</sup>Even this would not be sufficient to make a firm argument for its importance, since we cannot know whether such improvements could have been derived from the current Western strategies of health planning. To point to the pre-revolution period is not completely valid, given the civil turmoil and wars which characterized pre-1949 China.

Since health is a component of a larger strategy for the socio-economic development of the Chinese people, we shall examine in Section 2 the rationale underlying the emphasis accorded to health by the Chinese leaders. This yields insights into the broad policy objectives which investments in health are intended to realize, and the broad policy constraints which this larger strategy places on both the size and structure of the health program. We shall conclude this section by a short discussion on the environment of health and the nature of health services at the time of the revolution. This obviously affected both the choice of health targets and the feasible range of health strategies.

Between 1949 and 1965, the Chinese health policy paralleled that of many LDC's in terms of its bias in allocating both medical manpower and financial resources to the urban rather than rural sector. Yet the relative absence of curative health services in the rural areas was compensated by their ability to implement effective rural preventive health programs, without substantial outlays of central government funds. In section 3, we shall examine these adaptations to the traditional strategy of preventive health, and stress what is appealing from the vantage point of development economics.

Despite the relative success of these preventive measures, the overall impact of the Chinese health strategy on rural health was inherently limited by the reliance on a conventional set of policies in the rural curative health sector. One effect of the Cultural Revolution on the health sector was to set into motion a process for reallocating health resources and reorienting medical technology and medical care organization towards the problems of the rural areas. These reforms are potentially as significant as those in the preventive sector, but whether they are pervasive or deeply rooted is still not fully clear. We can do no more than to evaluate their significance in terms of their economic rationale and await a more definitive empirical evaluation. These issues will be discussed in Section 4. Finally, in Section 5, we shall examine which elements of the Chinese strategy are likely to be applicable to other LDC's. More fundamentally, can such programs by themselves effect a substantive change in a country's health status or is their success conditioned by the existence of other non-health sector development programs as well.

In the rest of this section, we shall offer some caveats to the reader. First, this writer is an economist interested in the problems of



planning health in less developed countries, and as such, is neither a "China hand", nor a specialist in public health. The former factor confined the sources of information for this paper to either secondhand studies from Western or Chinese sources or to the large mass of translated materials from the Chinese press, journals and radio broadcasts.<sup>1</sup> To the extent that not being a "China hand" obfuscates one's ability to lift the veil that surrounds much of the translated Chinese documents, this deficiency maybe serious. This is particularly the case for evidence assessing the impact of these programs. These sources appear more reliable for determining the character of health programs over a long period of time (although even here, one must relax the accepted canons of scientific research).

Second, this study is concerned with the problems faced by the government of an LDC in mobilizing and allocating public sector resources for public health. Hence, our discussion will at times justify the significance and "rationality" of the Chinese strategy in health within the framework of microeconomic theory. To the extent that our background in many of the technological and organizational characteristics of public health and health delivery is deficient, our application of economic analysis may neglect some relevant issues.

Finally, we are primarily concerned with the problems of providing health in the rural areas. It is here that the bulk of the Chinese population is concentrated, and this is similarly the case for many other LDCs. The shortage of both financial and medical manpower resources in these areas has created critical barriers to the development of a rural health network in most LDCs. How have the Chinese attacked this problem?

## Section II: The Policy Environment of Health

### The Role of Health in the Chinese Development Strategy

In this section, we shall offer a perspective on the policy environment within which the Chinese rural health strategy evolved. Our goals are twofold. First, we shall describe the underlying rationale for the emphasis on health programs and the set of resource constraints on the size and shape of these programs. Second, we shall argue that many formal

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<sup>1</sup>The lack of access to untranslated materials may thus have potentially skewed the writer's perception as to the actual character of developments in China.

features of the Chinese health strategy, both as it began and evolved before 1965, were quite similar to the health programs found in many other LDC's. This implies that fundamental adaptations in the mode of health prevention and delivery were clearly needed to resolve the contradiction between the level of financial and manpower resources allocated by the government to rural health services and the magnitude of the problems that these programs confronted. This will set the stage for our discussion, in sections 3 and 4, of these adaptations.

The Chinese emphasis on health reflects an awareness of its political significance for the maintenance and development of popular support for the regime, and a belief in its crucial role in facilitating and expanding the productivity of the economy. Better health is an end of development in and of itself and it would be inadequate for a government to point to gains in the material welfare of the economy without comparable improvements in the level of health as perceived by the people. A reduction in child and maternal mortality, an expansion in available health-delivery services, and an eradication of the mass infectious diseases which swept China before 1949, were important benefits to be expected from a revolutionary government.<sup>1</sup>

The Chinese have equally stressed the importance of health as a component of their economic policies. Repeatedly in the statements of China's leadership, one hears that "the firm guide of health work is to proceed from production, coordinate closely with production and serve production."<sup>2</sup> Similarly, in the context of a China with a high dependent, (i.e., under age 15 population), a

"...policy of health first is connected with our long range national interest and our national health. A student begins school at age 7 and graduates after age 20. If, during such a long period of time, attention is not given to his health,<sup>3</sup> it will affect the physical condition of the entire nation."<sup>3</sup>

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<sup>1</sup>They are "consumption goods" that must receive some attention, regardless of whether they also have some developmental impact.

<sup>2</sup>Chang K'ai, Vice Minister of Health, "Health Work Makes Big Strides in the Service of Industrial and Agricultural Production," in Kuang-ming Jih-Pao, October 6, 1964 in Joint Publications Research Service (JPRS), no. 28543 (January 29, 1965).

<sup>3</sup>Feng P'ei-chih, "The Dialectic Relationship of Ethics, Intelligence and Health," in Kuang-ming Jih-Pao, JPRS #33312 (December 14, 1965).

Indeed, one often finds a castigation of the so-called "dangerous bourgeois" view that health should be supplied only for health's sake.<sup>1</sup>

Yet the implications for policy of the linkages between health and economic development are vague, as is quite clear from the frenzied attempts of Western scholars recently even to establish a linkage. Should one divert investible resources from industry or agriculture to health? One may assert that investments in health lead to an expansion in an individual's life-time productive capacity, or have positive effects on the rate of population growth through reductions in child mortality, or reduce the consumption losses implied by early deaths. Nutritional programs may prevent irreversible brain damage and losses in individual productivity. Yet the validity of these assertions and the magnitude of the purported linkages are still indeterminate for both health and economic planners. It would thus be absurd to assert that the Chinese have explicitly or implicitly allocated resources to health strictly on a cost-benefit basis.<sup>2</sup>

Similarly the specific policy implications, within the health sector of such an emphasis are also ambiguous. A problem confronting any policymaker is the determination of what constitutes "delivery" of this "consumption good," "health". Is it manifested through popular awareness of a means for satisfying "emergency health needs?" Is it manifested by a perception that the health of oneself and one's children is improved? Although the latter is a crucial prerequisite, the nature of the health services which satisfy the former are potentially more flexible.

Similarly, is the economic payoff to increments in the quality or quantity of health services greater in those sectors where labour has high marginal productivity, viz. the urban-industrial centers. Conversely, if the agricultural sector is characterized by surplus labour, does it really matter in terms of economic development whether any individual peasant's productive capacity is improved? Second, given the massive relative size of China's peasantry, and the limited financial and health resources available, would not a rural-oriented, egalitarian strategy

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<sup>1</sup>Marie Sieh, "Medicine in China: Wealth for the State," Current Scene, Vol. III, No. 5,6 (October 15-Nov. 1, 1964).

<sup>2</sup>See the model presented by S. Rivkin and R. Kaplinsky in "Health Strategy and Development Planning: Lessons from the People's Republic of China," (University of Sussex, the Science Policy Research Unit, Dec. 1971).

spread these resources so thinly as to vitiate<sup>1</sup> any economic impact through their provision, and conversely with respect to high quality care for the small or urban centers. Third, should one emphasize the current productive groups in society relative to the future generation of productive workers? Should one emphasize the provision of maternal-child health and nutrition programs relative to the elimination of parasitic diseases among production workers and curative services to reduce losses in work activity?<sup>3</sup>

Again, the problem is that the validity of each assertion hinges on several critical assumptions on the role of health in the production of human capital which are not readily verifiable. Moreover, the political weights attached to each group, and perhaps as important, the way in which health enters the utility<sup>2</sup> of the peasants and workers crucially determine the relative allocative priorities of the political decision-maker.

Since 1949, one can observe a conflict (which still is not fully resolved) within Chinese policy making circles as to the relative emphasis to be placed on the urban vs rural sectors, the proletariat vs the peasantry. Indeed the emphasis can be seen to vary throughout the last twenty years paralleling the relative balance between agriculture and industry in national economic policy. The position of the pendulum has decisively affected the observed policies, primarily through its effect on the allocation of limited budgetary and manpower resources between the two sectors. Indeed, the cyclical character of the tightness of the budgetary constraint for agriculture may be said to have crucially shaped the feasible range of health policies in that sector.

Since the Cultural Revolution, the stated emphasis of policy has been oriented towards the rural peasantry.<sup>3</sup> Mao argued that the goal of health policy should be:

<sup>1</sup>The low level of inputs being presumably reflected in low quality.

<sup>2</sup>If the mass of peasantry attach a high utility to the consumption of health (with sharply diminishing utility), then regardless of the economic impact, this may provide support for an "egalitarian" health policy.

<sup>3</sup>As we shall see, the Chinese government's ability to exert effective control over health policy is itself limited so that the "stated" emphasis is not necessarily translated into reality throughout China.

"to satisfy the medical need of the broad peasant masses, and to change the public health appearance of the rural areas, as well as to provide material conditions for building the new socialist countryside."<sup>1</sup>

The peasants - the chief concern of China's cultural movement at the present stage. Would not illiteracy elimination, universal education, mass liberation and art and public hygiene become largely empty talk if the 360 million peasants were left out of account?<sup>2</sup>

"The peasant is the forerunner of the Chinese worker, the main factor of China's industrial market, the source of the Chinese army, the backbone force of China's democratic politics, and a major target of Chinese cultural movement."<sup>3</sup>

#### Policy Setting: 1949

What remains to examine are the policies that were adopted to translate these broad policy objectives into concrete health programs. The structure of these programs should be determined in light of the specific health problems and the areas where the existing health institutions are inadequate to deal with them. Let us briefly examine the epidemiological context within which Chinese policies were framed.

In 1949, one facet of China's underdevelopment was the range and severity of the diseases which afflicted its population. The Japanese occupation and the civil war had disrupted agricultural and industrial production, causing extensive food shortages and consequent malnutrition. China's infant mortality rate in 1949 ranged upwards of two hundred per thousand, and even in Peking was 117.6 per thousand.<sup>4</sup> The crude mortality rate was at 25-30 per thousand. Worth has estimated that 30% of Chinese children died before age five. The maternal mortality rate was at 2-3%.

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<sup>1</sup>Union Research Service, Vol. 40, No. 19, (September 3, 1965), pp. 273-286.

<sup>2</sup>"Shortage of Medical Services in Rural China," Union Research Service, vol. 35 #26, pp. 412-423, (1964).

<sup>3</sup>"Strengthen Medical and Health Work in the Rural Areas," Union Research Service, Vol. 40, no. 19 (September 3, 1965), pp. 273-286.

<sup>4</sup>Janet Salaff, "Social Mobilization and Public Health in Communist China," in Essays in Comparative Demography, ed. Kingsley Davis, (University of California, Berkeley, forthcoming), p. 15. Hereafter Salaff (2).

In table I, we have listed the major diseases by their means of transmission and by their control mechanism.<sup>1</sup> From data compiled by Salaff and Worth, it is quite clear that the diseases in category I were the principal causes of morbidity and mortality in pre-1949 China.<sup>2</sup> A sense of the endemicity of some parasitic diseases as late as 1958 was provided by Dr. Chien in the China Medical Journal. He estimated there to be ten million patients with schistosomiasis, thirty million with malaria and approximately twenty-five million with filariasis. Ancylostomiasis was endemic in the whole country and kala-azar endemic in provinces north of the Yangtse River.<sup>3</sup> Such diseases of the bodily organs as chronic arthritis, cancer, cardiac and renal diseases that are major disease problems in the developed world were far less prevalent. For the most part, they were localized to the urban areas (vis. those areas associated with greater life expectancy).

At the time of the revolution, China's medical resources were meager in contrast to the medical needs of the population. The number of health facilities for a population of over half a billion was staggeringly small. There were only 2,580 hospitals with 84,000 beds, and of the latter approximately 30% were either privately or foreign owned. It would not be an underestimate to argue that at least seventy percent of such facilities were located in urban areas. Hence at a national level there were approximately 6550 persons per hospital bed (PHB) and in the rural areas this rose to 19,600 persons PHB<sup>4</sup> (which may be contrasted with the current minimal goal of W.H.O. of a thousand persons PHB). The

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<sup>1</sup>We shall use this delineation in Section III to emphasize the relevance of the rural preventive health strategy.

<sup>2</sup>For further discussion of these issues, the papers by Dr. Robert Worth and Janet Salaff provide extremely valuable insights into the nature of China's disease problems at the time of the revolution. See R.M. Worth, "Health in Rural China: From Village to Commune," American Journal of Hygiene, vol. 77 no. 3 (May, 1963), pp. 228-39.

<sup>3</sup>Worth estimates that TB was the single greatest cause of mortality with annual death rates of 208/100,000, and with a TB positivity of 70-85% in city children.

<sup>4</sup>We assume seventy percent of hospital beds are located in the urban areas and that 90% of the population is rural. The former is probably an underestimate. See People's Republic of China, Ten Great Years (Peking: Foreign Language Press, 1960), p. 8.

Table 1

MAJOR CAUSES OF MORBIDITY AND MORTALITY LISTED ACCORDING TO MEASURES OF CONTROL

Disease Type

Type I Diseases: Infectious and Parasitic Diseases Whose Control is Not Dependent on Direct Medical Services

IA: Diseases Spread by Close Personal Contact

- |                     |  |
|---------------------|--|
| 1. Plague           | Social Stability   |
| 2. Smallpox         | Mass vaccinations :  |
| 3. Diphtheria       | Mass immunizations   |
| 4. Measles          | Mass education re symptoms and prevention of contagion; nutritional improvements critically affect case fatality rate <sup>a</sup>   |
| 5. Venereal Disease | Close brothels and alter sexual patterns by socio-economic control (reduce sexual promiscuity). Penicillin treatment administered by health workers trained to recognize symptoms. |
| 6. Tuberculosis     | (a) BCG vaccination campaigns; (b) improve protein nutritional status (c) reduce crowding in housing (d) curative-sanitoria <sup>b</sup>   |

IB: Diseases Transmitted via Vectors & Intermediate Hosts

- |   |   |
|---|---|
| 1. cholera<br>typhoid<br>Shigella                                 | Improved Sanitation and Water supplies; mass immunization of marginal value                       |
| 2. Typhus (louseband)   | (a) immunization (b) provision of adequate domestic water supply and emphasis on personal hygiene |
| 3. Tetanus  | improved hygiene in childbirth; immunization of children and adults                               |
| 4. Malaria; filariasis  | (a) mass treatment (b) anti-mosquito campaigns  |
| 5. Schistosomiasis  | (a) mass treatment (b) foecal control (c) snail control (d) protective garments                   |
| 6. Kala-azar  | (a) eradicate infected dogs (b) kill sandflies with insecticides; (c) mass treatment campaigns    |
| 7. Intestinal Parasites (Hookworm, ascariasis, amoebic dysentary) | (a) foecal control (b) personal hygiene education; (c) food sanitation (d) mass treatment         |
| 8. Conochis (liver fluke in Kwantung province)                    | (a) foecal control (b) food sanitation (cook the fish)  |
| 9. Paragonimus (liver fluke)                                      | food sanitation (cook the crayfish)   |

IC: Nutritional Deficiency Diseases

- |                 |  |
|-----------------|--|
| 1. Malnutrition | (a) provide better nutrition<br>on a regular basis |
|-----------------|--|

Type II Diseases: Diseases Requiring Delivery of Personal Health Service  
for Control

- |   |   |
|---|---|
| 1. Leprosy  | (a) early detection and treatment<br>(b) surveillance of contacts |
| 2. Maternal Mortality   | adequate parental and perinatal supervision by midwives           |
| 3. Neonatal Mortality   | adequate parental care; adequate well-baby supervision            |
| 4. Diseases of Bodily Organs, Malignant Tumors (includes severe mumps, chronic diseases of veins and arteries, cancer, diseases of heart and kidney, old age) |   |

Source: Janet Salaff, op. cit., pp.<sup>32-35</sup>. I am indebted to Dr. Robert Worth for his assistance in preparing this table. Needless to say, any remaining errors should be attributed solely to the author.

<sup>a</sup>In 1963, the Chinese developed a measles vaccine. Prior to 1963, its incidence was close to 100% but these measures had a significant impact on the case fatality rate.

<sup>b</sup>Measures (a) to (c) will deal with 90% of incidence of TB.



average hsien, (the average district comprising 300,000 people)<sup>1</sup> had only seven health institutes (each averaging 7.8 beds). The total number of health center in rural China was less than 400. There were only fifty epidemic prevention centers.

This was complemented by an equally small, slowly growing stock of Western physicians. Chen estimates that before 1949, there were only 12,000 doctors, with 500 new medical graduates per annum.<sup>2</sup> It has been estimated that in 1950, there were only 41,000 Western trained physicians, 53,000 doctor's assistants, 38,000 nurses and 16,000 trained midwives. This implies a national ratio of 1 doctor per 13,400 persons, and a rural ratio of approximately 1:40,000.<sup>3</sup> Thus, at the time of the revolution the rural peasantry was almost wholly dependent on the stock of approximately 500,000 Chinese traditional physicians.<sup>4</sup> Yet Crozier argues that these traditional doctors charged fees too high for the average peasant to afford.<sup>5</sup> Hence, it is clear that there was negligible capacity to rapidly attack China's health programs with any substantive impact. To add to these constraints, China was heavily dependent on imports for the bulk of its pharmaceutical needs in modern medicine.

#### Policy Constraints

Despite the emphasis attributed to an expanded health program by the Chinese leaders, the magnitude of any effort in the health sector was severely constrained by two factors. First, China is not a wealthy country. Its per capita income in 1950 was approximately \$50 and by 1966

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<sup>1</sup>Theodore Shabad, China's Changing Map, (Praeger; New York 1972) p. 31.

<sup>2</sup>W. Y. Chen, "Medicine and Public Health," The China Quarterly, vol. 6 (1961) pp. 153-159.

<sup>3</sup>We again conservatively assume that seventy percent of China's doctors were found in the urban areas. IBID, p. 222.

<sup>4</sup>Ralph Crozier, Traditional Medicine and Modern China (Cambridge, Harvard University Press, 1968).

<sup>5</sup>Ibid., p. .

was no more than \$130.<sup>1</sup> We have noted the shortage of medical manpower at the time of the revolution. Despite the attempt to build up its stock of medical manpower,<sup>2</sup> the number of doctors and beds per capita in 1966 was still only 1:3,613 and 1:900 respectively.<sup>3</sup> This may be compared with the ratios found in other LDC's (see Table 2)

Second, the character of China's health effort was constrained by the limited priority attached to health relative to other competing sectors in the central government's development program, and by the allocation of this health budget as between the urban and rural sectors. The effect of the latter sets of constraints was to assure that unless significant adaptations were made in the mobilization and utilization of health sector resources, China's health program would blend into the grey canvas of programs found in most less developed countries.

Table 2

RATIO OF DOCTORS AND BEDS PER CAPITA  
IN SOME LESS DEVELOPED COUNTRIES: 1963

	Population Per Doctor	Population Per Nurse	Population Per Hospital Bed
Columbia	2,000	16,600	320
Ecuador	2,800	16,500	520
Guatemala	3,600	8,800	420
Jamaica	2,200	437	240
Malaur	148,000	47,000	940
Nigeria	50,000	7,000	1,860
Sinegal	20,000	38,000	260
Sudan	29,000	43,000	990
Thailand	7,600	5,900	1,260

Source: Bryant, op. cit., p. 58.

<sup>1</sup>A. G. Ashbrook, "China: Economic Policies and Economic Results, 1949-71," in Joint Economic Committee, People's Republic of China: An Economic Assessment, pp. 46,47.

<sup>2</sup>For example, in 1967 it was reported that enrollment in all medical schools had risen eightfold since 1947. Various reports indicate 70,000 medical school graduates between 1949 and 1961, and 250,000 graduates from medical high schools. By 1957, there were 4,194 gynecologists and obstretricians, 679,000 midwives and assistant obstreticians and 36,000 maternity assistants. Orlean's study indicates that between 1949 and 1958, the number of medical students increased by 223%. Source: L.A. Orleans, Professional Manpower and Education in Communist China, pp. 134-42, vol. 11 #25 6/24/58, p. 364; JPRS 29598 p. 86, CCD #145; JPRS 19221, CCD #91 10/6/62. Chu-Yuan Cheng, "Health Manpower in China," (unpublished 1972).

<sup>3</sup>We have made the optimistic assumption that the number of beds doubled between 1958 and 1966, See People's Republic of China, Ten Great Years (Peking Foreign Language Press 1961), pp.220-223 (hereafter Ten Great Years) and Chu-yuan Cheng, op. cit.

Since there are no published statistics on the level of government expenditures in the health sector, one must fall back on secondary estimates to indicate the degree of financial stingency. (See Table 3). During the period prior to 1966, not more than 16% of central government resources were spend on "culture, education, science, social welfare and public health." It is reasonable to assume that the former three account for the largest proportion (certainly above seventy five percent), particularly <sup>because</sup> /this sector includes the ever mounting expenditures on nuclear research.

This <sup>is</sup> /likely to be an underestimate of the total social resources allocated to health. First there may be a certain number of military or agricultural projects financed by the Central Government with health components, but this is not likely to be significant. Second, we have omitted expenditures made at the non-central Government level. We can obtain a crude estimate of the importance of this omission by examining the level of capital investments in health in the total economy (See Table 3). Even if we were to assume that the ratio of capital investments to recurrent outlays was 10% (which seems extremely low), the level of total outlays on health would have been no more than 1210 million yuan in 1958. If the level of these outlays had risen at the same rate as total state outlays in the "health and others" sector in Table 2, total health expenditures in 1966 would still have been less than 1810 million yuan. This is probably an overestimate. As a proportion of GNP in 1966, this would be no more than 1.2%.<sup>1</sup> As a proportion of state expenditures, health accounted for no more than 4%. In Table 4, we have listed comparable statistics for a set of other less developed countries. Assuming the above statistics are not overestimates, China's health allocations are not significantly above average. Hence, at the level of expenditures per capita (as realized through some form of market nexus) China has not supported its policy emphasis with unusually high expenditure outlays.<sup>2</sup>

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<sup>1</sup> See the World Tables, published by the IBRD for their estimate of China's 1966 GNP stated in 1964 dollars.

<sup>2</sup> Indeed, it has been argued that one important motive for the decentralization of rural health services arising during the Cultural Revolution was to transfer the cost burden of health from the Central Government to the *communes*. That the government was not completely successful in this transfer is reflected in the cutback in drug prices in 1969 by 37%, indicating a ~~an~~ acceptance of greater expenditure by the Central Government. "Public Health Developments—Continued Focus on the

Table 3

Allocation of Central Government Resources

(in ¥ million)

Expenditure Category	1954-57	1957	<u>Final Accounts</u>		1959	Ratio	<u>Estimates</u>	
			1958	Ratio			1966	Ratio
National Economic Construction	50-52%	149	262.7	64.1%	321.7	61.1%	184.0	46.0%
Social Welfare, Culture, Education, Science and Public Health	15-16%	47 <sup>a</sup>	43.5	10.6%	58.6	11.1%	64.0	16.0%
National Defense			50.0	12.2%	58.0	11.0%	85.0	21.3%
Administrative Expenses			22.7	5.6%	29.0	5.5%	22.0	5.5%
Debts & Foreign Aid			11.8	2.9%	13.2	2.5%	20.0	5.0%
Other			18.9	4.6%	47.2	8.9%	25.0	6.2%
Total	310		409.6	100%	527.7	100.0	400.0	100.0

<sup>a</sup>Applying sectoral proportion of 1954-1957 to total 1957 budgetary expenditures

Source: Union Research Institute, Communist China 1966, vol. I, pp. 92-94; 98-99. Ten Great Years, op. cit., pp. 23,24.

TABLE 4

APPROXIMATE LEVEL OF GOVERNMENT EXPENDITURES ON HEALTH IN SOME LESS DEVELOPED COUNTRIES

	GNP per capita (1965) (in U.S. Dollars)	Government Health expenditures as a percentage of:		Government Health Expenditures per capital (in U.S. Dollars (1963-64))
		Gen. Government Expenditures (1963-64)	GNP (1963-64)	
✓ Indonesia	99	2.8%	0.23%	\$0.20
✓ Nigeria	83	12.0%	0.62%	0.50
✓ Thailand	126	3.4%	0.5%	0.60
Malaur	40	5.8%	1.6%	0.64
✓ Sudan	95	4.8%	1.07%	1.02
Guatemala	300	9.1%	0.78%	2.36
Sinegal	170	6.6%	2.4%	3.47
Colombra	277	11.0%	1.26%	3.5
Jamaica	460	11.0%	2.08%	9.6
Kenya	85	6.0%	1.3%	1.1
✓ Tanzania	70	9.2%	1.3%	0.90
Chile	480	11.1%	2.5%	13.7
Peoples Republic of China (1986)	85-100	≤ 4%	<1.2%	≤.99

Source: (1) John Bryant, Health and the Developing World (Ithaca; Cornell University Press, 1969), pp. 43-45.  
(2) IBRD, World Tables 1970  
(3) Ten Great Years, op. cit., p. 23, 59, 60.

Similarly the gross inequalities found in most less developed countries as between urban and rural areas were similarly observed in China prior to 1966. The formal structure of curative health facilities resembles the health institutional pyramid of local dispensaries and health centers in urban and rural areas feeding into larger hospitals. Yet the distribution of these health institutions and the level and quality of their equipment, facilities and personnel were highly skewed towards the urban areas and the apex of the pyramid. In the rural areas, accessibility to curative services was more a function of proximity and individual financial capacity than degree of medical need. Prior to 1958, only in the maternal-child health area can one find any modern medical curative programs geared to the rural areas. Not until 1965, do we find any blossoming of the commune curative health systems begun in 1958.

In some provinces, upwards of 80% of total government health expenditures were allocated to urban hospitals and clinics. This is further shown by the nature of the central government's budgetary responsibilities in the health sector. These encompass the financing of (1) hospitals from the county level, and in large and medium cities, from the district level; (2) Medical educational facilities; and (3) the manufacture and distribution of medical equipment, drugs and supplies.<sup>1</sup> One could speculate that the state health insurance scheme for party and industrial workers is similarly included in this budget. Omitted then are the costs for the bulk of preventive health campaigns, and the costs of basic medical units in urban and rural areas. In the rural areas these were financed, if at all, at the commune or district level, and were obtained from "after-state tax" disposable income. This probably means that the financing of health was proportional at best, if not regressive.

This differential is further substantiated by examining Chen's recent study on medical manpower in China. Using his statistics, we have estimated the number of doctors per capita in the urban and rural areas, using the oft-quoted assertion that sixty to eighty per cent of medical manpower were relocated in the urban areas. The resulting ratios range from

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farms," Current Scene, vol. XII, no. 24 (December 15, 1969), pp. 1-12. "Medicine to the Villages." China News Analysis #602, (March 4, 1966): "The Mao-Liu Controversy over Rural Public Health," Current Scene, vol. VII, no. 2 (June 15, 1969).

<sup>1</sup>Chang Tze-k'uan, "The Development of Hospital Services in China," Chinese Medical Journal, vol. 84 (June, 1965), pp 412-416.

1:7640 to 1:15,4000 in the rural areas to 1:680 to 1:890 in the urban areas. In Kwantung province, the ratio of doctors per capita ranged from 1:600 in Canton to 1:10,000 in the rural sector.<sup>1</sup> Similarly, if two thirds of hospital beds are in the urban areas the ratio of beds per capita ranged from 1/244 to 1/4034 in the urban and rural areas, respectively.

Hence, in the formal structure of China's health policies, we find that the level of state resources allocated to health, and its distribution between urban and rural areas would not appear favorable for the implementation of anything more than a skeletal rural health program. Yet throughout the period, and increasingly after 1958, one observes a set of significant adaptations to this formal structure, based on their ability to mobilize and allocate effectively additional resources for health purposes. Prior to 1958, these adaptations occurred primarily on the preventive level. Thereafter an alternative strategy for curative health care begins to emerge, although it only begins to snowball after 1965. In the next two sections we shall examine the adaptations introduced in the mobilization and utilization of resources in the health sector.

### Section III: Preventive Health Strategy: 1949-1965

Prior to the Cultural Revolution, the most significant innovation in China's health strategy occurred in the area of preventive health. There are two elements which were central to this policy. First, the Chinese were able to mobilize additional resources for its preventive health program, in what might be termed a "surplus labour absorption" strategy. Second, and more central, these resources were able to be directly translated into effective preventive health inputs. This prevented any bottlenecks to a large-scale preventive health program arising from shortages of trained public health personnel.

The effect was to obtain health goals with only minimal allocations from the state budget, (thus transferring the burden to the commune and

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Canton Forum of Medical Personnel on Tour in Rural Areas,"  
Union Research Service, vol. 49. no. 22 (December 15, 1967), pp. 289-303.

individual level), while attacking many of the primary disease inducing mechanisms at their source. There are policy actions demanding adaptations among a much wider target group than would organizational changes within the institutions more traditionally within the health sector. It necessitated the development of an institutional mechanism capable of inducing an adequate level of individual and communal participation in health programs (often termed "moral" as opposed to "material" incentives). Hence, the strains, resistances and contradictions to successful implementation were considerable. Indeed, the cultural revolution in curative health care may have reflected an attempt to resolve some of these contradictions.

There were four specific elements characteristics of this program. First, the Chinese began to develop a basic preventive health infrastructure throughout the country (although more elaborate in the urban areas). Second, one observes the use of continuous social pressure to induce changes in individual behavior and attitudes toward personal hygiene, environmental sanitation and nutrition. Third, mass mobilizations of the labour force, in short intensive campaign periods, and the use of peasant public health teams, provided both the resources and inputs critical to the program's success.<sup>1</sup> Fourth, the Chinese consciously attempted to integrate the realization of health and agricultural objectives, in the hope of economizing on the resources devoted to both sectors.

The basic underpinning for these policies was provided by the state's investment in educational facilities to train a core of professional public health inputs. Responding to the high incidence of many acute infectious diseases, the Chinese also established a network of epidemic prevention centres (although these were principally located in the urban areas). These disseminated information on the means of containing the spread of infectious diseases, and managed mass immunization campaigns. With the elaboration of decentralized curative health networks in municipal areas (municipal hospitals, work clinics, dispensaries), virtually all urban children were routinely immunized against smallpox tuberculosis, and diphtheria.<sup>2</sup> In the rural areas, (particularly in the

<sup>1</sup>The substantive details of the following discussion were partially drawn from a paper by Janet Salaff which deals explicitly with mass mobilization and public health activities. Salaff (2).

<sup>2</sup>JPRS #28543, (January 29, 1965).



principal villages), one observes a far more skeletal set of comparable institutions, and only the immunization of children received the degree of financing from the state necessary to make it moderately successful (the rural immunization rate was probably closer to half that in the urban areas).

In certain cities, there is evidence that at the district level, there is an extremely active maternal and child health program which seeks out children and mothers within the districts, rather than letting the provision of health be dependent on parental initiative.

( Virtually all urban babies are born in hospitals or maternity homes and they are given BCG against TB and are vaccinated against smallpox within the first three days of life.<sup>1</sup> )

These district centers combine curative and preventive work, systematically providing check-ups to children under seven, while offering health education and family planning guidance to mothers. Whether these district and street health centers are available in all urban areas is not clear.<sup>2</sup>

This institutional infrastructure was complimented by extensive state investments in urban sewage systems and water supplies. Sewage treatment plants were set up, tap water availability was expanded, and a regular collection of garbage was instituted.<sup>3</sup> This type of state financed investment was not made in the rural areas, and occurred far more gradually, if at all, and was dependent upon local (and eventually communal) financing. Hence, one observes a core of conventional preventive health programs, particularly in the urban areas, which are focussed on immunization and sanitational measures. These can have a significant impact on many of the diseases listed in categories IA and IB of Table 1.

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<sup>1</sup>Robert M. Worth, "Health Trends in China Since the Great Leap Forward," The China Quarterly (April-June, 1965), pp. 181-189.

<sup>2</sup>"An Experimental Study on the Organization of Urban Child Health Sources," Chinese Medical Journal, vol. 84, no. 9 (September 1965), pp. 563-570. (Hereafter, Chinese Medical Journal 9/65).

<sup>3</sup>This engendered rural medical problems in that urban human waste was often transported for use in rural agriculture, and this resulted in the transmission of various infectious diseases. Leo A. Orleans and Richard P. Suttmeier, "The Mao Ethnic and Environmental Quality," Science vol. 170 #3963 (December 11, 1970), pp. 1173-76.

Complimentary to these programs, the Chinese attempted to propagandize the importance of changing the individual's behavior with respect to health and sanitation. The continuous stream of propaganda on cleanliness and hygiene provides a crucial information flow which is presumably necessary if one is to observe any changes at the level of individual behavior. Homeowners are urged to observe the "5 cleans" - doors, floors, walls, roofs and utensils - and in many areas special inspection groups are formed (using party or PLA personnel) to supervise these programs.<sup>1</sup>

Likewise, one observes continuous emphasis on the need for personal hygiene, of food sanitation, of foecal control, etc. Peasants were urged to store human waste for at least a seven day period in order to assure the destruction of many parasites. The Chinese government provided microscopes to teams of health personnel in order to show the peasants that their drinking water often was polluted by parasites, such as the schistosome. It is in the urban areas that these actions seem to have been relatively successful, although there has been undoubtedly substantial variance. Many foreigners returning to China have noted an overwhelming improvement in the level of cleanliness.<sup>2</sup>

Whether these behavioral changes occurred in the rural areas prior to 1965 is more uncertain. One occasionally reads of certain countries which are "models" of public health, but is it unclear whether they are truly representative. The relative difference in the success at the urban and rural level is likely to be a function of the differential quality of <sup>curative</sup> health networks that existed prior to 1965. These provide a vehicle for health education, which particularly among relatively uneducated workers or peasantry, is necessary to insure that the linkage between a given set of individual actions and its effect on personal health is clearly understood.

In both rural and urban areas, however, it is the preventive work through "mass mobilization" that distinguishes the Chinese experience from other LDCs (prior to 1965). Throughout the period, there are reports of short bursts of frenzied activity, lasting anywhere from one week to

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<sup>1</sup>Current Scene 12/15/69, *op. cit.*

<sup>2</sup>H. B. Collier, "Teaching and Research in the Basic Medical Sciences in the People's Republic of China," Journal of Medical Education, vol. 42 (May 1967), pp. 467-69.

one month, against the various "villains" of health. Initially it involved mass immunization campaigns against smallpox or cholera. The patriotic campaigns against the purported American chemical-biological warfare during the Korean war involved mass extermination campaigns against the four pests (sparrows, flies, mosquitoes and rats), with extensive publicity given to the number killed.<sup>1</sup> Two or three times a year (usually in early spring and midsummer), "shock weeks" were initiated against flies and mosquitoes, with mass spraying of insecticides, and fly swatters in abundance. Stray dogs were eradicated in order to attack the transmission cycle of kala-azar. In virtually all areas of China<sup>2</sup>, mass sanitation campaigns to dispose of garbage and manure, and to clean the streets and homes appear to be regular occurrences<sup>3,4</sup>. These action campaigns were extended to the repairing of water channels and road surfaces, in order to destroy the breeding grounds for mosquitoes and flies.<sup>5</sup>

A byproduct of these campaigns was the transmission of health information to the Chinese population. Salaff argues that this had an "unknown, but undoubtedly great, influence on depressing incidence of all disease."<sup>6</sup> This is a critical prerequisite for any attempt to inducing changes in individual behavior and attitudes towards these disease problems.

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<sup>1</sup>For example, in a health bulletin in 1958, reports indicated the extermination of 1590 million rats, 1650 million sparrows, 100,980 kg of flies and 11 million kg of mosquitoes.

<sup>2</sup>"Recent Developments in Medicine and Public Health Work," Union Research Service, vol. 32, no. 11 (August 6, 1963) (Hereafter, URS vol. 32, no. 11). Current Scene 12/15/69; Chinese Medical Journal vol. 79.

<sup>3</sup>Anti-kalazar campaigns were mounted with the spraying of DDT, mass treatment, and residual DDT spraying of human dwellings. T. C. Li, "Ten Years of Public Health Work in New China," Chinese Medical Journal vol. 79, pg. 483-88.

<sup>4</sup>Same as above.

<sup>5</sup>Anti-hookworm campaigns took the form of the construction of public latrines, propoganda against "promiscuous defecation," and composting of night soil. R. M. Worth, "Health in Rural China: From Village to Commune," American Journal of Hygiene, vol. 77, #3 (May 1963), pp. 228-239 "Recent Developments in Medicine and Public Health Work," Union Research Service, vol. 32, #11 (August 6, 1963).

In addition, there is both a political and economic rationale to the use of these mass actions campaigns. Mass campaigns for health purposes are politically safe vehicles for engendering popular support for collective social action and united effort as a means of target realization. Similarly, the same medical teams that lead the population in these health campaigns, or which provide mass immunizations, are in a crucial position to stress and disseminate the ideological message of the regime.

(These teams were chosen for the mission of social control because they, as healers, would already have the trust of the masses.<sup>1</sup>)

In the rural areas, these campaigns were often used to jointly realize agricultural and health objectives. One aspect of the anti-schistosomiasis campaign was mass action work in developing irrigation networks and expanding cultivable farm acreage.<sup>2</sup> In the process of digging new irrigation canals (and filling existing snail infested canals), the snails which serve as the schistosome hosts could be uprooted and buried. Repeated emphasis is placed on increasing the consciousness of the peasantry, throughout the entire farming season, to eliminate the snails.<sup>3</sup> Similarly,

various localities have mobilized half a million laboring people and some 200 tractors; and 31 conservancy projects for elimination of snails have been started successfully.<sup>4</sup>

To the extent that these efforts are focused in periods when there is a slackening in the level of agricultural work, it proves a relatively costless means of taking such preventive health action. To the extent it is combined with agricultural efforts, its cost is further reduced, thus effectively providing a productive outlet for surplus labour.

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<sup>1</sup>Janet Salaff, "Physician, Heal Thyself," Far Eastern Economic Review. (Oct. 31, 1968), p. 292.

<sup>2</sup>C. S. Den, "Success of Patriotic Health Movement for 1958," Journal of Microbiology, Epidemiology and Immunobiology, vol. 30, #10, 17-22.

<sup>3</sup>JPRS #39411 1/4/67.

<sup>4</sup>"The Elimination of Schistosomiasis," Union Research Service, vol. 62 #3 (January, 1971), pp 30-44.

Finally, we observe the use of what Salaff calls "community action and self-help" in mass curative services designed to attack one point in the transmission cycle of certain infectious and parasitic diseases. At various times, medical teams were sent from the urban areas to train a corps of medical workers, drawn from the peasantry and proletariat, in simple diagnostic and treatment methods and disease control procedures for a limited number of diseases.<sup>1</sup> The approach was initially developed for an anti-syphilis program.

These local leaders checked other villagers for symptoms of syphilis, reporting the sick, who were then treated with penicillin. It was claimed that syphilis was under control by the late 1950's ... and congenital syphilis among infants was almost eliminated.<sup>2</sup>

Such techniques have more recently been used in anti-parasite campaigns particularly schistosomiasis, where treatment can provide one mechanism for cutting the transmission chain.<sup>3</sup> The goal is to

[master] the pattern of mass movement in collaboration with production, [understand] the requirements of the control program and also [to simplify] the diagnostic methods, elevate the accurate diagnostic rates [study] new treatment methods, and [shorten] treatment schedules.<sup>4</sup>

Although schistosomiasis has not disappeared, its prevalence and incidence have been sharply reduced.<sup>5</sup>

The use of mass campaigns and community effort provides a model for the later reforms that are implemented after 1965, both in preventive and curative health measures. Furthermore, the emphasis on self-reliance and social mobilization as key ethics of socialist public health policy implies an alternative resource allocational strategy to that commonly observed in the preventive health policies of most LDCs.

<sup>1</sup>"China's Achievements in Internal Medicine," JPRS #30251, pg. 2.

<sup>2</sup>Salaff (2), op. cit., p. 28.

<sup>3</sup>JPRS #52013 12/17/70.

<sup>4</sup>JPRS #30251, pg. 2. "China's Achievements in Internal Medicine."

<sup>5</sup>Andreano, despite his protestations that Cheng has been overly optimistic with respect to the elimination of schistosomiasis, still argues that substantial progress was made in schistosomiasis control and eradication up to 1958-59. He argues that minimal progress was made between then and the 1960's owing to the widening of the potential area of infection and population at risk. Ralph Andreano, "Farewell to the God of Plague: The Economic Impact of Parasitic Disease (Schistosomiasis) in Mainland China," Health Economics Research Center, Research Report No. 3, April 1971. Department of Economics,

First, the Chinese government has emphasized that the primary burden of financing preventive health measures must be borne out of the disposable incomes of those directly benefitting from these measures: the rural communes, production brigades and production teams.<sup>1</sup> Although the government clearly subsidizes elements of the program, there is by no means the sense that it is the state budgetary constraint that binds the level of the preventive (or curative) health program (as is true in many LDCs). This creates two intertwined problems. It requires an ability at the local levels to mobilize resources and a set of resource allocational options which provide a sufficient sense of health output to assure continued popular support for the bearing of the resource burden. If the cost of public health programs proves high to the peasantry, there will be less willingness to pay the price. Hence, if the Chinese government's stress on the importance of health is to be matched by a comparable level of health program, it must provide the allocational options and incentives for the local communities.

This mode of resource mobilization is a classical strategy involving the mobilization of "surplus" labour.<sup>1</sup> The extent to which "surplus" is

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University of Wisconsin, and "More on the God of Plague: Schistosomiasis in Mainland China," Res. Report Series, no. 7. University of Wisconsin.

<sup>1</sup>In most LDCs, virtually all rural health services and a substantial proportion of urban services are delivered within the public sector. This mix of private and public sector responsibilities is not based on any firm theoretical delineation of the "public" and "private" components of health as a "commodity." Health has both investment and consumption characteristics, and is of importance both to individuals and society. It is a "public good" in the sense that many infectious and parasitic borne diseases involve the human being in the transmission cycle, so that both an individual's actions and his personal health may affect the health and thus the utility of others. Likewise, society may derive social benefits, or prevent social losses, from the provision of better health for its members. Yet health is also a private good, in that it is "consumed" by the individual, yields, in large part, its utility to the consumer, and is, to a large part not shared jointly with others. This justifies the individual's absorption of a certain proportion of the costs of providing better health. Society collectively absorbs a share of the costs in order to insure a socially adequate level of consumption of health services. In most LDC's, the commitment by the government to assure a minimal level of health facilities to the population becomes transformed into a financial commitment to bear the costs of these services. The effect is to place a substantial financial burden on the government's recurrent budget. The effect is that government budget constraints thereby limit the possibility for an expansion of such health services.

<sup>2</sup>What is crucial in the Chinese strategy is less the fact that it is heavily labor intensive (which it obviously is), but more that (1) it

an appropriate term is unclear since either the individual or the society usually will bear some cost from this activity. / If the peasant's marginal productivity is not zero during the period in which he is mobilized for health purposes, then the commune clearly faces a tradeoff between present agricultural output and the output of health improvement (although the latter may have dynamic implications on the former). In slack seasons, it involves a tradeoff by the individual of the utility derived from leisure time and that derived from the improved health of himself, his family or the community deriving from his actions. This may require that the individual sense that the externalities of his actions are compensated by the knowledge that his peers are similarly engaged in such activities. / Finally, the health input may be realized by an individual's reorganization of the way in which he meets certain basic physiological needs (i.e. cooking fish, or defecating in a latrine etc.). The cost here is the lost utility arising from the period of adjustment to new habits. Of the three possible sources of surplus, only the first involves an explicit tradeoff in output. The latter two would unambiguously add to the output level of the economy, and it is in this sense that economists refer to this as a means of mobilizing surplus resources.

∟ In all three cases, the resources are not only mobilized but are also directly used for health purposes. An alternative option might be to utilize these resources to generate a marketable output, the revenues from which could then be used to purchase specialized health sector inputs. In most LDC's, the latter is often rationalized in terms of the absence of a viable private sector alternative (particularly involving non-specialized inputs). This reflects the conventional wisdom as to the range of possible technological options available and a judgement that a policy of subsidizing the development of private sector alternative to provide the socially desirable level of health "output" would be more costly. <

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implies a transfer of the burden of these health activities to those whom it directly affects and (2) the Chinese have found the institutional and organization keys which allow them to use a labour intensive strategy where so many other LDCs have tried and failed. See the model presented by S. Rifkin and R. Kaplinsky in Health Strategy and Development Planning: Lessons from the People's Republic of China (University of Sussex: The Science Policy Research Unit, December 1971).

The Chinese strategy of self-reliance rejects the latter assertion and rests on the assumption that there are a range of health actions which can be made by individuals or by rudimentarily trained personnel, whose primary occupational focus lies outside of the health sector.

We must educate the students to give attention to their own health; they cannot become healthy by relying only on the attention of others.<sup>1</sup>

As can be seen in Table 1, many of the fundamental actions required of a rural peasant society to bring a dramatic improvement in the health status of the population require only a small input from health sector personnel. Types IA and IB encompass diseases which provided the main causes of mortality and morbidity at the time of the revolution. Virtually all can be dealt with on a preventive level with only a minimal level of curative health infrastructure (i.e. health centers, hospitals, laboratories, etc.) and pharmaceutical supplies.<sup>2</sup> They require environmental sanitation projects, the boring of tap wells, changes in individual behavior with respect to personal hygiene, sanitation and nutrition, the eradication of certain disease bearing insects or animals (i.e. dogs, rats, fleas, budbugs, sparrows, mosquitoes, etc.), a supply of drugs and the minimal competence necessary to give mass inoculations. Hence as a resource allocational strategy, it circumvents the presence of a specialized manpower constraint by rationing their use to managerial and pedagogical purposes. Hence both the financial and manpower constraint binding in many LDCs are absent.

The role played by the Chinese government and the organized health sector should not be underestimated. It provides the critical input of an informational transmission mechanism to the peasantry. Most individuals in any society are ignorant of the "technology" of personal health, particularly if it involves the presence of parasitic organisms. This ignorance may inhibit an individual from allocating individual labour and financial resources in a manner which would rationally be in his, and his family's, self-interest. Indeed, the linkages between these

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<sup>1</sup>Feng P'ei-Cheh, "The Dialectic Relationships of Ethics, Intelligence and Health," in Kuang-ming Jih-pao in JPRS #33312 Dec. 14. 1965.

<sup>2</sup>Salaff has documented the dramatic decline in the incidence of many of these diseases, particularly in the urban areas, as a result of these measures. See Salaff (2), pp. 31-52.



preventive health activities and improvements in health status may be induced with long gestation periods. The individual's behavior must be predicated on the maintenance of confidence that such activities are socially and personally significant. Hence, over the long run, the technology must demonstrate some tangible benefit, i.e. it must be a productive technology.

Second, excessive promotion of this type of "self-reliance" strategy is predicated on the ability to induce such changes in an individual's allocation of labour, leisure and financial resources. A factor of obviously critical importance is the mechanism by which the Chinese were able to mobilize these campaigns, (an issue which is peripheral to the main focus of this paper). Winckler and Skinner have noted a cycle in the choice of instruments used for inducing social action. One observes coercion, mass exhortation and propaganda, and remuneration at various points in the cycle. The relative emphasis on each of these in the health sector is critically determined by the target group involved. For example, one might expect that a high degree of coercive pressure was required to obtain resettlement of a large number of medical manpower to the rural areas in the late 1960s, and likewise for mass agricultural actions. Yet one would also expect that the ideological component would dominate for many of "shock campaigns" in sanitation and pest eradication, although these themselves would be characterized by cyclical characteristics in their duration and intensity. It is generally agreed, however, that whatever the means, these campaigns have indeed occurred and are an integral aspect of Chinese policy.<sup>1</sup>

In concluding this section, it should be noted that this type of preventive health strategy is inherently limited in its potential impact on the critical disease problems of the community. There are a substantial range of health problems for which there is only limited substitutability between individual action and specialized health sector inputs (as one moves from Type I diseases to types II and III). Indeed, the basic success of these preventive health programs will itself shift the central problems of health to those for which these health sector

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<sup>1</sup>See (1) G. William Skinner and Edwin A. Winckler, "Compliance Succession in Rural Communist China: A Cyclical Theory," in Amitai Etzioni (ed.), Complex Organizations, a sociological reader, 2nd ed. New York, Holt, Rinehart and Winston, 1969, pp. 410-438.

inputs do become critical.<sup>1</sup> Second, we shall argue that its success is also limited by the degree of development of the curative health infrastructure.

#### Section IV: Structural Changes in the Rural Curative Health Strategy

Thus, despite the apparent inequality in allocation of state health funds between the urban and rural areas, the Chinese were nevertheless able to mount a substantial rural preventive health program. This was facilitated primarily by an ability to mobilize and organize effectively the pool of "surplus" labour in the rural areas. From the statistics that can be obtained, such programs had a significant impact on the causes of morbidity and mortality in China (although evidence is more firm for the urban areas).<sup>2</sup> The budgetary inequality came home to roost primarily with respect to curative health services. Both in terms of manpower and budgetary resources, substantial inequalities on a per capita basis existed prior to 1965, a fact which is not uncommon in even the more advanced health systems of the less developed world. Such inequalities were not offset by any substantial, sustained commune effort to mobilize resources for these services. Indeed, we shall argue that such an effort would not have had a major impact given the high cost of curative services prior to the Cultural Revolution. What marks the Cultural Revolution is its impact on lowering this cost, and increasing the financial viability of such services in the rural areas.

The inadequacy of rural health services became apparent during the Cultural Revolution. As mobile medical teams from the urban areas returned from brief stints in the rural areas, forums were held to evaluate their experiences. These were peppered with descriptions of the neglect of curative health services for the peasantry. They indicated extreme shortages of funds, equipments, personnel facilities and, equally important, an ignorance of the appropriate technology of medical care for use under such constrained circumstances. In other words, their reports indicate not only that conditions failed to barely approximate those which they would require given their medical background,

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<sup>1</sup>Salaff, op. cit., pp. 32, 33.

<sup>2</sup>Salaff, op. cit., pp. 32, 33.

but also that inadequate attention had been paid, at all levels of medical education, to adapting existing technology for use in the rural areas.<sup>1</sup>

For example, the average hsien usually had no more than 1 major hospital of one hundred to two hundred beds. During the Great Leap Forward, many communes constructed a commune health center to service their members.<sup>2</sup> The level and quality of care at many commune health centers was extremely poor. Medical equipment to perform routine examinations was often lacking. Many examinations necessitated long journeys to the hsien hospital, journeys often rewarded by possible exacerbations of one's illness, losses in working time, and lengthy delays in obtaining both treatment and drugs. These were rewards which often proved inadequate to induce people to receive them.<sup>3</sup> Most health centers had inadequate facilities for inpatients. Chronic understaffing, and low quality personnel were common. Many had no doctors, others had less than 5 personnel.<sup>4</sup> Although most medical graduates were obligated to spend several years in the rural areas, the sheer magnitude of the need and the infrequency of any mobile medical work within the hsien, gave this only minor impact. Moreover, the most skilled medical graduates usually were sent to the urban areas, and the needs of the urban hospitals were sufficient to sanction out doctors after their stint in the rural areas.

Medical and pharmaceutical supplies were often unavailable and even Chinese herbal drugs were often in short supply.<sup>5</sup> Many production brigades and teams, were not readily accessible even to the commune health center and thus could not be offset given the limited number of personnel.<sup>6</sup> Home visits were infrequent and usually limited to maternity.

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<sup>1</sup>As a depiction of the true state of rural health services, these reports are not wholly acceptable. They are undoubtedly the reflection of jaundiced eyes. Yet between the rosy glasses of the pre-1965 reports and those thereafter, a middle ground of reality can be obtained. Second, their policy prescriptions are undoubtedly excessive. To argue that the rural areas are lacking in sophisticated equipment and facilities is relevant only if sufficient funds can be found to obtain them. Lacking this precondition, existing funds may be more usefully directed at reinforcing, at certain critical points, the existing institutions.

<sup>2</sup>A commune's membership can range from 15,000 to 60,000 people.

<sup>3</sup>Union Research Service, op. cit., vol. 49 #22.

<sup>4</sup>Ibid.

<sup>5</sup>China News Analysis, op. cit., #365, p. 6-7

<sup>6</sup>Union Research Service, op. cit., vol. 49, #22

cases.

Perhaps as important as the shortage of funds and services was a basic ignorance as to the most efficient and inexpensive means of organizing and treating the curative health needs of the rural population. An expansion in the level of budgetary support by the Chinese government was not likely. The high cost of modern forms of medical technology and medical care organization, in terms of budgetary costs and specialized manpower, was brought home to Chinese health planners after the initial forays of the mobile medical teams. /Modern medical technology would be described by economists as a "fixed-coefficient" technology. For a given output of inpatients and outpatient services it conventionally requires capital, pharmaceutical and specialized personnel inputs organized in a fairly determinate structure.<sup>1</sup> /

The medical educational system transmits a "decision process" for medical doctors which emphasizes the importance of increasing the probability of the correct diagnosis of a patient's illness. This implies both an insatiable need for those complimentary inputs which are necessary to attain this ever increasing degree of certainty and an unwillingness to delegate critical diagnostic and treatment responsibilities to less skilled medical auxiliaries and nurses. Although the normal medical doctor's experience and degree of perception allows for shortcuts and rationalizations of this diagnostic procedure, there exists a basic unwillingness to synthesize this ability in a way which could be used by lesser trained personnel. Hence the basic specialization of medical function with low potential substitutability remains.

/Application of this technology under severe budgetary constraints and shortages of these personnel inputs, inherently limits its extent. Any substantive improvement in rural health care would thus require technological and organizational adaptation to drastically lower these input requirements with as small a loss in the quality of health service as possible. / In December 1965, Chinese Minister of Health Ch'in Hsin Chung argued that

"We know very little about: (1) the characteristics of the outbreak and spread of various common diseases in the countryside and the most effective methods for their treatment and prevention... (2) the way to carry out effectively work for the elimination of the 4 pests, for publicizing hygiene, and for

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<sup>1</sup>See Bryant, op. cit.

prevention and control of the diseases in the countryside; and (3) the way to find medicines and apparatuses which are economical and convenient to use and yield good results."<sup>1</sup>

These deficiencies in curative services were mirrored in the health status of the rural population. Urban doctors reported a high incidence of dysentery, ascariasis, tuberculosis, bronchitis and asthma. Among children, the critical diseases were upper respiratory infections, bronchitis, pneumonia, diarrhea, enterocolitis, measles and intestinal ascariasis.<sup>2</sup> The scarcity of ophthalmologists or even cadres of oculists was reflected in the reported incidence of large numbers of eye diseases.<sup>3</sup> A conference in December, 1965 reported that in some regions the incidence of trachoma exceeded 50%, and was particularly high among children. Although it also reported significant progress since 1949 due to preventive work, the eradication of the disease yet required a substantial improvement in both preventative and curative services.<sup>4</sup> Bone diseases (k-eshan disease) in some areas afflicted 20% of the population. Goiter was equally prevalent in some areas.<sup>5</sup>

The absence of these curative services engendered both political and economic problems, while presenting obstacles to the successful implementation of the preventive health policies previously discussed. As the preventive health policies began to prove successful, the changes in the characteristics of China's disease problems made the absence of curative services more critically apparent. Many childhood diseases went untreated (a problem engendered by the drop in the infant mortality rate). The unavailability of basic curative services was politically detrimental to the continuing support of the regime by the peasantry. The economic objectives attributed to health policies, whether real or

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<sup>1</sup>Red Flag No. 13, 12/6/65 in "Mao's Revolution in Public Health in Current Scene, vol. VI, no. 7 (May 1, 1968), p. 5.

<sup>2</sup>Huang Chua-ssu, "Our Medical Team in the Countryside," Chinese Medical Journal, vol. 84 #12 (December, 1965), p. 800.

<sup>3</sup>Ibid.

<sup>4</sup>"A gigantic effort would be needed: the spread of knowledge through all mass media, disinfecting of towels in public places; use of personal towels and separate washing basins, to prevent infection; specialized staff trained over the whole country," op. cit., China News Analysis #602.

<sup>5</sup>JPRS #43903, Comm, China Digest #193 1/8/68; JPRS #52527, 3/3/71.

fictitious, were similarly unlikely to be realized in the absence.

Furthermore, it can be argued that even the impact of preventive health measures was diluted in the absence of a minimal grass-roots curative health network. We define "curative" services in terms of the existence of personnel with a basic level of specialization in medical science. This may involve no more than "barefoot doctors" or "middle doctors" with 3 months to 2 years of training. It does not imply that their health activities are wholly restricted to treatment rather than prevention. Indeed, many preventive health measures, particularly for childhood diseases, must be delivered within the framework of curative institutions or by their personnel. This not only relates to their capacity to deliver these or curative services, but in terms of the willingness of a target group to be receptive to health education.<sup>1</sup>

It is essential to combine therapeutic and prophylactic measures to emphasize early diagnosis and early treatment at the nearest clinics. Either prevention without treatment or treatment without prevention would be an imperfect method of practice. The chief concern of the parents is the cure of their children's diseases. Once this is obtained, they would be glad to accept suggestions on prophylactic measures and to propagate them consciously among the inhabitants.<sup>2</sup>

The deficiency in the quality of the medical network meant that continuous health pressures could not be maintained. Reports during the Cultural Revolution that family health workers and barefoot doctors were fighting "the habit of paying no attention to health work" indicates that a spotlessly clean rural society did not yet exist.

In the countryside, it has become a new fashion to pay attention to public health, eliminate diseases, do away with all fetishes and superstitions, and change old customs and habits.<sup>3</sup>

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<sup>1</sup>A substantive economic problem that confronts any policymaker in a less developed country is the appropriate balance that must exist between preventive and curative activities. If, in 1950, the Chinese had attacked their curative health problems with the zeal of the post-1965 period, it is not clear whether this would have had as much of a substantive impact. It may have required the earlier period of preventive health action as a precondition for the delivery of these services with an effective impact. (It would always have had some impact, but whether it would have been no more than a "finger in the dike" effect is not clear.)

<sup>2</sup>Chinese Medical Journal, 9/65, p. 568.

<sup>3</sup>"The Elimination of Schistosomiasis," Union Research Service, vol. 62 #3 (January 8, 1971), pp. 30-44. By the author Undermeng.

The post-1965 reforms in rural curative health care were aimed at remedying this deficiency in curative services.

What makes the cultural revolution and its aftermath interesting is that it provides a testing ground for many hypotheses on alternative modes of health care delivery. In the remainder of this section, we shall examine the various adaptations that were introduced, the tradeoffs and contradictions which they often embodied, and a sense of their economic rationale. This will provide a basis for evaluating their applicability in the context of other LDCs. We shall organize this discussion in terms of the two root causes of the dysfunctionality of modern medical science in the rural curative health system: (1) the inflexibility of the existing technology and of the organizational processes through which it is transmitted; and (2) the bias of technological change towards an accentuation of the existing technology. The effect of the former is to restrict health planners to a fairly narrow range of options as to both the form and substance of the health delivery system. The effect of the latter is to retard the development of scientific knowledge in those areas which are critically relevant to the main objectives of the health program. It is the relaxation of these inflexibilities, the widening of their viable options, which proves to be the primary characteristic, or potential effect, of the Chinese adaptations since the Cultural Revolution. It has opened up modes of technology utilization which are more efficient given the objectives and the budgetary and manpower constraints which impinge on the health system.

The Rationalization of Medical Technology in China:  
The Role of Traditional Medicine and its Practitioners

In our discussion, we have paid little attention to the role of the traditional Chinese medical system, which slights a key element in the state of rural curative health, particularly before 1965. Very quickly after liberation, the critical policy decision was made to support traditional medicine as an integral part of the health program. As early as 1944, the Communists abandoned their previous rejection of ching-i (traditional medicine) as "pre-modern."<sup>1</sup> The shortage of Western

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<sup>1</sup>John Z. Bowers, "Medicine in Mainland China, Red and Rual," Current Scene, vol. VIII, no. 12 (June 15, 1970). The political, cultural and social roots of this decision are amplified in R. Croizier, Traditional Medicine and Modern China, (Cambridge, Harvard University Press, 1968).

medical personnel, coupled with the deep-rooted confidence of the peasantry in the efficacy of Chinese medicine, made this decision inevitable, particularly in the context of an urban-oriented curative health system.

Chinese medicine is still the principle strength on which the great masses of our people depend in overcoming disease and maintaining health.<sup>1</sup>

If traditional Chinese medicine were to be prominently held up by the party as being equal to Western medicine, and used as part of the government medical services, the already existing faith in it should serve as a powerful force to the political advantage of the party and a step forward in healing the cultural wounds of the Chinese people.<sup>2</sup>

What was an equally important decision was that this was not merely a transitional decision, but would be accompanied by<sup>3</sup> an expansion in the stock of Chinese medical practitioners through the establishment of separate colleges for Chinese medicine.

The scientific merits of Chinese medicine thus received a political legitimacy, which was further reinforced by the establishment of several research institutes in Chinese medicine. Yet throughout the period, only partial rapprochement between the two schools occurred, government attempts at integration notwithstanding.<sup>4</sup> Although increasingly traditional

<sup>1</sup>Jen Hsaiia Feng Chung Hua I Hsueh Tsa Chih 2/56 in Union Research Service 6/8/56, vol. 3 #20.

<sup>2</sup>Robert Worth, "Strategy of Change in the People's Republic of Ching: The Rural Health Centre," in Lerner, Daniel and Schramm, Wilbur, Communication and Change in the Developing Countries (Honolulu: East-West Center, 1967).

<sup>3</sup>Perhaps this too reflects the impossibility of training, within 10 to 20 years, sufficient Western doctors. For example, by 1966, 21 colleges for traditional medicine, with 10,000 students had been established. But whether it is any more efficient to divert resources to education in traditional medicine remains a relevant economic issue. R. C. Croizer, "Chinese Communist Attitudes toward traditional Medicine," in Croizier, Ralph C., China's Cultural Legacy and Communism (Praeger, New York), pp. 270-275.

<sup>4</sup>As of 1966, Western medical doctors were enrolled in programs of Chinese medicine in order to provide a core of researchers, familiar with both, and capable of providing a firm scientific ground for the yet inexplicable efficacy of many Chinese herbal cures and acupuncture. The successfulness of this early integrative effort is unclear. The Vice Minister of Health reported that "there are some young ones who study (Chinese medicine) but there are few specialists and professors who do so; there are some practitioners who study it, but there are few among theoreticians; there are people who make a cursory enquiry, but



medical practitioners were integrated within the institutional apparatus, this proved to be more of a bureaucratic than a scientific merger. Patients were theoretically given freedom of choice as to which door of the health center they chose to enter, but the existence of this choice, particularly in rural areas, was often moot. Moreover, as long as the screen existed between the two technologies, neither would benefit from the other, and the result would be an inefficient two track system of health.

Hence, an evaluation of Chinese government policy prior to the Cultural Revolution would have to conclude that traditional medicine's role was more a reflection of the lack of any alternative in the rural areas and its political inviolability, than as a component of an evolving unified Chinese health system. As put by Ho Cheng, former Minister of Health, traditional medicine's importance in many eyes

originated from a temporary viewpoint and for the sake of meeting the present emergency [in the belief] that Western medicine would ultimately replace Chinese medicine.<sup>1</sup>

While acceptance and integration of traditional medical practitioners remained an innovation relative to the attitude found in the health systems of most LDCs, in and of itself it did not fundamentally lead to any significant improvement in the availability or quality of rural curative health services. Though the stock of traditional practitioners in the rural areas was large relative to the stock of modern doctors, both were primarily concentrated to the major villages. As with the commune health centers, inaccessibility often limited their outreach to the community. Moreover, the price of their services often outstripped the capacity of most peasant's income.

Likewise, Chinese medicine, as practiced, was not sufficient to treat the entire range of rural disease problems. It is quite clear that

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there are few who make a prolonged and systematic study," See "Health" China News Analysis #365 (March 24, 1961); "Training in Medicine," China News Analysis #577, (August 20, 1965), pp. 6,7; Juang-ming Jih-Pao 5/9/56 in Union Research Service, vol. 3, pt. 20 (June 8, 1956), For a detailed discussion of new developments in the integration of the two sciences, see "Recent Developments in Medicine and Public Health Work, Union Research Service, vol. 58 #21, p. 299.

<sup>1</sup>Ho Cheng, "Examination of my Mistaken Thinking in Health Work," Jen Min Jih Pao in Union Research Service, vol. 3 #30 (June 9, 1956), p. 281.

despite the shakiness of its theoretical underpinnings, there are many medical problems for which the use of acupuncture, moxibustion and traditional herbs can be quite efficacious.<sup>1</sup> Yet as an eclectic, unformalized science, there was considerable variance in the effectiveness of different medical practitioners and the herbs and treatments they prescribed. This was exacerbated by the secrecy maintained by individual practitioners, thus inhibiting any free flow of medical information to the body of practitioners at large. Often, practitioners were unable to operate effectively for lack of medicinal herbs. Hence, to assert that the rural areas were served by a stock of such practitioners does not reflect on the breath and character of the medical services offered.

The Cultural Revolution appears to have accelerated markedly the evolution of an integrative process between the two systems. One observes greater interaction between the two types of medical practitioners, at the mobile medical team and health centre level. Short training courses in certain areas of modern medicine are offered to rural practitioners by visiting mobile medical teams. At the health centres, emphasis is placed on joint diagnosis and treatment, and this effectively offers further on-the-job training for the traditional doctor in modern medical procedures.<sup>2</sup>

One would expect that this increased interaction should have an impact on the quality of medical manpower in the rural areas and on the appositeness of the technology chosen for particular health problems. By encouraging greater examination and research into Chinese medicine, and by increasing the interaction between the two types of practitioners, it will lead to the identification of those elements of Chinese medicine which can be substituted for comparable modern treatment procedures with substantial savings in costs. The recognized effect of acupuncture for the treatment of certain diseases and as an anaesthetic is an obvious

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<sup>1</sup>Stephan Palos, The Chinese Art of Healing (New York: Hercler and Herdy, 1972).

<sup>2</sup>One purported reason for the increased consultative arrangements derives from the political insecurity of both types of practitioners. Because of the ability of patients to file complaints with local party secretaries, one way of spreading the risk is through consultation. Worth, in Lerner & Schramm, op. cit., p. 226.

example of a technology which is more practical in a rural setting.

Likewise, there are a wide range of traditional herbs which have a proven impact on certain diseases and to the extent that these may be easily cultivated and prepared by commune members, this may be a less expensive and more accessible form of treatment than modern pharmaceuticals. The Chinese have attempted to induce traditional practitioners to reveal their herbal secrets<sup>1</sup> in order to consolidate the body of existing knowledge on the uses of traditional herbs. By transmitting this in a simplified form, it will broaden the knowledge of any given practitioner, (i.e. including peasant doctors) while lowering the cost of drugs.<sup>2</sup> By encouraging the private and communal cultivation and collection of herbs, the external financing requirements (and dependence on subsidies) of health centers are effectively lowered while their capacity to afford other health services is potentially increased.<sup>3</sup> At the brigade level, 85% of prescriptions are herbal drugs. At the production team level, virtually all prescriptions are traditional herbs.

Second, this interaction contributes to an upgrading of the quality and versatility of the stock of traditional medical practitioners, while increasing the efficiency with which they interact with modern rural health services. As their diagnostic capacity and their awareness of the

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<sup>1</sup>For example, the members of one commune contributed 200 secret formulas and prescriptions. Production brigades have given workpoints as compensation for these contributions. Often old medical books were donated. At the Ping-shih commune in Nankung (Kiangsi Province) "the commune rearranged these herbs and formulas, compiled four volumes of Collection of Folk Medicine, [and] issued them to the 'barefoot doctors' and the broad masses for their study and application." "Develop rural in Hanyang Huran 8/8/70, in Selections from China Mainland Magazines, #689-80, (September 8 and 15, 1970). Also "Recent Developments in Medicine and Public Health Work," Union Research Service vol. 58 #21 p. 299.

<sup>2</sup>Emphasis is placed on Mao's dictum to "inherit and develop the motherland's medical legacy," which is interpreted to mean discarding what proves useless and developing those which are effective, regardless of whether the mechanism which explains their effectiveness is known.

<sup>3</sup>One constantly reads reports of how communes have expanded their cultivation of traditional herbs, or established an herb processing plant to produce, in off hours, a variety of ointments, pills, powders and lotions. Likewise, the PLA soldiers constantly sought out and collected herbal plants. For example, in 4 months, a group near Kwangchow reportedly collected 680 tons of 1000 kinds of medicinal herbs. Selection from China Mainland Magazine, op. cit. #21 (March 13, 1970), pp. 294-309; "PLA Medical Health Units Serve Rural Areas." Federal Broadcasting Information Service, (June 26, 1969), pp. B1-B3.

limitations of traditional medicines improves, they will operate more effectively as curative agents and as channelling mechanisms for more complicated disease problems to the communal health center.

The correct attitude toward Chinese doctors should be to ascertain that the unification of Chinese doctors is a long-term policy... because it is a powerful force in the public health enterprise of our country. In fact, more than half of the urban populace and practically the entire peasantry of our country is still dependent on the existing several hundreds of thousands of Chinese doctors for treatment.<sup>1</sup>

Moreover, by joint treatment, the traditional doctor also becomes a vehicle for the introduction of modern curative techniques and health education against which there are often many superstitions and taboos. Indeed one could argue that even if partial reliance on traditional medicine is at the expense of better health for a given bundle of resources, it is valuable in crucially facilitating the dissemination of modern forms of medical care.

This policy has not been without certain strains. The intensification in usage of Chinese herbs was often excessive and not based on scientific tests of effectiveness. When combined with the hasty expansion in "barefoot doctors" and PLA corpsman with quick cookbook courses in acupuncture and herbal medicine, there was unquestionably resistance to these curative services in many areas. Chinese medicine is not applicable in all instances and the experimentation with new herbs often proved unsuccessful. Reports of herbs insufficiently baked or processed, and incorrect application of acupuncture treatments are not uncommon.<sup>2</sup>

The 'barefoot doctors' usually treat their patients with medicinal herbs. However, reportedly the patients do not always trust them and have doubts about the efficacy of wild herbs in the treatment of illness.<sup>3</sup>

Conversely, there are many groups, particularly in urban areas, which

<sup>1</sup>Ho Cheng, in Jen Min Jih-Pao, Union Research Service, vol. 3 #20 (June 9, 1956).

<sup>2</sup>JPRS #43903, Communist China Digest No. 193, 1/8/68; "Chinese traditional Medicine and Western Traditional Medicine," Union Research Service, vol. 63 #25, (June 25, 1971).

<sup>3</sup>URS 61-26, p. 349. See also URS 58 #21, 6/25/71.

still reject all traditional medical practices as "unscientific" and "pre-modern".<sup>1</sup> Hence, it is clear that there are limits to the rate at which their integration can be paced to gain general acceptance by some social groups.

Motivating Technological Change;  
Medical Technology and the Income Distribution

At present, the set of methods of examination and treatment of hospitals is basically unsuitable for the countryside. The method of training doctors is also for the cities. But China has over 500 million people who are peasants.<sup>2</sup>

The increased utilization of traditional medicines does not attack the basic problem of the inappropriateness of modern medical technology within the context of an impoverished rural medical system. It is precisely because traditional medicine is inadequate for a wide range of diseases that an inability to deliver modern medical technology, at a realistic cost, effectively precludes any further inroads into improving the health status of the rural masses.

Hence, a second development that occurred during the Cultural Revolution was an attempt to reorient the thrust of medical research toward an attack on rural health problems, while adapting the existing technology in order that it could be effectively applied within the rural areas. On one hand, it represents an attempt to<sup>3</sup> change the direction of technological change in both medical science and medical care organization. On the other, it is an attempt to move toward a reallocation of health inputs, within the framework of existing medical knowledge, toward a new output mix as between the urban and rural sectors.

Beyond the need for a physical reallocation of medical inputs as between sectors, it required what Schumpeter would have called innovations

<sup>1</sup>Croizier, op. cit.; FBIS, 6/26/69.

<sup>2</sup>Mao-Tse Tung in Union Research Service, vol. 49, #23, op. cit.

<sup>3</sup>Within the terminology of economists, it argues for new criteria for technological research which embody; (1) change in output objectives, viz, the prevention and treatment of common rural diseases as opposed to urban illnesses, (2) a new set of factor price criteria reflecting the high cost of capital and skilled labour inputs. Such adaptations refer not only to new medical science developments (strictly technological), but also to what might be considered organizational adaptations.

in existing medical care technology organization and education. This involves (1) a rationalization of existing medical knowledge, (and the priorities in its transmission) (2) a reconsideration of the basis for the functional delineation of responsibilities as between different levels of medical personnel, and (3) a reorganization of the process of health delivery within existing rural health institutions.

We shall examine (2) and (3) at a later point in the paper. The first policy was manifested in an attempt to pressure urban physicians to focus their research efforts on the problems existing in rural areas and to ensure that medical students were oriented to service in these areas.

These policies were an attempt at remedying what the Maoists view as the dysfunctional perspectives engendered by the modern medical educational system. These perspectives effectively constrained the ability of the Chinese to develop or utilize the most effective technologies for rural medical care programs. They have both technological and motivational roots. The modern trained doctor undergoes a rigorous period of training in the most advanced areas of medical knowledge, utilizing the sophisticated medical equipment and supplies that exist at most medical schools. The economics of providing quality medical care are secondary elements in determining the choice of technology.

In the absence of these complimentary capital inputs, these technologies become inapplicable. Hence, one immediately obtains a basic professional resistance to practicing in areas without adequate medical facilities. Adaptations to the rural environment require a compromise with the medical standards of quality with which they are professionally imbued. The character of training required also differs, in that one must be capable of making diagnoses quickly, and without the benefit of a barrage of laboratory tests or diagnostic equipment. Deepseated resistances to any delegation of medical responsibility to nonprofessional practitioners, be they paramedics or traditional Chinese doctors, is inherent in the training process. Reliance on Western-trained doctors as the core of the rural medical program can thus immediately narrow the range of allocative options in as between a quantity vs. a quality oriented delivery system. This tradeoff is expressed in terms of the (1) benefit from the expanded coverage of the health system (number of outpatients) and (2) the

differential probability of a correct diagnosis that results for any given patient.

Similarly, the medical education process induces motivations which are inconsistent with a rural perspective. The technical expertise inherent in the profession, the long periods of schooling and the explicit specialization of functions leads to an individuality, an eliteness, which engenders barriers to any empathy or communication with the uneducated rural peasantry. This reinforces the unwillingness of the urban trained physicians to settle in these areas. In a society where socialism and the breakdown of status are key objectives, the training of Western physicians leads to significant contradictions.

The basic question in the revolutionization of health personnel is to overcome individualism continuously and solve the question of for whom professional techniques should serve. This is also the center of the transformation of the world outlook of the intellectuals. Health personnel who can let politics command professional techniques can better exert their activism and creativeness and can make professional techniques in the health service field play a greater role in serving the workers, peasants and servicemen.<sup>1</sup>

An outgrowth of this urban-oriented perspective was a paucity of research on the ways in which Western medical techniques could be applied outside the context of well equipped urban hospitals. A primary motive for the temporary and permanent settlement of the M.D.s in rural areas was to force them to develop a greater awareness of both the character of the disease problems found in the rural areas, as well as the primitive conditions under which these diseases must be inevitably treated.<sup>2</sup> The urban physicians

should continuously group for and sum up [their rural] experience in order to find a feasible road for our medical and health work to meet in a still better way the practical requirements of the countryside.<sup>3</sup>

Mobile medical teams from the urban areas were, of necessity, forced to devise new techniques based on their rural experiences. Often this

<sup>1</sup>JPRS 43903 1/8/68, Communist China Digest #193, p. 175

<sup>2</sup>This might be considered an expansion of their awareness of factor price ratios and budget constraints.

<sup>3</sup>"Senior Medical Personnel and Popular Physicians go to the Country-side," Union Research Service, vol. 38 #23 (March, 1965), p. 340.

involved no more than an exploration into the areas of medical procedure that can be compromised or modified without substantial damage to the success of the treatment.<sup>1</sup>

At the pure research level, Dimond reports the elimination of "all basic and unstructured research, with the total thrust of health personnel directed toward the people."<sup>2</sup> Thus, research becomes focussed on ascertaining the pathogenetic characteristics of the common rural diseases. These policies are also motivated by ideological factors. By forcing greater contact with the peasants and their life style, it is hoped that the narrow elitist classorientation of these groups will be weakened.

The second set of policies attempts to prevent the present generation of medical students from developing a dysfunctional medical competence. A restructuring of the medical curriculum appears to have occurred, with an increased emphasis upon clinical work, and a shortening of the length of the formal courses.<sup>3</sup> The medical and pharmaceutical courses have been shortened by half with an expanded part of this training

<sup>1</sup>Emphasis on developing these "alternative" technologies was manifested by the following substitutions: (1) grass sheds for sterilized rooms; (2) distillation of spring water; (3) simple tables for operating tables; (4) willow tree branches for swab sticks; (5) kerosene lamps and flash-lights where electricity is unavailable; JPRS #51919 12/14/70, pg. 6.7.

<sup>2</sup>E. Grey Diamond, "Inside Look at Chinese Medicine," in American Medical Newsletter, vol. 14, #1, October 11, 1971.

<sup>3</sup>The policy statement of the 6/26 Commune of Shantung Medical College best exemplifies the reformers arguments: it involved:

- (1) the integration of the medical school and teaching hospitals with nearby nursing schools;
- (2) the establishment of rural branches;
- (3) the merger of preventative Modern and traditional medicine;
- (4) change class composition of the medical school with an emphasis on peasant youth recruitment and their return to rural areas;
- (5) reduction in training from five to three years. See J. Salaff, "China's Medicine: Physician Heal Thyself," Far Eastern Economic Review, vol. LXII, no. 44 (October 31, 1968), pp. 292-3.



within mobile medical units.<sup>1</sup> Whether this has been an extensive reform program throughout all the country's medical schools is not clear.<sup>2</sup>

Implicit within these policies is a theoretical perspective on the way in which technology and class interest interact. For example, one could narrowly view these policies as an attempt to expand the map of available technologies in a labour-intensive direction, while increasing the capacity of the medical educational plant to produce physicians who are capable and willing to operate on these new regions (at existing wage rates). The goal is to expand the capacity of the health system, for a given budgetary level, to handle the magnitude of rural health problems by a reduction in the average cost of treatment.<sup>3</sup>

However, it may be argued that this is at the cost of constricting the range of already available technologies that are effective options. Presumably, it would inhibit the medical specialization that characterizes the modern medical profession. If there is a reduction in the quality of the medical education or, for political reasons, in the quality of the student body, many advanced modern technologies will be neglected and the professional competence of Chinese medical personnel weakened. This would presumably be reflected in a deterioration in the quality of medical care available in urban areas (although the present stock of modern trained physicians, two thirds of which, by all admissions still remain in urban areas, would remain of high quality). Similarly, the reorientation of research will retard the development of Chinese research relative to the West.<sup>4</sup>

These policies implicitly evoke two unresolvable issues. Can one simultaneously continue to train modern style physicians at the past levels of quality and still move to more labour intensive regions of the map? Second, what are the tradeoffs in choosing between quality and

<sup>1</sup>Ibid.

<sup>2</sup>Salaff argues that most reforms occurred in those schools where there was substantial politicization through "revolutionary committees," i.e. in Shantung, Shanghai, Heliungkian. See Salaff (1), pp. 292-3.

<sup>3</sup>John I. Bowers, "Medicine in Mainland China," Current Scene, vol. VIII, no. 12 (June 15, 1970). Also, JPRS #43903, Communist China Digest, 1/8/68 #193.

<sup>4</sup>"Mao's Revolution in Public Health," Current Scene, vol. VI no. 7, (May 1, 1968).

quantity in the training of medical doctors? The latter is only a subtopic of the larger tradeoff between quality and quantity in the delivery of health services implicit in the entire range of technological and organizational changes proposed after the Cultural Revolution. To the first, the Chinese would argue that if the process of training personnel is geared towards a mode of technology which is linked with a specific income distributional range of choices that are unacceptable, then it is necessary to train towards alternative modes of technology that are less restrictive. This is particularly critical if the choice of the former mode implies substantial public sector expenditures without the realization of the social goals they are meant to fulfill. Whereas more rigorous and better quality training will allow a physician to make the adaptations to rural conditions with a smaller loss in quality, this training will instill a value system that breeds substantial resistances to making these compromises, or to settling in the rural areas (under present conditions). It is this contradiction, as much as the high cost of the more adequate training, which they attempted to resolve.

Likewise, the emphasis on medical students with peasant roots reflects an attempt to ensure that the perspective will be correctly focused.

To make health work strike root in rural areas, greatest attention must be paid to the training of rural medicine workers not detached from agricultural production...of desirable family background, ideologically sound, having certain cultural levels...not detached from production, live among masses, can easily perform mass work.

Hence, the best that can be hoped for the current stock of urban physicians is some resettlement and a more detailed focus on developing new cures for the rural areas. Future flows of medical graduates will be required to deal with rural medical problems at the actual curative level.

What remains to evaluate is the advisability of trading off quantity for quality in the training of modern doctors. Yet one must be careful to separate what are issues in the optimization of resource utilization from those which are tradeoffs in output objectives. The advisability of quality vs quantity in the delivery of health services is reflected in the earlier tradeoffs between the urban and rural sectors,

between the workers and peasantry. They are subject to both political and economic criteria. It is extremely difficult to scientifically judge whether a lower quality of such service will have a negative impact on either the Chinese economy, or the health status of the bulk of the Chinese population (given the status quo).<sup>1</sup> It becomes an income distributional issue subject to the mandates of political and ideological policy. Given a decision on this larger issue, we must then judge alternative organizational strategies in terms of their relative impact on policy objectives.

Even with a quantity oriented goal system, there remain important arguments against a dilution of the quality of medical graduates. The "individualistic" argument was aptly expressed at the Canton Forum of mobile medical team doctors returning from the rural areas. They argued that

without proper medical instruments and equipment, teaching and study cannot be carried out, [and] at most you will reach a level equivalent to part-time rural medical workers and you will not be counted as university graduates when you finish your studies.<sup>2</sup>

Moreover, to the extent quality dilution is a policy adopted throughout the nation's medical schools, it will have serious dynamic implications on the future quality of the Chinese medical system. In the same way that the success of past preventive policies led to their present insufficiency, the success of present curative policies may shift the future pattern of diseases toward those requiring sophisticated medical expertise. Hence, the Chinese should be concerned with the impact of present policies on their future options. Third, it may be

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<sup>1</sup>One can specify the following types of functional relationship which reflect the impact of the quality-quantity tradeoff in political and economic terms. First, let Health =  $f(\text{quality of health care, } x_1, x_2, x_3, \dots, x_n)$  where  $x_1, \dots, x_n$  are a range of possible environmental and physical factors. Let Cost =  $g(\text{quality of health care, } y_1, y_2, \dots, y_n)$ . Let individual productivity =  $h(\text{health, } z_1, z_2, \dots, z_n)$ . Let us hold all vectors  $x, y, z$  fixed. If  $h', f' > 0$  and  $h'', f'' < 0$ , and  $g' > 0, g'' > 0$ , then for a given cost, it might be important, in terms of productivity, to provide a greater quantity of low quality health than vice-versa. If there is a diminishing marginal utility to better health, this is reinforced from a political point of view. If however, different groups have different vectors of associated factors, particularly the level of capital equipment in  $h$ , the economic argument is weakened.

<sup>2</sup>"Public Health System in Yunnan Improves," in Federal Broadcast Information Service (6/25/69), pp. E1-E2.

argued that particularly in a quantity oriented system, with a broad base of semi-skilled paramedics and peasant at the first level of treatment, it is crucial to have high quality modern doctors at the apex, for treatment, education and management.

The import of each of these issues depends on the character of the rationalizing process in medical education. If it reflects no more than a trimming of the truly superfluous or marginal elements of this education, then these may not be substantive arguments. Furthermore, the Maoists have argued that "one must solve the problem as to what purpose one should raise one's skill" and that "M.D.'s should not remain in urban areas to 'add flowers to embroidery.'"<sup>1</sup> Finally, to the extent that the previous arguments on the negative ideological impact of a high quality education are correct, these may provide further support for the "quantity" arguments.

### Organizational Adaptations:

#### Resource Reallocation Between Urban and Rural Areas

There were two phases to the reallocation of urban medical personnel to the rural areas. The publication of Mao's famous directive to right<sup>2</sup> the urban-rural unbalance led initially to the formation of mobile medical teams, ideally composed of a representative cross-section of urban medical personnel. These would tour the rural areas for one to three months, and were expected to remedy the deficiencies in rural curative and preventative care, while righting their own ideological perspective, both as to class interest and medical focus. Base camps in the major villages of a country were set up for one of two weeks. A part of the team held clinics, and barefoot doctor and family medical worker training sessions, while the rest would travel to outlying towns for 2 to 3 day clinics. The doctors were also expected to assist the health departments in each commune in the operation and development of their cooperative medical service.<sup>3</sup>

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<sup>1</sup>"Senior Medical Personnel and Popular Physicians go to the Countryside," Union Research Service, vol. 38, no. 23, (3/19/65), p. 340-355.

<sup>2</sup>"Mao's Revolution in Public Health," Current Scene, vol. VI, no. 7 (5/1/68).

<sup>3</sup>"Public Health System in Yunnan Improves," in Federal Broadcast Information Service (6/25/69), pp. E1-E2.

At the same time, it was hoped that the M.D.s would receive ideological education from the peasants and party cadres. This would involve them in "serious class struggle," and effect a "revolutionization" in the ranks of medical and health personnel.<sup>1</sup> At any one time, it was expected that one third of urban medical personnel be in the rural areas. Both Western and Chinese doctors were presumably involved in these teams and training sessions involved the interchange of basic medical techniques of both types of medicine (see next part).<sup>2</sup>

For two years, one thus obtains reports on how this or that major city sent off a given number of their medical workers to the rural areas.<sup>3</sup> As a component of the aforementioned strategies of aiding the rural areas and reorienting the medical workers it was a theoretically intelligent policy. It undoubtedly required, for its implementation, a heavy dose of both ideological and coercive pressures, particularly due to the relatively elitist composition of most of the mobile teams (particularly after the early ideological enthusiasm wore off).<sup>4</sup> But the resistance proved particularly deep, extending to the vested urban party interests. Hence, by 1967 it was apparent that the rural mobilization of one third of urban medical workers was often unrealized in many areas of China. Lower level personnel were often promoted to "doctors," the least competent doctors were often assigned to the teams, and the length of rural stay was often shortened in order to prevent the deterioration or the urban

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<sup>1</sup>"Senior Medical Personnel and Popular Physicians go to the Countryside," Union Research Service, vol. 38, no. 23. (3/19/65), p. 340-355.

<sup>2</sup>John Z. Bowers, "Medicine in Mainland China-Red and Rural," Current Scene, vol. VIII, no. 12 (6/15/70).

<sup>3</sup>For example, in Shantung, a reported 1000 doctors, nurses, pharmacists and chemists left; in Hupeh, 50 medical workers; in Shanghai 150 doctors and nurses; in Szechuan, 3000 doctors. Overall, in 1965, 165,000 city doctors and other medical personnel were reported to have formed 10,000 mobile medical teams to the rural area. JPRS #37161 8/22/66, Communist China Digest No. 173, pg. 128.

<sup>4</sup>The resistance of the medical educational system to these assignments may be gleaned from the nature of the criticisms directed at them as late as 1970 by students at various medical colleges. See JPRS #52613 3/12/71 Trans. in Communist China, no. 138, p. 13

medical corps.<sup>1</sup>

Hence, by 1967 there was a shift in policy geared toward the gradual resettlement of one third of urban medical personnel. For the last several years, there are many reports of large numbers of them being forced<sup>1</sup> to permanently settle in rural areas.<sup>2</sup> Although such resettlement seems to be occurring, lack of statistics prevent any assertion on either the magnitude or extensiveness of this change. Its degree of permanency is obviously not determinate at the present time. The permanent settlement policy is undoubtedly aimed specifically at the new medical graduates, so that over time there is a gradual convergence to an optimal distribution. The major rationale for the emphasis on admitting medical cadres from the peasantry into medical schools is a reflection of the difficulties and resistences engendered in transferring urban-oriented personnel.<sup>3</sup> At the same time, there appears to be continued pressure to assure a flow of urban medical personnel to the rural areas. Dr. Joshua Horn's recent book provides a detailed picture of the tasks of some of these mobile medical teams.<sup>4</sup>

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<sup>1</sup>See the castigations of T'ao Chus, party secretary of Kwantung. (See URS vol. 49 #22, December 1967) Moreover, the effectiveness of the tours in terms of their various objectives, were often vitiated by their short duration. In one month, "we cannot even see clearly the places; we cannot accomplish the rural health work... Three months is better, but doesn't help us much in ideological reform."

<sup>2</sup>"Medical Personnel to Settle Down in the Countryside," in Union Research Service, vol. 54, No. 4 (1/14/69) Also, "Health for the Millions," China News Analysis, #738 (1/3/69).

<sup>3</sup>"Mao's Revolution in Public Health," Current Scene, vol. VI, no. 7, (5/1/68).

<sup>4</sup>He outlines the following six tasks;

- (1) "to provide preventive and therapeutic services in the area served"
- (2) "to train auxilliary medical personnel from among the local people"
- (3) "to make the Party's policy of planned parenthood become a reality in the Chinese countryside."
- (4) "to cooperate with and raise the level of the medical services which existed in the countryside before the mobile medical teams arrived on the scene."
- (5) "to cooperate with and assist in Patriotic Health Campaign"... (elimination of flu, bedbugs, rats, and mosquitos.
- (6) "to utilize the opportunity of a year in the countryside, in close contact with the peasants, to deepen their understanding of the labouring people, and to change their thinking in such a way that they fit better into the new society and become more effective in building socialism," See Dr. Joshua Horn, Away With All Pests (New York: Monthly Review Press, 1969, pp. 129-143.

The reallocation policy is important in that it is part of the process of redressing the severe inadequacy of rural health services. Negatively, it may effect the quality of urban health services at the level of advanced curative services in urban areas. However, its effect is obviously dependent on which urban health services are reduced, and the substitutions in para-medical staffing that are made within and between urban health institutions. In some cases, it led to training courses comparable to those in rural areas in order to replenish the stock of health workers. In Shanghai, industrial workers were given short courses in medicine in order to replace health workers transferred to the communes.<sup>1</sup>

#### The Reorganization of the Delivery System of Rural Curative Health Services

Perhaps the most important set of policy innovations that occurred after 1965 were those related to the expansion in the financial and physical accessibility of curative services in the rural areas. These policies constituted an attempt to rapidly expand the supply of medical manpower and facilities in the rural areas. For their success, they had to overcome several critical bottlenecks. First, there was a supply bottleneck in terms of the capacity of China's medical manpower training institutions to rapidly spew out trained medical auxiliaries. Fundamental compromises would be required in the content, character and environment of this training process. Second, ~~and~~ related to the former, this manpower had to be effectively integrated within the existing health system, in order to assure a more effective rationing of the skilled resources of that system. Third, additional resources were required to finance both the construction of these basic level health stations, and more important their recurrent operating costs. Hence the ability to mobilize these resources would be contingent on the effectiveness and cheapness of these new services. We shall examine these reforms with these

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<sup>1</sup>In 1969, there were reports of shortages of urban M.D.'s and personnel. This led to (1) a reduction in services and the level of care in hospitals, sanatoria, rest homes and special clinics: (2) an increased sharing of responsibility by medical personnel (i.e. nurses doing diagnoses and treatment, workers performing nursing functions, etc.). Editor, Public Health Developments-Continued Focus on the Farms," Current Scene, vol. XIII, no. 24 (12/15/69) p. 1-12.

bottlenecks in mind.

Prior to 1965, the provision of rural health services was fragmented among the commune health center, the hsien hospital, private clinics and traditional medical practitioners. The hsien hospital was the tip of the health pyramid. Its size could range between 30 and 300 beds and it usually contained the equipment and staff to handle more advanced medical problems.<sup>1</sup> Theoretically, it served two primary functions. Since it was usually located in the major population center of the Hsien, it provided outpatient services for this community. Second, and more important, it served as the final medical referral point for the entire hsien's population. Hence, one would expect that inpatient services should have been rationed to those individuals with illnesses requiring the sophisticated medical skills available only at this level. Yet this rationing could successfully occur only if there existed a set of grass-roots curative health institutions with sufficient capacity to absorb a large proportion of the basic demand for health services. This primary health care system was nonexistent until 1958.

Prior to 1958, access to curative services was not a function of the degree of medical need, but was more a function of financial status, and physical proximity to the hsien's hospital outpatient clinics. Hence the pool of patients that reached the outpatient clinic was not subject to this rationing process. This was compounded by the congestion at these clinics arising from the insufficient capacity to process the existing level of outpatient demand. The inaccessibility problem was not affected by the presence of traditional practitioners in that these also tended to be located in the major villages and their fee schedule was often prohibitively expensive to all but the most wealthy peasants.

At the time of the Great Leap Forward, the commune health systems emerged in a flurry of capital construction and communilization. Health centers and medical rooms were constructed at the commune and production brigade level, respectively. The former was the focal point of

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<sup>1</sup>These generally contained specialists in internal medicine, obstetrics, preventive health, pediatrics, traditional Chinese medicine, pharmacology and radiology (JPRS #28543 (1/29/65); (see also "The Development of Hospital Service in China," by Chang Tze-K'uan, Chinese Medical Journal, vol. 84 (June 1965), p. 413.



most curative services for the commune's population, while the latter was primarily a first-aid clinic. Health centers were usually staffed by a graduate of a regular medical course, one or two "middle doctors" (graduates from medical secondary schools)<sup>1</sup> and several untrained nurses (who effectively were apprentices to the former personnel).<sup>2</sup>

Often the commune established a cooperative medical system to finance the health center's activities, and it is this system which provided the model for the systems adopted after 1965. Access to this health system was available to nearly all commune members.<sup>3</sup> Each individual paid annual dues of 1 to 3 yuan, with a matching contribution of 10 fen from his production brigad's collective welfare fund. In addition, a token registration fee of 5 fen was often required for each visit. These fees covered all treatment and medicine in most instances.

Those in serious illness [would] stay in [the] hospital and 60% of the charge for medicine would be paid from the brigade account. For those who suffer from chronic ailments and frequently using medicine, 50% of the charge for medicine is to be paid by themselves."<sup>4</sup>

Thus, the system was potentially self financing at the commune level which could imply that the government was able to shift the fiscal burden of these costs downward.

By 1965, these commune health systems were still inadequate to deal with the basic problem of the unavailability of curative health services in the rural areas. Many communes had either not constructed primary health centers or had not provided sufficient financial support to sustain them. In 1961, Vice Minister of Health, Hus Yun-pei noted that

"The organization of public health in the villages is the general wish of all commune members. It is hoped that this system will be gradually introduced, and that each locality will take positive measures in this direction."<sup>5</sup>

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<sup>1</sup>These are comparable to the medical auxiliaries found in many LDC's. See N.R.E. Rendall, Auxiliaries in Health Care: programs in developing countries (Baltimore: Johns Hopkins Press, 1972).

<sup>2</sup>Sieh, op. cit. p. 12.

<sup>3</sup>The question of whether you allow the "four category" elements and/or their children into the system was often resolved for the latter "if they do not adhere to the reactionary stand."

<sup>4</sup>"Cooperative Medical Services in the Countryside," Union Research Service, vol. 54, #5 (January 17, 1969), pp. 61-74.

<sup>5</sup>China News Analysis #365, p. 3

Even in those communes with fully operative health centers, their outreach was primarily localized to the immediate commune village area. At the production brigade and team level, health services were often inaccessible. Long distances proved to be sufficient deterrents for many peasant farmers in the outlying areas of the commune. Lengthy queues, inadequate equipment and shortages of drugs were additional obstacles to effective diagnosis or treatment for those who did seek out these services. The lack of any formal screening process at the health center level further exacerbated the basic shortage of trained personnel.

Thus, the resulting output of medical services was not directed towards the most important medical problems. Trained personnel often found their time poorly spent in screening cases which could have been dealt with by less skilled personnel. The physical inaccessibility of the system implied that many ill peasants never even reached the health center. Hence, the same type of congestion and inefficiency in the allocation of skilled medical resources observed at the hsien hospital level was to be found at the commune level as well.

There were four primary aspects to the post 1965 new curative health policy: (1) a further decentralization of health institutions at the family, production team and production brigade levels; (2) the use of mobile medical teams to provide a linkage mechanism with these institutions and the health center; (3) a reorganization of the delivery process within the commune health center; (4) a rapid expansion in the capacity to train a corps of semi-skilled medical personnel (the so-called "barefoot or peasant" doctor) to staff these new facilities. Also involved were the aforementioned policies relating to the cultivation of traditional herbs, the increasing integration of traditional and Western practitioners and the merger of curative and preventive activities. These changes were introduced on an experimental basis in 1966, but by 1968 became a firmly established policy, As reported by Radio Yunnan in July of 1969, "The system should now be established in places which have not yet adopted it."<sup>1</sup>

The core of the reforms lay in the establishment of brigade health

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<sup>1</sup>Current Scene 12/15/69, op. cit., p. 2.

stations and "red medical (herbal) rooms at the production brigade and team level, respectively. The former now became the primary curative unit in the new rural curative medical system, with the latter assuming the role of a first aid dispensary. Each health station was to be staffed by at least two part-time peasant doctors and two midwives. Thus, for a large proportion of the commune's population, the commune's health center was transformed from a primary to a secondary referral institution. The brigade health stations were expected to be a readily available screening mechanism to filter out those cases which could be handled quickly and easily by semi-skilled medical personnel. Moreover, by locating at the grass roots level, peasant doctors would be in a position (both physically and socially) to actively identify those people in medical need who were reluctant to utilize the health service. Similarly they could serve as instruments for social control and education with respect to various preventive activities, family planning, nutrition and environmental sanitation.<sup>1</sup>

The rationale for this should be apparent. By adding an additional base of medical services, a preliminary screening and treatment mechanism was created. The bulk of curative problems would for the first time be diagnosed and treated. Simultaneously scarce medical resources were in a position to be rationed to those medical problems for which no lower cost or lesser skill substitute existed. One could not argue that the "quality" of health care was negatively affected by these "peasant doctors" in that for many peasants, they represented the first set of curative services that had ever been effectively available. For those for whom access had not previously been a problem, they were not legally bound to first consult the peasant doctor. Indeed, the peasant doctor's services were contingent on the general support of his production brigade.

The success of this strategy hinged on (1) whether the Chinese could, within a short period of time, rapidly create a corps of medical workers capable of meeting a large proportion of the rural population's curative needs and (2) whether these "peasant doctors" could gain the confidence of the population. They had to be able to distinguish those diseases which could and could not be treated at the brigade level. For the former their

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For example, "peasant doctors" received training in the insertion of intrauterine devices.

treatment had to be relatively effective. For the latter, they had to assure that the referral process would actually operate. Hence the training process had to communicate to the peasant doctor a basic core of skills necessary to satisfy both objectives. The confidence factor would yield a critical momentum which could either support or undermine the decentralized program's viability. Conversely, a narrow capacity to treat problems would not prevent congection at a higher referral level.

Hence success hinged on the competence of the peasant doctors and the adequacy of their pharmaceutical supplies. The creation of this corps of medical manpower was fundamentally intertwined with many of the earlier discussed policies of the Cultural Revolution. Some urban doctors from the mobile medical teams were expected to double as medical educators. They were to develop "on-the-job" training courses which could, within the span of three or four months, provide a basic core of relevant medical skills to a group of secondary school peasant youths chosen by individual production brigades. Thus, the process of training was initially distinct from ongoing medical training institutes, and was integrated as much as possible in the actual process of rural health delivery. The course regimen has been aptly described by Dr. Joshua Horn:

For the first two weeks they studied anatomy and physiology, dissected pigs, and attended lectures illustrated by models and lantern slides. After this introductory course they learned the elements of bacteriology and pathology in the mornings and clinical medicine and hygiene in the afternoons. They learnt to identify germs in contaminated water and to recognize the eggs of worm parasites in excreta. They learnt how to make drinking water safe, how to treat night-soil, how to sterilize needles and syringes and how to given injections. they learnt how infectious diseases are spread and how to diagnose them. They accompanied their teacher doctors on their rounds, learnt the use of the stethoscope, how to take a medical history, how to diagnose common diseases and how to detect the signs of serious illness. They examined patients who came to the clinic and discussed their findings with the doctor in charge. They concentrated on a few diseases commonly seen in the neighbourhood, and on the use and dosage of some forty drugs. They memorized fifty acupuncture points and the symptom complexes which they control and they practised the technique of acupuncture. Each student was issued with a well illustrated book specially written for peasant doctors.

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<sup>1</sup>Horn, *op. cit.*, p. 136.

Thus, the barefoot doctor's first period of training was intended to provide the minimum threshold of skills required to effectively perform curative responsibilities. In subsequent years, the barefoot doctor would be able to return to these training "clinics" in order to obtain a more thorough theoretical underpinning for his curative skills. For example, Horn notes that

"...last year, they studies anatomy and physiology as a whole in a short, concentrated, superficial course. This year, they are re-studying it in relation to diseases of particular organs... last year they studied only commonly seen diseases, but this year they systematically study all the diseases of particular organs."<sup>1</sup>

It should be noted that the content and duration of these courses exhibited considerable variability throughout China, particularly in the early periods after the Cultural Revolution.<sup>2</sup> Some reports indicate that "peasant doctors" are trained at medical secondary schools, or at separate joint-farming study departments within the medical colleges.<sup>3</sup> They are aided by the publication of medical handbooks on the uses of herbs and on the symptoms and treatment for a range of common diseases.

The cost of this training process was minimized by scheduling the training period during the slack season in agriculture, thereby not impinging on the size of the brigade's agricultural work force. The cost of teaching personnel was lowered by combining the teaching and curative responsibilities of the mobile medical teams as much as possible. Clinical teaching occurred at the commune health centre. The trainees and commune community provided the labour to construct primitive dormitory facilities.

The risks involved in sole reliance on this corps of quickly trained personnel were lowered through the elaboration of a linkage mechanism

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<sup>1</sup>Horn, op. cit., p. 139.

<sup>2</sup>For other descriptions of the "barefoot doctor," see E. G. Dimond, "Inside Look at Chinese Medicine"; Bowers, op. cit.; JPRS #51274 11/5/70 Translations #122; China News Analysis #738.

<sup>3</sup>JPRS #51280 8/31/70 Transl. #114, pp. 14-16; JPRS #35144 Communist China Digest 4/22/66, pp. 74-76.

between the "peasant doctor" in the field and the professional trained medical personnel at the commune health center and the urban mobile medical teams. Thus, brigade health stations were linked by telephone to the commune health center, thus ensuring both a viable backup system for critical cases and for the provision of guidance to the "peasant" doctors. Mobile medical teams regularly visit each production brigade thus providing an additional source of medical education to the "peasant doctor".

Finally, this type of organizational structure strikes at the goal of integrating agricultural production and health. At the brigade level, the peasant doctors divide their time between agriculture and medicine. Often the peasant doctor is fully employed in agriculture and performs his medical duties during his free time. It is for this reason that the "political" criteria which underlie the choice, by the brigade, of those who are trained for barefoot doctors, reflects their degree of social dedication and communal spirit. If the peasant doctor finds that he requires more time for his medical duties, brigades may then allocate some work points for this service. What is important is that these are indeed peasant doctors, who are engaged at least part time in agricultural activities. Their training periods are spaced over several years and occur during the slack agricultural periods. Hence, the cost of these medical personnel is not excessive to the brigade. Where work points are allocated, it reflects a communal decision which can be changed if it is felt that the peasant doctor's services are not sufficient or unqualified. At the production team level, family health workers are full-time agricultural workers. Hence, these reforms represent a net addition of health services at the commune level, with the financial burden clearly thrust upon the brigade collectively, rather than on the commune, hsien, or state.<sup>1</sup>

The brigade health-rooms were constructed out of brigade funds, although frequently abandoned buildings were repaired to serve this function. The continued emphasis on traditional herbs likewise implies that only a minimal amount of health supplier need be purchased externally to the brigade.<sup>2</sup>

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<sup>1</sup>Current Scene, 12/15/69, op. cit.

<sup>2</sup>"Medical Health Units Serve Rural Areas" in Hsinhua in Federal Broadcast Information Service (6/26/69), p. D1.

Making full use of medicinal herbs to cure the poor and lower middle peasants illnesses cannot only solve the problem of drug supply but can also save a lot of money for the cooperative medical system.

Similarly, emphasis is placed upon treating diseases at the point of minimum costs, given the differential costs of treatment at the health center, brigade room or hospital. One would expect that this cost saving is reflected in a quality differential as well.<sup>1</sup> This is also a means of transferring the fiscal burden for treating minor ailments to the brigade level, thus expanding the level of resources the total community expends on health.

At the commune hospital, an "anti-regularization" campaign has been waged to prevent them from becoming mirror images of the county and urban hospitals. Again this reflects the need for a more efficient allocation of staff resources, and a greater responsiveness to the needs of the peasantry, in terms of their time and financial ability.<sup>2</sup> It manifests itself in a reduction in specialization, a simplification of bureaucratic procedures, economies in laboratory work, and more mobile medical activities.<sup>3</sup> Whether these organizational changes have occurred, or whether they appear to be mere rationalizations of current operating procedure, is not apparent. The pressure towards rationalization may also be motivated by the abuses observed in the earlier system, such as multiple visits to both Chinese and Western doctors, the overuse of drugs, etc.<sup>4</sup>

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<sup>1</sup>This frugality extends to the diagnostic level as well. What are the losses involved in making diagnoses based on a small number of tests, relative to their cost in equipment, chemicals and personnel? Again, this is a quality-quantity tradeoff which needs to be made, given the budgetary constraint. "To undergo the tough test of fundamental skill in diagnosis is of primary importance. Having accomplished such skill one can examine a case clearly and prescribe specific medicine and thus reduce unnecessary instrument diagnosis and medical expenses," "Strengthen Medical and Health Work in the Rural Areas," Union Research Service, vol. 40 #19 (September 3, 1965), pp. 273-286.

<sup>2</sup>Joint Publications Research Service (12/27/65) p. 5-9.

<sup>3</sup>Hence, in the Chin Yuan Hsien Hospital, the five windows for registration, medical history, cost estimation, payments, and drawing of medicine were merged into two; likewise the treatment departments of internal medicine, surgery, pediatrics and gynecology and the "five organs" were merged into internal medicine, surgery and gynecology/obstetrics. Union Research Service, vol. 40 #19, op. cit.

<sup>4</sup>"The Abuse of Free Medical Service," in Union Research Service, vol. 38, No. 14 (2/16/67), p. 208-225.

Perspectives on Curative Health Reforms in Rural China

There is considerable theoretical attraction to the basic thrust of the changes made in the rural curative health system. Given the apparent resource bottlenecks to providing these services within the existing technological framework, one observes a search for ways of expanding the substitutability between factors of production in providing a given health output. The bottlenecks thus become technologically less binding. For example, the creation of new categories of health manpower is effectively an attempt to reduce the amount of overkill that exists between the quality of medical ability that is applied and required for a particular medical problem. Hence, there is a rationing of access to the higher cost, more qualified personnel on the basis of relative need. Problems that are of lower degree of urgency are caught at an earlier level by personnel with a level of competence sufficient to treat them. Hence, congestion in the system at the health center level is lessened, and the capacity of the overall system is enlarged. The cost is the possible "misdiagnosed case" which is not properly channeled to the higher level, and the increased "time" cost to the seriously ill patient who must be reexamined several times.

Likewise innovations or adaptations in the equipment and drugs which are required may prevent these from serving as effective bottlenecks to the use of lesser skilled personnel. Again, the question becomes one of expanding the capacity of the health system reducing queueing and congestion, and economizing on the skilled resources, at the cost of a loss in quality of health care.

The second attractive adaptation is that there is an economizing on the use of the state's budgetary resources. These are allocated to those health programs - curative, preventive and research - for which there is limited effective substitutability of private for public action. Hence, the state must either be actively involved or assure that the private sector (the communes) can adequately meet the level of demand. This involves: (1) provision of inputs to the lower levels (production of Western medicines, training of certain types of health personnel), (2) the fostering of research into new medical technologies, (3) implementation of mass preventive campaigns for which interregional



coordination is necessary and (4) provision of more advanced curative services. By shifting the burden of basic health provision and finance to the private sector, scarce budgetary resources are allocated to those health areas with maximum social externalities.

What remains unclear is whether these substitutions are occurring technologically feasible, effective and socially accepted. For example, in those rural areas where physical or financial obstacles prevented access to the communal health center for anything but major illnesses, the availability of the "barefoot doctor" was probably a positive change. If he proves ineffective, there has been minimal loss relative to the status quo. But in areas where the health center outpatient department is accessible, will one find that the "barefoot doctor" is ignored and ineffective? The reports that are emerging seem to indicate that this is not a problem.<sup>1</sup> Have the Chinese developed a pricing mechanism to ration access to the health center personnel? What effect does a lack of confidence in the "barefoot doctor" have on the peasants' predisposition towards other preventative health-related actions proposed by the political cadres and government?

What is the proper strategy in developing a cadre of minimally skilled medical corpsman that will be accepted by the rural masses? The Chinese opted for a rapid buildup with a skill upgrading to occur over time through on-the-job clinical experience and two-three month classes annually. The cost is that the core of "barefoot doctors" may often be insufficiently trained initially and this breeds a resistance by the masses which may be difficult to overcome at a later stage. The alternative strategy of a slow development of cadre with a specified standard of competence trades off the provision of health in the present for a higher probability of popular acceptance.

What is the nature of the interaction between the medical cadres and the medically skilled personnel at the health center level? How are their activities functionally delineated? Are the "barefoot doctors" competent enough to know the limitations of their training and the points at which referral is critical? Is there adequate potential at the apex of the system to receive the referral flow? The lower the skill level at the base, the less impact the decentralization will have on reducing

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<sup>1</sup>Horn, op. cit., pp. 129-143.

apex congestion. Further, the extensive reliance on traditional medicine, primarily for budgetary reasons, means that there are limits to the range of disease problems that the barefoot doctors can treat. Certain preventive and curative actions by necessity require Western drugs (i.e. vaccines etc) or Western medical skills. Are these non-substitutable inputs being supplied through the mechanism of mobile medical teams?

For the Western scholar, these are unanswered questions which are at the heart of any final evaluation of the desirability of transferring the Chinese adaptations to other LDCs. In the final section, we shall briefly speculate on what elements of the Chinese strategy are likely to be transferrable.

#### Section 5: The Chinese Gift to LDC Health Planners: An Existence Theorem

Beyond curiosity, a major motivation for this study is to determine whether the Chinese have developed a viable, alternative health strategy which is of immediate relevance to other less developed countries. What fresh insights into the problems of health delivery and disease preventions may be gleaned from the Chinese experiment? Though we do believe that the Chinese have utilized a basically different strategy (its uniqueness being left unsettled), its transferability is far less clear.

There are three primary characteristics of the Chinese strategy. First, there is an extensive and successful reliance on a variety of non-remunerative instruments for inducing social and individual behavioral actions in support of national health policies. These not only increment the level of social resources allocated to health but provide an extremely efficient means of striking at some of the fundamental roots of their disease problems. These instruments appear to be a fundamental aspect of the overall process of development in China, and thus whether they can be applied piecemeal for health alone remains unclear.

Complimentary to this, is the degree of priority attached to "red" over "expert" and the willingness to coercively maintain this dominance. This is by no means irrelevant to the probability that the Chinese will be able to fundamentally reorient the technicians to the "for whom" of the health problem. In most LDCs, the insufficiency of resources for an adequate program, under the existing technology of health delivery, is obvious. Yet the ability of the system to compromise on this technology

is thwarted by the dominance of the technology's practitioners. This is not to argue that the Chinese alternative is wholly successful, but the probability is much higher that it will evolve towards a more effective solution.

Second, one is struck by the problems that have arisen in the Chinese case from an unbalanced strategy with respect to preventive and curative health. The insufficiency of the latter in the rural sector weakened the impact of the fundamentally innovative reforms on the preventive health level. We have argued that the Cultural Revolution in health reflected an attempt to remedy this imbalance, to provide the complement of curative services. The implication is that in the absence of an ability to make adaptations on the curative level, other LDCs will find there are limits to the impact of preventive health measures on the health status of the population.

Third, the Chinese were blessed with a medical legacy with a demonstrated level of effectiveness and a substantial stock of practitioners to deliver it. Although there are limits to its applicability, the Chinese had a large stock of "medical" manpower in which the masses had a high degree of confidence. The "modern medicine demonstration" effect had not yet permeated the value system of the mass of the peasantry so as to render these practitioners suspect and untrustworthy. Moreover, the pharmaceutical base of the traditional technology was relatively inexpensive and did not constrain the operation of the system. This is not a wholly unique legacy in that most LDCs are "blessed" with comparable groups of practitioners. Are their technologies viable and can they be incorporated as instruments of an integrated health delivery system? Presumably, the technology can be exported so that the former is not a binding constraint. The acceptability of the latter, by the masses and Western health system, is less clear.

The curative adaptations are no less transferrable. Indeed, the theoretical role of the "medical auxiliary" in East Africa is remarkably similar to that of the "barefoot doctor." Handbooks on the diagnosis and treatment of the common diseases are equally available. What constrains the Western system is often the mode of financing of the health service and of the training costs of the medical auxiliary. These financially constrain both the capacity of the system to expand its stock of paramedicals and its ability to support their recurrent cost

requirements. By pushing for a cooperative medical system which is self-financing, which draws on part-time agricultural effort, the latter has been mitigated in China. By emphasizing a gradual upgrading of quality and extensive on-the-job training, the former has been relaxed.

A final reflection that emerges from this study is that the capacity to introduce severe "shocks" into the operational system is critically important. It can prevent its ossification and insure that it remains responsive to the needs upon which its existence is predicated. In health, the post-1965 reforms were attempts at effecting such a jolt into a health system which was inappropriate for the needs of the mass of the population. This type of periodic jolt has substantial short-run costs and is susceptible to substantial resistances. However, it may be what is necessary to prevent the system from deviating from the optimal path (or, less optimistically, the optimal direction). ( Whether this indeed is a prerequisite to a structural reform of health policies in an LDC is perhaps to be overly pessimistic. Certainly there are many micro adaptations that can be transferred. However, to exert major structural changes in such key areas as budgetary and skilled manpower allocation may indeed require such "jolts" to the system. )

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