

the land is excellently abundant in rice and other victuals; all the rice that is carried along the whole coast of Java to Molucca, Johore, Ambon and Banda is usually loaded from here."¹⁴

¹⁴Schrieke, 1955, p. 267. The Mataram here is of course the Islamic one of the seventeenth century, not the Hindu one of the eighth; but the region in which it was situated is more or less the same.

4. THE COLONIAL PERIOD: FOUNDATIONS

The Company

At the inception of the colonial period, then, the over-all ecological pattern was fairly well set: on Java, a wet-rice agrarian heartland shading off into less developed regions to the west, east, and north; in the Outer Islands, an immense tropical forest worked only here and there by small tribes of swidden farmers. The first object of interest of the Dutch, as of the Portuguese who immediately preceded them, were the Moluccas, the fabled spice islands; but their attention soon turned toward Java, and it is upon it that they mainly superimposed their colonial economy, turning back again to the Outer Islands only toward the end of the past century.

"Superimposed" is the proper word, because what the Dutch were essentially concerned to do, from 1619 to 1942, was to pry agricultural products out of the archipelago, and particularly out of Java, which were saleable on world markets without changing fundamentally the structure of the indigenous economy. The Netherlands was never able, particularly after William I's attempt to re-absorb Belgium failed, to develop a manufacture export

economy even remotely comparable to that of Britain, and so the interest of the Dutch in Indonesia remained overwhelmingly mercantilist to the end. The stimulation in Indonesia of extensive markets for industrial goods, it was feared, would lead only to increased British (or, later, Japanese) influence; the essential economic task was to maintain a decent differential between the import and re-export prices of East Indian agricultural products—a task which implied the developing of Dutch commercial institutions and the discouraging of Indonesian ones.¹ Amid the apparent fluctuations of policy, the colonial period consists, from the economic point of view, of one long attempt to bring Indonesia's crops into the modern world, but not her people.

The means for accomplishing this effort to keep the natives native and yet get them to produce for world markets was the formation of a chronically, and in fact intrinsically, unbalanced economic structure sometimes referred to as "dual."² In the export sector, there was administrative capitalism: a system in which the holders of capital, the Dutch, regulated selling prices and wages,

¹ The one exception, and that but a partial one, to this generalization was the export of textiles to Indonesia from Twente after 1870. See van Kilaavren, 1955, pp. 133–136, 138, 164, 192. Of course, East India products did not have to be carried to Holland before being "re-exported," but could be taken directly to foreign ports (from 1928–1939 about 90 percent of them were—see Boeke, 1947, p. 105).

² Boeke, 1953. The fact that Boeke's theoretical explanations for dualism were largely unsound, his pessimistic assessment of its policy implications arbitrary, and his views concerning Indonesian (or "Eastern") "mentality" fanciful (see Higgins, 1956) ought not to obscure the fact, as it sometimes has, that, although mal-integration of labor-intensive and capital-intensive sectors is a general phenomenon, in the Netherlands East Indies economy this mal-integration was present to an extraordinarily high degree; and that Boeke recognized this fact, even if he did not understand the reasons for it, as early as his 1910 Leiden dissertation, long before the modern concern with "factor proportions," "multi-sector models" and "discontinuous investment functions" made it seem like an analytical commonplace. For the half-century debate between Boeke and his critics in Holland, the bulk of it rather beside the point, see Indonesian Economics, 1961.

controlled output, and even dictated the processes of production. In the domestic sector there was family-unit agriculture, a little home industry, and some petty internal trade. As the first expanded, stimulated by rising world commodity prices, the second contracted; land and labor were taken out of rice and other village staples and put into sugar, indigo, coffee, tobacco, and other commercial crops. As the first contracted, responding to collapsing international markets, the second expanded; and a steadily growing peasant population attempted to compensate for a lost money income, to which it had become increasingly accustomed, by intensified production of subsistence crops.

With perfect flexibility, such a system might seem less disruptive of traditional society than the more direct methods of other colonial governments—and some disinterested observers, for example Furnivall, have held it to be so.³ But it did not even approach perfect flexibility: the monopolistic nature of economic organization on the dynamic European side, fused with the political administration of the colony (at first explicitly, later merely *de facto*), made stickiness inevitable. Not only did a booming export market tend to compress the subsistence sector beyond realistic limits, but the ability of Dutch economic leadership to respond effectively to rapidly changing market conditions and developing technology was constrained by the weight of financial conservatism and by the political and economic vicissitudes of the home country. The tendency was to maintain outmoded policies to the point where the peasant subsidization of the export sector through low rents and wages became so altogether oppressive that articulate Dutch moralists would arise to stir Holland's Calvinist conscience with the specter of "declining native welfare." Then, after a few decades of ineffectual reformist experimentation and increasing penetration of East Indies trade by rival powers, a new program would be produced which would promise, finally, to make it possible to draw a commercial

³ Furnivall, 1948.

profit from Indonesia while leaving its inhabitants unharmed—even, in any fundamental sense, untouched.

However, it was always more or less the same program in, for the times, modern guise. East Indian colonial history was marked by a series of politico-economic devices (the East India Company, the Culture System, the Corporate Plantation System) by means of which the European "merchant capitalism" side of the dual economy was to be more efficiently organized for the production and marketing of export crops, and the Indonesian "peasant household" side was to be better protected against the disruptive effects of this large-scale commercial agriculture. Driven on by ever-increasing capital requirements, the Dutch moved from the institutional contrivances of adventurous capitalism in the eighteenth century, to those of state capitalism in the nineteenth, and to those of bureaucratic capitalism in the twentieth. But, as each contrivance or device, building upon the ruins of its predecessor, entailed a yet deeper penetration of the rural economy by Western enterprise, it actually made it more difficult to isolate native life from the economic forces with which such enterprise deals. Modern Indonesia was created both because of Dutch policies and in spite of them.

The Dutch East India Company, the first of these devices, was formed in 1602 as a state-chartered far-eastern trade syndicate with considerable autonomy ("a state within a state") in order to counter the active competition of both Asiatic merchants and other European powers trafficking around the archipelago.⁴ At first, the Company was only interested in commerce—in securing by hook or by crook whatever products might be carried from places where they abounded to those where they were scarce. Aside from its depredations in the Moluccas, something of a landmark in the history of mercantile brutality, its initial impact

⁴ The Company's activities were of course not confined to the Indonesian area. The best book on its commercial aspects is Glanmann, 1958. For its social impact in Indonesia, see Gonggrijp, 1957, pp. 181–321.

was mainly concentrated, therefore, in the passage ports of the Java Sea, and particularly in those dotting Java's north coast. But, in an age of rampant mercantilism, the catchword is not "business is business" but "trade follows the flag": commercial development implies political expansion. The Company—"tired of the forcing up of tolls and market taxes and the constant giving of presents to rulers and lords"—soon turned toward gaining a more comprehensive control over sources of supply.⁵ By 1684 it dominated all of Sunda; by 1743 the entire Pasisir and most of the East Hook; by 1755 the Kedjawén. (The Moluccas had been in hand since about 1660.) What began as a trade combine ended, not without struggle, as a sovereign.

The colonial economy this marriage of the economic and the political produced was one in which, as Gonggrijp has well said, sharp distinctions among free, pre-emptive, quota and monopoly commerce, all conducted under the shadow of the cannon, are not too usefully made.⁶ The Company, adjusting to local conditions, functioned in diverse ways in different parts of its realm. But its activities everywhere worked toward the same end: the reduction of indigenous chiefs to dependents and the substitution of tribute for trade.

In the Moluccas, the luckless source of cloves and nutmeg, the Dutch imposed restriction of cultivation, collective punishment (for "smuggling"), and forced labor exercised through the agency of humbled native rulers. In the pepper areas, Bantam-Lampung and, to a lesser extent, central Sumatra, treaties with harbor sultans established quotas and fixed prices. In the Priangan highlands coffee gardens were introduced with traditional aristocrats acting as the Company's labor contractors. Immediately around Batavia and the adjoining northwest coast, there were nearly a hundred private sugar estates, leased from local lordlings now converted to Company employees, the proprietors of which (almost all Chinese) consequently exercised seignorial rights over

⁵ Schrieke, 1955, p. 62.

⁶ Gonggrijp, 1957, p. 40.

the villagers who chanced to live on them. And in still but half-subdued central Java were simple levies in rice, timber, cotton thread, beans, and cash. By the time the Company dissolved in bankruptcy on the last day of the eighteenth century, it had laid down the general lines which the Netherlands East Indies economy followed to the end.

But only the general lines. The Company established the Dutch presence in the archipelago, introduced a few new cultivations (mainly coffee; pepper, spices, and sugar preceded it) and devised, in rough form, most of the techniques for skimming cash crops off the surface of an immobilized subsistence economy which later became so useful when Java filled up with peasants. But its impact on the Indonesian ecological pattern as a whole was marginal and unsystematic. It capitalized on it where it could, demanding deliveries, fixing prices, restricting trade but, with a few exceptions, such as the decimation of Banda, it did not attempt to act upon it directly. Its work was pioneering; consolidation of the approach it established came after it with the next major scheme to make Indonesia pay—the Culture System.

The Culture System

To speak of the Culture System⁷ as a stage of Indonesian economic history, however, is to speak synecdochically. That stroke of fiscal genius by Governor General van den Bosch which we conceive to be the System proper—the remission of the peas-

⁷ *Cultuurstelsel*. Properly, this term ought to be Englished as "Cultivation System," but the "Culture System" mistranslation is so embedded in the literature that it seems less confusing to continue to employ it. A great deal has been written about the Culture System (see, for example, the bibliography in Reisma, 1955, pp. 183-189), but much of it has been marred by focus on its short-run impact at the expense of its long-run effects, and in particular by an anxious concern with its immediate moral justifiability (or lack thereof) rather than its importance as part of the crystallizing Colonial pattern in Indonesia and the role it consequently played in the formation of modern Indonesian society. The most important exception to this stricture is the discussion by Burger, 1939, pp. 117-160.

ant's land taxes in favor of his undertaking to cultivate government-owned export crops on one-fifth of his fields or, alternatively, to work sixty-six days of his year on government-owned estates or other projects—was only part of a much larger complex of politico-economic policies and institutions. Alongside the mammoth state plantation which this system tended to make of Java, there was a whole series of adjuncts, related systems, and independent growths, so that the picture of the island from 1830 to 1870 is a much more differentiated and much less static one than that which has so often been drawn for us. And yet, in spite of this, in spite of the fact that it never encompassed more than about 6 percent of Java's cultivated land or about a quarter of her people in any one year, and although it was only fully applied for perhaps two decades, van den Bosch's miraculous invention ("less taxes but more Government revenue!" as de Graff exclaims in mock wonder) does define the period.⁸ And the period defines the age: ecologically, at any rate, it was the most decisive of the Dutch era, the classic stage of colonial history, as the Company was the formative.

The System, in this larger sense, was decisive in at least three ways. By its intense concentration on Java it gave a final form to the extreme contrast between Inner Indonesia and Outer which thenceforth merely deepened. It stabilized and accentuated the dual economy pattern of a capital-intensive Western sector and a labor-intensive Eastern one by rapidly developing the first and rigorously stereotyping the second, a gulf which also subsequently merely widened as Dutch investment grew. And, most important of all, it prevented the effects on Javanese peasantry and gentry alike of an enormously deeper Western penetration into their life from leading to autochthonous agricultural modernization at the point it could most easily have occurred. Such charges, more serious than those usually leveled against the System by its enemies (that it was brutal, corrupt or uneconomic), demand, clearly, both explanation and substantiation.

⁸ de Graff, 1949, p. 407.

The impact of the Culture System upon indigenous Javanese agriculture was, of course, mainly exercised through the agency of the cultivations it imposed as substitutes for money taxes.⁹ Under its aegis, virtually every crop which at the time might conceivably be grown with profit was attempted: indigo, sugar, coffee, tea, tobacco, pepper, cinchona, cinnamon, cotton, silk, cochenille; in Tjirebon, the government even tried for a while, with disastrous results, to turn rice into a levy by demanding it in lieu of taxes also and contracting with private millers to mill it.¹⁰ Almost all these experiments, save coffee and, most spectacularly, sugar, eventually failed; but the effect of this tinkering with the established ecosystems was nonetheless profound. Today almost none of these crops are of central importance in Indonesian exports, which—minerals aside—are dominated by rubber and copra. But they established the matrix within which the present farming system, steadily replacing profitless crops with profitable ones, matured, and, in fact, over-ripened.

In these terms, the imposed crops of the Culture System sorted themselves out into two broad categories: annuals (sugar, indigo, tobacco), which could be grown on sawahs in rotation with rice; and perennials (coffee, tea, pepper, and less important cinchona and cinnamon) which could not.¹¹ As a result, these two cultivations developed sharply contrasting modes of interaction with the established biotic communities into which they were projecting, by order of the King. The annuals tended to fall into a mutualistic relationship with such communities, sharing their habitats with them, if not exactly without strain, at least without deterioration on either side and, in fact, with a degree of reciprocal encouragement. The perennials (except for the spices, which had been grown on swiddens since well before the Dutch advent) tended to fall into an insular relationship, pre-empting unused

⁹ For a history of taxation practices in Java up to 1816, see Bastin, 1957, pp. 102–103.

¹¹ This point has been particularly well emphasized by van Klaveren, 1955, pp. 18–19, 118, 120.

habitats and sealing themselves off from the indigenous systems as independent enclaves. It is, to anticipate, but a sort of natural irony, a kind of immanent parable, that, in the long run, it was the mutualistic relationship which turned out to be the more injurious to Indonesian economic vitality.

The two main cultivations, the only ones which occupied much land, absorbed significant quantities of labor, showed important profit, or exercised a lasting influence on the general structure of the peasant economy, were sugar on the annuals side and coffee on the perennials, and they may be taken as type cases.¹²

Sugar demands irrigation (and drainage) and a general environment almost identical to that for wet rice; thus, it was almost of necessity initially cultivated on peasant sawah, for the most part under the one-fifth remission of land-tax procedure.¹³ Coffee pre-

¹² In 1830, coffee accounted for about 36 percent of Netherlands East Indies exports by value, sugar for about 13 percent; for 1850, the figures are 32 percent and 30 percent; for 1870, 43 percent and 45 percent. Calculated from Furnivall, 1944, pp. 129, 169. For a while, indigo was important, particularly in some dense sawah areas (see, for example, van Doorn, 1926, pp. 37–38). But it never proved very profitable and eventually became almost completely replaced by sugar as the latter flourished. In 1840 indigo accounted for nearly 9 percent of the export value; by 1870 for about 3 percent (Furnivall, as above), and eventually the invention of synthetic dyes removed it from the scene more or less altogether. Coffee and sugar largely dominated the later phases of the Company period too: see Day, 1904, pp. 66–70.

¹³ In the indirectly ruled principalities of Surakarta and Jogjakarta, to which this procedure did not formally extend, it was cultivated under the seigniorial village-lease system (in which the entrepreneurs rented what were essentially political rights over the villages and the villagers who lived in them from the Javanese aristocracy) which had by now migrated from its original foothold on the northwest coast and shifted from Chinese to European hands. In a few special areas, such as the still sparsely settled Surabaja delta, the quasi-private entrepreneurs rented the necessary sawah and hired the required labor from village authorities on a cash-and-carry basis, usually with capital advanced by the government on condition that the crops produced be sold to it at contracted prices. But these latter systems added up to mere variations on the basic approach—the establishment

fers a highland setting, does not need irrigation, and requires a relatively constant labor force rather than the seasonally variable one of sugar; thus, it was grown on so-called "waste" (that is, *uncultivated*, not *uncultivable*) land, for the most part under the labor-tax procedure. Sugar obligations were measured in terms of units of land per village which had to be devoted to its cultivation; coffee assessments were levied in terms of the number of trees each conscripted family had to care for.¹⁴ It would be expected, then, that sugar, integrated into the sawah regime, would become a peasant crop and coffee, isolated from peasant agriculture, would become an estate crop. Instead, however, in the final three decades of the Colonial Period, about 60 percent of Indonesia's coffee production was coming from (almost entirely Outer Island) small holders, and more than 95 percent of her sugar production (still wholly confined to Java) from Dutch-owned corporate plantations.¹⁵

This paradox dissolves, however, when the mutualistic and "exclusivistic" relationships are considered. In the mutualistic relationship, the expansion of one side, sugar cultivation, brings with it the expansion of the other, wet-rice growing. The more numerous and the better irrigated the terraces are, the more sugar of a symbiosis between the Javanese subsistence economy and the Dutch commercial economy. For a description of these variant arrangements, see Reinsma, 1955, pp. 125-159.

¹⁴ van Klaavert, 1955, p. 120. Of course, the relation between labor-force requirements, environmental factors, and the location of the two sorts of cultivation was again a systematic, not a linear one. In part, at least sugar was planted in the lowlands, because that was where the usable population was, coffee in the highlands, because that was where the usable land was. The relative importance of ecological and economic variables in determining the spatial distribution of estate agriculture in Java is difficult to determine with any precision at this late date.

¹⁵ For coffee, Metcalf, 1952, p. 70. Small-holder sugar production, because it was so marginal, is much harder to determine precisely; my 5 percent or so estimate is based on the graph on p. 418, of van de Koppel, 1946. A discussion of small-holder sugar-growing and the reasons for its weakness can be found in van der Kolff, in Ruopp, 1953.

can be grown; and the more people—a seasonal, readily available, resident labor force (a sort of part-time proletariat)—supported by these terraces during the nonsugar portion of the cycle, can grow sugar.

The dynamics on either side of this odd ecological bond support their respective growths. If terracing is improved or extended, because of more and better irrigation, the peasant food production and commercial cultivation can both be increased although they are being grown, so to speak, on the same land. This, in turn, makes it possible to conscript maximum amounts of land and labor into the commercial sector on a temporary basis while leaving that sector "morally" free to contract whenever market conditions so indicate, under the theory that the peasant is only passively engaged in the wider economy and that such contracting merely provides him—until prices recover—with more land to farm and more time to farm it. For men whose whole thought and feeling is consumed by export statistics, as Gonggrijp has said of van den Bosch's, this is an attractive arrangement.¹⁶

The pleasing symmetry of this picture assumes that population increase is at least matched by the intensive or extensive growth of sawah, and, as we shall see, this eventually came very much not to be the case. It also assumes that the profits to be gained from sugar (or other products) will not prove so fatally attractive as to lead to an overexpansion of its cultivation at the peasant's expense—a danger the government always seems to have realized but not always seems to have been able, or perhaps willing, to avoid. And, more to the immediate point, it assumes that there will be no drift of the market mentality across the export-subsistence line; namely, that Javanese peasants will not themselves replace the cultivation of rice on their lands by small-holder sugar. If they do, the resultant pressure on the subsistence base means that it will be more difficult to conscript peasant land

¹⁶ Gonggrijp, 1957, p. 195.

and labor. The workability of the whole mutualistic relationship depends, in short, on each side "doing its job"—the subsistence side feeding the labor force, and the commercial side producing state revenue.

Nor does this change essentially if, as also soon occurred, forced labor is replaced by paid labor, if land is rented rather than its use appropriated as a form of taxation, and if private entrepreneurs replace governmental managers. Then, it is a matter of holding down money wages and rents and avoiding the formation of a true proletariat without the productive means with which to provide its own subsistence.¹⁷ In the Culture System and its appendages political control was pervasive enough, particularly in the settled sawah areas, to prevent the expansion of peasant cane growing: the main problem seems to have been to contain the commercial pressures sufficiently to keep the peasants from fleeing their land altogether. Later, Dutch control of milling, legal restrictions, and semilegal pressures easily effected the same aim of keeping small-holders out of the cane-growing business, and there was no place left to which to flee. In the framework of a colonial political system, the close ecological tie between sugar and rice became the basis for their radical economic separation.

For coffee, the situation was different. Introduced first during the Company period in the Priangan highlands of Sunda under a proto-Culture System arrangement, and later spread to the mountainside areas of the still sparsely settled East Hook, and to some extent of the Kedjawèn, it became by the beginning of the nineteenth century Indonesia's most profitable export. (When the Padri wars gave the Dutch their entree into the Padang highlands after 1837, the forced cultivation of coffee was introduced there too, about the only important example of the Culture-System type of approach outside of Java.) Cultivated, thus, on "waste" land, coffee's fortunes were only indirectly linked with those of peasant subsistence agriculture. Coffee did not demand

¹⁷ Even under the Culture System a certain quantity of money wages and rents were paid. See Burger, 1939, pp. 140 ff.

the periodic efforts of great hordes of peasant-coolies organized anti-like into short, intensive "campaigns," but the steady, painstaking application of at least semiskilled labor, and so it was cultivated by a labor force less massive and less fluctuating than the one employed in sugar.

Such a system naturally leads to the formation of enclaves, manned by permanent, fully-proletarianized workers. Although under the Culture System labor was still drawn almost wholly from the lower-lying rice villages, true plantations, with coolie settlements established on or around them, soon developed, particularly in eastern Java where a supply of landless peasants was available from well-populated but largely sawahless Madura. By the end of the colonial period, the divergence between this pattern and that characteristic of sugar was virtually complete: of the four sugar enterprises studied by the Coolie Budget Commission Report of 1939-40, none had any resident cane workers; for the three coffee estates, 100 percent of the coolies were housed on and by the estate.¹⁸

Yet, at the same time, the Dutch were much less concerned to discourage, or prohibit outright, peasant cultivation of coffee than of sugar. A perennial, sugar could not be grown on sawah, and as the government regarded all "waste" lands as its personal property, the reservation of uncultivated land to estate exploitation was easily managed. On the other hand, coffee-growing fitted well with swidden, particularly on hillsides, where small gardens could be cared for without any real pressure on subsistence cultivation and, in fact, as the trees helped with the closed-cover problem, perhaps with some benefit to it. Coffee trees could be planted in swiddens and, taking three or four years before they became productive, could be maintained as gardens after the other swidden crops—grains, legumes, roots—had ceased to be economic and had been "shifted" to another

¹⁸ Living Conditions of Plantation Workers and Peasants on Java in 1939-1940, 1956, pp. 6, 13. The distinction is not always quite this sharp, of course, but the contrast is clear over-all.

plot, thus fitting neatly into the phased intercropping pattern of swidden generally. Like pepper before it and rubber after it, coffee could be woven directly into the fabric of swidden farming, and so it spread from its Dutch-established Outer Island beachheads in west Sumatra, north central Celebes, and other areas to free small-holder cultivation in a way sugar, bound to sawah with that dismal combination of dependence and separation we associate with Siamese twins, never did.¹⁹

This spread, like the full development of enclave plantations, occurred well after the decline of the Culture System, when the Outer Islands began to feel more directly the impact of Western commercial interests. But the basis for the spread was laid during the decline. The isolation of coffee cultivation on enclave European estates, like that of rubber later on, made the barrier to the drift of a commercial orientation to agriculture into the peasant sector much less formidable in the long run than did the mutualistic integration of sugar with wet-rice growing. Here, ecological separation eventually reduced economic contrast, at least in the sense that peasant agriculture became a functioning element in the Indies' export economy rather than merely its backstop; peasant agriculture was developed, at least in part, into a business proposition rather than becoming frozen into a kind of outdoor relief. By the end of the colonial period, around 45 percent by value of Outer Island peasant agriculture was embodied in export crops as against food crops, in Java about 9 percent. Put another

¹⁹ For a discussion of the role of tree crops in the swidden cycle and their continued harvesting over extensive periods, see Conklin, 1960. For the integration of coffee trees into the swidden pattern in Outer Indonesia, see van Hall, n.d., pp. 105-106; Paerels, 1946; and Pelzer, 1945, pp. 23-26. For pepper, see Rutgers, 1946. For rubber, van Gelder, 1946; and Thomas, n.d., pp. 21-23 and Appendix H. Tree crop planting in swiddens is, of course, not free of the adaptive constraints of the regime generally; much of southwest Sumatra was planted with *Robusta* coffee trees in the early 1930's, only to be abandoned with the collapse of coffee prices in the depression, leaving vast areas to revert to *imperata* savannah (Benjamin Higgins, personal communication).

way: though the production (by value) of food crops per capita was approximately the same, the per-capita value of export crops was about seven times as high in the Outer Islands.²⁰

But despite this difference in relationship to existing ecological patterns, annuals and perennials grown under Dutch auspices shared another critical property that peasant cultivations (even when they were the same crops and were grown for the same commercial ends) lacked—they were integrated into a modernizing economy.

This basic difference—a sociological and not an ecological one—now-split Netherlands East Indies agriculture into two radically unconformable strata which, despite Boeke's objections, one can only call "native" and "foreign," or, perhaps better, Indonesian and Dutch.²¹ For the large-scale, well-capitalized, rationally organized estate agriculture which by 1900 accounted for 90 percent by value of Indonesia's exports (by 1938, after Outer Island small holders got well established, 60 percent), was essentially not part, save in a merely spatial or geographic sense, of the Indonesian economy at all, but of the Dutch.²² The universal practice of colonial historians of opposing the NEI economy as a unit on the one hand to the Netherlands economy as a unit on the other merely obscures this crucial fact. There never really was, even in Company times, a Netherlands East Indies economy in an integral, analytic sense—there was just that, admittedly highly autonomous, branch of the Dutch economy which was situated in the Indies ("tropical Holland," as it was some-

²⁰ Boeke, 1947, p. 25. As Boeke remarks, such figures (which are for 1939 and are computed on the agrarian population alone) can be at best general estimates, particularly on the food crop side, but the order of magnitudes is such that the broad picture is clear.

²¹ Some of the "Dutch" side actually came into British, American, etc., hands; by 1937 about a quarter (Allen and Donithorne, 1957, p. 288). Boeke's desperate attempt to dissociate dualism and colonialism is to be found in his 1953, pp. 18-20 and *passim*.

²² Mercaul, 1952, p. 8.

times called), and, cheek-by-jowl, the autonomous Indonesian economy also situated there. And though, indeed, the two interacted continuously in ways which fundamentally shaped their separate courses, they steadily diverged, largely as a result of this interaction, to the point where the structural contrasts between them were overwhelming. What Boeke regarded as an intrinsic and permanent characteristic of Indonesian (or "Eastern") economic life, "a primarily spiritual phenomenon," was really an historically created condition; it grew not from the immutable essence of the Eastern soul as it encountered the incarnate spirit of Western dynamism, but from the in no way predestined shape of colonial policy as it impressed itself upon the traditional pattern of Indonesian agriculture.²³

This view, that the radical economic dualism which came to characterize Indonesia was brought on by a set of colonial policies may seem to be belied by the fact that it is found in countries which are not colonies (Italy, for example) and also may persist in former colonies (the Philippines, for example) after they have become independent. But the fact that a phenomenon is general does not mean that the particular occasions of its appearance may not be various, as the example of inflation only too well demonstrates. Basically, the development of dualism consists of a trend toward fixed (or presumed fixed) technical coefficients of production in more and more capital-intensive enterprises on the one hand, and toward variable ones in more and more labor-intensive activities on the other, together with the peculiarly lopsided pattern of investment, productivity, and employment which flows from this steadily widening disparity.²⁴ Despite its formal identity from place to place, the ways in which such a situation can arise historically are very diverse. And as what we are concerned to understand here is not the mere presence but the extraordinary severity of this development so far as Indonesia is concerned (with, so to speak, "runaway dualism"),

²³ Boeke, 1953, p. 14.

²⁴ Higgins, 1959, pp. 325-340.

the nature of Dutch colonial policy, the decisive force on the capital-intensive side, can hardly be irrelevant.

The inability of Dutch private enterprise to provide the capital necessary to exploit Java efficiently was one of the main motivating forces for the institution of the Culture System in the first place.²⁵ From 1816 (when the English interregnum ended) to 1830 (when van den Bosch, plan in hand, arrived in Java), the Dutch in Indonesia faced a situation similar to that faced by some newly independent nations today. A once effective mechanism for producing foreign exchange—the Company—had become exhausted and discredited, and had disappeared, leaving behind it an intense theoretical controversy over how to increase the island's profitability. Land and labor were available enough, but capital was in short supply, which hampered rapid expansion of private enterprise (at least by the Dutch) of the sort desired by the Liberal opponents of van den Bosch.²⁶ Looked at against this background, the Culture System appears to represent the kind of governmental mobilization of "redundant" labor for capital creation projects which has been often proposed and occasionally attempted in underdeveloped areas. Within the framework of the labor-tax system, itself cast in the mold of the traditional corvée powers of the indigenous aristocracy, the government built roads and bridges, expanded irrigation facilities, cleared and improved large tracts of "waste" land, constructed buildings, and generally substituted the labor of the Javanese for the capital Holland lacked in laying the preparative foundations of a very rapidly accelerating, if distorted, process of economic growth.

At first, such efforts to accumulate social capital by applying redundant labor to government projects were, like the forced work in cultivation itself, not altogether successful. (Nor was the

²⁵ Reinsma, 1955, pp. 17-21.

²⁶ For a description and analysis of the Liberal-Conservative debate of this period (and a spirited, not to say emotional, defense of the Conservative policy actually chosen), see Ottow, 1937.

labor always so simply redundant as it seemed, as the rice-crop failures and attendant famines of the 1840's soon made clear.) An estimated 100,000 days of unpaid labor on an irrigation system in Demak went largely, and literally, down the drain, when typical northcoast wet monsoon flooding washed out its main work.²⁷ In Tjilatjap, on the south coast, even more work seems to have been wasted when two large-scale attempts to build a waterway to the harbor failed, one because an impossible route had been chosen, the other because the banks caved in.²⁸

But, as in the cultivations, experience proved a teacher, and these projects soon grew more efficient and more extensive. In the so-called Bagalen area west of Jogjakarta in the Kedjawaèn a huge irrigation canal was built to support the forced indigo cultivation and to provide water for the new "capital" of the region of Purweredjo; the lower reaches of the Lukolo river were rerouted to run more directly to the sea, thus draining a good part of the coastal swamp which had made the littoral uncultivable up to that time; and four large, as well as a great number of small, indigo factories were built with taxation labor.²⁹ Clive Day, drawing on a British government source, tells of 1,200 men, cheered by musicians and dancing girls, laboring three months on a single dam somewhere in Java during this period; and in the Brantas delta around Sidoradjo, "private" entrepreneurs, using government-supplied labor, began to build up what eventually became, after 1852, Indonesia's first technically modernized irrigation system.³⁰ Concerning roadways and bridges, even fewer specific data seem to be available, but Furnivall remarks that in the beginning of the Culture System (when there was but a single trunk road to the interior), communications threatened

²⁷ Gonggritjip, 1957, p. 103.

²⁸ Day, 1904, p. 286. A third effort ultimately succeeded, however.

²⁹ Van Doorn, 1926, pp. 37-38. There was also a plan to build three sugar mills which never materialized. Elsewhere in Java, however, government labor was directed to mill construction: see Reinsma, 1955, p. 138.

³⁰ Day, 1904, pp. 285-286.

to be a greater bottleneck to Java's development than its fertility:

... but the administrative machinery of van den Bosch gave the State an almost unlimited command over free labor, and this was employed so lavishly in some parts, if not everywhere, that in 1847 van Hoevell talks of the fine roads intersecting the countryside in the Preangers, with bridges spanning the numerous streams and of the imposing public buildings; and a few years later Money was impressed by the superiority of the communications to those of British India.³¹

From the developmental point of view, therefore, the Culture System represented an attempt to raise an estate economy by a peasantry's bootstraps; and in this it was remarkably successful. Benefiting from the external economies created by the formation of social capital, the forced diffusion of plantation crops and attendant labor skills over the island, and a certain amount of more direct governmental assistance, private enterprises steadily multiplied; soon their returns were great enough that they could provide most of the investment required for the qualitative changes in capital stock, particularly in sugar-milling, which were becoming necessary.³² As Reinsma has well argued, the protracted "fall" of the Culture System (which lasted from about 1850 to about 1915) and its gradual replacement by the Corporate Plantation System were largely self-generated, because its success in establishing a serviceable export economy infrastructure made private entrepreneurship, originally so hampered by lack of capital, progressively more feasible:

³¹ Furnivall, 1944, p. 128. Van Hoevell was an archenemy of the system, Money a British enthusiast for it.

³² In 1840, private estates accounted for 17 percent of agricultural export volume, government forced cultivation 78 percent. In 1850, the figures were 26 and 73; in 1860, 58 and 39; in 1870, 43 and 52; in 1873, 72 and 19. Reinsma, 1955, p. 157. For a general discussion of "social overhead capital," "external economies," and development, see Higgins, 1959, pp. 384-408.

A great many [private Netherlands East Indies] planters . . . had their success to thank not to the [economic] renaissance of the Netherlands, but to "the energy of pioneers, supported by speculative elements in the Indies itself." So far as capital supply is concerned, private enterprise in the motherland played a much less powerful role in supporting the successors of the Culture System than has commonly been suggested in the literature.³³

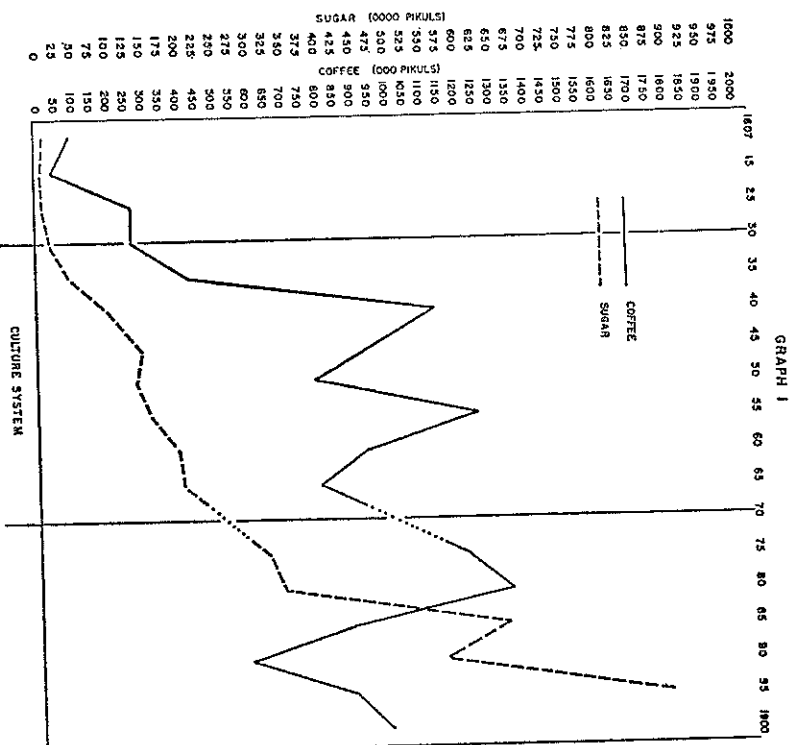
Like most Liberal analyses, this gives more weight to individual character and less to social context than seems realistic. But its essential point is accurate: though importantly assisted by Netherlands investment in shipping and trade, the capital-intensive side of the Indonesian dual economy was not merely imported bodily from Holland like street canals and billiards, but was a direct product of the workings of the Colonial System after about 1830.

If we look again at the two leading commercial crops of the nineteenth century, coffee and sugar, a somewhat more palpable picture of the developmental pattern appears, which the Culture System "big push" generated. (Graph 1.)³⁴ The production of coffee, the cultivation most immediately affected by the system, rose sharply within ten years of the inception of mass-labor taxation to a new level as it spread extensively over the uncultivated uplands of Java. (In 1833 somewhat more than 100 million trees are said to have existed on Java; two years later, in 1835, about twice that many, and by 1840-50 more than three times as many.³⁵) But, not particularly susceptible to qualitative technical

³³ Reinsma, 1955, p. 171. The internal quotation is from a Dutch government report on "the first commercial houses in Indonesia."

³⁴ Based on figures in Furnivall, 1944, pp. 75, 104, 129, 171, 207. The beginning and end points of the Culture System are the conventional ones, and admittedly somewhat arbitrary. No production figures for 1870 are available, evidently.

³⁵ Van Klabaveren, 1955, p. 123. As not even Dutch civil servants can have been so conscientious as to have counted 300 million coffee trees, such figures must, of course, be taken only as general, order-of-magnitude estimates.



Source: J. S. Furnivall, *Netherlands India*, Cambridge (England): Cambridge University Press, 1944, pp. 75, 109, 129, 171, 207.

improvement, this spread did not continue upward once it reached its approximate limits; having found a higher level, it oscillated around it. (The severe dip in 1880-1890 was due to disease, which was overcome in the 1890's by a shift in species.) For the period of the Culture System proper, roughly the middle half of the nineteenth century, coffee was to Java what textiles were to England—it virtually carried the estate economy, accounting in itself for between a quarter and a third of the Indies' export income.³⁶

³⁶ Furnivall, 1944, as in note 34. Though price movements obviously shaped this pattern as it developed, they can in no simple way account for it. From 1825 to 1855, the general trend of coffee prices was moderately

Sugar production, however, behaved differently. In the first place, it rose less explosively (and also less erratically) under the Culture System, mainly because its advances were based on technical improvements, in both cultivation and milling, which took time and capital to develop. Where the area planted in cane increased only about 18 percent between 1833 and 1861, the production per hectare of refined sugar about tripled.³⁷ And, unlike the coffee expansion, this growth, once underway, continued at an accelerating rate: by 1900, productivity had doubled again and, now that modern irrigation facilities were appearing in significant quantity, planted area had about tripled, leading to the five-fold output increase shown on the graph.³⁸ Thus, the role of vanguard industry that coffee played up to about 1880, sugar played for the last quarter of the nineteenth century and into the twentieth, until in 1920 it earned more than a million guilders of export revenue—more than all other products, minerals included, put together.³⁹

downward; after 1860 they rose rapidly until 1875, when they plunged downward again, rising once more in 1890–1895 and falling off in 1900 (calculated from Furnivall). Sugar prices were somewhat less fluctuating, at least until 1885, but a similar analysis can be given for them.

³⁷ Burger, 1939, pp. 130, 154. On the cultivation side the technical improvements consisted of more intensive planting and care under the so-called Reynoso system; on the milling side of more and more elaborate machinery. Between 1830 and 1839 machinery imports (mostly for sugar) into the Netherlands East Indies averaged 1.48 million guilders annually; 1840–1849, 1.79; 1850–1859, 2.02; 1860–1869, 2.78 (Reinsma, 1955, p. 159). Capitalization was increasing in other crops too: after 1859, the private tobacco grower George Birnie spent more than 500,000 guilders on irrigation works in Djember (Boeke, 1953, pp. 212–213).

³⁸ Gonggrijp, 1957, p. 121. Gonggrijp's figures do not entirely tally with Burger's, but again the general direction, if not the precise values, is clear enough. For the steady increase in per-hectare refined sugar productivity from about 20 quintals in 1842 to about 165 in 1937, see Koningsberger, in van Hall and van de Koppel, 1946, p. 291.

³⁹ Furnivall, 1944, p. 337. About this time Java was contributing about 10 percent of the world's sugar supply; see graph in Bulletin of the Colonial Institute of Amsterdam, 3:207 (1939).

In sum, if "take-off" is defined as a largely self-generated, relatively sudden transition to sustained economic growth, then there is at least presumptive evidence that something of the sort occurred on the estate side of the dual economy during the Culture System period, or—if the system itself be viewed as merely establishing preconditions—just after it.⁴⁰ The fact that the estate sector became progressively more closely integrated into the modernizing Netherlands economy (and progressively segregated from the rigidifying Javanese one) does not mean, as has sometimes been asserted, that it was a simple creation of that economy; it was a creation of Javanese land and labor organized under Dutch colonial political direction. If anything, the flow of support ran the other way: "The true measure of [van den Bosch's] greatness," Furnivall has justly written, "is the renaissance of the Netherlands."⁴¹

The true measure of van den Bosch's malignancy, however, is the stultification of Indonesia. For, although the Javanese helped launch the estate sector, they were not properly part of it, nor were they permitted to become so; it was just something they did, or more exactly were obligated to do, in their spare time. On their own time, they multiplied; and "take-off" on the peasant side was of a less remunerative sort—into rapid and sustained population growth. In 1830 there were probably about 7 million people on Java; in 1840, 8.7; 1850 (when census-taking first became reasonably systematic), 9.6; 1860, 12.7; 1870, 16.2; 1880, 19.5; 1890, 23.6; 1900, 28.4—an average annual increase of approximately 2 percent during seventy years.⁴² And, here too, the pattern once

⁴⁰ The "take-off" concept is from Rostow, 1960, pp. 36–58. However, Rostow's analysis generally ignores the developmental patterns of colonial economies.

⁴¹ Furnivall, 1944, p. 152.

⁴² Reinsma, 1955, p. 175; The Population of Indonesia, p. 22; van Alphen, 1870, second part, p. 68. Not all these sources precisely agree, but the general pattern is about the same. Also, of course, the rate of growth was not steady: in the 1840's when there was famine, the annual increase seems to

established, persists (though the rate slows): 1920, 34.4; 1930, 41.7. What the precise causes of this "explosion" were and, particularly, how far it was directly rather than merely indirectly detonated by Culture System policies, are, reliable data being scarce, matters of debate. But there is little doubt that it was during the Culture System period that the saying about the Dutch growing in wealth and the Javanese in numbers first hardened into a sociological reality. By the end of it, the Javanese had, as they have today, the worst of two possible worlds: a static economy and a burgeoning population.

The unreliability (as well as the scarcity) of agricultural statistics on the peasant sector during the nineteenth century, on both the extent of cultivated land and the production of food crops, makes an exact tracing of the way in which the Javanese coped with this deepening demographic dilemma difficult. But, although the stages through which their adaptation passed have to be described in speculative terms, shored up only by fragmentary and indirect evidence plus some hard reasoning, the over-all nature and direction of that adaptation are clear, and comprise what I am going to call "agricultural involution."

Unable to attack the problem head-on, let us attempt to get at it by a circuitous route. Beginning with a picture of the general situation at a later period, when statistics on peasant agriculture are more reliable, we can try, first, to figure out how the situation characteristic of this later period could have been produced and then, second, we can see whether the scattered historical evidence supports the notion that it was in fact so produced. Such a procedure amounts, admittedly, to doing history backwards. But it is doing history, not deducing logically the past from the present. It is moving from a known result to an analysis of a factually much less fully outlined process which seems to

have sunk to around 1 percent, in the 1850's to have risen to about 3 percent—though it is difficult to tell how much of such variation stems from irregularities in census-taking. For a review of the development of population surveys in Indonesia, see van de Graaf, 1955, pp. 138-169.

have brought the result about, in order to clarify that process and give it a more concrete content.

In any case, the striking set of figures with which I want to

TABLE 1

THE LAND, POPULATION, AND RICE-PRODUCTION CHARACTERISTICS OF THE SUGAR REGIONS OF JAVA IN 1920

	Percent of land of Java	Percent of wet-rice land of Java	Percent of population of Java	Percent of wet-rice production of Java
The 37 main sugar regencies (47% of the total number of regencies)	34	46	50	49
The 98 main sugar districts (22% of the total number of districts)	15	22	24	24
The 19 leading sugar districts (4% of the total number of districts)	2.6	4.6	5.3	5.2
Same with Percentage of Land Set as Index Base				
The 37 main sugar regencies	100	131	143	140
The 98 main sugar districts	100	147	160	160
The 19 leading sugar districts	100	178	204	200

Source: Calculated from data in: Landbouwatlas van Java en Madoera, Mededeelingen van het Centraal Kantoor voor de Statistiek, No. 33, Weltevreden: 1926, Part II, Tables I, III, IV, and V. In Mataram (which in 1920 was organized slightly differently from the rest of Java), Bantul, Sleman, and Kalasan have been counted as districts, Mataram itself as a regency.

TABLE 2

RELATIONSHIPS BETWEEN WET-RICE PRODUCTION, SAWAH AREA, HARVESTED SAWAH AREA, PER-HECTARE WET-RICE YIELDS AND POPULATION IN THE SUGAR AREAS OF JAVA IN 1920
(Indexes only, with all-Java figure set as base)

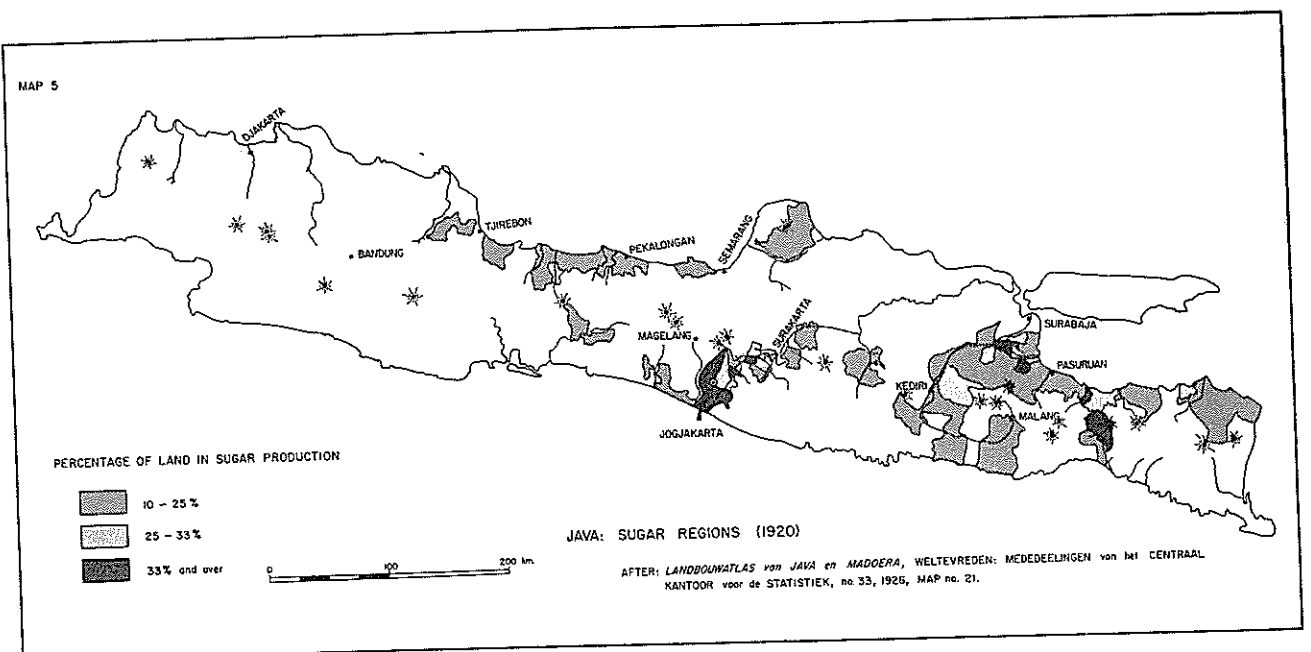
	Ratio: Percent of wet-rice produc- tion/ percent of sawah area	Ratio: Percent of wet-rice produc- tion/ percent of popula- tion	Percent of sawah area harvested in rice (includes double cropping)	Average per- hectare yields of harvested (in rice) sawah
The 37 main sugar regencies	107	98	98	110
The 98 main sugar districts	109	100	94	115
The 19 leading sugar districts	113	98	85	128
All-Java (base)	100	100	100	100

Source: Same as Table 1.

begin are those of Tables 1 and 2, which show the character of the sugar areas of Java set against the population and rice-production characteristics of the island as a whole in the year that probably was the high-water mark of the colonial economy of Indonesia—1920. Moving from the level of the larger and more inclusive administrative unit, the regency, to the smaller, constituent unit, the district, and then to selected districts, the tables focus on the sugar areas of Java.⁴³

The "thirty-seven main sugar regencies" are those in which there were, in 1920, at least a thousand hectares planted in sugar.

⁴³ The order of territorial administrative units in Java is: province, residency, regency, district, subdistrict. On the average there were slightly less than six districts per regency in 1920.



The "ninety-eight main sugar districts" are those with more than 10 percent of their total sawah acreage rented to sugar factories for cane growing in a single year (see Map 5 for their distribution). The shift in criterion here is regrettable, but necessitated by the way in which the districts are presented in the source. In any case, as about 94 percent of estate cane is planted on rented peasant sawahs, the correlation of the two criteria is nearly exact: all of the main districts lie within the main regencies. Finally, the "nineteen leading districts" are those among the ninety-eight "main" ones which have 25 percent or more of their sawah so rented, the highest single percentage being a startling 44 percent. Each of these categories is demarcated by sharp cut-off points, and, therefore, all sugar areas of any consequence are included in the table totals. (For Java as a whole, only about 8 percent of her sawah was in cane in 1920, so the concentration in these areas was very sharp.) Table 2 presents indexes showing how the three units compare with Java as a whole with respect to the amount of rice produced for the amount of sawah and population they contain, the percentage of their sawah harvested in rice, and average per hectare yields of the sawah so harvested.⁴⁴

These figures show that within "Inner Indonesia" there is (or was in 1920) yet another ecological nucleus, a sort of "inner" Inner Indonesia. The sugar areas have proportionately: (1) more sawah; (2) more population; and (3) *even though more of their sawah is occupied by sugar*, more rice production than

⁴⁴Harvested area includes double (occasionally even triple) cropping, so totals may exceed 100 percent. For example, Banjardono, a district in Surakarta, managed to harvest 147.5 percent of its total sawah acreage, even though 26 percent of its sawah was rented to sugar companies! Such a high overall total is unusual for heavy sugar districts, however, which averaged 90.4 percent for the 98 main districts and 81.4 percent for the 18 leading ones. But if only sawah planted in rice were considered, virtually all such districts would be well over 100 percent. Landbouwatlas, 1926, as in Tables I and II. The 8 percent of Javanese sawahs planted in cane figure is from Huender, 1921, p. 83.

the nonsugar areas. Further, the relationship strengthens markedly, as the sugar areas are more precisely pinpointed by isolation of the cane districts within the sugar regencies generally and the leading cane districts among all such districts. Whatever the causes, the tie between sugar, wet-rice, and population density is unmistakable: all three "flourish," if that is the proper word, together.

In Table 2, the main factor which makes this seemingly contradictory phenomenon possible is revealed: a progressively higher *per hectare* sawah productivity. Taking Java-wide averages as a base, yields can be seen to rise as one moves to more intensely planted sugar areas, a rise which, especially when combined with the concurrent (but slower) rise in sawah, compensates for the loss of rice land to cane. This, in turn, brings about the more moderate rise in wet-rice production per total sawah area. The question, then, is: why the higher yields?

Two possibilities suggest themselves: (1) sugar tended to be planted in the best rice areas; (2) rice cultivation was more efficiently pursued in the sugar areas. Both of these factors certainly were operative. Given the ecologically specialized, "aquarium" nature of wet-rice growing, it is difficult to distinguish sharply between them because fertility is so closely tied to level of technique rather than merely reflecting natural conditions; the best rice areas are naturally the better-worked areas, and vice versa. As already explained, the ecological requirements for cane and rice are similar, therefore sugar gravitated to the most fertile (i.e., the best-irrigated) sawahs and, by financing water-control facilities, the companies improved and expanded such areas.

This thesis that sugar cultivation (and to a lesser extent other mutualistic plantation cultivations) was an operative, not merely an accidental or derivative, link between high density, high "sawah-ization," and high productivity is strengthened by the following argument. First, though on the whole sugar districts tended to be dense (and the densest districts tended to be sugar

districts), not all dense districts were also sugar districts.⁴⁵ Second, though sugar districts tended to be productive rice districts, not all of the most productive rice districts were also cane districts (though if the sugar industry had continued to expand, perhaps nearly all would eventually have become so).⁴⁶ Third, a similar proposition holds for percentage of total arable land irrigated.⁴⁷ Fourth, and finally, if sugar districts are then climinated from consideration, the close correlation between per-hectare wet-rice yields, population density, and percentage of arable land which is irrigated disappears or at least is noticeably weakened. As Kuperus has shown, for the universe of *nonsugar* districts (what he calls "districts in the indigenous sphere") the highest-yield districts are *not* those with the densest population,

⁴⁵ Excluding the heavy urban concentrations (Djakarta, Bandung, Surakarta, Jogjakarta, Semarang, and Surabaya), of the 27 districts which had more than 700 persons per square kilometer in 1920, 20 were "main" sugar districts; of the 78 which had more than 500, 49 were "main" sugar districts. Landbouwatlas, Vol. II, "Text and Tables," Table 1.

⁴⁶ Of the 77 districts in which rice yields were more than 20 percent above the Java-wide average, 38 were "main" sugar districts, 39 were not. Landbouwatlas, Table III. The bulk of the latter were, however, contiguous to sugar districts and so were subject to some of the same influences. Of the 121 districts with yields 20 percent below the Java average, only three were "main" sugar districts, and they were just barely below the line.

⁴⁷ For the 37 main sugar regencies, the percentage of total cultivated land which was irrigated was about 50, for the 98 main sugar districts 56, for the 19 leading districts, 64; for all Java, 45. Landbouwatlas, Table I. Actually, the index problem is complicated here by the fact that many less developed districts, especially in west Java, without much cultivated land of any kind have what little they do have in sawah, while others, especially in east Java, have what little they do have in dry fields, so that an aggregate distribution by percent of land irrigated gives a misleading and incomprehensible picture. If one could group villages into subtypes according to general level of agricultural development and then compare within subtypes, the picture would be clear and systematic; but this is difficult to do in a nonarbitrary way on the basis of the Landbouwatlas data.

those with the highest sawah proportions are not the densest, nor those with the highest sawah proportions the most productive.⁴⁸ Evidently, sugar cultivation, through its improvement of local ecological conditions for rice, binds those three together when they are found together, and pushed all of them to the higher than average levels shown above.⁴⁹

But without more effective cultivation methods the Javanese could hardly have taken advantage of these better facilities. And as there was virtually no variation in capital inputs in sawah agriculture from one part of the island to another, aside from irrigation works, this greater efficiency in cultivation derived almost entirely from a greater intensification of labor—an intensification made both possible and necessary by the increasing population. The practices have already been mentioned—pre-germination, transplanting, more thorough land preparation, fastidious planting and weeding, razor-blade harvesting, double cropping, a more exact regulation of terrace-flooding, and the

⁴⁸ Kuperus, 1930.

⁴⁹ Kuperus, who is concerned to show that Java's failure to progress is due not to colonial impact but to internal stagnation of Javanese "culture" since classical times, has tried to deny a link between rice yields, Western irrigation methods, and population density for sugar areas as well. ("The Javanese culture . . . since the fall of Majapahit has been a *fellah*-culture. The Javanese people have had their culture and try now only to hang on to what cultural resources they once had. Javanese culture has stagnated and the problem of population pressure is therefore more closely connected to the ancient times than to the past one hundred years of Euro-peanization.") Kuperus, 1930, and 1938. But as this conclusion is based on the study of three closely grouped districts in the Tjireborn-Pekalongan northcoast plain, two of which happen to be among the least productive of the sugar districts, the argument is unconvincing. Only when one takes the whole universe of sugar districts does the relative importance of various determinants and their interactions emerge. By selecting an area in which, evidently for local ecological reasons (abundance of water together with distance from sources of volcanic fertilization), expansion of percentage of land in sawah has played a greater role than increasing yields, Kuperus got a reversed picture of their general relationship.

addition of more fields at the edges of volcanoes.⁵⁰ The concetrative, inflatable quality of sawah, its labor-absorbing capacity, was an almost ideal (in an ecological, not a social, sense) complement to capital-intensive sugar-growing. As Table 2 shows, it enabled the densest regions of Java to keep pace (at least until 1920) with the per-capita output of rice of the island as a whole.

The process resembles nothing else so much as treading water. Higher-level densities are offset by greater labor inputs into the same productive system, but output per head (or per mouth) remains more or less constant from region to region. This, however, is only the synchronic picture. From the diachronic point of view, the important questions are: how long has this water-treading been going on? What set it off? What sustained it? And in this respect, two otherwise isolated facts take on significance: first, that *local* overcrowding begins to be reported from Java as early as the beginning of the nineteenth century, when the island had a density about like that of Thailand today;⁵¹ second, that, with the exception of a disproportionate expansion in the Brantas basin, due mainly to large-scale irrigation improvements carried out in the 1890's, the distribution of sugar cultivation in 1860, and for the most part even in 1833, was about the same as it was in 1920, though only about a sixth as much acreage was involved.⁵²

⁵⁰ Though they tend to increase labor intensification, such procedures as double-cropping or pushing terraces up mountainsides do not, of course, necessarily increase per-harvested-hectare yields, but increase production mainly by increasing harvested area.

⁵¹ Boeke, 1953, pp. 166-167. In 1817 Raffles remarks that "the population of Java is very unequally distributed," and that the bulk of the rice production comes from about one-eighth of the island. Raffles, 1830, I, 68, 71, 119. On the basis of colonial reports Kuperus (1930) estimates a nutritional density for 1827 Java of .35 ha. cultivated land per capita. In the "mid-1950's" Burma's nutritional density was about .44, Thailand's .38, Malaya's .31, the Philippines' .27 (Java, 1956, 15). Ginstburg, 1961, p. 46. Statistical Pocketbook of Indonesia, 1957, p. 46.

⁵² Burger, 1939, p. 132.

These fragments suggest that the ever-more energetic, regionally uneven process of water-treading which led to the swollen population and intensely driven rice terraces of 1920 and later went on steadily during the whole of the past century. From 1850 on there are even some reasonably reliable figures to support this view: the per-capita production of rice between 1850 and 1900, when population was mounting as rapidly as it probably ever has in Java, is given as averaging about 106 kilograms, with no clear trend in any direction: 1850, 106; 1865, 97 (the low); 1885, 119 (the high); 1895, 105; 1900, 98, and so on.⁵³ After the turn of the century the 1900-1940 average declined to about 96.⁵⁴ But, as we shall see, by then the expanded cultivation of dry crops had begun to take up the slack and total per-capita output probably remained at about the nineteenth-century level. In a general review of the problem, Hollinger has written: "Taking all the historical evidence available into consideration, we conclude that per capita food consumption has been maintained through the period of rapid population increase, but it has never risen above a minimal level."⁵⁵ Less circumspect, Boeke summed the whole picture up in a single, mordant phrase: "static expansion."⁵⁶

The superimposition of sugar cultivation on the already unequal distribution of sawah and population over Java left the Javanese peasantry with essentially a single choice in coping with their rising numbers: driving their terraces, and in fact all their agricultural resources, harder by working them more carefully. There was no industrial sector into which to move and, as the returns from cultivation went, in Furnivall's words, to keep the

⁵³ Table quoted from A. M. P. A. Schelema, 1936, Table II.10, in Hollinger, 1953b. The maintenance of the level after about 1880 seems to have been due not only to increasing yields but new terrace construction made possible by expanded irrigation systems, particularly in the northwestern and eastern parts of the island.

⁵⁴ Hollinger, 1953b.

⁵⁵ Hollinger, 1953a. See also, Wertheim and The Siauw Giap, 1962.

⁵⁶ Boeke, 1953, p. 174.

Netherlands from becoming another Portugal, none was developed.⁵⁷ Coffee-growing was still almost wholly a forced-labor occupation and no real substitute for subsistence cultivation; and the same was true of the other Culture System crops. The Javanese could not themselves become part of the estate economy, and they could not transform their general pattern of already intensive farming in an extensive direction, for they lacked capital, had no way to shuck off excess labor, and were administratively barred from the bulk of their own frontier, the so-called "waste lands" which were filling up with coffee trees. Slowly, steadily, relentlessly, they were forced into a more and more labor-stuffed sawah pattern of the sort the 1920 figures show: tremendous populations absorbed on minuscule rice farms, particularly in areas where sugar cultivation led to improved irrigation; consequent rises in per-hectare productivity; and, with the assistance after about 1900 of an expansion in dry-crop cultivation, a probably largely stable, or very gradually rising, standard of living. 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,⁵⁸ at least indirectly. It is this ultimately self-defeating process that I have proposed to call "agricultural involution."

I take the concept of "involution" from the American anthropologist Alexander Goldenweiser, who devised it to describe those

⁵⁷ Fournival, 1944, p. 151.

⁵⁸ Just what the factors producing the population rise in the nineteenth century were is not quite so clear as the usual references to the removal of Malthus' positive checks would make it seem. Improved hygiene could hardly have played a major role until fairly late. The Pax Nederlandica had perhaps more effect, but probably not so much because so many people had been killed in wars in the precolonial period but because the attendant destruction of crops ceased. Probably most important, and least discussed, was the expansion of the transport network which prevented local crop failures from turning into famines.

culture patterns which, after having reached what would seem to be a definitive form, nonetheless fail either to stabilize or to transform themselves into a new pattern but rather continue to develop by becoming internally more complicated:

The application of the pattern concept to a cultural feature in the process of development provides . . . a way of explaining one peculiarity of primitive cultures. The primary effect of pattern is . . . to check development, or at least to limit it. As soon as the pattern form is reached further change is inhibited by the tenacity of the pattern. . . . But there are also instances where pattern merely sets a limit, a frame . . . within which further change is permitted if not invited. Take, for instance, the decorative art of the Maori, distinguished by its complexity, elaborateness, and the extent to which the entire decorated object is pervaded by the decoration. On analysis the unit elements of the design are found to be few in number; in some instances, in fact, the complex design is brought about through a multiplicity of spatial arrangements of one and the same unit. What we have here is pattern plus continued development. The pattern precludes the use of another unit or units, but it is not inimical to play within the unit or units. The inevitable result is progressive complication, a variety within uniformity, virtuosity within monotony. This is *involution*. A parallel instance . . . is provided by what is called ornateness in art, as in the late Gothic. The basic forms of art have reached finality, the structural features are fixed beyond variation, inventive originality is exhausted. Still, development goes on. Being hemmed in on all sides by a crystallized pattern, it takes the function of elaborateness. Expansive creativeness having dried up at the source, a special kind of virtuosity takes its place, a sort of technical hairsplitting. . . . Anyone familiar with primitive cultures will think of similar instances in other cultural domains.⁵⁹

From the point of view of general theory, there is much misplaced concreteness in this formulation; but for our purposes

⁵⁹ Goldenweiser, 1936. As his own reference to late Gothic art demonstrates, however, there is nothing particularly "primitive" about this process.

we want only the analytic concept—that of the overdriving of an established form in such a way that it becomes rigid through an inward overelaboration of detail—not the hazy cultural vitalism in which it is here embedded.

The general earmarks of involution that Goldenweiser lists for aesthetic phenomena characterized the development of the sawah system after about the middle of the nineteenth century: increasing tenacity of basic pattern; internal elaboration and ornateness; technical hairsplitting, and unending virtuosity. And this "late Gothic" quality of agriculture increasingly pervaded the whole rural economy: tenure systems grew more intricate; tenancy relationships more complicated; cooperative labor arrangements more complex—all in an effort to provide everyone with some niche, however small, in the over-all system. If the original establishment of terraces in Java's little interior river galleries was but a preliminary sketch of the wet-rice mode of adaptation, and the time of the Javanese states and of the Company saw a filling in of solid compositional substance, the Culture System period brought an overornamentation, a Gothic elaboration of technical and organizational detail. But what makes this development tragic rather than merely decadent is that around 1830 the Javanese (and, thus, the Indonesian) economy could have made the transition to modernism, never a painless experience, with more ease than it can do today. To see how this is so, however, it is necessary to look at the last major colonial device for exploiting the archipelago, the Corporate Plantation System, for it is under its aegis that all the immobilizing processes which the Culture System so powerfully propelled settled into their definitive form.

5. THE COLONIAL PERIOD: FLORESCENCE

The Corporate Plantation System

The rapid mechanization of sugar-milling in the second half of the nineteenth century steadily made obsolete the Culture System, based on the substitution of (Javanese) labor for (Dutch) capital. With such substitution rendered progressively less practical by technological advance, effective colonial management became less a matter of mobilization of labor and more of regulating the relationship between the highly capitalized sugar "factory," or other crop-processing enterprises, and the peasant village to which it was symbiotically tied.¹

To this end, the Dutch introduced, in 1870, the Agrarian Land Law. Together with various ancillary enactments, this statute made it possible to transfer direct responsibility for insuring Java's profitability to private enterprises while preventing such enterprises from destroying the village economy upon which that profitability depended. In it, the convenient notion, current since the Raffles interregnum at the beginning of the

¹ It must be remembered, however, that although sugar production became steadily more capital intensive, it continued to use large quantities of unskilled seasonal labor on the cultivation side of its operations.

century, that all uncultivated "waste land" is inalienable state property was for the first time officially codified, making it possible for private plantation concerns to lease such land on a regularized, long-term contractual basis from Batavia and to use such legal titles for the purposes of obtaining credit. Further, the prohibition of outright alienation of peasant land to foreigners embodied in Javanese customary law was given formal legal backing by the government, permitting the systematization of rules and regulations for a similar long-term leasing of it to plantation companies for commercial use by its millions of smallholders. At base, the law, which inaugurates the Corporate Plantation period in East Indian economic history, represents one more effort to superimpose commercial economy upon subsistence economy in such a way as to stimulate the first and tranquilize the second.

The immediate beneficiaries of this legal innovation were the individual private Netherlands East Indies planters who had been created by the workings of the Culture System they professed to despise. This was particularly true in sugar, where privately planted cane made up about 9 percent of the total in 1870 and about 97 percent two decades later, though enterprise in coffee, tobacco, and even rice also appeared.² But the depression of the middle eighties (coffee prices fell by half, sugar prices by even more),³ assisted by the onset of crop diseases in both coffee and sugar, wrecked the jerry-built financial structure of the Indies beyond repair. The self-styled "pioneers [and] speculative elements in the Indies itself," whom Reinsma celebrates, were consequently driven into the now waiting arms of large-scale Dutch finance, and they soon disappeared into enormous, multi-enterprise, limited-liability corporations rooted firmly in the motherland, or, in some cases, in other European countries. The Amsterdam and Rotterdam merchants of great traffic did not create, as they later came to claim, the Netherlands East

² Burger, 1939, p. 177.

³ Furnivall, 1944, p. 196.

Indies estate economy. They bought it—and rather cheaply, considering the social costs of its production—at auction.

By 1900 the reorganization was well underway and the replacement of state mercantilism by corporate nearly complete. The Nederlandsche Handel Maatschappij (NHM), established as an imperial shipping company by William I in 1824 to prevent the English merchant marine from dominating the Far East and, when that effort failed, to carry Culture System products to Holland, transformed itself from crown's agent to private investment firm, half bank and half planter. By 1915 it owned, in whole or part, sixteen sugar factories, and had effective control over twenty-two others, plus fourteen tobacco, twelve tea and fourteen rubber estates.⁴ By the same year, the Handels Vereenigen Amsterdam (HVA), founded as late as 1878, controlled fourteen sugar estates and managed one tapioca, one combined coffee-rubber and two fiber (sisal) plantations.⁵ In the principalities, the dozens of independent planters of the Culture System period collapsed into the Cultuur Maatschappij der Vorstenlanden, which had twenty sugar enterprises by 1913, plus three in coffee, one in tobacco and one in tea. After the introduction of tobacco into northeast Sumatra in 1864, the Deli Maatschappij flourished and eventually spread its interests into rubber, oilpalm, sisal, tea and coffee.⁶

Backed by a network of banks—the Java Bank, the Nederlands-Indische Handelsbank, and others, as well as some foreign concerns, such as the Chartered Bank—the corporations diversified plantation production beyond the staple sugar and coffee of the nineteenth century, spread it to restricted parts of Outer Indonesia, built railroads and modern irrigation works, set up agricultural experimental stations to improve yields, and in general created a comprehensive agro-industrial structure probably unmatched for complexity, efficiency, and scale anywhere in the

⁴ Encyclopedie van Nederlandsche-Indie, II, 53.

⁵ Encyclopedie van Nederlandsche-Indie, II, 53.

⁶ Encyclopedie van Nederlandsche-Indie, II, 53; Allen and Donithorne, 1957, pp. 97-99.