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Abstract: The writer examines how changes in the political economy of rural China influence, and are influenced by, the social and environmental aspects of production. He argues that transformations in the political economy, primarily decollectivization and privatization, have resulted in an increase in the rate of environmental degradation in many rural communities. Based on data from Heilongjiang province, he contends that the potentially negative results of rapid agrarian change have resulted in crises ranging from overproduction and declining/unstable returns on investment in agriculture to stagnation and decline in productivity. He points out that declining availability of social welfare, mining of communal capital, decreasing capital investment for long-term production, and acceleration of environmental degradation that lowers the productivity of the resource base have combined to cause a decline in the long-term sustainability of development in many areas of rural China.

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Impact of Reform on Environmental Sustainability in Rural China

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In this article I discuss the political ecology of agrarian change through the era of reforms in contemporary China.(FN1) I argue that it is the close intertwining of changes in the political economy and changes in patterns of resource use which can best explain the observed increase in the rates of environmental degradation, as well as the undermining of the sustainability of rural development. I do this using a series of examples drawn primarily from case study material gathered through intensive field research in Heilongjiang Province, northeast China, since 1982. (FN2) Although this discussion is based upon the connections between changes in the broader political economy and changes in locally specific practices, it provides an example of the environmental impacts of agrarian transformation taking place throughout China. Specifically I aim to improve our understanding of the contradictions inherent in rural transformation and the environmental implications of decollectivization campaigns, when accompanied by market reforms and increased privatization. In contrast to many contemporary analysts, I do not think the current "crisis" is a transitional one, but rather one that is based on fundamental structural problems of the reform program.(FN3)

Since the dawning of the post-Mao "pragmatic" period in 1978, discussion has largely centered on the positive potential of China's political-economic reforms. This potential was seen to stem primarily from the dismantling of the commune system in rural areas and the central government's move towards a market-oriented economy. Collective organization of production was perceived by many observers and policy makers as being stagnant and economically restrictive. The return to a household-level and individually-based system of production organization was seen as the best hope to counter these weaknesses. The reforms set in motion major shifts in China's development strategy.

This article focuses on how changes in the political economy of rural China influence, and are influenced by, the social and environmental aspects-of production. It is argued that transformations in the political economy, primarily decollectivization and privatization, have led to an increase in the rate of environmental degradation in many rural communities. In addition, gains in overall production and productivity growth during the 1980s were achieved first, through the mining of communal capital that had been built up over the preceding three decades;(FN4) second, through the rapid (and unsustainable) increase in fertilizer use; and third, through rapid increases in grain prices paid to peasant producers.

The reforms have come under intense scrutiny by a disparate array of interested parties. Volumes of material have already been produced chronicling the reforms. This article analyzes the economic and environmental contradictions of the rapid transformation of rural China from a communal to a household-based society, with a concomitant shift from planned to an increasingly market-oriented economy. Some writers have heralded the reforms as the proper pathway for China to follow, given the failures of the communal period, and the obvious triumphs of market reforms throughout the world.(FN5) Other more balanced accounts have portrayed the reforms as a necessary and positive step in the right direction, even if there are some difficult problems in the transition to a market economy.(FN6) Still another group proposes that there are more fundamental problems with the reforms, or at least certain aspects of them. These problems may

undermine the supposed success of the reforms in solving the weaknesses of the communal period.(FN7)

The environmental implications of this development route have received less attention. I argue that in this regard the reforms do not fare quite as favorably by any standards. Whether the environmental impacts of these reforms are a transitional characteristic or a reflection of deeper structural flaws in the development path chosen is one of the major questions this article addresses. I attempt to show that these reform policies contain within them a series of fundamental contradictions when viewed in terms of the long-term sustainability of production in rural China. This is particularly true if our view of sustainability is expanded to encompass the social and economic aspects of environmental degradation, hence my use of the term political ecology.(FN8)

I use the concept of sustainability in this article in broad terms, encompassing the relationship between people and their environment, thereby including the natural resource base, the political economy, and the socio-cultural settings in which resource-use practices evolve. (FN9) I try to avoid a reformist notion of sustainable development where the goal is still maximization of production over a longer period of time. Instead, it is replaced with a more dynamic concept that focuses on the transformation of existing and inadequate institutional structures. The goal is a system of production and consumption that is non-degrading of natural resources, achievable through a more equitable distribution of assets and power, and the maintenance of a redefined life quality oriented for the greatest number of people. This goes beyond simple maximization of production to encompass other less tangible aspects such as community. In this context, the reforms may be situated in relation to an important body of theoretical work: political ecology.

The rapid transition from collective to household form of production organization, in contemporary rural China, provides a unique opportunity for investigating decollectivization within a political ecology framework. In particular, a comparison of collective and household forms offers the chance for identifying how production organization affects issues surrounding land use practices--for example, shifts in decision making strategies resulting from changing perceptions of risk, social security, and stability.

The use of political ecology, focusing on long-term environmental effects, forces a reevaluation of the impacts of short-term coping strategies under shifting regimes of accumulation--from plan to market, collective to individual, long-term to short-term. Put another way, it is an historically-informed attempt to understand the role of the state,(FN10) the social relations within which land users are entwined, and resulting environmental changes.(FN11)

An explicit examination of the environmental effects of changes in the organization of production is an under-theorized area of political ecology. Where studied, the emphasis has lain on interactions between peasant/indigenous and capitalist forms of production organization. Within the more overtly political economy-driven arena of political ecology, much work has been completed looking at the transformative effects of the penetration of capital into different aspects of the production process, the commodification of production and reproduction, and subsequent changes in land use towards more degrading practices.(FN12) I extend this work in the Chinese

context with a special emphasis on organizational form.(FN13)

POLITICAL ECOLOGICAL CONTEXT OF AGRARIAN CHANGE

China experimented with collective organization of production for about thirty years. The process of decollectivization that began in 1978 stands out as a major watershed in contemporary Chinese history. For two years following Mao's death in 1976 exponents of contradictory economic policies fought for control. Deng Xiaoping and the so-called pragmatists had gained the upper hand by December of 1978, and began to forge a new pathway of development in rural China.(FN14) This pathway represented a 180-degree turn from Mao's focus upon self-reliance and collective egalitarian ideals. In particular, it consisted of a move from a development strategy focused upon collective organization and centralized control, to one relying primarily upon individuals and the Chinese traditional household as the unit of surplus extraction for the state.

I argue that the results of decollectivization and the unleashing of market forces by the central planners in China are complex and indeterminate, encompassing within them an entire array of forces and tendencies which are extremely difficult to simplify. The impacts are regionally and locally specific. Still, there have been some major shifts through the reform period, and an accompanying evolution of effects and counter-effects. These shifts, as presented in Figure 1, provide a framework to address the questions below.

The central question is: what has been the impact of the rural reforms on long-term sustainability of production? This question can perhaps best be addressed by examining each of its constituent parts separately. First, what has been the role of expanded market forces in undermining sustainability? Second, how has decollectivization (as the primary change in the organization of production) impacted on sustainability? And third, how have subsequent changes in decision-making strategies led to the mining of communal capital?

SHIFTS OF THE REFORMS

These questions can be made conceptually concrete by examining three arenas of change-- first, in the predominant mode of economic coordination; second, in the base unit of production; and third, in the accompanying decision-making strategies and goals. The first and most significant shift has been from a predominantly planned economy to one where market forces have become decisive. The "market" has become a dominant force in the development of production strategies. In addition, it has taken over a large portion of the previously planned distribution of resources and commodities. Although the plan still exists, it now must reside within a framework that is increasingly competitive, individually as well as institutionally.(FN15)

Simultaneously, there has been a second shift, from the collective economy to the household and individual economy. This second shift is significant because of the immense and historically important transfer of control over resources and means of production, both agricultural and industrial, from the collective to the household and individual. This transfer corresponds to a shift in control taking place at the highest levels of government.

Finally, there has been a shift in decision-making strategies and goals. The concern for long-term egalitarian collective gains, has been supplanted by a context favoring short-term competitive individual gains. This is not only the case in the rural sector, but increasingly in the

urban areas as well.(FN16) To some extent, this shift from long-term to short-term outlook has resulted from the transfer of risk in production from collective entities, such as the team, back onto households and individuals.(FN17) This third shift is a complement to the first two, reflecting increased insecurity (risk) and instability throughout the economy, as well as the necessity of immediate and ongoing material returns to provide strong political legitimation for the state and a solid base for further reforms. The three shifts have given rise to the short-term mining of communal capital.

This line of argument assumes that long-term strategies predominated in certain parts of China's planned economy and collectives, something which is difficult to prove empirically, but which at this point I will posit hypothetically.(FN18) I do this because I believe the shift from long- to short-term strategies has been so striking that it provides ample evidence of the earlier predominance of longer-term decision making. Granted, there were numerous examples of environmentally unsound decisions made prior to the reform period,(FN19) however I argue that the reforms have introduced a new element of unsustainability.(FN20)

There are three other aspects of the third shift worth mentioning here: first, the move from socially and politically-based incentives within collective production to market incentives based on competition and risk; and second, a move away from "self-reliance" towards global interdependence, encompassing a more positive view of foreign capital. This has necessitated China's involvement in the global economy and expanded its role in global restructuring processes. Third, at the local and provincial level these changes are manifested as a shift from negotiation between planners and producers to administration of markets and contractual relationships.

HEILONGJIANG PROVINCE: SOME EXPERIENCES

Heilongjiang province (see map, Figure 2), with a total area of 454,000 square kilometers, and a population of more than 35 million,(FN21) is a critical grain base for China, as well as a major industrial center and source of raw materials such as oil and lumber. Through the state farm sector, a massive campaign was waged prior to the reform period to develop large-scale mechanized production of major cereal crops and soybeans, as well as cash crops such as sugar beet, sunflowers and flax.(FN22) For each of these crops, Heilongjiang farms led the country in production.(FN23) About one twelfth of the total cropland and one sixth of the total commercial grain production of China are concentrated in this frontier province.(FN24) In addition, vast areas of Heilongjiang are devoted to grazing of cattle, sheep and horses, as well as more exotic species such as deer. There are also 280 square kilometers of fisheries in the province. Along the Heilongjiang river on the northern provincial border, there are sturgeon-processing factories producing caviar for the world market.

Heilongjiang has been transformed from a wilderness frontier with limited production, to "the great northern granary" in less than a hundred years. Degradation problems are therefore related to the last one hundred years of land use changes, as well as those occurring after 1978. With particularly harsh and long winters, the region is limited to single-season crop production, preventing the intensification of production through multiple cropping, which has occurred in other parts of China. However, in many respects, Heilongjiang still serves as an important indicator of

the wider changes taking place in rural China, particularly in more remote areas and border regions. A striking example of the change taking place in post-reform Heilongjiang was the rapid expansion in herd size. For example, milk cows in 1988 increased 26.3 percent over the previous year.(FN25) Animal numbers are at their highest in recorded history in the province, a reflection of national development policy goals for the region, which include rapid expansion of the animal husbandry industry.(FN26)

ECONOMIC AND ENVIRONMENTAL CONTRADICTIONS OF THE REFORMS

There are severe structural problems in the Dengist development pathway. These are manifested in rural areas of Heilongjiang province in numerous ways. The economic and environmental contradictions that I refer to are exemplified by the following problems: 1) stagnant output of grain; 2) intensification of land use; 3) changes in capital investment and in the locus of control and risk; 4) subsidies and the state revenue crisis; and 5) inflation. These problems are important components of the subsequent delegitimization of the state.

Although some of these difficulties may be transitory, the vast majority are fundamental in nature and give rise to long-term problems in production and social reproduction. They call into question the long-term viability of the economic model. In addition, the reforms simultaneously dismantle the existing social welfare system and erect barriers to future broad-based social gains.

The dilemmas of the Dengist model arise out of a flawed set of ideological assumptions concerning incentives, risk, competition, allocation of resources, and efficiency. At its ideological core the reform agenda embodies a reliance on the invisible hand of the market and trickle down redistribution to resolve perceived economic and social development problems of the previous command economy. The shift to individual decision makers as the rational driving force guiding the transformation of the rural economy represents a profound change in the organization of production.

What has just been presented is the ideological rationalization of this development model. The reality of the political economy is much more complex. There are struggles amongst those trying to create policy, those charged with its implementation, and those taking advantage of newly emerging contexts for surplus extraction and accumulation. At the local level, the implementation of policy is a negotiated process with a vast array of potential outcomes. I will now return to a detailed discussion of the issues mentioned above.

STAGNANT OUTPUT OF GRAIN, 1985-89

Causes of the stagnation in grain production in China in the 1980s are many and complex. One crucial aspect is decreasing profitability as input prices rose faster than prices farmers received for their crops. Much of the gain during the boom period (1978-1984) can be attributed to technical factors of production such as fertilizer.(FN27) Therefore, problems associated with these factors loom large. Not only has the increase of input prices been rapid, but problems have arisen as input quality and availability have become increasingly erratic. When the state monopoly on agricultural inputs was lifted in the mid-1980s, the potential to claim huge profits in the black market undermined much of the expected benefits of freer input flows. Farmers were rarely able to purchase sufficient quantities of fertilizer, with only 70-80 percent of demand being

fulfilled.(FN28) Prices were so high, in part due to the long chain of middlemen, that the already minimal profitability of grain production simply vanished. At the same time, middlemen extracted a growing percentage of the benefits supposed to flow to farmers from increased production and prices.

From 1984 until 1989 total grain production fluctuated below the 1984 peak, while unit yields stagnated (see Figures 3a and 3b). Total grain production area, nationally, has fallen continuously, as shown in Figure 4. A fall in grain area is not necessarily bad. For example, in Inner Mongolia this trend represents returning inappropriately cultivated lands to their original status as pasture lands. But declining grain area demonstrates the intensification of grain production on lands still devoted to grain. Higher yields were achieved through increased use of chemical fertilizers (see Figure 3c) and other changes in agricultural practices, bringing short-term productivity gains which could not be sustained.

After 1989, a rapid increase in fertilizer use helps explain the increase in grain output. Along with the decline in grain cropping area discussed above, there has been an expansion in cultivated land devoted to cash crops, such as oil seeds and tobacco, a trend at both regional and national levels.(FN29) This shift to high-value cash crops partially explains the recent increase in gross output value of farming in 1990 (see Figure 5).

INTENSIFICATION OF LAND USE

Changes in agricultural production practices are due to a series of interrelated choices imposed on peasant households by the necessity to intensify production under a situation of increasing risk. Intensification of land use in Zhaozhou and Bayan counties in the early 1980s led to a rapid decline in overall fertility. Rates of organic matter decline intensified through the early years of the reform period, signifying a departure from agronomic practices focused on long-term sustainability. For example, only one year into the implementation of the reforms, all green manure cropping ended in Zhaozhou county. Likewise, manure delivery to fields for composting and spreading declined rapidly in Bayan county and was only reinstated through an enforced system of compost quotas in the late 1980s. Furthermore, crop rotation was abandoned throughout Heilongjiang in favor of repeated planting of the same crop--the choice of crop depending upon whichever was most profitable in the short term. Thus corn was planted repeatedly, giving no rest to the soil. The obvious impact on fertility was partially countered by the rapid increase in chemical fertilizer use mentioned above. This increase, indicative of a growing dependence upon a complex of unsustainable practices, has led to another series of problems (salinization, ground water pollution, and micro-nutrient deficiencies, for example) which are difficult to resolve.(FN30)

In village case studies in Henan Province, yields have stagnated and declined because of soil degradation due to overuse of chemical fertilizers. Peasant farmers complain about the "soil burning" results of long-term fertilizer overuse and misuse. The soils became harder, less friable, and the available nutrients diminished despite large additions of chemical fertilizer because of the loss of soil structure and decline in overall quality. Widely-used hybrid corn varieties' ability to achieve consistent yield increases is dependent upon optimal field conditions. The combination of growing pest resistance to pesticides, changes in rotation practices (no fallow or green manure),

repetitive cropping of a single crop (which intensifies disease and pest problems), declining availability of water because of crumbling irrigation infrastructure and lack of investment--all have contributed to an intensified but increasingly unstable agricultural production system.(FN31)

Intensification of grazing lands, as I documented in Zhaozhou County of Heilongjiang Province in 1983-85, resulted from decollectivization and subsequent decontrol over livestock numbers and grazing area rights. Peasant herders rapidly increased herd size after the reforms began, as a means of improving their security (see Figure 6b). But the deregulation of grasslands, though officially contracted to households, meant their rapid decline was difficult to monitor, let alone reverse. The process of accelerating sodic alkalization and desertification in Heilongjiang Province (see Figure 6a) is closely tied to the rapid increase in the use of marginal lands coming with the decline in collective control over these areas.(FN32) While marginal land use did increase in earlier periods, particularly during The Great Leap Forward, the rate of natural resource exploitation has accelerated in recent years--the overall process being intensification.

The movement into marginal lands and the shift of land use from forests, marshes, and grasslands to cultivated agricultural land (extensification) provided another means of increasing overall production. These types of shifts often bring very short-term positive results, but also result in serious damage to areas unsuitable for agriculture. The most common example of marginal land invasion in Zhaozhou County was the transformation of tall prairie grass lands into field crop or intensively-grazed pasture areas. Whether the choice was made to rapidly increase grazing, or plow under the grasslands, the result was the same--massive problems in production within a short time. This situation was compounded by market incentives for rapid increases in animal numbers with little attention being paid to the quality of meat.(FN33) As mentioned above, livestock populations rose rapidly through the decollectivization period, pushing out into what was left of the virgin grassland. Herders moved their expanding flocks further and further away from the home village as the areas near villages were either already completely degraded or were transferred to crop production. This has resulted in the rapid expansion in the area of barren sodic alkali land, approaching a quarter of the total area in the county by 1988.(FN34)

Another aspect of changes in production practices has accompanied the shift in scale from large unified plots to a mosaic of small holdings reminiscent of the prerevolutionary period in China. Machinery, like large tractors and harvesters, were abandoned after the implementation of the reforms since it was no longer possible to utilize them efficiently on this myriad of small individual plots.(FN35) This brought a return to labor-intensive methods in agriculture, and was a direct consequence of the downgrading of the Maoist ideal of mechanization.(FN36) The burden of increased labor demands has been borne primarily by women and children. In turn, there has been a realignment of power relations within the household reinforcing patriarchal domination in decision-making.(FN37)

The changes in production practices just mentioned are indicative of thift from long-term to short-term goals in decision making on the part of rural producers. Many of these changes in practices can be attributed to the transfer of risk from the collective (team/brigade) level to the household/individual level as discussed earlier. Peasants repeatedly describe in interviews how a riskier production environment forces them to utilize practices they know undermine long-term

sustainability.(FN38)

The intensification and transformation of arable land through a complex combination of population increase, rapid and unregulated rural industrialization, expanded home building, and economic incentives, is an immensely difficult problem. Intensification of land use is partially a result of increasing population pressure, but this tends to be a long-term trend. On the other hand, the shift to intensified production practices I am describing in Heilongjiang and Henan provinces came on the heels of organizational reforms in agricultural production, namely decollectivization. Deregulation and decentralization of agriculture and the increasing control at local and household levels led to production decision making partially in response to perceived economic changes, and partially to changing social relations. Short-term goals were increasingly emphasized through a riskier production environment combined with decline in social welfare expenditure.

CHANGES IN CAPITAL INVESTMENT AND CONTROL PATTERNS IN RURAL AREAS

It is widely recognized by analysts from a neoclassical (Lin 1993) to a Maoist perspective (Hinton 1990) that the state's investment in agriculture and infrastructure has fallen significantly since the implementation of the reforms with resulting negative impacts on production. What is less agreed upon are the fundamental causes of this situation and the best solutions.

By 1984, the collective had ceased to exist as a form which could organize and allocate large amounts of capital and labor. This was a direct result of the decline in control over investment by the collective and the state, with the locus of control and risk shifting to the household level. There are two major interconnected aspects of this situation. The first is the decline in capital and labor investment in large-scale infrastructure. The second is the redirection of that capital and labor into short-term projects and investments.

LARGE-SCALE INFRASTRUCTURE DECLINE

Lacking the previous labor pools, collective funds, and collective tractor assets, villagers have been hard put to organize the necessary labor and capital investment for agricultural infrastructure. Reservoirs, dikes, irrigation canals, tube wells, erosion control, tree planting--all of these components critical to sustaining and increasing production are receiving little additional investment for maintenance, let alone improvement or expansion, and are therefore in a state of serious disrepair.(FN39) Although collectively owned equipment and facilities were often distributed along with land,(FN40) as part of the reforms, water control infrastructure remained under collective management. However, with decollectivization and privatization, collective structures have experienced a massive decline in capital available for investment while simultaneously being stripped of authority and assets.(FN41) Rapid acceleration of local-level "natural disasters" in the last few years is largely due to the delayed effects of this decrease in capital investment and its environmental and therefore production consequences.(FN42) Combined with the intensified use of forests and grasslands, many of these natural disasters can be traced to distinctly human-induced causes, although not necessarily simply as a result of the economic reforms, given the wide variability and locally-specific geographies of long-term environmental degradation.

In Zhaozhou county in 1983 and 1984 I witnessed the abandonment of tree-planting programs, as well as their subsequent rapid harvest as plots were contracted out to individual

households for management. The same process of rapid destruction of tree-based erosion-control systems was even further progressed in Bayan county in 1988 and 1989.(FN43) The inability in both counties to organize sufficient labor and funds to replant denuded hillsides or windbreaks is representative of the recent decline of investment in sustainable land use. Between 1985 and 1989 there was a 48 percent nationwide decline in area covered by windbreaks.(FN44)

During investigations in Henan province from 1989 to 1994, the complete disrepair of irrigation systems, at all scales, had left villages in my study area without any backup to the unpredictable rains.(FN45) Informants in these villages describe in detail the current contradiction between their ability to meet subsistence needs, and the demands of local state authorities for higher taxes, despite the precipitous decline in local infrastructure investment. This has engendered widespread anger towards local representatives of the state, undermining and delegitimizing it in the eyes of the majority of local producers.(FN46)

Expenditure on agriculture as a percent of total state expenditure has been in continual decline since the late 1970s. Hovering at over 13 percent of the state budget at the time of Deng's ascent, it first rose to almost 14 percent in 1979, but by 1981 had fallen to less than nine percent. During the first three years of the Seventh Five-Year Plan (1986-90) the figure was stuck at around eight percent of the national budget, before beginning a slow ascent (see Figure 7). The rapid decline in state capital investment in agriculture prefigured the period of agricultural stagnation between 1985 and 1989. Moreover, it is a major barrier to continued improvement in land and labor productivity in agriculture.(FN47)

There have been repeated calls over the last few years to divert large amounts of revenue to agriculture. In 1989, the Vice Minister of Agriculture said that large capital construction projects in agriculture were not just being planned, but were being successfully implemented as well.(FN48) He identified the new land conversion tax as a major source of funds for agricultural investment capital. Problems in collection of this and other agricultural taxes hindered the proposed increase in investment, however. Another difficulty is the translation of top directives and transfer of monies down through the institutional maze into productive investment, without most of it being diverted along the way. Total projected investment needs of rural China over the last fifteen years of this century exceed 1.5 trillion RMB, with the state expected to contribute less than one-fifth and the rest expected to come mainly from peasant savings, as well as the savings of Township and Village Enterprises and the collectives.(FN49) With institutional structures at the local level severely weakened by the reforms, it is difficult to imagine the funding and smooth implementation of the multitude of necessary projects.

The attempt to build a levee in Hesheng Village (see Figure 8) is a good example of the inability to properly plan and maintain capital investment on a significant scale. Between 1978 and 1994, annual work has been organized utilizing contracted labor duty days to construct a levee protecting the village from flooding. The village has been unable to complete construction of the levee. The failure of Hesheng Village to collectively organize and invest the requisite capital and labor, has necessitated starting the project over from scratch since each year's labor is washed away with annual flooding. As a result, the villagers are so demoralized by the Sisyphean nature

of this task, that it is no longer possible to rally their efforts around the project. In addition, other township-wide labor requirements to maintain infrastructure prohibit additional labor to be allocated for completion of this project. The result is the progressive impoverishment of Hesheng Village. For a number of years it was impossible for the village to deliver to the township any quota grain because the entire harvest was destroyed, and the village was completely dependent on state relief funds and grain. Consequently, there has been an out-migration of families trying to survive, further complicating the attempt to complete the levee due to a declining labor pool. These migrants join the millions of peasants wandering over China in search of labor opportunities of any sort.(FN50)

DIVERSION OF CAPITAL TO SHORT-TERM INVESTMENTS

In Heilongjiang and Henan provinces, capital previously used for large-scale infrastructure and collective projects has been diverted to more short-term investments such as increased chemical fertilizer application, plastic sheeting, small pumps for water control, and other agro-chemicals.(FN51) The terms of credit available from the state has tended to favor these short-term investments. Investment by farmers has also been of a short-term nature since the reform period began. Most accumulated funds have been spent on house building,(FN52) consumer durables, and traditional ceremonies.(FN53)

In addition, investment in township and village enterprises (TVEs) has often come at the expense of other needed investments in infrastructure. There has been little reinvestment in production for long-term incremental gains. As well, many of these unregulated TVEs contribute to increased local air, water, and soil pollution. The much touted change in locus of control over capital investment and planning, from the center to local authorities, has not brought with it the expected efficiencies when defined in terms of long-term sustainability of production.

SUBSIDIES

The fiscal crisis brought on by the high level of subsidies in the early reform period, gave the state little choice but to later cut back on many of these same subsidies, bringing about a further intensification of land use and environmental degradation. As a direct result of the reforms and the reorganization of production and exchange relations, peasant producers have been forced on to production treadmills. The same kind of production treadmills, leading to intensification of production, have been clearly detailed in capitalist agriculture,(FN54) and, I argue, have a similar configuration in so-called market socialism.(FN55) In both cases the state intervenes to mitigate some of the worst consequences, but in neither case are the fundamental structural conditions addressed. As described above there is a rise in state expenditures, precipitating a fiscal crisis for the state. Consequently, subsidies for agricultural inputs are cut, bringing about a rise in agricultural production costs. This takes place within a context of stable or rising levels of surplus extraction from rural areas--causing farmers to redouble their productive efforts, while undermining the state's legitimacy.(FN56)

There are various forms of subsidies within the Chinese system. Some are more explicit than others and show up in official statistics. Other subsidies have to be derived from separate categories of state spending, or from indirect costs absorbed by different units. For example, agricultural financing in China, from either the Agricultural Bank of China or the Rural Credit

Cooperatives, has become an increasingly important source of short-term financing to cover shortfalls in procurement funds at the local grain bureaus. The infusion of funds to cover losses and bad loans is a form of indirect subsidy to rural areas. Of the officially reported subsidies there are: a) price subsidies (the largest in recent years);(FN57) b) direct subsidies to consumers; c) subsidies provided to the grain bureau to cover losses in procuring and distributing grain from rural to urban areas;(FN58) d) direct production subsidies provided to rural producers, primarily to cover input costs; and e) a special subsidy for rural production in the poorest regions. In recent years the state has had to provide an indirect subsidy to rural and urban residents through inflation-proof guarantees on savings.

Although not quite in agreement with official statistics provided since, a report on the budget by Wang Bingqian in March of 1989 is quite illustrative.(FN59) Rural subsidies were estimated for 1989 to be 17.4 billion RMB to support rural production, 2.9 billion to support rural production in poor areas, and 9 billion RMB to bolster the purchase price to peasants. Together these comprised 10 percent of the state's total actual revenue for 1989. Urban price subsidies were 41 billion RMB (14 percent of state revenue), 5.5 billion RMB was spent on subsidies to state workers to counter the rapid rise in urban prices (two percent of state revenue), and nine billion was spent subsidizing rural and urban savings (three percent of state revenue). The sum of the rural and urban subsidies combined represents 29 percent of the state's total revenue. This does not include other significant subsidies. Subsidies to cover enterprise losses were expected to be 52 billion RMB (the actual amount was 59.9 billion RMB) representing another 18 percent of total state revenue. Since a large portion of state enterprise funds were being used to provide bonuses and raises to disgruntled urban workers (rather than being invested in new technology or even maintenance), roughly half of these so-called subsidies were in fact going directly to workers. This then raises the total percentage of state revenue being used on subsidies of rural producers and urban consumers to approximately 38 percent. The major problem in both the rural and urban context of the resulting fiscal squeeze is that necessary state investment in long-term production, both agricultural and industrial, declined in order to "keep the peace" with peasants and workers.

Combined government price subsidies as a percentage of total state revenue can be conservatively figured to have risen from seven percent in 1979 to over 16 percent in 1983. There was a slight decline to 15 percent in 1984 before further budget constraints forced reductions back down to 11 percent by 1986. In 1991 these subsidies still hovered above ten percent of total state revenue. But the trend was clear in terms of the percentage of total government expenditures allocated to agriculture, dropping from 13.7 percent of total expenditure in 1979 to less than eight percent in 1987.(FN60)

The importance of these statistics are their direct effects on land use. Declining input subsidies place peasant farmers within an increasingly competitive environment forcing them to utilize a variety of methods to expand overall production. These methods have included soil mining (i.e. relying on pre-existing fertility of the soil without maintaining organic and inorganic fertilizer input levels), and increased use of marginal lands. These methods were only partially successful, and failed to halt the overall decline and stagnation in agricultural production in the

late 1980s. This led to increasing social tension within the villages, and between peasants and representatives of the state.(FN61) These trends were also mirrored in the urban sector, as seen in Figure 9, which shows the decline and/or stagnation in overall subsidies (price, input, etc.), adjusted for inflation, to urban and rural residents since 1984. Much of this decline can be attributed to the high levels of inflation throughout this period (see Figure 10).

There is an apparent contradiction between overall subsidies and subsidies to agriculture that requires further explanation. On the one hand, from 1978 to 1986, overall subsidies as defined by the Chinese State Statistical Bureau at first increased and then entered a period of rapid decline (after adjustment for inflation). These subsidies were intended to pay for unpopular policy initiatives and placed a great burden on the state, precipitating a fiscal crisis. On the other hand, particularly after 1986, subsidies to agriculture flattened off at a substantially lower level, bringing about a further crisis in production.

One of the problems with these figures is that money allocated for grain purchases by the state is not included in official price subsidy figures. These numbers show urban grain consumption subsidies only. In fact a double subsidization of grain has been taking place, both of rural producers and urban consumers (this is clear when looking at the losses of the General Grain Bureau). This led to what appears to have been an overall increase in the terms of trade for rural residents, though at the same time prices for agriculture inputs were rising as subsidies on these same inputs declined. Between 1978 and 1985 subsidies for agricultural inputs declined from a high of 2.4 billion RMB to less than 696 million RMB, recovering slightly to 975 million in 1986.(FN62)

Even with increasing input costs, inflation, and other factors, the terms of trade for farmers showed, by some accounts, a significant improvement over the period from 1978 to 1988.(FN63) In fact, because of rapid production increases through 1984 (or at least income increases from rising grain prices), the impact of the loss of subsidies to agriculture was not immediately perceived. By 1986, though, it was being felt and condemned. By 1989 issues of agricultural input price and availability led to mass venting of grievances. Black marketeering forced prices up further. Doctoring of fertilizer was common. The complete loss of control over this important input forced the government to respond by again taking command of marketing and distribution. Through the leverage of the quota, the state was able to reassert control over input procurement by 1989, helping to explain the rise in grain production in subsequent years. But ongoing abuse of the system limited the availability and quality of inputs at specified prices for most farmers. By 1990 and 1991 the situation had improved slightly, but in 1992, and intensifying in 1993 and 1994, input prices once again began to rise rapidly, eroding the profits of peasant agricultural producers, which in turn led to more frequent incidents of militant peasant resistance.(FN64) The figures above point to the need to conduct further detailed research unraveling the complex set of both urban and rural subsidies in the context of the reforms.

The subsidies of the post-Mao period are representative of a larger crisis of the Chinese state, which involves the mortgaging of the future for the immediate satisfaction of part of the current generation--a very expensive state program to legitimize the reform agenda. This situation has been dictated by political necessity, as a means of paying for the legitimacy of a set

of reforms that otherwise would bring both short and long-term harm to a wider array of China's people than could be politically justified without such measures. This has required not only a shift of resources away from investment and into present consumption, but also a rapid increase in international borrowing. By 1988 one third of the entire state investment in agriculture was being financed by foreign sources, principally the World Bank.(FN65) Thus, the post-reform boom will be paid for by succeeding generations. Estimates of China's indebtedness in 1990 topped 44 billion U.S. dollars, with some figures showing it to be as high as \$52 billion.(FN66) This entire debt was incurred during the 1980s, representing a burdensome future drain on state coffers for repayment. This situation will only get worse.(FN67) By 1993 the debt had increased to approximately \$70 billion, with repayment beginning on earlier loans.(FN68) Figure 11 clearly represents the trend in China's debt from 1978 to 1992.(FN69)

Though insignificant in relative terms, China's debt is still symbolic of a rapid change in China's international economic position, and its ability to set the terms of its articulation in the global economy. Obviously, China's size--economically, militarily, and in terms of population--means that this debt will provide significantly less leverage to those on the collection side than it would for a much smaller less powerful country. That aside, it is a trend worth monitoring.

INFLATION AND GROWTH

During the 1980s significant inflation appeared for the first time in post-1949 China. According to *The Economist*, "it makes little sense to speak of a single consumer price inflation rate in a country as large and economically diverse as China, especially now that the state has ceased rigidly to control pricing of all goods."(FN70) Drawing from a maze of figures, inflation appears to have been somewhat higher than official figures suggest throughout the reform period. Still, according to government figures, inflation rose from less than three percent in the early 1980s (though many feel it was actually higher than ten percent during this period), to an annual rate of 27 percent in the first quarter of 1989. With the contraction of the economy after Tian'anmen in June of 1989, inflation then declined dramatically, falling to 0.6 percent by the third quarter of 1990.(FN71) By 1993 inflation in urban areas was running over 20 percent and in rural areas over 14 percent, and in September of 1994 urban inflation was over 28 percent,(FN72) settling to 21.7 percent for the year, the highest official rate since the reform period began(FN73) (the official index of inflation is shown in Figure 10).(FN74) Inflation worsens the reproductive squeeze, thus intensifying land use.

At the same time real growth in GDP per annum has declined from a high of almost 15 percent in 1984 to less than five percent for 1989, to less than zero percent for 1990,(FN75) before slowly reviving in 1991, to three percent, and close to four percent in 1992.(FN76) By the end of the first quarter in 1993, the rapid growth in certain areas of the country raised the overall national GDP estimate to greater than 14 percent,(FN77) though after inflation real growth in GDP was only six percent. According to Zou Jiahua, Vice-Premier of the State Council, the growth in GDP was to be maintained at eight percent in 1993, with agricultural output increasing by four percent and total industrial output value increasing by 14 percent.(FN78) In 1994 GDP, unadjusted for inflation, expanded by 11.8 percent.(FN79)

A critical aspect of these growth figures is the immense regional variation that exists in

China. Most of the growth is focused in a narrow band of primarily urban and suburban areas in the eastern portion of the country. Even within this area there is immense heterogeneity in the spatial distribution of both industrial and agricultural growth. Beyond the complex problem of further refining our understanding of uneven growth in the context of Chinese regional development, is the issue of stratification in terms of the distribution of the benefits of that growth. (FN80) Contrary to popular myth, most of the benefits have been garnered by a small portion of the Chinese urban and rural populations. The vast majority have not gained in the ways the generalized figures of GDP may seem to symbolize. In fact a significant number of China's rural peasants, and to a lesser degree urban residents, have been experiencing considerable declines in living standards.(FN81) In 1993, while 4.3 million people saw their incomes skyrocket to 32 times the rural average, 400 million people's incomes declined.(FN82) Social stratification and unequal distribution of benefits and costs of the reform process is a fundamental cause of rural and urban unrest in China today. This has strained the ability of the state to maintain its reform program and undermined its legitimacy in the eyes of the majority.(FN83)

DELEGITIMIZATION OF THE STATE

The importance of the inflation figures above is that, combined with the subsidy figures, a very different picture of China's prosperous period of the 1980s and 1990s begins to emerge. Inflation was a real and legitimate concern amongst both rural and urban residents. It was the runaway inflation in the latter 1980s that helped delegitimize the state to the point where urban and rural interests allied in a series of widespread protests. Tian'anmen was only the urban aspect of what was also a rural phenomenon. Inflation was one of the top four complaints of urban dwellers taking part in the Tian'anmen protests. Some estimates for 1988-89 inflation ranged as high as 30-40 percent (The Economist Intelligence Unit estimated it to be 80 percent in autumn 1988), with most of the blame being laid on unfettered industrial growth within an environment of easy credit and capital sources. For ordinary workers it meant a real decline in wages and living standards.(FN84) Incomes which doubled in a decade no longer held the same meaning after two to three years of double digit inflation. Thus, inflation has been a public relations disaster for the Dengist reform government, undermining many of the gains of the past fifteen years, and imposing a work speedup without the anticipated rewards.

Rural resistance, though less publicized, exists and has periodically flared into localized but nonetheless important incidents of rebellion. The fiscal crisis led directly to the subsequent difficulties for the state in countering some of the negative consequences of inflation with subsidies, furthering its overall delegitimization as a representative of the vast majority of either workers or peasants. One aspect of the monetary crisis is forced buying of government bonds (forced savings) to curb inflationary consumer spending. This form of revenue is further justified by linking it with the provision of needed funds for investment in infrastructure projects by the state.

The combination of factors discussed above (subsidy problems, fiscal crisis, inflation, geographic inequality in growth, etc.) has led to delegitimization of the state in the eyes of many peasants, and has provided the context for the steady undermining and transformation of the reform process. The rising real costs of agricultural and agro-industrial inputs, such as diesel oil

and fertilizer, caused considerable unrest and demonstrations among the peasantry by 1987. (FN85) Locally-controlled monopolistic pricing and supply arrangements allowed for corruption and profit taking at peasants' expense. This helps to explain the spate of rural rebellions and general unrest that have continued to mark the past few years. In 1992 there were dozens of reported incidents of rural unrest due to the reproduction squeeze described above. A recent peasant revolt in Renshou in Sichuan Province highlights the difficulties of the state in trying to impose levies on rural peasants when most peasants' income is stagnating or declining due to inflation.(FN86) Further, the delegitimization of the state weakens the state's ability to call on peasants for contributions to national development via taxes and quota deliveries. The state has all but pulled out of provision of resources for social welfare, local infrastructure projects, and other forms of support for agriculture and rural areas.(FN87)

In rural Henan province, after delivering their quotas to the state, paying local taxes and levies, the majority of peasants in three villages surveyed had zero or negative income from agriculture.(FN88) This forced peasant families to send a number of household members off into the great mass of migratory labor (estimated to be 80 to 100 million at any one time during 1994) wandering the country in search of work. In overwhelming numbers, peasant agricultural families expressed the immense burden they face just trying to meet quota and tax requirements. This situation has been exacerbated considerably, according to their accounts, by the complete disrepair of irrigation facilities, lack of agricultural extension, and rapid rise in input prices.

This is the case in parts of Heilongjiang as well, particularly in poorer townships. When peasants refuse to pay taxes in rural Heilongjiang, local police (whose wages are dependent on tax income) go with local cadres to peasant homes to demand payment. If the peasants don't pay, the police take household goods that they feel are of equivalent value. In cases where peasants accuse the local leaders and police of unfairness in treatment, they are punished through the cancellation of the contract for their fields. They are left with only a small quantity of ration land.(FN89)

Other forms of delegitimization are evident. In Henan Province in the summer of 1994 there was a major peasant uprising over the population policy, though tied directly to the economic policy as well. Over seven thousand peasants rose up against corrupt local state representatives who were using the population laws as a means of increasing income to the county. Caught in a squeeze between expectations and revenue realities, the local authorities have begun using existing laws to legitimate further surplus extraction from the peasants. In this case, families who had a child over the quota allowed, were being repeatedly fined for the same child, a clear abuse of the regulations. Peasants spoke of numerous methods the county officials had used to obtain the fines imposed and enforce their decrees. These actions ranged from bulldozing peasant homes to taking expectant and recent mothers to detention centers (with charges for the ride in the car and the room and board in the center).

At one point the officials pulled a young couple out of their home in the middle of the night and carted them off to detention. When the officials returned to the village, they were confronted by seven thousand angry peasants. The peasants took a dozen officials hostage, tore their cars to bits and scattered the pieces around on the road. When the militia arrived to free the hostages,

they were stoned by the huge gathering of peasants, and fearful for their own lives, were afraid to open fire. The militia leader was hit in the head with a stone and later died at the hospital. When a smaller group of peasant leaders marched towards the provincial capital to protest to a higher authority, they were rounded up by the local officials and arrested.

An interesting aspect of this story is that, for peasants, it was primarily local authorities who lost legitimacy. The peasants still believe in the central government and party leadership, hoping and expecting them to intervene to stop local abuse of power. Their desire to send an emissary to Zhengzhou and then Beijing clearly demonstrates that the state, particularly the central power in Beijing, is slow to be delegitimized in the eyes of most peasants. Local representatives of state power, on the other hand, do not have the benefit of distance to blur the lens of scrutiny. As of this writing, county leaders had been unable to reenter the villages in question, and had yet to release the leaders arrested.(FN90)

Increasing population will increase pressures on the natural resource base under any system, capitalist or socialist. At the same time, the ways in which the state and local institutions intervene and regulate resource use, the level of local collective control and the redistribution of surplus, and the degree of social stratification all influence the ultimate impacts of population increase on the environment, and in turn influence the fertility rate.

Recent problems with an overheating economy have forced the revamping of monetary levers. The state continues to try to maintain a balance between growth and increased consumptive power for at least a portion of the population, and a slowdown in investment to lower inflation. A contraction of the economy could cause additional unrest even among those benefiting most directly from the reforms. For the vast majority of peasants who are not sharing in many of the benefits of the rapid economic expansion in coastal and southern provinces, changes may be too little, too late. Although corruption is the byword of many who would like to criticize the reforms, it is only one indicator of much deeper structural problems in the reform agenda and the economy as a whole.

ALTERNATIVE PATHWAYS AND MULTIPLE FORMS

The preceding explanation of the policy shifts and their impacts provides another view of the emergent reality of rural China in the reform era. In contrast to many contemporary analysts, I do not think the current crisis is a transitional one, but rather one that is based on fundamental structural problems of the reform program itself, as conceptualized and implemented in government policies.

It is a commonly-held misconception that reform of collective-based planned economies requires that decollectivization move forward simultaneously with the promotion of market mechanisms. In fact, these two types of change need not be tied together at all. A shift from collective to household economy is not a necessary corollary to the transition from command to market economy.(FN91) There are a number of problems associated with the operation of collective forms of production and decision making. Centrally planned economies face serious difficulties in dealing with the minutiae of day-to-day production and resource allocation. However, the abrupt dismantling of collectives, and their replacement by individual/household production units, in concert with the shift from plan to market, gives rise to other complex and significant

problems--many of which touch on fundamental issues of sustainability.

Given the heterogeneity of China's political economy at local and regional levels, it is obvious that the conditions being reformed, and the paths that these reforms take, are diverse and uneven. Decision-making strategies of collectives and planned economies were and are made within a complex of cultural/historical/social/political contexts. As a corollary, the problems faced by China's decision makers are potentially severe no matter what the form of decision making for resource control and allocation.

Taken all together it would appear that the reform shifts may preclude other options and pathways. In fact, other pathways are emerging throughout the country. Another interpretation of the reforms is as negotiated development of alternative structures. An example of this is a shift to markets within a predominantly collective economy leaving decision making in production and control at a level where long-term strategies may be employed alongside short-term market ones. Such an arrangement could serve to spread the increased risk of market mechanisms over a larger group. This form of institutional competition could minimize the cost of the more drastic mining of communal capital that came about with the dual shift of decollectivization and the move towards a market economy.

For example, in Heilongjiang, I have witnessed the evolution of a form of market collective economy in some areas as a response to crises generated by the shifts. In fact, in large parts of Heilongjiang, this type of production organization may soon predominate.(FN92) What is critical in any assessment of its evolution is to learn in what ways this small-scale reunification is truly a voluntary collective, or in what other ways it may just be an imposed and more efficient means of surplus extraction (via resources and revenue) by the state through collective organization. As such, what may be emerging is a new form of what might be called micro-feudalism, with local neo-gentry providing protection as well as supervision of production practices, while guaranteeing a certain level of surplus extraction for the state.

Still another alternate pathway is to have individual decision making within a planned economy with certain guarantees left in place. This pathway could provide adequate social welfare and stability of markets for individuals to make long-term decisions in regards to production. In fact, intervention of this sort (though short-term and reactive in nature) has been the method most often used to deal with the crises that have arisen from the reforms. For example, elsewhere in Heilongjiang, a planned individual economy has evolved in partial response to crises generated by the shifts. The state took over more control in the allocation of resources and commodities, while maintaining individual production. This was in response to a "have our cake and eat it too" cry from the peasantry, in which, after experiencing massive inflation and market fluctuations, they demanded a stable non-anarchistic market and supply of inputs (decreased production risks), as well as greater personal freedom in economic decision making and resource control. This latter situation is very similar to that of farmers in the Western industrialized democracies who are constantly trying to minimize risk and force the government/state to share in the risk inherent in rural agriculturally-based production through protectionism, price supports, and subsidies for credit, inputs and other guarantees. The state is welcome only so far as it helps in risk minimization. When, because of other pressures, the state

asks the farmer's cooperation in helping to eliminate overproduction, market chaos, or heavy subsidy burdens (and corollary revenue crisis), rural producers are quick to react negatively. (FN93)

Both of these alternatives already exist in certain regions and localities of China today, under specific conditions that have arisen with the reforms. The triple shift has been dominant during the past fifteen years,(FN94) but throughout the country numerous counter examples exist. Other alternatives are emerging from the crisis in the household economy and the rising importance of the informal economy.

CONCLUSION

I have attempted to flesh out a picture of agrarian change in China as different local economies have evolved towards a mosaic of mixed market and socialist forms, some with government sanction, some without. These forms range from individual to collective, and in recent years in Heilongjiang province, increasingly rely upon government intervention in the local economy for long-term market planning and stability. All forms share a common goal of growth, but with differing emphasis placed upon the importance of aspects concerning the quality of life that are not strictly economic--for example, long-term environmental quality, household gender relations, or a sense of security and shared risk.

Some of the (potentially) negative results of the rapid agrarian change are: a) more room for corruption,(FN95) b) generalized decline in the role and power of the collective in organizing production for long-term communal goals, c) changes in cropping patterns to more intensified and soil-taxing regimes, d) increased vulnerability and risk for individual households as a result of a shift to cash crops and increased dependence on world markets, and e) short-term decision making enforced through market mechanisms as well as the contract system. The result has been crises ranging from overproduction and declining/unstable returns on investment in agriculture, to stagnation and decline in productivity. All of this in turn amplifies contradictions in population policy, as a lack of social security and increasing economic instability promotes a rise in human fertility. At the same time population policies penalize the peasant households for this rational response.(FN96) Hence, declining availability of social welfare, mining of communal capital, decreasing capital investment for long-term production, and acceleration of environmental degradation lowering the productivity of the resource base, have combined to bring about a decline in the long-term sustainability of development in many areas of rural China. The failure of the state--or of the magical trickle down--to redistribute the wealth of the rapidly developing coastal and southern regions to the poorer agriculturally-dependent hinterlands, amplifies a sense of multiple Chinas. Further, the relationship between these multiple Chinas clearly represents the development of underdevelopment in the hinterland. China's economic reforms are based on fundamental contradictions that will not simply go away with the completion of "transition" to a market economy.

Local power struggles over access to resources, demands for assets (tangible and intangible), and resistance to certain policies and practices of the reforms force a reevaluation and an exploration of potential alternatives within the rapidly changing global context. The history of China sets the stage for a multiplicity of options, while at the same time creating institutional

barriers to change in the organization of production and exchange. The immense heterogeneity of the country renders generalization very difficult, and only allows trends in certain areas to be outlined here. In attempting to understand China's agrarian changes through the use of a political ecology framework, I have placed the issue of long-term sustainability of production firmly in the centre of my analysis. I have tried to redefine sustainability to include not only the physical parameters of production, but also to incorporate complex political, social, historical and economic aspects. This then allows us to understand China's changes within a matrix of multiple levels. In this way I hope we can better analyze the problems presented, and provide ideas of potential pathways for change that are in step with the historical realities that China carries into each period of transformation.(FN97)

Added material

Figure 1: Shifts in China's Rural Political Economy

Figure 2: Map of Heilongjiang Province, China

Figure 3a, Figure 3b and Figure 3C: Grain Production, Yields, and Fertilizer Use (1984-89 focus)

Figure 4: Grain production Area (1984-89 focus)

Figure 5: Gross Output Value of Farming, 1978-91.

Figure 6a: Diagram of Process of Sodic Alkalinization in Grasslands

Figure 6b: Sheep Population, 1949-83, in Zhaozhou County, Heilongjiang Province

Figure 7: Expenditure on Agriculture as a Percentage of Total Government Expenditure, 1978-90.

Figure 8: Hesheng Village Land Use Map

Figure 9: State Subsidies to Urban Consumers and Rural Producers, 1978-91.

Figure 10: Inflation, 1978-1994.

Figure 11: China's Total Debt, 1978-92.

FOOTNOTES

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1. For a review of the literature and major theoretical trends in political ecology see Peet and Watts, 1993, "Development Theory and Environment in the Age of Market Triumphalism," *Economic Geography* 69 (3):227-253.

2. The case study material from Heilongjiang and Henan provinces provide good examples of what are current trends in much of rural China, particularly outside of the relatively booming coastal and suburban areas, providing a sound basis for understanding the majority of rural areas in hinterland China.

3. I would like to acknowledge the generous support of the Fulbright-Hays Doctoral Dissertation Research Fellowship, and the IEE/ITT Fulbright Fellowship for their support during the later stages of research which forms a substantial basis for this article. I would also like to thank the following people for extremely useful close readings and critical comments--Piers Blaikie, Claudia Carr, Alex Clapp, Carmen Diana Deere, Donald Gauthier, Ivan Szelenyi, Teodor Shanin, and Craig Thorburn. Despite the immense help of those just mentioned, the responsibility for the ideas presented is completely my own.

4. Communal capital is composed of assets resulting from investments undertaken with the explicit expectation of long-term collective gains. Collective labor and assets applied to social and physical infrastructure enhance productivity and the quality of life. Socially-oriented infrastructure consisted of housing, clinics, schools, and administrative buildings. Bio-physical infrastructure directly related to production included dams, levees, irrigation and drainage canals, and roads; reforestation projects to prevent erosion and tree planting for windbreaks, and sand dune stabilization; and terracing, improvements in soil fertility, grassland and cropland quality. Also, the collectives purchased machinery--tractors and implements, harvesters, combines, threshers, trucks, pumps, and generators. In addition, the collectives built and operated small industrial facilities focused on the processing of agricultural products (tofu factories, flour mills, noodle workshops, etc.), the production of construction materials (cement works, brick kilns, woodworking shops and sawmills, metal working shops etc.), commercial exchanges for distribution of commodities and collection of surpluses for the state, granaries for storage, as well as miscellaneous other small facilities to support productive efforts (tractor repair stations, machine shops, urea plants, methane digesters, etc.). I refer to this combination of social and physical infrastructure as communal capital, for it was built up under a communal system of production organization with the expectation of long-term benefits for all members of the commune.

5. Byrd, W.A., editor, 1990. *China's Rural Industry: Structure, Development, and Reform*. Oxford: Oxford University Press; Friedman, M. 1990. "Using the Market for Social Development," in (eds), J.A. Dom, and X. Wang. *Economic Reform in China: Problems and Prospects*, Chicago: University of Chicago Press; Lin, Justin, 1993, "Chinese Agriculture: Institutional Changes and Performance," manuscript presented at the Conference on Rural Transformation and Comparative Socialist Transition, Shanghai, September 1993.

6. Deng, Y. Chen, Sue, and Liu. 1992. *Chinese Rural Reform and Development: Looking Back and Looking Forward (Modern Socialism Series--in Chinese)*. Guangdong, China: Guangdong Education College Publishing House; Croll, E.J. 1988. *The New Peasant Economy in China* in (eds) Feuchtwang et al. *Transforming China's Economy in the Eighties: The Rural Sector, Welfare, and Employment*, Boulder: Westview; Nolan, Peter, 1988. *The Political Economy of Collective Farms*, Boulder: Westview.

7. Hinton, W. 1990. *The Great Reversal: The Privatization of China, 1978-1989*. New York: Monthly Review Press; Delman, J. 1989. *Current Peasant Discontent in China: Background and Political Implications*. *China Information* 4 (2); Chossudovsky, M. 1986. *Towards Capitalist Restoration? Chinese Socialism after Mao*. New York: St. Martin's Press; Muldavin, J.S.S. 1986. *Mining the Chinese Earth.: Sustainability and Agricultural Transformation in Post-Mao China.*, M.A. Thesis, Department of Geography, University of California at Berkeley; Muldavin. 1992. *China's Decade of Rural Reforms: The Impact of Agrarian Change on Sustainable Development*, Ph.D. Dissertation, Department of Geography, University of California at Berkeley; Chai and Leung (eds), 1987. *China's Economic Reforms*. Hong Kong: University of Hong Kong; Davin, D. 1988. *The Implication of Contract Agriculture for the Employment and Status of Chinese Peasant Women*. *Transforming China's Economy in the Eighties.*

8. Carr, Claudia. 1981. "Sustainable Development: Theory and Practice" (unpublished manuscript); Blaikie, Piers. 1985. *The Political Economy of Soil Erosion in Developing Countries*. New York and London: Longman Publishing House; Watts, Michael. 1983. *Silent Violence: Food, Famine and Peasantry in Northern Nigeria*. Berkeley: University of California Press.

Discussions of sustainability from highly-industrialized to non-industrial societies have increasingly incorporated a structural analysis. Since many of the problems of sustainability have similar structural roots, this analytical framework can productively be brought to bear on China's situation. Hence the use of the term political ecology.

9. Socio-cultural sustainability, for example, should not be taken to imply a non-dynamic situation, such as a further reinforcement of sustainable (historically speaking) yet oppressive institutional arrangements within the household and society. On the contrary, resource, being of social construction, is inherently dynamic and evolving in meaning, and thus the conception of sustainability is also understood here to be socially constructed and evolving. These are fundamental aspects of a political ecology analytical approach. For further reading see Peet and Watts, editors of two special issues of *Economic Geography*, July and October 1993, Vol. 69, No. 3 and No. 4 (forthcoming as a book in 1996, R. Peet and M. Watts (eds), *Liberation Ecologies: Environment, Development, and Social Movements*, London: Routledge).

10. As with Blaikie, P. and Brookfield, H. 1987. *Land Degradation and Society*. London: Methuen.

11. Neumann, Rod, 1992. *Political Ecology of wildlife conservation in the Mt. Meru area of Northeast Tanzania*. *Land Degradation and Society* 3:85-98.

12. Blaikie and Brookfield 1987; Blaikie, P. 1985. *The Political Economy of Soil Erosion in Developing Countries*. Essex: Longman; Carney, J. 1993. "Converting the Wetlands, Engendering the Environment: The Intersection of Gender with Agrarian Change in the Gambia," *Economic Geography*, Vol. 69, No. 4, October.

13. For other examples of material using a political ecology approach in China see L. Hershkovitz, 1993, "Political Ecology and Environmental Management in the Loess Plateau, China," *Human Ecology*, 221(4): 327-353; and J. Mudavin, 1996, "The Political Ecology of Agrarian Reform in China: The Case of Heilongjiang Province," forthcoming in *Liberation Ecologies: Environment, Development, and Social Movements*, R. Peet and M. Watts, eds., London: Routledge.

14. Cannon and Jenkins, 1990. *The Geography of Contemporary China: The Impacts of Deng Xiaoping's Decade*. London, Routledge. Prior to the 1990s the reforms were focused mainly on rural areas. With the apparent success of the rural reforms, urban reforms were viewed as an unfinished policy goal and reform efforts were increasingly targeted on urban areas.

15. Institutional competition, both before and after the reforms, often undermines positive potentials for action and change. This is an ongoing concern under any system in China. Institutions acting as firms will not necessarily act in a cooperative manner beneficial to long-term development. Conversely, institutional competition can sometimes play a role in improving certain kinds of efficiency within the organization involved.

16. The short-term nature of capital investment in urban industry over the last decade has

precipitated its own crisis. As new investment monies were spent on bonuses (to legitimize changes in the system as often as not) to raise worker's living standards, fixed capital investment declined. After a decade of this policy of declining investment much of industrial fixed capital is in a state of disrepair, leading to more factory down time and inefficiency, thereby creating the problems used to single out state industry for urban reforms--the so-called poor performance. The final result is a slowdown in technical advances in numerous industrial sectors. All of this may then be used to legitimize eventual privatization with managers taking a major share of industrial assets (notes from meeting with Tian Weiming, agricultural economist at the Institute of Agricultural Economics, CAAS, 27/7/92).

17. Individual is included because of the importance of intra-household power relations. The relationship between the individual and the state is a peculiar and important point of analysis. An excellent topic for additional research would be to look at when and how these various shifts occurred throughout the country, i.e. a regional spatial analysis of the uneven development and change that occurred with the implementation of the reforms. Frequently, much of the national unevenness is replicated on smaller and smaller scale as one goes down the hierarchical ladder to the household and individual. Stratification has been a national phenomenon as well as a highly localized and intra-familial one.

18. Gurley, J. G. 1979. *Challengers to Capitalism: Marx Lenin, Stalin, and Mao*. New York: W. W. Norton. Capital investment in agricultural infrastructure is a prime example of a longer-term strategy under the collective system. The rapid decline in this investment after the reforms, as investment has been shifted to those things which can provide short-term returns, has severely undermined agricultural production throughout much of rural China.

19. Smil, Vaclav. 1984. *The Bad Earth: Environmental Degradation in China*. M. E. Sharpe, New York.

20. I argue that the shared focus on developmentalism in both centrally-planned and capitalist economies has meant that the environmental impacts of both systems of production organization are unsustainable (see Huang 1992, Muldavin 1992 on convergence theories). Far from apologizing for extreme policies that were environmentally detrimental during the thirty years previous to the reforms, I suggest that "a new element of unsustainability" has been introduced by the reforms. I am attempting a more nuanced argument of the shared ill effects on the environment of both centrally-planned and capitalist economies, not a defense of either. By assuming longer-term strategies in the pre-reform period I am not saying that the development model of that time was correct, but rather in relative terms there was a shift to even more short-sighted decision making in certain aspects since the reforms.

21. Heilongjiang jingji Tongji Nianjian (Heilongjiang Statistical Yearbook--HLJSY). Beijing, China: China State Statistical Bureau Publishing House. Heilongjiang Province Statistical Bureau, 1992: 34, 36.

22. Heilongjiang has 870 state farms, the largest number of any province in China. Heilongjiang derives a much greater share of its output from these enterprises than is typical in the rest of the country. These farms support a population of 1,526,000 persons and cover an area of 57,000 square kilometers, 12.6 percent of the province. Of this area 1.26 million hectares

are under cultivation. This area represents 14.3 percent of the cultivated land in the province. Heilongjiang's 0.83 hectares of cultivated land per state farm member is significantly higher than in the rest of China (HLJSY, 1988: 44).

23. Zhongguo tongji nianjian, 1993: pp. 368-70. China State Statistical Bureau. Zhongguo tongji nianjian. 1984-1993. Beijing, China: China Statistical Publishing House.

24. Zhao, Songqiao. 1981. "Transforming Wilderness into Farmland." China Geographer (special edition on agriculture) 11.

25. 403,000 in 1988 (HLJSY 1988: 42).

26. Land use in Heilongjiang province as of 1988 can be broken down as follows (in millions of hectares): total land area--45.39; grassland--7.53; forests--16.73; cultivated--8.83 (of which irrigated paddies constituted .56 million hectares); other--12.3. Source: HLJSY 1989.

27. Stone, B. 1988. Developments in Agricultural Technology. The China Quarterly (116): 767-822. It is important to note that fertilizer increases were the major source of production increases, not reorganization of production.

28. The Economist, 25 May 1989: 69. Fertilizer demand was not fulfilled prior to reforms, but the basis to do so came from collective investment. Also, overuse of fertilizers is causing immense production and environmental problems through soil degradation, organic matter decline, and water pollution. In the summer of 1994 there was an outcry in China over the immense fish kills in major rivers as a result of fertilizer and pesticides entering the waterways through agricultural runoff.

29. Increased cultivation of cash crops has been accompanied by increased use of chemical pesticides and fertilizers. Intensified crop production, in general, has led to a growing dependency upon costly agricultural chemicals, as farm households have jumped on the production treadmill. Perelman, M. 1977. Farming for Profit in a Hungry World: Capital and the Crisis in Agriculture. Montclair, NJ: Allanheld, Osmun & Co.

30. Muldavin, 1983. 15-Year Plan for the Agricultural and Agro-Industrial Development of Zhaozhou County, Ministry of Agriculture, Beijing. Muldavin, 1986. Muldavin, 1992.

31. Muldavin, 1994, Collected field notes, Henan Province, 1990-94.

32. Muldavin 1986.

33. A focus on raising fewer animals of better quality might result if a grading system were instituted with real priced differentials between grades. But this is only part of a solution. Other incentives to increase herd size are strong given the increased risk borne by individual household production units. The poor grading system existed in the pre-reform period as well. Thus, though it may help solve the current problems associated with rapid increases in herd size, the increase cannot be explained by the lack of its existence. Rather it is the increase in risk and overall prices, and resulting changes in decision making that have had the largest influence on herd numbers within a newly deregulated environment. Cf., Hinton 1990 for comments on this situation in nearby Inner Mongolia.

34. Muldavin 1986, 1992.

35. Muldavin, 1986, 1992, field notes 1983.

36. Chung, Jae Ho 1993. The Politics of Agricultural Mechanization in the Post-Mao Era.

China Quarterly, No. 134, June, pp. 264-290.

37. The rise in labor-intensive agricultural production has been dubbed the "feminization of agriculture". One problem with this characterization is that it often views the process only as a side effect of male labor migration (Muldavin 1992). In fact it is also taking place (though to a lesser extent, perhaps), in areas of little male migration. Thus, the feminization of agriculture has more to do with changes in household power relations and the devaluation of women's labor during the reform period (David 1988), than with male labor migration.

38. Muldavin, 1992.

39. Nongmin ribao, 12 April 1989, p. 3. Muldavin, field notes, Henan, 1993, 1994. Furthermore, loss of control over the utilization of resources has led to severe overdraft of water resources in many areas (Hinton 1990: 132).

40. Renmin ribao, 22 May and 24 July 1982.

41. Zhongguo nongcun tongji nianjian, 1992: 298

42. There was a 25% increase in area covered and affected by natural disasters between 1985 and 1991 (Zhongguo nongcun tongji nianjian, 1992: 284). Hinton (1990:132) discusses the collapsed terraces, ground water overdraft, and other aspects of declining capital investment as well as resource exploitation run amok. In my own fieldwork in Heilongjiang and Henan provinces there have been rapid increases in supposed natural disasters resulting directly from declining investment in agricultural and conservation infrastructure. In the summer of 1994 I was unable to return to two of my primary research sites in different parts of Heilongjiang province as a result of massive flooding. The flooding happened without extreme rainfall levels, but was a result of combined forest clearcutting in contracted watersheds, and degraded levees and water works after a decade of limited investment and maintenance. Lin (1993) (from a neoclassical perspective) also discusses this increase in natural disasters as a result of decreasing capital investment.

43. Muldavin, field notes, 1989.

44. Zhongguo nongcun tongji nianjian, 1992: 129.

45. Villagers are once again praying to ancestors and other deities in this risky situation, though this may just be the result of greater tolerance to public display of religion.

46. This is not an isolated occurrence, but rather represents an increasingly apparent trend throughout much of rural China. It has become the norm in my research areas in Heilongjiang and Henan provinces (Muldavin 1990, 1991, 1992, 1993, 1994--field notes, Henan Province; 1987, 1988, 1989, 1994--field notes, Heilongjiang Province).

47. For additional work on this issue see the following authors: Lardy, N.R. 1984. "Consumption and Living Standards in China, 1978-83." The China quarterly 100 (December 1984): 849-65; Stone, B. 1985. The 1985. The Basis for Chinese Agricultural Growth in the 1980s and 1990s: A Comment on Document No. 1, 1984. The China Quarterly (101), March 1985; Walker, K., 1984. China's Agriculture During the Period of Readjustment, 1978-83. The China Quarterly 100 (December 1984): 783-812; Muldavin 1986.

48. Wang Lianzheng, Vice-Minister, Ministry of Agriculture, President, Chinese Academy of Agricultural Sciences, Interview with author, April 1989.

49. Delfs, R. December 1984. "Agricultural Yields Rise, But the Boom Cannot Last," *Far East Economic Review [FEER]*: 68; Du, R. 1985. *Lianchan chengbaozhi he nongcun hezuo jingjide xin fazhan* (New Developments in the Contracting System of United Production and the Cooperative Economy in the Countryside), *Renmin ribao*, March 7, 1983, p. 2.; Riskin, C. 1987. *China's Political Economy: The Quest for Development since 1949*. Oxford, UK: Oxford University Press..

50. Muldavin. 1989. Hesheng Village Survey (HSVS), Bayan County, Heilongjiang Province, PRC, (10 November 1989).

51. *Zhongguo nongcun tongji nianjian* 1992: 302. Muldavin, 1990, field notes.

52. In Zhaozhou county, Heilongjiang province, in order to satisfy the increased demand for construction materials, poorer land is often used as the raw material of clay bricks for home building. The combined environmental and social impact of this can be seen in the resulting pockmarked landscape of clay pits, which also provide a perfect breeding ground for mosquitoes. There has been a corresponding increase in reported cases of Japanese encephalitis in the area (Muldavin, field notes, Heilongjiang Province, 1985).

53. Muldavin, Field notes from my work in Heilongjiang, Jilin, Xinjiang, Sichuan, Anhui, Yunnan, Guangxi, Guangdong and Henan, 1983-89. See also Zhang Bingwu's article on a household study in Baomiancheng zhen, Changtu xian, in Liaoning sheng, "Yingjie xiandaihua tiaozhan de dangdai nongmin" ("Modern Peasants Facing the Challenge from Modernization"), *Shehui kexue jikan* 1993 (Social Science Periodical), No. 1, p. 32-39, Liaoning shehui kexue yuan. For another account of increased spending on ceremonies in rural areas, see: *Beijing Review*, Vol. 32, 1989, May 1-7, p. 11.

54. Perelman 1979.

55. Muldavin 1994, unfinished manuscript on production treadmills in socialist transition.

56. c.f. Bernstein 1977, simple reproduction squeeze. Bernstein, H. 1977. "Notes on Capital and Peasantry." *Review of African Political Economy*, No. 10, pp. 60-73.

57. Usually in the form of losses to the state due to price differentials between what the state buys a particular commodity for and subsequent resale price.

58. In 1987 General Grain Bureau net losses were 19.84 billion RMB. This alone represented 8.4% of total government revenue. There are also small additional subsidies for grain importation used to cover shortfalls.

59. Wang Bingqian, "Report on the Implementation of the State Budget for 1988 and on the Draft State Budget for 1989." Delivered at the Second Session of the Seventh National People's Congress on March 21, 1989. The full English translation appears in *Beijing Review*, Vol. 32, No. 18, May 1, 1989, p. XI.

60. CSY 1991 p. 673.

61. Muldavin 1992.

62. These figures are not adjusted for inflation. With adjustment, the actual decline becomes much more severe.

63. World Bank. August 1990. *China: Managing an Agricultural Transformation--I* (Volume I: Working Papers 1-3; Volume II: Working Papers 4-8), World Bank, China Department,

Agricultural Operations Division, Asia Regional Office. World Bank Working Paper (WBWP) No. 1, Annex Table 4.

64. Muldavin, field notes 1992, 1993.

65. This is the World Bank's own estimate. Discussions with members of the staff at the World Bank office in Beijing, 1989, 1990, 1991, and 1992.

66. Beijing Review, Vol. 36, No. 8, p. 4-5, May 3-9 1993. Beijing Review, Vol. 36, No. 18, 1993

67. WBWP No. 7, 1990.

68. International debt reduces China's flexibility in dealing with global restructuring. If, for instance, China were to decide to reduce its dependence on trade in the global economy in an attempt to restore national stability, the rising debt would seriously challenge that potential option.

69. CSY, 1992, p. 200.

70. The Economist Intelligence Unit Country Profile 1992-93, China.

71. Cheng, H. 22 February 1991. Federal Reserve Bank of San Francisco Weekly Newsletter; Delfs, R. December 1984.

72. World Bank, 1994. Inflation estimates by World Bank officials in Beijing in discussions with author, 1994. CASS, 1993. Discussions by author with economists at the Chinese Academy of Agricultural Sciences on rural and urban inflation rates.

73. Beijing Review, Vol. 38, No. 4, p. 5, Jan. 23-29, 1995.

74. CSY, 1992. Beijing Review, Vol. 36, No. 18, p. 4-5, May 3-9, 1993

75. U.S. News and World Report. 12 March 1990: 44.

76. Beijing Review, Vol. 36, No. 2, p. 5, Jan. 11-17, 1993. Estimates based on discussions with the vicehead of the World Bank office in Beijing, April 1993.

77. Beijing Review, Vol. 36, No. 18, p. 4-5, May 3-9, 1993.

78. Beijing Review, Vol. 36, No. 16, p. 12-19, April 19-25, 1993.

79. Beijing Review, Vol. 38, No. 4, p. 5, Jan. 23-29, 1995.

80. The development of underdevelopment in this context, can be defined as the growth of one area being dependent on the exploitation of another. A good example of this is Nanjie village near Luohe City in Henan Province. This "model re-unified village" has amassed significant assets and subsequent income for its residents, well above the county average. But this process of development was achieved through the massive exploitation of rural labor from surrounding villages where development has been severely hindered by Nanjie's success. Almost all manual labor in factories and fields in Nanjie is performed by peasants from surrounding villages working under hazardous conditions for extremely low wages with no benefits or security. This contrasts markedly with the high average incomes ("corporate" dividends) and white-collar jobs of the "peasants" of Nanjie. Nanjie's wealth is thus dependent upon an unequal relationship with the surrounding area. Without the subordination of these surrounding villages within a labor shed dominated by Nanjie's needs, Nanjie could not maintain its rapid growth and capital accumulation rates. Contrary to village leaders' official pronouncements, Nanjie is not a repeatable model of development for the area, though it is a model being repeated throughout China. In any particular region, it represents a system resulting in highly stratified incomes between the "model" village

and the surrounding region of subcontracted-labor villages.

81. Muldavin, field notes and research interviews, Henan and Heilongjiang provinces, 1992, 1993.

82. Schell, O. 1995. "Twilight of the Titan: China--the end of an era," in *The Nation*, July 17/24, 1995, Vol. 61, No. 3.

83. Inflation, it is true, has been argued by some to be an inevitable and not too problematic aspect of a dynamic economy. On the other hand, it has caused immense social unrest in the Chinese context, partially because of a history of extremely low inflation, and partially because of the differentiated impact it has on various strata of rural and urban society, having its greatest negative impact on the poorest and most vulnerable. It adds to the sense of economic instability which I argue has had important effects on decision-making, shortening time horizons, and changing production practices. Particularly for rural producers, the time between planting and harvest exposes them to the immense risks associated with rapid inflation. Their investment is in the ground and growing. If the value of their product declines, either because its price falls or does not rise as fast as inputs to the production process, overall profitability declines increasing the necessity of intensifying production further in the next round to try to make up for the decline in income. Treadmill effects in agricultural production tend towards this kind of dynamic even without inflation. With inflation, the phenomenon is magnified. As well, inflation forces the ongoing devaluation of the RMB, bringing declining terms of international trade, and making China's loan repayment costs substantially more burdensome.

84. In 1991, 54 percent of family income in urban areas was spent on food. Between 1982 and 1988 the percentage of income spent on food was 58.6%, 59.2%, 58%, 52.2%, 52.4%, 53.4% and 51.4% respectively. The only significant drop came after the bumper harvest year of 1984 (China Statistical Yearbook, 1989, 1992: 257). It is interesting to note that among the poorest households, food expenditures comprised over 60% of total income in 1991. For rural households the average expenditure on food was approximately 40%, primarily for purchase of non-staple items not locally produced. (CSY, 1992:286). Although this percentage is not significantly different from earlier years, other estimates range as high as 65 percent or greater. (See Delman, J. 1989. *Current Peasant Discontent in China: Background and Political Implications*. *China Information* 4 (2):49). By 1992, the withdrawal of urban subsidies for food, housing, transport, medical care, and other necessities pushed inflation back up, after a period of tight control in 1990 and 1991.

85. Widespread accounts appeared at this time in the foreign press, e.g., *U.S. News and World Report* 12/3/90:56.

86. Muldavin, 1992; discussions with Hinton, Beijing, April and July 1993; Hinton, unpublished manuscript, 1993. The Renshou uprising has been widely reported in the foreign press, as well, e.g., *Newsweek*, 5/4/93: 21. These well-known events are representative of a common trend throughout much of rural China.

87. Local agricultural extension stations are now run on a profit basis. This has forced them to orient their research and personnel towards projects which yield immediate results and returns, rather than longer-term research and support for methods and technologies that may

yield more sustainable results but over time periods impossible for these units to sustain without state support. Rural relief funds from the Central government have stagnated and fallen (in absolute terms, after adjustment for inflation, and also as a percentage of total government expenditure) since 1978 (CSY, 1992:199). At the same time, the amount spent in urban areas on relief has increased.

88. Muldavin, field research interviews, 1992, 1993.

89. Muldavin, field interviews, 1990, 1993.

90. Muldavin 1994, field notes. To protect participants in this uprising it is impossible at this time to disclose the place or method of data gathering.

91. Nove, Alec. 1983. *The Economics of Feasible Socialism*. London; Boston: Allen & Unwin.

92. Sun Jia. 1990. Deputy Director of Agriculture, Heilongjiang Province, conversation with author.

93. There are better strategies than the current one to deal with the problems facing rural China. Further, despite my dire warnings, I clearly am not predicting imminent collapse, only an intensification of the rate of degradation within the new economic context with a resulting deepening of contradictions. Again, this is not an argument to return to commandist communes. One should be able to critique the current situation (even partially in relation to the old) without being nailed to the cross of commandist Maoism. There are a wide range of options that exist beyond the extremes. It is in this range that I feel alternatives must be forged if the difficult problems raised are to be solved.

94. I am referring to the dual shift of collective-planned to household-market economy, and consequent third shift from long to short-term strategies in decision making and practice.

95. Cheng, 1991.

96. Davin, 146.

97. Ideology still presents an immense barrier to the discussion of agrarian change since it is ideology that determines what questions are asked and answered, and therefore which issues receive the greatest emphasis (Muldavin, 1993, unpublished manuscript, "Chinese Rural Reforms: The Ideology of Theory and Practice, and The Contextualization of Perceptions of Agrarian Change").

Though ideology obviously shapes one's view concerning the transitional or fundamental reality of the contemporary crisis, there is much evidence that the problems are fundamental. In addition, there are options beyond capitalist free markets to solve or at least ameliorate some of the problems. The structural ones require new policy steps, not necessarily a return to a commandist economy, but possibly a shift to a policy environment and economic development model which promotes long-term views of resource use.

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