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Agricultural Evolution  
in Java:  
The Decline of  
Shared Poverty and Involution

by

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AGRICULTURAL EVOLUTION/  
IN JAVA:  
THE DECLINE OF/  
SHARED POVERTY AND INVOLUTION

William L. Collier

During the past two decades many scholars have sought resource in the concept of agricultural involution to explain Java's seemingly unending capacity for absorbing larger numbers of labors within its already densely populated rural economy. The concept of involution had its beginnings in the 1952-1954 "Modjokuto Project" where Clifford Geertz and a team of several other social scientists undertook an interdisciplinary study of certain institutional, economic, and cultural features of rural society within a small village area in East Java. Applying the concept to modes of agricultural production and distribution in rural society, Geertz went on to refine his ideas about involution in a number of publications, and finally authored a book bearing the title of Agricultural Involution. Thereafter, the concept of involution gained widespread recognition in the discourse of scholarly work on Indonesia. Nevertheless, the elegance and consuming attractiveness of the involution theory has frequently given rise to its acceptance under conditions where there should have been more on-going questioning of its validity in not only explaining events as observed in the 1960's, but also in trying to determine the relevance of the theory in understanding events in the 1970's. The following essay addresses this task and hopefully provides some new insights on the dynamics of agricultural change in Java. The first part of the essay examines the concept of involution and its adequacy in explaining certain continuities with respect to the structure of rural society, whereas the remainder of the analysis undertakes an examination of involution theory in terms of its relevance in explaining more recent evidence on the character of agricultural change within rural Java.

Trying to fully comprehend Geertz's conception of agricultural involution is very difficult because of the imprecision associated with this concept. His main definition of involution appears to be as follows:

Wet-rice cultivation, with its extraordinary ability to maintain levels of marginal labor productivity by always managing to work one more man in without a serious fall in per-capita income, soaked up almost the whole of the additional population that Western intrusion created, at least indirectly. It is this ultimately self-defeating process that I have proposed to call agricultural involution.

This definition implies that over a long period of time, rice production could absorb additional labor without a reduction in income per person to these laborers. In Geertz's view, the process of involution was most visibly apparent in rice growing with the movement toward double cropping, more careful regulation of irrigation water to the fields, careful weeding around the rice plants, selection of each rice grain to be harvested, and the use of hand-pounding in milling the rice.<sup>2</sup> Related to the land itself, he described the growth of intricate share cropping arrangements as more evidence of involution.<sup>3</sup>

Geertz extended his ideas of involution from the rice fields to just about all activities in rural Javanese villages, especially in the low-land, well-irrigated sugar cane areas. In his view, the village responded to the intrusion of the sugar cane, and the land lease system in the following manner:

The mode of its (village) adaptation was again involutinal. The basic pattern of village life was maintained, in some ways even strengthened, and the adjustment to the impingements of high capitalism effected through the complication of established institutions and practices. In land tenure, in crop regime, in work organization, and in the less directly economic aspects of social structure as well, the village ... faced the problems posed by a rising population, increased monetization, greater dependence on the market, mass labor organization, more intimate contact with bureaucratic government and the like, not by dissolution of the traditional pattern into an individualistic

rural proletarian anomie, nor yet by a metamorphosis of it into a modern commercial farming community. Rather, by means of "a special kind of virtuosity", "a sort of technical hairsplitting", it maintained the overall outlines of that pattern while driving the elements of which it was composed to ever-higher degrees of ornate elaboration and Gothic intricacy.<sup>4</sup>

Extending his ideas beyond the low-land rice areas, Geertz stated that "involution too has proceeded relentlessly onward or perhaps one should say outward, for a process which began to be felt first in full force mainly in the sugar regions is now found over almost the whole of Java."<sup>5</sup>

Various scholars have attempted to clarify the concept of agricultural involution. First among these individuals is Otto van den Muijzenberg who tested the idea of agricultural involution in the Philippines. He notes that "although there has been some criticism of minor points of the concept and theory, no fundamental critical discussion has yet taken place."<sup>6</sup> In this context, it may seem obvious, but van den Muijzenberg made a contribution just by separating the two concepts of agricultural involution and shared poverty. He classified agricultural involution as the productive side and shared poverty as the consumption (or distributive) side of the situation in rural Javanese villages.<sup>7</sup> It may be easier to test these concepts if they are separated in this manner: one being production oriented and the other consumption/distribution oriented. However, there is a difference with distribution if it is thought of as distributing work opportunity, a definition which places it closer to the production function.

A major oversight on the part of Geertz is the fact that he apparently does not include off-farm labor by farmers in his analytical framework. In most of the recent studies on Javanese agriculture it has been definitely shown that the rice farmer secures a significant share of his income from other sources, and if this other income is included, then the income per man may have

increased rather than remained constant or decreased as Geertz speculated.

In summarizing his work, van den Muijzenberg found the following:

Thus the third level at which we should consider the involution/ evolution question requires consideration of all the resources both agricultural and non-agricultural, local and non-local, available to the villagers. As long as a significant proportion of their income comes from outside the village these considerations must involve other terms than just the productivity per hectare of sawah. Geertz fails to adopt this approach even when he is dealing only with the sawah as a resource. His conclusions on evolution in the Javanese sawah ecosystems are based solely on rice production and he does not include in his calculations even the yields from second crops (polowidjo) let alone the land rent from and wages earned at the sugar mills using the sawah land.<sup>8</sup>

Another dimension of the involution thesis which is generally ignored in discussing agricultural institutions in Java is the fact that the island is characterized by great regional differences in its social and economic structure. Of course, the first major difference is between the Javanese regions in central and east Java and the Sundanese regions in west Java. Then, the east Javanese regions are much different than the central Javanese regions, which can, in turn be separated from the Yogyakarta region. Further, the Agro-Economic Survey has noticed major differences between the situation on the north coast of central Java and the south coast of central Java. Great caution must therefore be exercised in doing research in one area and then trying to generalize for other areas. In this context, Geertz did his work in east Java, and White's work on Kali Loro is in the hilly region of Yogyakarta. The Agro-Economic Survey had a sample of 20 villages in the best irrigated areas throughout the island, but concentrated on the north coast of central Java. One of the studies by members of the Agro Economic Survey concluded that various institutional changes were preventing the further spread of involution, and perhaps reversing it.<sup>9</sup> Yet, this assertion is based primarily on research in the north coast area.

Besides the problem of differences between regions, there is also the fact that peasants vary in their responses to the economic situation within a particular region at any one time. In this context, it must be stressed that Geertz did his field work in a relatively unusual period of time, for the entire country was suffering from inflation and the after-effects of the Second World War and the revolution. Unfortunately, Geertz was not able to compare the area where he did his field work with periods before or after when conditions were more stable. Only one study has been able to undertake such comparisons in measuring peasant responses to different economic conditions, and this is the very useful work by G.H. van der Kolff on "The Historical Development of the Labour Relationships in a Remote Corner of Java as They Apply to the Cultivation of Rice". Van der Kolff examined rice production in one region in east Java in 1922 and again in 1936 which gave him a marvelous opportunity to compare the two periods. In 1922, the country was enjoying prosperity and farmers were receiving a high price for their produce whereas in 1936 the country was suffering severely from the global depression.<sup>10</sup> Prices for rice were depressed, and very little money was in circulation at the village level. By stretching the point somewhat, there are similarities in the situation in 1922 and the 1970's which were relatively stable and prosperous, and the conditions in 1936 and the 1950's when the country faced severe economic problems and instability. Thus, villagers in 1936 showed much more solidarity between rich and poor than in 1922; the wages to rice field laborers were lower and they had to perform more work in an operation than in 1922; the share-cropping arrangements favored the tenant in 1922 and the landowner in 1936; cash wages were paid for planting, weeding, and harvesting in 1922 and paid in kind in 1936; labor was relatively scarce in 1922 and over-abundant in 1936.

If van der Kolff had only been in the area in 1936 he would have drawn much different conclusions about rice production than if he had only been there in 1922. Studying the two periods gave him an invaluable opportunity to examine the villagers reactions in each period. It is possible, therefore, that if Geertz had done his fieldwork in 1922 or 1970 rather than 1952 or 1936 his concepts of involution and shared poverty would have been much different.

In addition to the work of van der Kolff, another Dutch scholar with many years of experience in Java gives a different view of the situation than does Geertz. Egbert de Vries wrote in 1931 that:

The situation of the farmer before 1830, so before the cultuurstelsel, can be described as that of a small cultivator with ample land for a family-undertaking, strongly restricted but also strongly supported by forceful communal ties. His land tenure rights, although not property rights were fairly durable; only there was a redistribution of the land in case of population growth. But in this ultimate right of disposal by the village he joined with his own opinion.

Although the cultuurstelsel in Pasoeroean did not lead to the excesses which happened elsewhere, it nevertheless destroyed the class of well-to-do farmers, substantially reduced its agricultural income, and destroyed the important social relations in the village. The countryside was proletarianized, the communal tenureship with regularly rotating shares soon become a general feature. Rice cultivation declined as a result of retardation of the planting-time and diminishing care. <sup>11</sup>

Geertz argued that rice cultivation become involuted while de Vries observed that less labor and care were used in rice production. Geertz extended his concept to social relations which become involuted while de Vries felt that these relations were destroyed rather than re-enforced and involuted. Based on de Vries' much longer experience in Java, his access to all of the dutch materials, and his field research in the early 30's, it would seem that his observations are more valid than those of Geertz in the early 50's. One only wonders why de Vries

never commented on the involution concept.

Closely related to the concept of involution, is the idea of shared poverty. Logically, it follows that if villagers share job opportunities on the production side, they are just as altruistic on the consumption side. At times, in the discussions of these two institutions, the concepts are used interchangeably and it is difficult to decide if the writer is talking about one or the other.

Geertz described shared poverty in the following manner:

.... the involution process also worked its peculiar pattern of changeless change on the distribution side. With the steady growth of population came also the elaboration and extension of mechanisms through which agricultural product was spread, if not altogether evenly, at least relatively so, throughout the huge human horde which was obliged to subsist on it. Under the pressure of increasing numbers and limited resources Javanese village society did not bifurcate, as did that of so many other "underdeveloped" nations into a group of large landlords and a group of oppressed near-serfs. Rather it maintained a comparatively high degree of social and economic homogeneity by dividing the economic pie into a steadily increasing number of minute pieces, a process to which I have referred elsewhere as "shared poverty". 12

By and large, the set of mechanisms producing this fractionization of output seems to have been centered less on land ownership than on land-working. Consequently, according to Geertz there is involution of production and of distribution. Yet, what is distribution? At times he seems to be saying it is distribution of work opportunities and at other times the sharing of the results from the production process--the economic pie. In this case, it would seem to add to clarity, if agricultural involution is viewed as the process of production, and shared poverty as the distribution and consumption of the products of production.

Perhaps the most critical shortcoming in the shared poverty thesis is the fact that Geertz does not take into consideration the huge schism in village society

between those who have land and those who do not. In not discussing the landless and how they gain a share of jobs on the production side and a share of the results on the consumption side, he is ignoring almost one-half of all villagers. Geertz further states that there were no large landlord groups in the villages. It is likely, however, that this is incorrect for two reasons. First a large landlord in Java is in most cases considered as someone possessing more than three-fourths of a hectare of land. Koentjaraningrat in his study of a village in south central Java felt that "in fact, by Central Javanese standards two hectares of land is considered a large holding, and this is usually sub-divided into small parcels that are cultivated by others, following the various share-cropping systems, by renting, or by pawning."<sup>13</sup> In comparing this small land-holding size to the situation in other rice plains areas such as Thailand and the Philippines, Java would not appear to have large landlords. If it is viewed, however, from the perspective that only a very small number of farmers control most of the village rice fields, then there are landlords. While for reasons of social and governmental pressure, a farmer cannot appear to own a large amount of land, some do, in fact, control a considerable amount of land through long-term renting and share-cropping arrangements.

In a context where ownership and control of land is divided in an unequal fashion, it would seem unlikely that much sharing takes place between people across these economic strata. Indeed, much of the evidence suggests that people with land are sharing their wealth with those in the same class and usually with their relations or close friends and that the poor are simply sharing their poverty amongst themselves. Thus, in his study of a Javanese village, Koentjaraningrat provides information on the social ties of villagers which seems to indicate that there are definite limits to the sharing of wealth and poverty. First in importance to a Javanese household is to have good relations with close neighbors, then others

in same hamlet, and lastly with households in other hamlets.<sup>14</sup> Kinship ties outside of the nuclear family are quite limited, and most important are relations among farmers who have fields in the same area. Koentjaraningrat does not specify that relations with the landless, other than close neighbors or relatives, have much importance to the Javanese household, and it is difficult to believe that in these circumstances that a farmer would willingly share his resources with others in the village, especially if they are from a different social class. In partial agreement with this finding, are the comments of Selosoemardjan who notes that there are strong communal norms in Javanese society which require the surplus wealth of the individual to be shared with others in the community, but with relatives being given first priority.<sup>15</sup> He suggests that there is sharing in a rural Javanese community but it is differential and relies on kinship ties and neighbor ties. If a landless laborer has no wealthy patron, then in his own group there may still also be sharing but it is a sharing of a very little.

In her penetrating study of rural Java, Margo Lyon portrayed the problem in the following way:

But what do these trends -- admittedly involutinal in one sense, but nevertheless true social and economic changes--imply in terms of changes in village stratification? The cash economy and the processes described by Geertz may have allowed the village to absorb more people, but they also changed the relationship between people within the desa (village). It may be that most people had a niche in the system and that a situation of "shared poverty" prevailed, but increased poverty and hardship also accentuated relatively small differences in economic and social rank within the village. The "fine web of work rights and responsibilities" may not be to the point, for, given the rising level of conflict in village society in recent decades and the increase in relative deprivation, what are minute changes in and of themselves are no longer minute in their larger context. Thus, accompanying the occurrence of involution is a process of social and economic differentiation, promoted by the increased divisions and involving changes in land use, ownership, and control.<sup>16</sup>

If the village is viewed in this context, with involution being associated with differentiation then it seems to imply that shared poverty must be declining as involution increases. In a situation where there are not enough resources to ensure survival for everyone, then as conflicts among different groups develop it seems much less likely that individuals will share with someone in a competing group. Although the Javanese have as much and perhaps more social conscience as anyone, Geertz implies too much in his concept of shared poverty. Lyon very clearly states the problem:

... the increasing irrelevance of the concept of "shared poverty" since colonial times (at least to those segments of the rural sector at either end of the economic spectrum) all created the conditions for a radically different view of the village social and economic scene on the part of some of its members. 17

In his concept of involution Geertz advanced the position that the most important feature of rice production in Java was its ability to absorb increased numbers of cultivators per unit of cultivated land. According to Geertz, increases in labor use simply reflect the capacity of wet-rice agriculture to yield more output in response to intensified cultivation practices. Thus, meticulous improvements in land preparation, transplanting techniques, irrigation management, and other aspects of the growing process, all allow for marginal gains in production output and for incremental enlargements in labor input. It would seem, therefore, that improvements in seed variety would also be accompanied by advances in production and labor use, for involution concerns a process whereby improvements in the quality and management of land, water, seeds, etc., allow for higher levels of production and labor absorption. Thus, the current widespread adoption in Java of the new high-yielding varieties should be accompanied by increases in labor use. Indeed, there is now sufficient evidence available on the use of the HYV's in advancing a

preliminary assessment of involution theory in explaining farmer responses to the Green Revolution technology.

At the time the "Modjokuto team" was in east Java, the total production of rough rice (gabah) in Indonesia was 10,483,000 tons in 1952; in 1967 just before the introduction of the HYVs from IRRI it was 14,280,000 tons; and thereafter increasing to 23,100,000 tons in 1975.<sup>18</sup> Due to intensification and extensification, production increased by 240,000 tons per year before the widespread use of the HYVs and 1,102,500 tons per year after this period. The latter increase reflects the fact that beginning in 1968 the Government very actively promoted the use of the HYVs throughout the country. In the 1968/69 wet season, only 2.5% of the total rice area was planted in the HYVs, but this increased to 40.0% in the 1974/75 wet season.<sup>19</sup> In this context, and following from the involution thesis, one would expect that the widespread adoption of the HYVs would have yielded sizeable gains in increased labor use per unit of cultivated land. Nevertheless, recent research indicates that there appears to be little difference in labor inputs for the cultivation of HYVs as opposed to local varieties. Indeed, based upon several studies in east Java, where increases in output have been achieved through the use of the HYVs, less labor is being used in their cultivation than what is normally used in the growing of local varieties.

The above conclusions are supported by data gathered by the Agro-Economic Survey from a sample of 600 rice farmers in 20 villages, all in Java, and all located in the better irrigated areas. Based on this data the results are rather mixed when comparing total pre-harvest workdays per hectare of rice cultivated.<sup>20</sup> In west Java the average <sup>number of</sup> workdays per hectare <sup>needed</sup> to grow local and national varieties was 240 workdays as compared to 270 workdays to produce high yielding, modern varieties (see Table 1), but in contrast, in east Java, the representative farmers

used an estimated 260 workdays to grow the local/national varieties and 230 workdays to grow the HYVs. Comparing labor use for the larger farmers in the sample, the average workdays per hectare were 220 in west Java, 195 in central Java, and 190 in east Java for the local/national varieties; and for the high-yielding varieties the estimates were 330 in west Java, 200 in central Java, and 210 in east Java. If these data are combined for the three provinces and size differences are eliminated, then the results are as follows:

	<u>Local/national varieties</u>	<u>HYVs</u>
Hired labor (workdays/Ha)	185.	190.
Family labor	55.	50.
Total labor	240.	240.
No. of observations	531	91

Based on these estimates it appears that there was little labor-use difference in growing local and high-yielding varieties. Indeed, based on the east Java sample, which has the most observations for each variety, the local varieties grown by the representative farmers use more labor than the HYVs. These conclusions seem to be corroborated by the studies of Soelistyo in east Java, and by the research undertaken by Montgomery in the Yogyakarta area. Thus, Montgomery estimated that the IR variety used an estimated (47 observations) 317.9 man days of labor per hectare, with the local varieties (56 observations) using 317,6 man-days per hectare of pre-harvest labor, whereas Soelistyo found that there was no significant difference between IR irrigated and non-IR irrigated in terms of labor-use per hectare.<sup>21</sup>

(Table 1 around here)

The above comments relate to pre-harvest cultivation practices but perhaps the most dramatic evidence of institutional change with respect to agricultural involution is the shift from the "bawon" harvesting system to the "tebasan" system.

**Table 1. Average labor use per ha in rice production (not including harvesting and milling) by varieties and by large farmers and representative farmers in Java in the wet season 69/70.**

Province and type of labor	Local/national varieties		High Yielding varieties	
	Representative farmers	Large farmers	Representative farmers	Large farmers
<u>West Java</u>				
Hired labor (workdays)	180.	160.	200.	220.
Family labor (workdays)	60.	60.	70.	110.
Total (workdays)	240.	220.	270.	330.
No. of observations	131	27	18	8
<u>Central Java</u>				
Hired labor (workdays)	190.	165.	130.	190.
Family labor (workdays)	60.	30.	50.	10.
Total (work days)	250.	195.	180.	200.
No. of observations	197	39	2	2
<u>East Java</u>				
Hired labor (workdays)	210.	180.	190.	190.
Family labor (workdays)	50.	10.	40.	20.
Total (workdays)	260.	190.	230.	210.
No. of observations	115	22	48	13
<u>Java</u>				
Hired labor (workdays)	190.	170.	190.	200.
Family labor (workdays)	60.	30.	50.	50.
Total (workdays)	250.	200.	240.	250.
No. of observations	443	88	68	23

**Source:** Field survey carried out by the Agro-Economic Survey after the wet season 69/70 harvest and reported in William L. Collier and Achmad T. Birowo, "Comparison of Input Use and Yields of Various Rice Varieties by Large Farmers and Representative Farmers," Agro-Economic Survey, mimeographed, July, 1973, Table 1.

In this context, it may be that Geertz first perceived his ideas on involution as he was watching a Javanese (bawon) rice harvest. Thousands of people crowd into a village for the open rice harvest. Indeed, the traditional system of rice harvesting with the ani-ani in Java permits large numbers of people to join the harvest in order to acquire a share (bawon) in kind. In the past, it would seem that this method of harvesting incorporated the farmer's social concern for the poor and rested upon his role as a patron distributing benefits among his many clients within the village. These patron obligations were further reinforced by traditional patterns of communal loyalty and mutual assistance among kin and between neighboring households within the village. As would be expected, serious problems begin to appear when population growth gives rise to unemployment and to greater competition over the limited resources available in any one village. Thus, in many areas the bawon tradition, which was once a safety mechanism to support everyone in the village, has gradually been transformed into a method by which increased numbers of harvesters extract a greater share of the harvest from sawah owners in meeting their own income needs. A typical traditional harvest scene now involves women and young girls arriving early in the morning in large numbers and gathering along the edges of a rice field which they believe will be harvested. When the owner appears there is a great rush to enter the field, and to secure a strategic position in using the ani-ani to cut and bundle as much paddy as possible. An entire one-hectare field can easily be finished in one hour because as many as 500 to 1000 people may join the harvest. Once the rice is cut, the tempo slows down because it is no longer a race with one's neighbor. Each woman carries her harvested rice to the owner's house where his wife separates the bundles according to the local bawon custom into two shares, one share for the harvester and one share for the owner. Every step of the way there are attempts by these harvesters, especially if they are

from outside the village, to increase their share. A description of the problem is given by Utami and Ihalauw:

Uncontrolled numbers of harvesters result in various kinds of losses to the farmer: large numbers of harvesters cause more stamp-down loss, dropping loss and left-over loss; in carrying the rice from the field to the farmer's house, losses occur through stealing or through real transportation loss; and finally there are losses due to the distribution of shares and handling losses. 22

With increasing frequency, it now appears that many farmers are seeking to reduce their traditional harvest costs by selling their rice crop before the harvest to a middleman who is called a "penebas". The penebas usually buys an almost mature crop, and then arranges to recruit a limited number of laborers to undertake the actual harvest. Usually, a larger farmer or a wealthy person, the penebas is likely to come from the village itself or a nearby town. This so-called "tebasan" system has appeared in a number of locations, especially along the north coast of Java, and has been present for many years in other areas, but its original function was to shift the risks associated with harvesting and marketing from the farmer to the entrepreneur. Only recently has it been used to limit the number of harvesters and lower the total-harvesting wage. If the farmer did not sell to a penebas it would be difficult for him to break away from traditional social obligations in opening his field to all available harvesters. However, the penebas is considered to be a middleman and not constrained by these traditional obligations to the rural community. Although, as tebasan and its role of limiting harvesters becomes firmly accepted in the village, there are indications that farmers can then limit harvesters without using tebasan.

The profitability for the farmer in adopting tebasan as an alternative harvesting method and its advantages over the bawon system are made fully apparent in an Agro-Economic Survey's study of three villages in central Java.<sup>23</sup> In these

villages the traditional harvest shares were 1:8 or 1:9, which means the harvester theoretically received 11.1 percent or 10 percent and the crop owners 88.9 percent or 90 percent, but the harvesters were actually able to secure bawons of 1:6 or 14.2 percent of the rice they harvested which in turn increased the farmers' harvests costs. Rukasah in his very interesting study of income and expenditure patterns in Karawang regency in west Java discovered that the share for harvesters varied from 19.3 to as high as 27.1 percent instead of the standard 20 percent.<sup>24</sup> For the operators, these share-wages were quite expensive, but since there was a surplus of harvesters each harvester did not earn much. However, with the adoption of tebasan, harvests costs were greatly reduced. Thus, in the above mentioned three villages in central Java it was found that the penebas had been able to force the harvesters to take a reduced harvest share of 1:11 and 1:12, or 8.3 percent and 7.6 percent of the amount they harvested. Utami and Ihalauw noted an even greater difference in their studies with harvesters receiving a bawon of about one-tenth from a farmer and one-sixteenth from a penebas.<sup>25</sup>

Using yield estimates secured from some of the sample farmers and data on shares and wages under various conditions from two of the above three village studies, the costs of harvesting can be calculated. If it is assumed that harvesters can manage to secure a 1:6 actual share (bawon) using the ani-ani rice knife on local rice varieties, then the farmers' estimated harvesting costs were \$31.93 per hectare in Rowosari village and \$28.00 in Banyutowo village. Comparing these farmers' actual harvesting costs with the \$16.04 and \$13.60 per hectare that it cost the penebas to harvest local rice variety crops with the ani-ani, it is evident that harvest costs are reduced by 50% in using the tebasan harvesting method.

To estimate the impact of tebasan on labor use in the rice harvest is very difficult because the farmer has no idea how many people join his bawon harvest.

Even an attempt to count the number of people in a harvest proves difficult because people continuously enter the field either as harvesters or gleaners until the harvest is finished. In Banyutowo the author witnessed two harvests and counted the harvesters. The first was carried out by a farmer and the second one by a penebas. In both of these harvests sickles were used to cut the high-yielding variety (C4) paddy crop. In the farmer's harvest, the area was .24 hectares and about 100 people joined the harvest, which averages out to 425 people per hectare. In the sawah that was harvested by the penebas, the area was .54 hectares, and 105 people were involved, or 194 harvesters per hectare. An even greater difference has been reported in Jepara Kabupaten. Utami and Ihalaw noted that 96 harvesters were working in a field of .20 hectares, or 480 persons per hectare. At the same time only 50 meters away only 3 persons were harvesting a field of .14 hectares, or 21 persons per hectare.<sup>26</sup> In the first field, the farmer-owner carried out the harvest and in the nearby field a penebas supervised the harvest of his purchased crop. Comparing these numbers with a reported 675 persons per hectare on relatively large fields and an amazing 973 persons using the ani-ani per hectare on less than one-hectare fields--both for farmer harvests--in Karawang Kabupaten near Jakarta, one can easily visualize the reduced employment impact of tebasan.<sup>27</sup>

In some measure the sharp decline in labor use with the use of the tebasan system can be associated with the adoption of sickles in replacing the ani-ani knife. Returning to the above three-village study, and based upon interviews with tebasan buyers, there were 56 percent fewer harvesters when using sickles rather than the ani-ani in Rowosari and 43 percent fewer in Banyutowo. In both types of harvest the penebas restricted the number of persons. More important than just limiting the numbers of harvesters, the penebas used the same persons in each harvest, which severely restricts the number of people who benefit from harvesting.

One final comment is in order concerning the harvesting function and its declined as a labor absorptive mechanism, and this relates to the process of gleaning the field after the initial crop cutting. Traditionally, the rice harvest takes place in two stages. First, the harvesters (penderep) cut the stalks with their hand-held knives (ani-ani) and receive a certain share of the amount they harvest. Next, one or two days after the harvest, poor villagers would enter these fields and gather for themselves the stalks of rice that were missed by the penderep harvesters. In recent years, however, with increasing population pressure this institution has come under stress with more people vying for the limited resources available in any one village. Thus, with more people harvesting, the race to cut as much rice as possible is intensified. Harvesters miss the harder to find stalks of rice, and tramp down other stalks before harvesting it. Likewise, since more people join the harvest, the amount any individual can harvest has declined. Since a larger amount of rice is missed and women receive smaller shares from the harvest, more people have begun to participate in the gleaning process. No longer is gleaning (ngasak) delayed for a day or two, rather it takes place in a many areas just after the harvest, and in some villages it occurs simultaneously with the harvest. An example of this problem is the following:

In Rowosari the penderep harvesters and the pengasak harvesters begin at the same time which makes it difficult to distinguish between the penderep and the pengasak. The ngasak harvesters also may take paddy that is not a remnant. Sometimes the paddy is intentionally missed by the penderep, thus leaving it for the pengasak to harvest because these people are part of the penderep's family. As everyone files out of the field some will say they are pengasak and the crop owner has no way of disproving it. The ngasak problem and the large number of harvesters create considerable tension in the harvest between the owners and the harvesters. This is a major reason why the farmers sell their rice to a penebas buyer. If a sickle is used to harvest the rice, then no paddy is left in the field--which eliminates the ngasak harvest. 28

Again, Stoler notes the various changes in the organization of harvesting and gleaning in her observations of a village in central Java:

Those excluded (from the bawon harvest) may ask permission to glean (ngasak) what is left after the harvesters have combed the field. Gleaners have always been present at harvest time; formerly, however, they were small children and old women from the poorest families who were neither agile nor skilled enough to keep up with the quick pace of the harvesting group. With more crowding of the land and more landless families, gleaners now comprise a more diverse group of women .... Several factors have affected the gleaning system. Formerly, when water was unavailable for the dry season, harvested rice stalks were left to decompose in the fields. Thus, gleaners could come at their leisure without asking permission and seek out the few penicles missed by the harvesters the day or two before. Now that a second rice crop is planted, harvesters are followed directly by men who slash, burn, or plough the remaining stalks back into the earth for quicker decomposition. Others carry the stalks home for fodder and garden mulch. Thus the gleaners must be there on the day of the harvest between the harvesters and cleaners. 29

In summary, the above-mentioned changes in cultivation practices and the contraction in labor-use associated with these transformations provides ample evidence that something other than the process of involution is acting as a prime mover in the allocation and distribution of production functions at the farm level. The concept of involution implies the presence of certain social mechanisms and communal norms whereby the needs of the many maintain ascendancy over the wants of the few. Nevertheless, the above evidence suggests that these mechanisms are under some degree of stress and that the presumed equilibrium between labor supply and labor absorption is giving way to a condition where the values of efficiency and profit assume a much more pronounced role in the economy of agricultural production:

In his early work, Geertz states that the emergence of agricultural involution, as an underlying dynamic in the organization of agricultural production, in great part rests upon the fact that "the peasant has made certain that no effective labor saving innovation would get a foothold in his crowded economy."<sup>30</sup> This resistance against technological innovation is stressed by Wertheim in his study on social change in Java between 1900 and 1930. He mentions that a rice field owner who replaced the ani-ani with a sickle to reduce the number of harvesters would ostracize himself from the village community.<sup>31</sup> He further indicates that the village's social system was one of disguised unemployment and that the villagers' system of values prevented innovations of technical improvements because it would cause misery and distress for a large portion of the people in the village. While in the past traditional norms and sanctions within the village may have served to sustain a relatively static or steady-state condition with respect to technological change, the already mentioned adoption of sickles as part of the tebasan harvesting system would seem to suggest that age-old checks upon innovation are beginning to give way as the village becomes more enmeshed in the process of technical and economic change. Indeed, there is now ample evidence of labor-saving technologies being adopted in practically every component of the production process.

Using a sickle rather than the hand-held ani-ani knife to harvest rice is one of the more obvious signs of this evolutionary change in the Javanese countryside. Although it has been mentioned in the previous section that the adoption of sickles is associated with the use of the tebasan system, in fact, however, there is now evidence that their use is beginning to occur outside of the tebasan harvests. Resistance to the acceptance of the sickle has been reduced by its use in tebasan, and many farmers apparently feel much less enfeathered by tradition in opting for a more profitable but labor displacing technology. The reasons for this higher

profitability are as follows: (1) harvesting with an ani-ani takes longer and the farmer must spend more time in the field supervising the operation; (2) harvesters tend to select only the panicles with the most rice if they use an ani-ani as this increases the amount they harvest in competition with others; (3) if harvesters use the ani-ani, then the farmers must hire someone to clear the stubble from the field. While the use of the sickle brings certain benefits in terms of higher profits, the cost in labor displacement is quite substantial. With sickles, only about 75 man days are needed to harvest one hectare (25 people for 3 days), while with the ani-ani, 200 or more man days may be used.<sup>32</sup> Moreover, using a sickle is harder work than cutting rice stalks with an ani-ani, and when the sickle is used many women and older people are simply unable to participate in the harvest. Although only recently occurring on a wide scale, Smits in his careful counting of labour use in rice production in 1926 found that the amount of hours spent to harvest with a sickle per bau (.6 ha) can be assumed to be half of the amount of hours needed if the harvest is done with the ani-ani.<sup>33</sup>

Along with the sickle, another technological change in evidence is the use of weighing scales to determine harvest shares. The usual procedure has been for harvesters to bundle the stalks together in the field, carry them to the rice owner's house, and then the owner's wife would divide these shares by hand. Normally, before reaching the house harvesters will have already selected the largest bundles so that when the wife divides the bundles between herself and the harvester, there is not a free choice, for often the harvester has already declared which bundles she considers hers. Of course, these bundles are usually larger so that instead of a one-sixth share the harvester may actually secure a one-fourth share. Social pressure by the harvesters prevents the owners' wife from redistributing the bundles. Nevertheless, with the widespread adoption of scales or volume measures it has become increasingly

more difficult for harvesters to acquire more than their specified share of the harvest; with the scale the owner can determine exactly what the laborer should receive.

Another labor displacing technology which has begun to appear in Java, although not in large numbers, is the mechanical rice thresher. Traditional threshing methods in Java are quite labor intensive with the thrashing being done in the owner's house using either home-made threshers that resemble a bicycle, or threshing by hand. If it is a high-yielding variety that has been cut with a sickle the rice is threshed by hand on mats in the field, and then sacked and carried to the owner's house. Thus, a large number of landless laborers will lose one more income source if more modern mechanical threshers are widely adopted by larger farmers and rice huller operators in Java. In addition to changes in threshing technology, mechanized weeders are also finding their way into the production process. With the adoption of improved cultivation practices involving the use of straight-line transplanting of seedlings, rotary weeders are now being used as a substitute for labor intensive hand weeding. In one observation Sinaga notes that:

The tendency is for hand weeding (women) to be replaced by "landak/caplak" (toothed/rotary weeders, used by men and only possible when straight-row planting is used; this type of planting is almost universal in Sukagalih). Eight man-days weeding with the landak replaces approximately 20 women-days of handweeding. 34

Other forms of mechanization are also gaining a foothold in Java and the potential for their widespread use would seriously reduce levels of labor use in the rice producing sector. Thus, larger rice farmers in certain areas, particularly in west Java, have been using hand tractors (power-tillers) for at least ten years and perhaps even longer. Observations in one village indicate the following:

In one of the villages there are nine padi tractors owned by the larger farmers. These farmers want padi tractors and feel it is better to use these tractors than hired laborers. One padi tractor can plow one

hectare of sawah in one day and half of the night. During the soil preparation period one padi tractor could handle approximately 24 to 30 hectares, a process which would otherwise entail ten laborers and seven kerbau and one person with each kerbau to prepare one hectare of sawah. If the nine padi tractors were each used on 20 hectares of sawah, in the preparation period, this would displace from 2060 to 5400 man days of labor..

A detailed study of hand tractors found that "without a concomitant increase in production, employment losses for each 5-hp tiller adopted and used at three fourths utilization are an estimated 128 and 688 days per year for the displacement of kerbau and manual methods, respectively."<sup>36</sup> In some areas there may be a need for tractors in order to prepare the soil quickly enough for the next rice crop. A common complaint in some locations is that there is shortage of laborers for soil preparation. Nevertheless, if tractors are widely adopted in the heavily populated areas of central and east Java, there could be a large displacement of landless laborers. It was the judgement of those interviewed who owned tractors that a farmer should own seven acres of rice field and have effective control over 20 acres before it is profitable to operate a padi tractor.<sup>37</sup> With these large-size dimensions it may be difficult for most farmers to purchase tractors. Nevertheless, problems may arise, if organizations or contractors purchase tractors to be rented out to farmers. Since in the heavily populated areas there is a scarcity of pastures and therefore a scarcity of carabau, it is entirely feasible that the soil-preparation-contractors who now use carabau would in the future shift to tractors.

One of the most dramatic examples of technological change concerns the decline of hand pounding as the most commonly used method in the processing of rice. In the past, a small farmer typically would have women hand pound the rice for his family's consumption, while the rice he sold would be in the form of padi or gabah (unhusked rice). Hand pounding would be done by family members, if only for a small

daily amount; and by laborers if a large amount was needed for a special occasion. A large farmer would use hand-pounding laborers for the rice his family consumed, and would sell either padi or gabah. The small rice traders employed a large number of female laborers to hand-pound rice. Beginning in the early 1970's hand pounding was gradually supplanted by the use of small-scale hullers as the dominant technology for rice processing, and although it is difficult to estimate with any precision, it now appears that on Java alone, much more than 50% of the total harvest is milled by hullers.

The widespread adoption of small-scale rice mills simply reflects the fact that this more modern technology brings a higher rate of return than is the case with hand pounding. This advantage is demonstrated by the following cost calculations. Based on survey data it is estimated that the average labor can pound 31.2 kg of gabah in an eight-hour day.<sup>38</sup> If she receives 10 percent of the product and this is valued at Rp 42/kg, and if, in addition, she receives two meals per day valued at Rp 25 each, then she receives a daily wage of Rp 180. This converts into a figure for average cost of hand pounding of \$1.45 per 100 kg. By comparison, the average cost to the farmer of using a huller is \$0.54 per 100 kg including the value of the by-product kept by the miller. This difference represents a substantial increase in efficiency at prevailing prices, and the beneficiaries are those farmers who would otherwise have hired laborers to pound their rice, and the huller operators and buyers of rice, to whom prices of milled rice may be around Rp 5 per kg lower than what would have prevailed if hand pounding had remained in practice. The losers, on the other hand, are those wives of small farmers and landless laborers who would have normally gained additional income from hand pounding. These are the people who can least afford such a drop in income, as the number of alternative work opportunities for them is quite limited. Although some of the displaced women will have found work in other endeavors,

these are usually activities with lower returns. The hand pounding of rice was a relatively high-paying job for these village women, some of who could support themselves through the year from this income. In effect, the shift from a traditional technology to a more modern technology has eliminated one of the important income sources for landless villagers. Singarimbun in his revisit to the village of Sriharjo has the following comments on this change:

However, the largest change in the village is that involving the women who formerly worked hulling rice. Before the advent of the mechanical rice hullers, a hard day's work could yield a woman two kilograms of rice, according to a formula giving her one-fifteenth of the product of her work. Now, there are three rice mills in Srihardjo, and most of the women who formerly worked in this industry have lost a major source of income. When I asked five of these women what alternative employment they would seek, they answered that there was no alternative work for them. "Then what will you do?"; I asked. "We will eat more carefully (Le nedha ngatos-atos)," they replied. This expression, however desperate, is at least accurate, because they now are forced to borrow money for food, and the interest rate is substantial. If they borrow Rp 100 they generally have to pay back Rp 120 five days later. 39

Assessing the overall magnitude of the shifts in income and jobs is still not possible with any great degree of accuracy. A report by Suparmoko, et.al., confirms estimates of the number of hand-pounding laborers displaced in one rice season by the introduction of the hullers.<sup>40</sup> They estimate that 3,701 laborers per huller were displaced in a sample kecamatan in west Java, 3,229 laborers per huller in central Java, and 482 per huller in east Java. This wide difference in the east Java sample is caused by laborers working longer hours and more days; also the hullers in west and central Java processed much more rice per season because of less competition from other rice mills. In the west and central Java samples, laborers worked 5 to 6 hours per day for 20 and 11 days but in east Java it was 11 hours per day for 48 days. If these numbers are multiplied by the number of hullers in Java in 1971, then an

estimated 7,721,360 people in one season were displaced, though these people were clearly not full-time laborers. A larger schematic look at these changes can be discerned in an estimate of the total loss in labor-earnings attendant upon the changeover from hand pounding to hullers. Using a figure of 12 millions tons of milled (gabah) rice for the total Indonesian rice crop, of which half is produced in Java, it can be assumed that 50 percent of this would have been hand pounded by wage laborers in the absence of hullers and thus, three million tons of this total would have created wage employment in hand pounding. A conservative estimate is that one woman could have hand pounded enough gabah in a hour to obtain kg of beras, and therefore to hand pound 3 million tons would take roughly one billion woman-hours, or 125 million woman-days. At a daily wage of Rp 180 per day, this amounts to earnings of Rp 22.5 billion in a year, or just under U.S. \$55 million. In estimating the earnings of employees for small rice mills in hulling this amount, it is assumed that one huller can mill 1,000 tons of gabah per year (or approximately 620 tons of beras), and therefore to obtain three million tons of beras requires nearly 5,000 small-scale hullers. At an average wage bill of \$80 per month, the annual earnings of laborers in these small rice mills would be just under \$5 million. Thus, the total loss in laborer earnings attributable to the introduction of hullers seems to be on the order of U.S. \$50 million annually in Java.<sup>41</sup> This represents a substantial diminution of income for large numbers of landless households and small farmers. The hand pounding of three million tons of rice would provide wages for one million women every day for four months each year.

The above-mentioned evidence indicates that technology change and the substitution of capital for labor is beginning to permeate many aspects of Java's rice economy. The concept of involution suggests that technology functions in the service of labor absorption, and embedded within the fabric of rural society are

strictures which inhibit the adoption of labor-saving production processes. Nevertheless, the notion that the economy of Javanese society can remain immune to the penetration of new technology must be put aside in order to fully understand the current level of receptivity to new labor-displacing technologies. Obviously, some of these transformations can be attributed to interventions emanating from the larger policy and administrative arena which stands above the village, but the evidence would seem to suggest that the locus of these permutations are also rooted within the village itself, and that the evolution of change within the village is a much more dynamic process than what would be otherwise envisaged in the imagery of agricultural involution.

#### IV

Embedded within the concept of involution is the assumption that labor markets are highly responsive in accommodating additional labor, and that contained within the organization of wet-rice agriculture are elasticities which allow for high rates of labor absorption. Thus, Geertz notes that "by continuing and re-emphasizing traditional values stressing labor and the right to work, historically defined 'fair shares' for labor and a deep-seated reluctance to sell the land to outsiders" the peasant has placed a premium upon maintaining a highly labor-intensive rice economy.<sup>42</sup> Thus, in situations .... "of increasing labor supply and constant output workers will characteristically be willing to restrict their own effort to let a new man into the line ...."<sup>43</sup> Geertz further indicates that:

examples of the operation of such values include the obligation of a man with a relatively large amount of land not to work all of it himself, even if able to do so not to work it entirely with wage labor: but to allow kin, political dependents or poorer neighbors a chance to share in its cultivation. Contrariwise, such a man is expected to permit others

to use his labor on their fields, even though he has no personal economic reason to offer it. The "fair shares" idea means that even the most moderate form of "Taylorism" in the direction of agricultural labor is very difficult of accomplishment; even in the most highly monetized areas, for examples, meals are still provided workers. The reluctance to alienate land to outsiders (it is forbidden by law to alienate it to foreigners) tends, of course, to prevent the development of large landholdings. 44

The concept of "fair shares" and the adaptability of Java's rice culture in dividing up a fixed or only gradually increasing work load among a rapidly expanding labor force may have been the dominant feature of agricultural production in the 1950's, at least in the Modjokuto area, but recent evidence suggests that is far from the case in providing an appropriate characterization of Javanese agriculture in the 1970's. In particular, many studies now indicate that admission into the ranks of the employed is becoming much more limited, as landowners, in response to an increasingly labor-abundant economy seek to maintain and/or expand profits (and reduce costs as well), whereas wage-labor, now competing for fewer jobs, strives to sustain the level and permanency of its income producing sources. In this context, it appears that a variety of institutional arrangements are beginning to emerge which allow for more limited access to the labor market, a condition which is, in turn, accompanied by an attendant decline in work opportunities for many of the rural poor.

The attenuation of rural labor markets is perhaps most dramatically exemplified in the emergence of contract labor, a method of labor recruitment which some farmers are apparently employing in both their pre-harvest and harvesting operations. Thus, appearing now in some of the Agro-Economic Survey's sample villages is evidence that contract (borongan) labor groups are being increasingly used by farmers to prepare their fields. Contractor groups usually consist of several farm laborers who own or have access to a carabau (kerbau) and agree to plow and spade (hoe) for a fixed amount of money. Only rather wealthy laborers can contract to do plowing because of

the need to possess or acquire a kerbau. An example of how this new mode of labor organization works in practice was examined in some detail in Gemarang, a village in east Java, during the dry season of 1973.<sup>45</sup> It was discovered here that if the farmer uses contract labor for the soil preparation, he employs two people with a kerbau who plow the field, with four or five people then using a large hoe in spading the soil. Usually, for the contractor team, it takes from two weeks to one month to finish this soil-preparation operation. They will receive a total of 10 dachine (1 dachine = 62 kg padi kering) per hectare for this labor at the harvest time which means they are paid for four or five months later. Thus, the farmer does not have to pay them in the planting period when he is short of cash. When the contract system is used in the wet season, some of these farmers will give the contractors the right to sharecrop their sawah in the dry season as an incentive to carry out the soil preparation without pay. Because of the poor irrigation facilities in the village, the danger of a crop failure is much greater in the dry season, and in effect, the contract system serves to shift some of this risk over to the contract labor. Another reason for the farmer liking this system is that he has more control over contract work: the laborers do a better job because of their desire to sharecrop his land in the dry season and to do contract work for the farmer in the next wet season. One other benefit is that the contract system allows the owner to limit his recruitment of labor from among his own relatives, neighbors and clients. From the contract laborers' point of view, it is a preferable system because their wage is higher than for non-contract labor and they are assured of work for up to one month. However, they must have a carabau and enough capital to supply their families with food until the harvest. Thus, for most landless labor they have neither the carabau or sufficient rice to carry them over to the harvest in order to engage in this kind of contract labor. Moreover, not only is the system biased against lower income

groups it also serves to reduce total labor-use in land preparation.

There is another variation in the use of contract labor and it appears that it is being employed with greater frequency on controlling access to the harvest. Although there are many variations and names, this practice is generally known as "ngepak-ngedok" and it allows laborers to transplant and weed a specific block in the farmer's field for which they receive the right to harvest the block for a one-fourth or one-fifth share. Observations of this practice are reported by van der Kolff in his study of labor relationships in Javanese villages from 1922 to 1932.<sup>46</sup> Even before van der Kolff, there were reports of the ngepak institution. Thus, in the Adatrechtbundel II for the 1905 to 1910 period, mention is made of two methods of paying harvesters: "bawon talunan" and "bawon laragan". Those women who transplanted the seedlings also got the right to harvest the field which was bawon talunan. If the harvester did not help transplant but was invited it was bawon laragan. If they transplanted the rice seedlings, they received one-fifth of the amount they harvested, but if only invited at harvest time they received a one-fifteenth share.<sup>47</sup> More recently, Roekasah Adiratma observed in his research in west Java that "under a special type of harvesting system attempts are made to hold the number of harvesters to a minimum for every plot of rice field so that the harvesters can earn more each day. This system, called "ngawesi", (ngepak-ngedok) limits by contract the number of harvesters who have the right to harvest a plot of rice field. However, they are obliged also to cut the straw, and engage in part of the land preparation for the dry-season crop."<sup>48</sup>

The actual operation of the ngepak-ngedok institution was observed in 1973 when the author lived in a number of villages in east Java. In one of these villages the laborers transplanted and weeded the rice fields and received one meal, but at harvest time they secured a one-fifth share. Usually, one family would do this as a

group for several farmers, and if they did not have enough members to handle the harvest, they would invite others to join and give them the traditional harvesting share from their share. The family group also guards the farmers' irrigation water, applies fertilizers, and does all the operations except plowing, harrowing, and leveling the fields. To organize the operation for ngepak-ngedok, the field is divided into blocks (petak) for each family group. Usually, there are 13 to 15 blocks per hectare. One farmer who had a one hectare field said he divided it into 14 blocks. If it is a large block, he assigns two people, and if it is a small block one person is involved. He is able to assign 25 people, all family relatives, to these blocks, and at harvest time they bring other members of their family to help harvest the assigned blocks. In this particular case, a high-yielding rice variety was planted and sickles were used in the harvest. Since the laborers each receive the same share whether they use an ani-ani or a sickle, there is no resistance to using the sickle. One laborer may enter into ngepak-ngedok agreements with 10 to 15 farmers, and a small rice farmers family would be ngepak laborers for other farmers. Yet, on his own land he would assign ngepak laborers to cultivate and harvest his field. Custom requires that they assign blocks to others, though he can do one block himself.

At the time of the field survey on 1973, the majority of the sample farmers in the four villages were using ngepak-ngedok as the primary method for organizing the harvest. They assigned ngepak rights to averages of 13, 42, 23, and 4 people per hectare in the four villages, and each of these labor households would have ngepak rights in 10 to 15 plots. Relationships between the farmers and the ngepak laborer were very close; many of them were either relatives or neighbors. In effect, what these farmers and their relatives were doing was to make it appear to others that the fields had been assigned for harvesting, in order that harvest could be shared within

their exclusive group. If they do not use this institution then they are under pressure to open the harvest to everyone, using many more laborers. In brief, the ngerak-ngedok institution has evolved to prevent large numbers of wandering laborers access to the harvest. It even prevents people from the same village joining the harvest, and it thereby operates to improve the farmer's income and reduce the number of laborers in the harvesting process.<sup>49</sup>

The above analysis of emerging institutions which serve to constrain access to rural labor markets would seem to suggest that the so-called "right-to-work" prescription is losing some of its moral force as a cultural norm, and that indeed, the evidence would also seem to indicate that the other elements of the involution process, i.e., the concept of fair shares, and the prohibition against the selling of land to outsiders may be losing their presumed hold over Javanese peasant society. The concept of fair shares can certainly be questioned in light of a recent study undertaken by the Agro-Economic Survey on changing wage levels in Java. This study indicates that wage levels have increased between 40% and 50% in the three provinces for plowing, 40% and 45% for spading, and 20% and 50% for transplanting, from the 1968/1969 wet season to the 1972/1973 wet season.<sup>50</sup> Nevertheless, during this same period the price of rice for these laborers increased between 50% and 63% in the three provinces. Thus, real wages declined in all three provinces by a factor of 17%, 17% and 27% for the three-work activities (plowing, spading and transplanting) in west Java, by a factor of 33%, 55%, and 30% in central Java, and by 52%, 54%, and 85% in east Java. Declining real wages, must also be viewed in the context of increasing reports of land being sold to those who live outside the village. Land transactions are most difficult to document by field survey, but there have been frequent occurrences where the Agro-Economic Survey has turned up cases of outsiders owning village land. This evidence suggests the possibility that village land is falling more

within the orbit of commercial interests as barriers to outside control weaken in the face for increasing economic pressures from within the village itself.

In summary a review of emerging trends in the organization of wet-rice cultivation on Java suggests that the imperatives of efficiency and profitability are beginning to exact their toll in the erosion of traditions where elasticities in the production function allowed for high rates of labor absorption within the rice-producing sector. It is likely that these changes were well underway in some areas long before Geertz advanced his theory of involution, and subject to different historical conditions within a particular region, it is likely that the presence of absence of attributes associated with involution, or its polar opposite, i.e., a more commercial agriculture, have varied in their influence upon the character of village and rural society. Thus, it may be that the concept of involution has never really adequately represented the rich and variegated processes of historical change in many areas of Java, and it is for certain that future research must now move beyond involution in understanding a rice economy which seems to be exhibiting a marked tendency towards exclusion rather than absorption in responding to a burgeoning labor force.

## FOOTNOTES

- <sup>1</sup> Clifford Geertz, Agricultural Involution (Berkeley, University of California Press, 1963), pp. 80.
- <sup>2</sup> Ibid. ., p. 101.
- <sup>3</sup> Ibid. ., p. 100.
- <sup>4</sup> Ibid. ., p. 90.
- <sup>5</sup> Ibid. ., p. 126.
- <sup>6</sup> Otto D. van den Muijzenberg, "Involution or Evolution in Central Luzon", in Cultural Anthropology in the Netherlands, edited by Peter Kloos and Henri J.M. Claessen, 1975, p. 141.
- <sup>7</sup> Ibid. ., p. 143
- <sup>8</sup> Ibid. ., p. 151.
- <sup>9</sup> William L. Collier, Soentoro, Gunawan Wiradi, and Makali, "Agricultural Technology and Institutional Change", Food Research Institute Studies, Vol. XIII: No.2, 1974, p. 181.
- <sup>10</sup> G.H. van der Kolff, "The Historical Development of the Labour Relationships in a Remote Corner of Java as They Apply to the Cultivation of Rice", Institute of Pacific Relations, Report C, 1936, pp. 22 and 42.
- <sup>11</sup> E. de Vries, Landbouw & Welvaart in het Regentschap Pasoeroean, Ph.D. dissertation, Wageningen, 1931. The quote is from chapter 2, contribution to the economic history.
- <sup>12</sup> Geertz, op. cit. ., pp. 97.
- <sup>13</sup> Koentjaraningrat, "Tjelapar: A Village in South Central Java", in Villages in Indonesia, edited by Koentjaraningrat, 1967, p. 251.
- <sup>14</sup> Ibid. ., pp. 261-263.
- <sup>15</sup> Selosoemardjan, Social Changes in Jogjakarta, Ithaca, Cornell University Press, p.323.

- <sup>16</sup> Margo Lyon, The Basis of Conflict in Rural Java, Berkeley: University of California Press, p. 27.
- <sup>17</sup> Ibid., p. 28.
- <sup>18</sup> Adelita C. Palacpac, World Rice Statistics, The International Rice Research Institute, April, 1976, p. 15 and 16.
- <sup>19</sup> Ibid., p. 36.
- <sup>20</sup> William L. Collier and Achmad T, Birowo, "Comparison of Input Use and Yields of Various Rice Varieties by Large Farmers and Representative Farmers," Agro-Economic Survey, mimeographed, July, 1973.
- <sup>21</sup> Soelistyo, "Creating Employment Opportunities in the Rural Areas of East Java," 1975, p. 256. R.D. Montgomery and D.G. Sisler, "Labor Absorption in Jogjakarta, Indonesia: An Input-Output Study", Cornell University, A.E. Res. 75-10, March, 1976, p. 61.
- <sup>22</sup> Widya Utami and John Ihalaw, "Some Consequences of Small Farm Size", Bulletin of Indonesian Economic Studies, July 1973, p. 53.
- <sup>23</sup> This survey is based on data from interviews with farmers and harvesters in the Kabupatens of Kendal and Pemalang in the wet season of 1972/1973.
- <sup>24</sup> Rukasah Adiratma, "Income of Rice Farmers and Their Marketable surplus of Rice in Krawang District, West Java," Unpublished Ph.D. dissertation, Bogor Agricultural University, 1970, p. 123.
- <sup>25</sup> Utami and Ihalaw, op.cit., p. 55
- <sup>26</sup> Widya Utami and John Ihalaw, "Farm Size: Its Consequences on Production, Land Tenure, Marketing, and Social Relationships in Klaten Regency", Central Java, Research Institute of Social Sciences, Satya Wacana University, Central Java, mimeographed, 1972, p. 17.
- <sup>27</sup> Adiratma, op. cit., p. 119.
- <sup>28</sup> William L. Collier, Soentoro, Gunawan Wiradi, and Makali, "Agricultural Technology and Institutional Change in Java", p. 177.

- <sup>29</sup> Ann. L. Stoler, "Rice Harvesting in Kali Loro: A Study of Class and Labor Relations in Rural Java", presented at the 75th Annual Meeting of the American Anthropological Association, November, 1976, p. 10.
- <sup>30</sup> Clifford Geertz, The Development of the Javanese Economy: A Socio-Cultural Approach, Cambridge: Center for International Studies, Massachusetts Institute of Technology, 1956, p. 35.
- <sup>31</sup> W.F. Wertheim and The Siauw Giap, "Social Change in Java, 1900-1930", Pacific Affairs, Fall 1962, p. 228.
- <sup>32</sup> William L. Collier, Gunawan Wiradi, and Soentoro, "Recent Changes in Rice Harvesting Methods", Bulletin of Indonesian Economic Studies, Vol.IX, no.2, July 1973, p. 41. Sinaga also reports as follows in his research on labor displacement and the use of the sickle in west Java: "Harvesting by women with the small-bladed ani-ani (paid with a 1/11 share of the harvest) is sometimes replaced by men using sickles and paid with the same 1/11 share. These men are generally hired from outside the village. Twenty-seven men with sickles replace 46 women with the ani-ani". Rudolf Sinaga, "Rural Institutions Serving Small Farmers in the Village of Sukagalih, Garut Regency, West Java", prepared for the ESCAP Expert Group meeting on Rural Institutions Service Small Farmers, Bangkok, December 13-17, 1976, p.6.
- <sup>33</sup> M.B. Smits, "Arbeidsaanwending in den Natten Rijstbouw op Java" (Use of labor in wet rice cultivation in Java), Landbouw, 1925-1926, p-269.
- <sup>34</sup> Sinaga, op. cit., p.6.
- <sup>35</sup> William L. Collier, Jusuf Colter, and Chaerul Saleh, "Observations on Recent Rice Problems at the Farm Level in Subang Kabupaten", Research Notes No.12, December 1972, p.3.
- <sup>36</sup> Richard Morris, The Potential Impact of Mechanical Land Preparation in the Indonesian Small-holder Production Sector, 1975, p. 101
- <sup>37</sup> Collier, aet. al., op.cit.
- <sup>38</sup> For a more detailed analysis of changes in rice processing see William L. Collier Jusuf Colter, Sinarhadi, and Robert d'A Shaw, "Choice of Technique in Rice Milling in Java: A Comment", Bulletin of Indonesian Economic Studies,

- Australian National University. March, 1974, pp. 36-45; and  
 C. Peter Timmer, "Choice of Technique in Rice Milling on Java",  
Bulletin of Indonesian Economic Studies, Vol IX, No.2, July 1973.
- <sup>39</sup> Masri Singarimbun, "Notes-Sriharjo Revisited", mimeographed, 1976, p.8.
- <sup>40</sup> (a) Suparmoko, Nugroho Budijuwono, Nopirin, Eukmono Markam, and Ace  
 Partadireja, Penyerapan Tenaga Kerja pada Intensifikasi Penanaman  
 Padi dan Pengolahan Padi di Jawa dan Bali, 1972-
- (b) Wirjadi Prawirohardjo, Peranan Ekonomi Perusahaan-Perusahaan Pengolah  
 Padi di Djawa Khususnya di Dua Kabupaten di Djawa Barat, 1968.
- <sup>41</sup> William L. Collier, Jusuf Colter, Sinarhadi, and Robert d'A Shaw,  
Ibid, pp. 36-45.
- <sup>42</sup> Geertz, The Development of the Javanese Economy, p. 35
- <sup>43</sup> Geertz, Ibid., p. 22.
- <sup>44</sup> Geertz, Ibid., p. 114.
- <sup>45</sup> This study was undertaken by the author and is based on interviews with  
 farmers, laborers and village leaders.
- <sup>46</sup> van der Kolff, op. cit., p. 18-20.
- <sup>47</sup> Adatrechtbundel II, Vol. II, 1905-1910, p. 154.
- <sup>48</sup> E. Roekasah Adiratma, "Income and Expenditure Patterns of Rice Producers in  
 Relation to Production and Rice Marketed: A Case Study in Karawang,  
 West Java", 1969, p. 128.
- <sup>49</sup> It is evident that as the ngepak-ngedok system includes more rice operations  
 it begins to resemble share-cropping but with a much lower share to the  
 laborer. In fact, Jay classified it as the most humble form of share-  
 cropping because the ngepak laborer is responsible only for the care  
 of the plants and receives between one-fifth and one-tenth of the harvest.  
 Although there is no solid evidence, the ngepak-ngedok institution may  
 be evolving into a form of sharecropping that very effectively reduces

cost and laborers. It may also be increasing, especially in west Java where in a survey of 795 villages in the Cimanuk River basin, in 15% of the villages ngepak-ngedok was expanding in area, and in 36% it had remained constant in area over a five-year period. See Robert R. Jay, Javanese Villagers: Social Relations in Rural Modjokuto, 1969, p. 264, and Abunawan Mintoro, "Keadaan Perubahan-Perubahan Beberapa Pranata Sosial Pertanian di DAS Cimanuk pada Tahun 1970-1975 (Changes in Various Institutions Related to Agriculture in the Cimanuk River Basin 1970-1975)"; Research Report No.1, Rural Dynamics Study, Agro-Economic Survey, June 1976, p.9.

50 Makali, "Upah Buruh Tani Tanaman Padi Dikaitkan dengan Kenaikan Produksi dan Harga Padi Selama Lima Tahun di Dua Puluh Desa Sampel Intensifikasi Padi Sawah di Jawa", (Farm laborer wages in rice cultivation related to increasing production and rice price during a five-year period in twenty-sample villages), Memorandum Survey, Agro-Economic Survey, 1974. Information on wages in 1968/1970, and 1970/1971 is based on five villages in west Java (one village used gotong royong labor and there were no prices), eight villages in central Java, and six villages in east Java; in 1971/1972 and 1972/1973 it is based on three villages in west Java, six villages in central Java, and six villages in east Java.

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