Itaguaí

Old habits and new practices in a Brazilian land settlement

B. F. Galjart

STELLINGEN

I

Indien, zoals in de sociologische literatuur gebruikelijk is, de begrippen 'traditioneel' en 'modern' gebruikt worden om die cultuurpatronen aan te duiden die de begin- en de eindfase van het proces van economische ontwikkeling in een maatschappij kenmerken, impliceert dit dat de inhoud van deze begrippen niet in iedere cultuur dezelfde kan zijn.

(Dit proefschrift)

II

De vooral door agrarisch sociologen frequent geuite veronderstelling dat het begrip traditioneel (c.q. modern) cultuurpatroon overal ter wereld min of meer dezelfde waarden en houdingen omvat, heeft het sociologisch inzicht in de ontwikkelingsproblematiek van met name de Latijns-Amerikaanse landen in de weg gestaan.

(Dit proefschrift)

III

Het beginsel dat donorlanden zich dienen te onthouden van inmenging in de binnenlandse politiek van het ontvangende land mag hen niet beletten om de sociale en politieke implicaties die hun hulp daar zal hebben te evalueren en bij hun beleidsbeslissingen te betrekken.

IV

In maatschappijen waar patronagerelaties het sociale handelen in sterke mate bepalen mag niet worden verwacht dat coöperaties gebaseerd kunnen worden op de solidariteit van de leden.

(Dit proefschrift)

V

Bij het sociologisch onderzoek naar de verschillen in vooruitstrevendheid tussen boeren zou meer aandacht moeten worden geschonken aan de kwaliteit van hun grond. Aangezien de invloed van deze factor op de adoptie per innovatie kan verschillen zou hij voor iedere innovatie afzonderlijk moeten worden nagegaan.

VI

De verhoging van de spaarquote die noodzakelijk is voor het op gang brengen van economische ontwikkeling in de meeste onderontwikkelde landen impliceert een soort bewind dat die verhoging kan afdwingen aan bevolkingsgroepen die erop uit zijn om hun consumptieniveau te verhogen.

(De Groot: Overdaad en gebrek in de 20ste eeuw)

VII

In het kader van de ontwikkelingshulp dient ruilhandel in industriële produkten tussen onderontwikkelde landen bevorderd te worden.

(Galjart: Het organiseren van ruilhandel: een vorm van ontwikkelingshulp? Econ. Stat. Berichten 3 mei 1967)

VIII

Discontinuïteit van langdurige aard in het Nederlandse assistent-deskundigen programma zal in de toekomst op elk gebied van wetenschap leiden tot een drastische vermindering van het aantal Nederlandse deskundigen, geschikt om in minder ontwikkelde landen adviezen uit te brengen.

IX

Om zich vertrouwd te maken met een hem vreemde maatschappij en cultuur – een vertrouwdheid die noodzakelijk is om op zinnige wijze onderzoek te kunnen doen – heeft een socioloog een periode van 'culturele acclimatisatie' nodig die op een jaar gesteld kan worden.

X

Dat een socioloog, die onderzoek gaat verrichten in een hem vreemde cultuur, een periode van 'culturele acclimatisatie' behoeft, zouden instellingen, die dergelijk onderzoek subsidiëren, voortdurend voor ogen moeten hebben.

XI

Studenten in de agrarische sociologie (westers zowel als niet-westers) hebben grote moeite om verband te leggen tussen de statistische kennis die zij opdeden tijdens het Kandidaats A en de statistische toetsen en technieken waarmee de sociologische literatuur hen confronteert.

XII

De confessionele partijen in Nederland dragen bij tot het afzwakken van de belangentegenstelling tussen werkgevers en werknemers.

Proefschrift van Ir. B. F. Galjart
Wageningen, 4 oktober 1968.

Itaguaí

Old habits and new practices in a Brazilian land settlement

Dit proefschrift met stellingen van Benno Franciscus Galjart, landbouwkundig ingenieur, geboren te Mennagio (Italië) op 9 oktober 1933, is goedgekeurd door de promotor, dr. R. A. J. van Lier, hoogleraar in de empirische sociologie en sociografie van de niet-westerse gebieden.

De Rector Magnificus van de Landbouwhogeschool
F. Hellinga

Wageningen, 19 juni 1968

B. F. Galjart

Itaguaí

Old habits and new practices in a Brazilian land settlement

Proefschrift
ter verkrijging van de graad van
doctor in de landbouwwetenschappen
op gezag van de Rector Magnificus, Dr. Ir. F. Hellinga,
hoogleraar in de cultuurtechniek,
te verdedigen tegen de bedenkingen van een commissie uit de
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This thesis will also be published as Agricultural Research Reports 712.

Quem pode pode, quem não pode se sacode.

Brazilian saying

Quem tem padrinho não morre pagão.

Brazilian saying

Cuando se subraya un hecho como específico de la condición española, no falta nunca algun discreto que nos cite otro hecho igual acontecido en Francia, en Inglaterra, en Alemania, sin advertir que lo que se subraya no es el hecho mismo, sino su peso y rango dentro de la anatomía nacional. Aun siendo, pues, aparentemente el mismo, su diferente colocación en el mecanismo colectivo lo modifica por completo.

Ortega y Gasset: España Invertebrada.

To Annetje and Celia

Acknowledgments

This study has burdened me with many debts of gratitude. In Brazil, I received kind and generous assistance from Manuel Diegues Jr, the Director of the Latin American Centre for Research in the Social Sciences, in which I much appreciated working for three years. My seniors at the Centre, Bertram Hutchinson and Carlos Alberto de Medina, gave freely of their wisdom and will undoubtedly recognize their influence even at points where I have forgotten that they conceived an idea. While the errors are mine, much of the good in this study I owe to them.

In the field, I was helped in various ways by Professor Romulo Cavina of the Universidade Rural do Brasil, by Ir Mario Gomes and Ir Guilherme Moitta of ACAR-RJ, and by Ir Dryden Castro de Arezzo, Mr Severino de Farias and Mr Nonito de Souza Cabral of the Nucleo Colonial de Santa Cruz. And of course by my informants, the settlers of the project, among whom Laerte stood out. Unlike a technician, a sociologist cannot achieve actual improvements. He talks more than he acts. One of the reasons why this book was written, however, was the hope that all this talk will allow some future action.

In the Netherlands, I owe gratitude to those of my teachers and colleagues who discussed certain problems with me or read and criticized the manuscript, so helping me to improve the presentation of the results of the field-work. Among my teachers I wish to mention first Prof. Dr R. A. J. van Lier, whose enthusiasm, erudition, opinions and even predilections have influenced me profoundly since my student days. Working with him has been a stimulating and instructive experience. Secondly Prof. Dr E. W. Hofstee, the doyen of rural sociology in Wageningen, who, by the work which he and his collaborators have done, set an example which proved hard to match. Now teacher, then colleague, Prof. Dr Ir A. W. van den Ban stands midway; his critical reading of parts of the manuscript removed many blemishes. Dr A. K. Constandse and Dr Ir M. A. J. van Montfort I wish to thank for the same service. Coming at a time when I thought the book was finished, Pudoc's editing imposed a heavy burden but was, I must confess, extremely helpful.

To Miss Nanny Brink and Miss Jeanette Heekelaar I am grateful for their excellent clerical help, to Mr P. Holleman for drawing the maps, and to Mr H. A. Hendrikx for the quality of the prints he managed to get from my negatives.

My wife I cannot even begin to thank here. She has earned a page to herself.

Samenvatting

Deze studie bevat de resultaten van een sociologisch onderzoek verricht in een Braziliaanse landbouwkolonie in de buurt van de stad Rio de Janeiro. Het onderzoek duurde, met enige onderbrekingen, van midden 1963 tot midden 1965. Het had een tweeledig doel.

In de eerste plaats is getracht een antwoord te vinden op de vraag, in welke opzichten de kolonisten die moderne landbouwmethoden gebruikten, verschilden van de overigen. Het onderzoek hiernaar geschiedde door middel van een enquête onder bedrijfshoofden. Het blijkt, dat de adoptie van moderne landbouwmethoden in de eerste plaats geassocieerd is met de sociaal-economische status van de boer, zijn inkomen en zijn grondbezit. De associaties tussen adoptie enerzijds en genoten onderwijs, alfabetisme en contact met de stedelijke cultuur anderzijds blijken per statuscategorie te verschillen en vaak alleen in de hoogste categorieën significant te zijn. Contact met de landbouwvoorlichting blijkt het meest voor te komen onder de innovatievere boeren. De verschillen tussen de kolonisten die moderne landbouwmethoden gebruikten en de overigen werden verder nog nagegaan voor verscheidene andere variabelen, zoals: de aard van hun relaties met andere boeren, hun vroegere mobiliteit, hun participatie in coöperaties, hun leeftijd, hun nationaliteit, de grootte van hun gezinnen, de mate waarin zij hun zoons op het bedrijf lieten werken, het onderwijs dat zij hun kinderen gaven, het in dienst hebben van vreemde arbeid en de aanwending van crediet. Al tijdens het vooronderzoek bleek, dat de mate waarin moderne landbouwmethoden werden toegepast echter niet de enige verklarende factor kon zijn voor het feit, dat de kolonie bepaald geen bloeiende landbouwstreek geworden was.

Het herkennen en beschrijven van andere verklarende factoren, gelegen in het vlak van de culturele waarden en houdingen, vormde het tweede doel van het onderzoek. Slechts voor enkele van deze factoren kon een vraag worden opgenomen in de enquête; voor de meeste factoren zijn kwalitatieve gegevens beschikbaar, verkregen uit participerend onderzoek. Aan de hand van een analyse van bepaalde gebeurtenissen enerzijds, en van de verschillen tussen de Japanse en de Braziliaanse kolonisten anderzijds, is aannemelijk gemaakt, dat de onderkende waarden en houdingen inderdaad van invloed zijn en de ontwikkeling van de kolonie hetzij geremd, hetzij in bepaalde banen gedwongen hebben.

De sociale relaties tussen de boeren worden beïnvloed door een drietal samenhangende cultuurelementen, samen het 'patronic syndrome' genoemd. Dit syndroom bestaat uit:

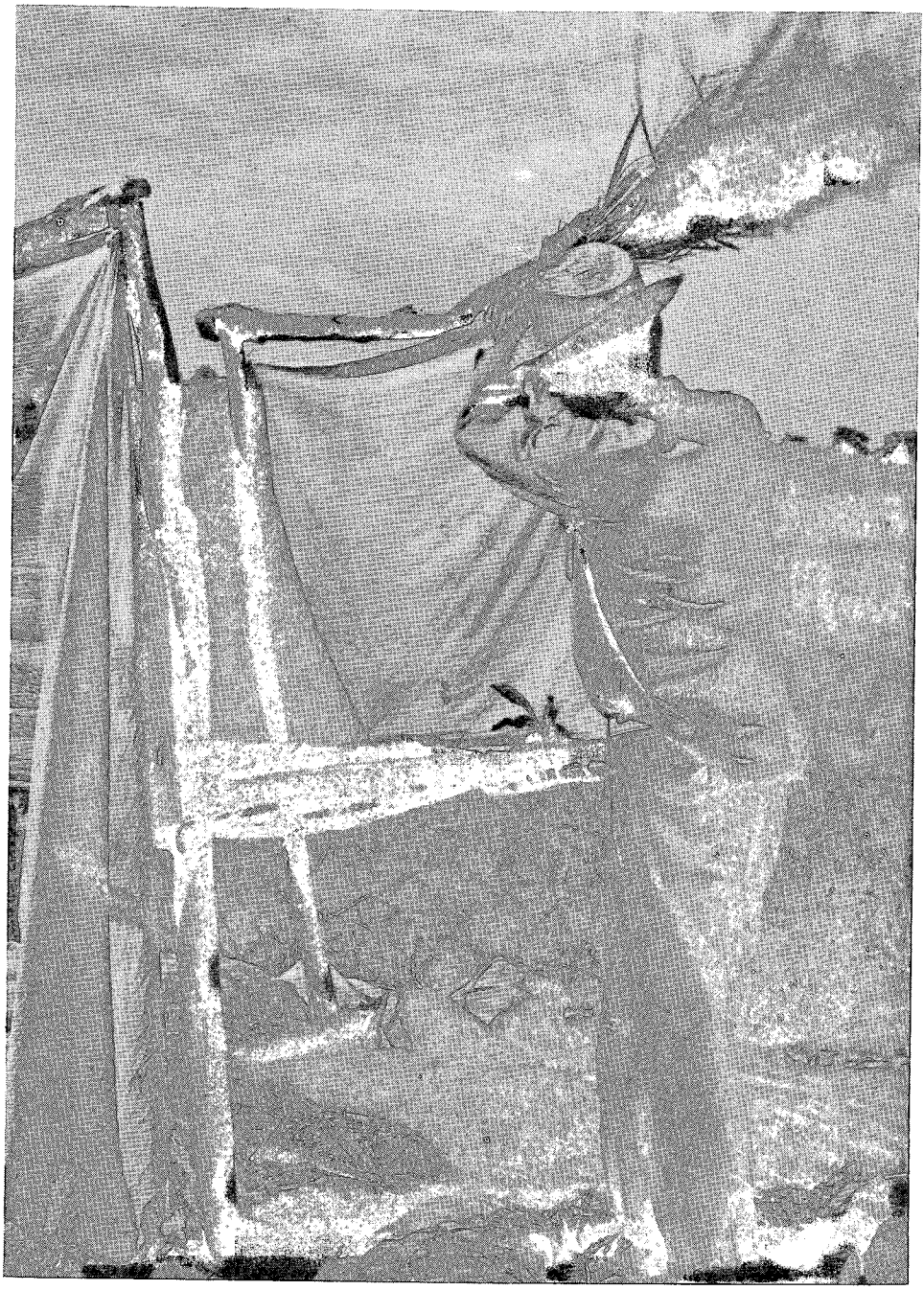
1. de verwachting dat de eigen inspanning alleen dan tot werkelijke lotsverbetering zal leiden als er van hogerhand (dat wil zeggen door een hogergeplaatste, een overheid of een bovennatuurlijke macht) steun wordt verleend;
2. de neiging om patronage-relaties aan te knopen met personen die een dienst kunnen bewijzen;
3. een gebrek aan solidariteit tussen sociaal gelijkstaanden die niet door bloedverwantschap, vriendschap of patronage verbonden zijn.

In de traditionele sociale structuur, die gekenmerkt was door een grote mate van ongelijkheid, hadden deze houdingen een functie. In de kolonie echter, waar deze structuur in beginsel vervangen was, blijken zij de noodzakelijke samenwerking tussen de boeren in de weg te staan. Hun voortbestaan mag voor een enkeling nog functioneel zijn, maar is dat niet voor de gemeenschap. Het bevordert de, gedeeltelijk reeds verwezenlijkte, terugval tot een traditionele sociale structuur.

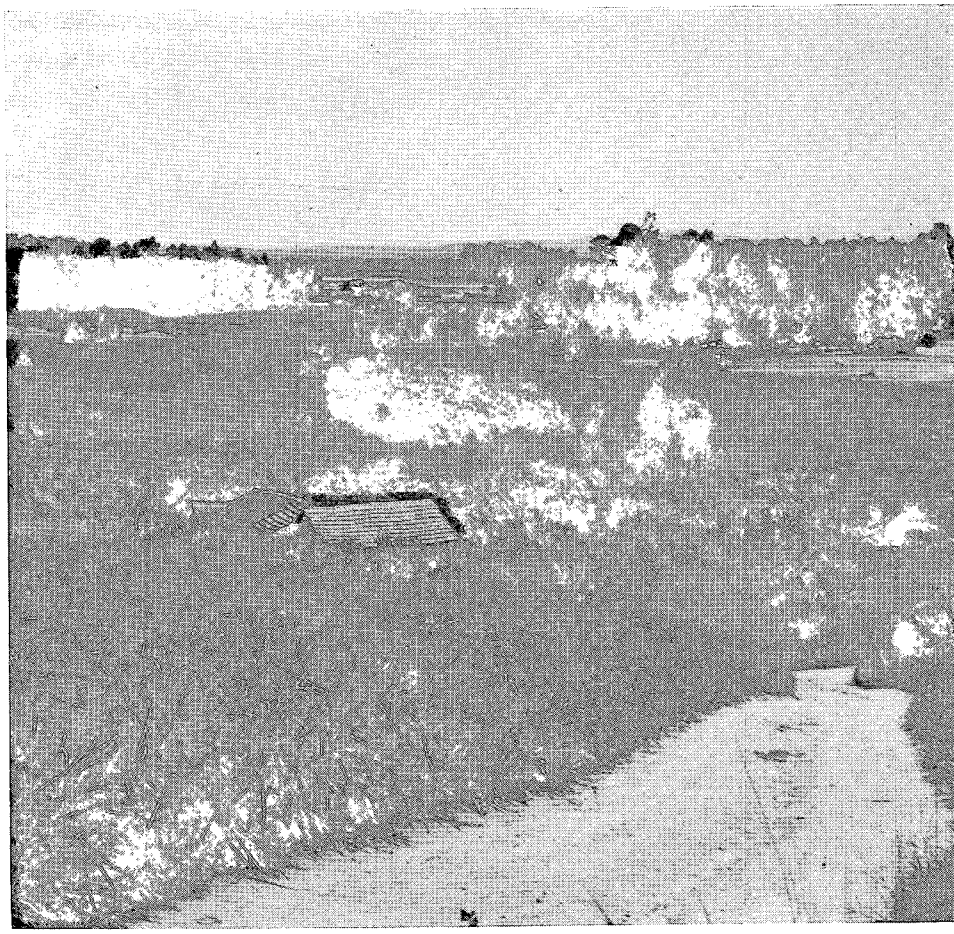
Uit de wijze waarop de landbouw in de kolonie beoefend wordt is op te maken, dat de kolonisten nog steeds bepaalde waarden aanhangen die in het verleden kenmerkend waren voor de grootgrondbezitters en planters. In grove trekken komt deze 'grote landbouwtraditie' neer op het bezitten van veel grond, het verbouwen van een handelsgewas (vaak als monocultuur), het in dienst hebben van anderen voor het verrichten van de manuale arbeid, en het investeren van kapitaal in de verwerking en het transport van het product maar niet in de productie zelf. De bedoeling van het bedrijven van landbouw was dus niet in de eerste plaats om te zorgen voor het eigen voedsel, zoals in andere delen van de wereld, maar: om rijk te worden.

Uit een vergelijking van verschillende categorieën Japanse en Braziliaanse kolonisten blijkt, dat de minder innovatieve Brazilianen nog het meest werken volgens de 'grote traditie', hoewel deze juist op de omstandigheden waarin zij verkeren het minst past. Het zijn vooral de Japanse boeren die rekening houden met het feit, dat zij beschikken over weinig grond. Zij bereiken bijzonder goede resultaten met de teelt van arbeids- en kapitaalsintensieve tuinbouwgewassen. De innovatieve Braziliaanse boeren blijken de 'grote traditie' nog voor een deel te handhaven.

Contents



Threshing rice



View from a hill in Piranema section

Introduction

The first time I heard of the land-settlement project of Santa Cruz was after a lecture which I had been asked to give at the nearby Universidade Rural do Brasil. But it was the work I had been engaged in for the previous year, a trend-report on the literature relating to land reform in Brazil, that lent significance to what I heard. In the publications which I had read, a recurrent topic of debate had been the relative importance, as obstacles to agricultural development, of land tenure relations and rural culture. Whereas most writers were inclined to blame the concentration of land in a few hands as the greatest obstacle to development, others wondered whether the values and attitudes of peasants and landlords alike were not equally important an impediment.

After the lecture, I was driven, in the rapidly falling darkness, to Itaguaí. The settlement project we were passing, I was told, was doing badly. Since every settler had been provided with a plot of ten hectares, this failure, for once, did not seem to be due to an unequal distribution of land.

I did not decide then and there to do research in the project, at least I do not remember having taken that decision. Nevertheless, when in the ensuing months the urge grew stronger to study the cultural obstacles to agricultural development (a subject which ultimately had received far less attention than the tenure relations), I thought of the project again.

Why I did indeed choose the project of Santa Cruz as the site for my study, and what problems I studied, will be explained in chapter 3. Before that, I will take the reader on an imaginary tour through the project, pointing out some striking features of the landscape, and introducing him to a few settlers. I do this because he should be made to feel the atmosphere of the place before being asked to digest the facts and assertions that will be presented in later chapters; especially so since he will often be foreign to Brazil. It is not out of condescension that I fear the reader will apply his frame of reference to a situation it does not fit. Sociologists themselves have committed that error. More than once foreign sociologists have come to Brazil not only with their research techniques, but also with their problems and interview schedules ready prepared; in short, with a frame of reference developed elsewhere. As a result, they studied fictitious problems, or problems of little significance. If I avoided that error myself, it is only because I was inexperienced enough to begin the study without many hypotheses and fixed ideas, and lucky enough to have good advisers. After my own narrow escape, I want to prevent the reader from applying too facilely a frame of reference derived from another culture. So I begin this book with a simple description

of the project and some people.

Chapter 2 deals rapidly with the history of the area and the legal provisions regulating its settlement. Firstly, the reader must have some idea of this background, even though it impinges only indirectly on my study. Secondly, the few historical notes may help to indicate that economic development in Brazil need not be lasting.

Chapter 3 describes what were the problems and what methods I used for the survey and the anthropological research. A special section discusses a theoretical problem the study evoked, to wit the usefulness and implications of the concepts 'modern' and 'traditional'. I explain why, after having used them initially myself, I concluded that they do not fit a culture of the Mediterranean type like the one obtaining in the project. Since these concepts, with their 'non-Mediterranean' contents, are still very much in vogue in diffusion studies that are at present undertaken in Latin America, the argument may have some importance.

Chapters 4 and 5 are based on the results of the survey I carried out in the project of Santa Cruz. Chapter 4 contains quantitative data on cropping patterns, production techniques, tenure relations, marketing, and professional relations with other settlers. Some of the data presented merely provide general information, but the distinguished traits often anticipate the agricultural tradition that will be described in chapter 7.

Chapter 5 discusses the quantitative differences between the 'high' and the 'low' adopters among the respondents. This chapter will be of interest mainly to diffusion researchers; the reader who is interested in the cultural obstacles to agricultural development may well feel lost among (or worse: bored with) the statistics, the more so because the findings are not unlike those reported in other diffusion studies.

The general reader, and the social scientist concerned with development in Latin America, may prefer to skip chapter 5 and concentrate on chapters 6 and 7. These contain the (mainly qualitative) results of the exploratory study of the cultural values and attitudes which seemed to hinder agricultural development in the project. Chapter 6 postulates the existence of a 'patronic syndrome', marked by a preference for patronage relations over peer relations. The syndrome is an important obstacle to cooperative action. The analysis of a number of historical incidents shows reason for the belief that this syndrome is a useful interpretative construct. Chapter 7 tries to show how far and in what ways a centuries-old tradition which originated among the great landed proprietors still influences agricultural production in the project of Santa Cruz.

Finally, chapter 8 contains a summary and some suggestions.

1 A visit to the project

The land

About seventy kilometers to the south-west of the city of Rio de Janeiro lies the land-settlement project of Santa Cruz. To get there you should follow the bus to Itaguaí that leaves the city by the Avenida das Bandeiras, then take the old main road to São Paulo, past the immense new water-purification plant on the bank of the River Guandu, and turn left a few kilometers before reaching the Universidade Rural do Brasil.

Not far from this cross-road the project of Santa Cruz begins. That is to say, on the left side of the road; to the right empty fields that belong to the University stretch away, green or yellow-brown according to the season.

Each farm measures about ten hectares. Every hundred and fifty meters or so stands a small single-story house, often surrounded by high trees that hide the rest of the farm from view. But where trees are absent, the fields seem remarkably empty, as if they were lying fallow. Apart from orange orchards and some sugar-cane you hardly see any crops. Two farms look as if they have been abandoned completely; nothing is grown on the fields and the houses are shuttered. The other houses are at least occupied; the open door and windows are great dark holes in the front; a child is sitting on the doorstep. Crude signs are nailed to the trees that line the road: farm for sale; we sell orange-tree grafts; or a number. It is only after you have passed many times that you begin to suspect that those fruit trees, those thickets of eucalyptus and bamboo groves, those orange orchards at the road side, not only obstruct the view to the fields behind, but have been set out many years ago for that very purpose. They are remnants from the time when it mattered not to show that the land was not intensively used.

After a few kilometers the land-settlement project occupies both sides of the road. Here the farms seem to be in better shape; you see brighter and roomier houses and more crops: young coconut palms, fields of dry, grey maize, the cobs still intact (not because harvest is late but because corn is preserved and stored that way), and cassava, curiously few leaves above thin, straggly stems. Some farms are closed off from the road by walls; if so, you often see a big new house next to the original dwelling. Along this all-weather road live many of the city people who have bought a farm in the project. They are all sorts. Some are pensioners who retired to a farm as a quiet place on which to live; others have not yet reached retirement and travel daily to Rio; a few have bought a farm as a hedge against inflation, or in the expectation that the price

of land will rise in relation to other prices and that they will be able to sell the farm at a profit. A number of city people have seriously begun to grow crops or raise chickens. On a farm to the left of the road, for example, fourteen great brick poultry houses have been erected, that accommodate 40,000 laying hens and broilers. But something is done on most of the farms that are owned by city people. Although there are often sharecroppers or labourers to do the work, the land at least remains in cultivation.

After about eight kilometers you reach the centre of the settlement. To the right, friendly and very white amidst high trees, is a small hospital; on the left, a row of shops, built with unpainted boards and rather dilapidated. A grocer who also sells concentrates, pesticides and working clothes; a cycle repairer; a bar. A wide dirt road crosses the main road here; round the corner are a few other shops. On the other two corners stand similar decrepit constructions: two more bars, a barber's and a tailor's. Some men lean against the counter; others play billiards. In the shade of a tree a woman and her daughter wait patiently for the bus to Itaguaí. Against the wall of one of the bars a small blackboard is hanging. Mysterious numbers have been chalked on it: today's results of the popular but illegal lottery, the jogo do bicho.

As a stranger, you are not stared at, but you have been noticed and remain under observation. You may be anybody. When you strike up a conversation with a shopkeeper, the man is on his guard and gives evasive answers. You get the impression that everybody here has something to hide and prefers not to make your acquaintance. Later, when you have been recognized for the harmless but curious queer that you are, people become cordial and open. But this recognition is an act of the individual or at most of a very small group, not of a community or a neighbourhood; it is a process which has to be repeated from the start with every local you meet. Thus you can be a trusted and welcome guest in one bar and a stranger in the bar across the road.

If you turn to the right, into the dirt road, you pass the administrative office of the project. One or two at a time, the whole day long, people call; to inquire when the official title to their land will be forthcoming, since they have paid off their debts two years ago already; to ask for a declaration to the effect that they are settlers, with which they can obtain credit from the State bank; to inquire whether 'Rio' has decided to let them have the farm of which they bought the benfeitorias; to ask if there is still a plot of land to be had; to complain about the state of a certain road; to ask for a job; to hear that they will have to pay 2 Cruzeiros instead of the ridiculous amount of 0.1 Cruzeiro (then 0.01 US cents) per square meter if they want to receive the concession to the farm they have been living on for the past five years; to settle a row; to talk politics; to hear what is new.

Further down the road you pass a number of bungalows built for the administrative staff of the settlement, and the closed shop of the cooperative. Opposite these houses is an extensive field with workshops, warehouses, and a hangar-like garage. A mass of rubbish and scrap iron lies about; parts of machines and trucks, old tires, discploughs. Two tractors are still recognizable, but they are incomplete. The dirt road,

which is full of holes, has been straight as an arrow once, but as a result of the repeated attempts of truckdrivers to avoid the worst holes it now reels a little. In the distance it disappears over a hill. There is always movement on this road; trucks coming to load produce; cars of owners or visitors; a herd of cattle being driven to another pasture; a man on horseback; children going to school in their white and blue uniforms; a woman with a bulging bag.

Here inside the settlement, where the roads are bad and passage becomes difficult after a night's rain, the city people are less numerous but not absent. The farm next to the field with the warehouses is a good example. From end to end it is planted with maracock. The owner, an agronomist, only visits the farm from time to time. He sells his entire production to the ice-cream factory of Kibon, in Rio. His is the only farm in the project where maracock is grown in such quantities.

Inside the settlement it is easier to see to what use the land is put. The first impression, again, is that it is rather empty; but those fields full of grass, weed and bushes are often pastures rather than fallow. And the further you penetrate into the project, the more numerous become the cultivated fields. Orange orchards are to be found on most farms. In the dry season the leaves of the trees are sometimes covered with a black mold, from a fungal disease called fumagina, but during the wet season, if it is wet enough, the trees become green again. Also maize and cassava are rather common. Here and there you see a field of sugar-cane, which the settlers use as fodder. In the rainy season rice also is grown, generally on the lowest fields. Around the houses grow fruit-trees; bananas, mango, cashew, jaca (jackfruit), genipap, sweetsop, avocado-pears. These are for home consumption, although the farmers who live on the asphalt road often try to sell their surpluses of these fruits to the passers-by. On several farms you will find a plantation of coconut palms. The trees are often low as if they have been planted recently, but that can be misleading: on some soils they do not develop properly.

The paramount impression, however, remains one of emptiness and disorderliness. The tall grass in which an orange plantation can be hidden; the custom of intercalating several crops on one field; the irregular shape of the fields, which often follow contours (one meter difference in altitude can mean different soil characteristics or, after heavy rains, the division between inundated and dry land); and the fact that some crops are cultivated in minute quantities only and are overlooked in passing; all contribute to this impression.

Although you will find throughout the project exceptions to this rule, farms that are intensively cultivated, in the section which we are visiting, Piranema, there is only one area where you can see a series of regular, clean fields in the European manner. It is the area called Chaperó, where the soil, black and granular, consists almost entirely of organic material. This area concentrates on vegetables; okra (hibiscus esculentus) mostly, but also giló (solanum ovigenum), tomatoes, cabbage, anguria. Most of the settlers here are of Japanese descent. Two different accounts are given of how it happens that they live so close together and have the best land. According to one story, Chaperó, at the time the section Piranema was settled, after 1945, was not much

more than a marsh. Only the Japanese were willing to settle there; the Brazilians did not like the risk of having their land flooded every year. (Chaperó is indeed one of the lowest areas of the project, and in summer inundations are still common after a few days of rain. A few deep and numerous smaller ditches usually manage to drain the water off within a day or two). According to the other story, the Japanese have gradually bought all farms on this soil type, or have exchanged farms with the original Brazilian settlers. Probably, both stories contain some truth.

On a field bordering the road a couple of men are working. As you approach, you notice that it is a Japanese settler with his labourers, who are Brazilians. They are spraying okra. The sprayer is connected by means of a long rubber hose to a reservoir mounted on a wagon. Dragging the hose along, the worker walks between the rows of okra, rapidly gyrating the nozzle around each individual plant. The mood is light; they are nearing the end of the field. Suddenly you observe that the Brazilian labourers who relieve each other at the sprayer play at their work rather than labour at it. They dance from plant to plant, demonstrate the agility of their wrists whirling the long metal nozzle around each plant, quickly trot past the empty spaces in the rows. When they are relieved, they stand about on the path, and keep a conversation going above the sound of the pump. Although it happens right before their eyes, they do not seem to notice it when the long hose threatens to flatten a few plants near the path on which they stand. You notice it, though, and the Japanese settler notices it too. He bends down and drags the hose to one side. He does that several times, without comment and not demonstratively. You have the feeling that you and he are suffering from the Protestant ethic.

In this north-west corner of the project, you see that the land, after all, is not wholly flat. Here and there, irregularly distributed and unconnected, as small islets, hills stand in the landschape. They are between ten and fifty meters high. The plain is crossed by a number of drainage canals, but these wind so much that you hardly see them, even from a hill; only a bridge in the road indicates their existence. These bridges are made of heavy trees[1], upon which boards are fastened lengthwise to make tracks for the lorries that come to load produce. There is no railing. The further you go from the centre the more dilapidated these bridges become. Especially if the boards have come loose and have shifted somewhat, it is with some trepidation that you venture to cross them with a car.

In the distance, standing out against the blue sky, lie the mountains of the Serra do Mar, the range that, running parallel to the coast, has for centuries hindered access to the interior. In the municipality of Itaguaí, in fact only a few kilometers from where you stand, this range curves outward to the coast. But the project does not extend to the mountains. As a stranger you must deduce this knowledge from a map, because in the field you often cannot discern where the settlement ends. In some places where, according to the map, there should be farms, you see nothing but empty fields covered with sparse grass, weeds and shrubbery; no houses, no people, often not even cattle. Because there are no fences or any other boundaries, and sometimes not even roads, it has decome impossible to trace the former farms. They have been absorbed into

bigger farms that were originally outside the settlement. One might say that the project has already disappeared in these places. Elsewhere the process is still going on; big cattlebreeders, coming in from the outside, have bought a number of farms in the project. They begin by buying a farm here and another there, but they try to acquire the interlying plots and finally seek to connect this land with the land they have outside the project.

The other, smaller section of the project, the section Santa Cruz, looks different. It was settled some fifteen years earlier, and it lies in another State, Guanabara, the former Federal District. This section appears to be more developed and more prosperous than Piranema, partly, perhaps, because it is older, but mostly because the State of Guanabara is better off and its government services are better equipped. The posto agricola, the local branch of the Government agricultural assistance and extension service, plows land for a reasonable fee; agricultural credit is easier to obtain; the farmers can ask for and receive permission to sell their produce on one of the markets in Rio[2]; the dirt roads are kept in good repair; most farms have electricity. Regular, reasonably clean, cultivated fields are less of an exception than in Piranema, and the pastures, even if they consist of native grass, are seldom as overgrown with weeds. The crops are the same, though: oranges, coconuts, bananas, cassava, vegetables. Especially cassava is prominent. It is a regular cash crop here, and consequently is cared for. The plants are higher, and the foliage is dense and very green. Bananas too are grown on another basis: whereas in Piranema only a few farms grow them in any quantity, in Santa Cruz there are many farms with sizable banana plantations.

Formerly the settlement was more of a unity. The two sections were connected by a bridge over the São Francisco River, and a regular bus service existed from Itaguaí to Santa Cruz right across the project. But in 1954 exceptionally high water (according to the Administration, high because the turbines of the Rio Light Company at Porça-cava had just been put into operation) swept the bridge away. It was never rebuilt. A few hundred meters up-river a small private ferry operates now, but it cannot support more than a horse-drawn cart. For a truck the banks are too steep anyway. The busline from Itaguaí took another route and did not traverse the section Piranema anymore. In fact, for two years this section did not have any public transport at all. Only in 1956 the road from the old Rio-São Paulo highway to Itaguaí, over which you entered the project, was bituminized, and thereafter became the main artery of the section Piranema. It was only then that Itaguaí itself, the seat of the municipality, came to have some importance for the settlers of Piranema. There they buy the things that shops in the settlement do not carry but that are not important or expensive enough to be worth a trip to Rio. They visit the doctor, the pharmacist, the prefecture. Some of their children attend the primary school in Itaguaí, and since the only ginasio of the municipality is in the village, any children go there if they proceed to secondary school.

The settlers

Sergio arose at five o'clock in the morning, when it was still dark. He was almost always the first to rise. He lit the oil-lamp and rapidly changed into his working clothes. It had rained hard during the night, and the roof had leaked so badly that they had had to get up, fold the mattress away and wait for the rain to slacken. The roof of the house was made of sapé (imperata brasiliensis), and near the ridge beam you could see the sky. Sergio did not repair it, because the house stood at the side of a road, on land belonging to the municipality, and might be pulled down any time. He had already bought roofing tiles for a new house, which he hoped to build somewhat further down the road, on land belonging to the Church, but he did not want to use them on this house. Its beams were not strong enough to carry the weight of tiles, anyway.

Sergio lit a fire in the brick oven and put water to boil for morning coffee. One by one, the others rose. Altogether eleven people slept in this house, that consisted of three small rooms, each about two meters square, and a kitchen. Sergio and Jenny had eight children, and the eleventh member of the household was Pedro, a negro boy who worked for Sergio. After they had drunk coffee Sergio went to the field with Pedro and one of his sons, a boy of ten. In the meantime his other labourer had arrived, a nortista, a man from the North-East, who had appeared in the project only recently. The man had left his wife and seven daughters behind in Rio Grande do Norte. From time to time he wrote them a letter and once he had sent them money, 5000 Cruzeiros. But where they lived a liter of cassava-flour cost 2300 Cruzeiros, or so he said. Sergio had the impression that the man would forget about his family in the long run; but maybe he only thought so because he, Sergio, would never have left his family; either they would have moved together, or nobody would have gone.

The evening before, having asked and received permission, Sergio had cut some young trees and branches on the land of a settler down the road. They now carried these trunks and branches to the field where they were working. Today they would continue to reap and thresh the rice he had planted as sharecropper for Senhor Julio. It was less than a hectare; they should be able to finish the work today.

Yesterday they had only reaped. It had rained a lot that year, and the field had been flooded repeatedly. Even yesterday the water had still been a foot deep in some places. There the grain in the ear had sprouted small white roots. This rice had, in fact, done badly from the very beginning. Senhor Julio had rented the land from the owner, who did nothing at all with it. It had been heavily overgrown with weed and grasses, but Senhor Julio had not really plowed it, as he should have done; he had only harrowed it twice (a couple of hours work) and had handed it over like that to Sergio. He in turn had not used any fertilizer, and had done nothing to improve the drainage. The lower parts of the field had lain almost continuously under water.

With a Japanese farmer, Sergio had thought, all this would have been impossible. He had wanted to give up the rice long ago, but Senhor Julio had insisted on him weeding the field and now insisted on harvesting. The labour did not cost Senhor

Julio a penny; for him everything that Sergio could get off the land was pure profit. Sergio had already lost heavily on this rice, so much labour had been wasted on it. But the only result of his protests had been that Senhor Julio had allowed him to plant some rice on his own land. That rice looked better; the land had been plowed well and the drainage was better.

After half an hour's walk they reached the field. The nortista started to reap. With a small sickle he cut the sheaves near the ground. Sergio's son put several sheaves together to make a bigger one and then carried it to the the threshing ground. Sergio and Pedro began to build a threshing chair. The chair resembled a crude throne; it was two meters high and had a seat of one meter square. The seat consisted of thin branches, not neatly fitted together but with slits between them. Against the back and under the armrests of the chair they nailed a piece of linen. They spread a piece of canvas on the ground and put the finished chair at one end. Sergio showed the boy how the threshing should be done. He took a big sheaf of rice in both hands, raised it as an axe, and brought down the heads with all his force against the seat of the chair. Through the slits in the seat, grains of rice showered onto the canvas. Sergio turned the sheaf a bit in his hands and again brought it down against the seat. Each sheaf had to be beaten from three to five times for most grains to come loose.

It was now ten o'clock. Laerte's eldest son, Paulo, arrived on a bicycle with food, the first real meal of the day. The metal pans contained the usual rice and black beans as well as angu (maize flour boiled with salt), vegetables and fried eggs. Jenny kept a garden where she grew all sorts of vegetables and herbs, and she often exchanged foodstuffs with her sisters who lived in the neighbourhood; if their husbands cultivated tomatoes for instance, they would exchange them for okra grown by Sergio. It was more a question of reciprocal gifts than of barter, though. There was always produce that could not be sold because it was slightly damaged; it had to be thrown away, unless some relative could use it.

Paulo, of course, had also brought coffee, not strong but very sweet. The household consumed about 10 kilos of sugar each week, and most of it went into the coffee. They all stopped working and settled down with their chow-pans. Sergio ate very little; he had ulcers and had to be careful with foods. He rolled himself a cigarette and drank some coffee.

After a while his two eldest daughters arrived, Martha and Marlene. The first was a mulatto, the second white. Sergio's children differed remarkably in skin colour. A younger daughter had the long, lank hair and high cheek-bones of an Amerindian. They all had Indian blood for that matter, for his great grandmother had been Indian, "caught with a lasso in the forest", as he used to say laughingly. His mother's grandfather had been Swiss; his own father a pure negro. He himself was obviously a half-blood, but Jenny was practically white. It did not matter much, he thought.

For some time already Martha considered herself engaged to be married. A young sharecropper from a farm in the neighbourhood had asked her to marry him, but he had not yet come to talk with Sergio and his wife. However, he seemed to be serious about it, and if he came to ask for her hand he would be likely to want to marry as

soon as possible. But Martha had no trousseau. Sergio hoped that the cabbage which he would soon plant on the farm of Chico, the Japanese, would do as well as it did last year, when he had been able to pay off all his debts and was still left with enough to buy a brand-new stove, that worked on cylinder gas. And it had been less than a hectare; less than half a hectare, allowing that Chico received half of the proceeds. This year, it was true, they were already deeper in debt than they had been last year at this time, but maybe the cabbage too would fetch more. All being well, they should be able to buy Martha a trousseau. After all, last year he had even planted okra between the rows of cabbage. He had done that to economize on his scarcest factor, land. He could not afford the luxury of fallow, so he had planted the okra before the cabbage had been cut. This year he would not do that, because he would hand the land over to Chico afterwards and go somewhere else himself.

He called everybody back to work. His youngest son left with the dirty pans. In a few hours he would be back again with a second meal, more rice and some scraps that were left over from this meal. The nortista went on reaping; the two girls collected the sheaves as they fell to the ground; his son bore them to the threshing ground. Pedro and Sergio relieved each other at the chair. When Sergio noticed many grains falling off the canvas, he stacked some sheaves around the legs of the chair.

They sweltered, although there were many clouds in the sky. The only relief came from a steady breeze off the sea. Everybody was working now. The girls slowly, talking with each other, and without enthusiasm. Sergio's son proudly carried big sheaves on his head, but he took no care how they fell. His father told him to rest the heads on the canvas (they were trodden upon so often, that they shed some grain) and in the same direction; otherwise, the thresher had to rearrange them before he could lift a sheaf, thus loosing time. Patient explanations were of little avail. The sheaves were too heavy for the boy; he could carry them but not control their fall. Sergio let him be, after some sarcastic remarks.

Two hours later Sergio's other son brought the second meal. This time, however, the work was not interrupted; those who wanted drank some coffee or ate a bit of rice and then resumed working. Sergio doubted if they would be able to finish the rice that day. The nortista was still busy reaping. In some places the rice was hidden among grasses as tall as the man himself, so that he disappeared from view. However, he at least was likely to finish today. The threshing would probably take longer; they were still at work on the rice that had been reaped yesterday, and had not even touched today's harvest. The rice was sodden and the grains stuck stubbornly to the ears; the sun had dried only the upper sheaves. But then, maybe the field would produce more, after all, than the ten sacks which he had expected. Sergio started working again.

In the afternoon it began to rain. Sergio sent his children home. The nortista had finished reaping. The man did not work badly, but it would be a long time before Sergio would trust him as he trusted Pedro, the boy. When it began to get dark they put the rice that had fallen under the chair in sacks. It had become a big heap, and they filled seven sacks with it. If they left it lying around, some of it could well be stolen during the night. Sergio decided to leave the sacks on the field, however. He

figured that it was not easy to lift sacks of fifty kilos.

They were soaked to the skin when they got home. Jenny told him that Vazau, the leader of the Japanese farmers, had called. They were going to repair the road the following day and he had asked Sergio to warn the Brazilians in the neighbourhood.

Although Sergio did not possess any land, the Japanese regarded him as a leader. This was not as preposterous as it sounds. Most of the Japanese knew him; he currently worked as sharecropper with three of them. But because he did not live on their farms, in a house provided by them, he kept a certain independence. Besides, many people in the neighbourhood were relatives or compadres of Sergio. His contact with the priest from Itaguaí (who distributed through Sergio's house part of the powdered milk received from the Food for Peace Programme) and with the agricultural extension officer raised his prestige. The Brazilian farm-owners in the neighbourhood did not really compete; those who were not absentees often kept to themselves, and preferred to be ignored.

This invitation was inconvenient, but he could hardly shirk it. Sergio owed his relative independence, and the ease with which he could leave one Japanese farmer and get a piece of land with another, to the confidence that he inspired. He was reputed to be a hard, careful and diligent worker. It had cost him a great deal of effort to build up this reputation. He had begun to work with the Japanese after he had been forced to leave the farm of Machado. His first job had been cutting trees for Chico, at a rate so low that he could not afford to employ others to help him. Most people would have given up after a time, but Sergio had held out, suspecting that the low rate was only to test him. After four months one of Chico's sharecroppers had suddenly wanted to leave. The man had offered his benfeitorias to Sergio for 20 contos, but Sergio did not have that kind of money. Instead, he had talked with Chico, telling him that he had worked four months now for very little and had amply shown that he was not afraid of work. Chico had bought the benfeitorias for him (he had had to pay only fifteen contos; poor people are like that, said Sergio, they sell dear to a poor man and cheap to a rich man) and had taken him in as sharecropper. Sergio sent a message to his brother-in-law, whose wife was visiting Sergio. His neighbour, Senhor Gonçalves, who owned two farms, was not home, but Sergio knew that he could order one of Gonçalves labourers to go and repair the road; Senhor Gonçalves would later pay him a day's wages for it. At least, he had done so last time. Perhaps he, Sergio, could do the same thing. He could send the Nortista to the Japanese and go on threshing rice himself. Further he could count on a number of relatives, who were sharecroppers with Japanese farmers. It was highly uncertain if any Brazilian settlers would show up. For instance, it was no use asking Corrêa, Sergio's compadre. Of course, except for Senhor Gonçalves, only the Japanese settlers possessed trucks to take their produce to Rio. The Brazilian settlers, if they had anything to sell, sold it to middlemen, and if one of those broke an axle in a hole in the road, nobody was sorry. Sergio decided that it was too late to warn the other settlers along the road. He would do that first thing in the morning. After supper he went to bed early, before the others.

When we arrived, about half past nine in the morning, we found Henrique, in shirt-sleeves, on the porch of his house, shaving himself. The day before it had poured with rain, but this morning the weather was fine. Henrique readily gave us permission to take some soil samples on his farm. Most of his land was under oranges, but he also had some cassava, on land that was higher than the rest, and some pasture. He sent his son along with us. Behind the house began the orange trees. They stood on small ridges, separated by furrows. The furrows were full of water, from a few centimeters to a foot or more deep. They were supposed to drain into a deep ditch at the end of the field, which Henrique had dug with the help of his oldest son who owned the farm on the other side. In the ditch, the water was indeed running, but on the field I could not detect any flow. The ditch across the road in front of the farm, constructed by the Administration, was too high to be of any use to Henrique. The orange trees showed traces of fumagina, but not much. Henrique later said that in some years they had suffered a lot from fumagina. He had sprayed but you got the stuff in your face, and after a while your arm ached from pumping. He had tried all sorts of concoctions: water and soap, petroleum, and also pesticides, but these he found dangerous; he had stopped using them.

While we were filling our sample sacks we talked with the son, an intelligent lad of twenty. He had interrupted his cientifico (university preliminary course) which he had been doing at the nearby Agricultural University, because he had been drafted into the army. He had only recently returned home. He did not know yet what he was going to do. He was going to give the matter a good deal of thought, so he said. Unlike many settler's sons he was not dead set against agriculture, but he thought that it was a great disadvantage that a farmer could not go away once in a while, unless he had somebody to look after the farm, One of his brothers owned an adjoining farm, but another had gone to São Paulo and had become a taxi driver. His sister taught at the primary school down the road. While we were talking the young man noticed a wasps' nest in one of the orange trees. He told us to stand back. Stooping, he filled both hands with a bundle of dried grass that covered the ground between the trees. Darting up to the wasps' nest, he rubbed it between his straw-filled hands and ground it to pieces.

When we had taken our samples we went back to the house and talked with Henrique who had finished shaving. His was not a bad house; it was less spacious than the bungalows which some Japanese and city people had built themselves, and also older, but it contained three comfortable rooms, a big kitchen and the porch. A few large fruit-trees with tremendous crowns provided shade. He had almond, cashew, jackfruit and mango. A jackfruit was cut open in our honour; with our hands we worked the edible parts free.

Henrique had already lived for seventeen years in the settlement, and had no plans to leave. His oranges and his nine cows provided enough for a living. Some years ago he had also bred pigs; he once had sixty of them, but they kept eating the oranges from the trees and he had sold them off. His oranges he sold sometimes on the tree, sometimes crated. Some middlemen brought their own pickers along, and then he had

only to count the number of crates afterwards. He was well aware that the settlers who had trucks bought cheaply from other farmers and made money, but what could one do? The attempts to organize a cooperative had failed, because the leaders had sought their own advantage. They could not bring it up again, the settlers did not want to hear of cooperatives any more. Matias (at that time an important official of the Administration) was the biggest crook of them all. He had been able to turn his job to good account and now owned five or six farms. Ten, according to Henrique's son.

As to annual crops, his farm had only cassava. But on a farm across the road he had planted rice. It was a sharecropping arrangement. Since the tractors of the Administration had stopped working, it had become very difficult to find somebody to plow your land. Plowing with animals Henrique considered more tiresome even than clearing land with the hoe; it simply could not be done. The thing to do was to plow with a tractor, brrrm and you are at the end of the field, but he had no money to buy one.

Later his son showed us the house. The furniture was simple but not wretched and falling apart as in the poorer houses. In the kitchen stood a big new refrigerator that worked on paraffin, and a stove with a cylinder of gas next to it. Behind the house we admired an electric pump, installed next to the well from which they got their drinking water. The current for the pump was supplied by a second-hand generator, which also fed the light-bulbs hanging from the ceiling in each room. Henrique said that recently, during the construction of the high-tension cable from the old Rio-São Paulo road to the centre of the project the settlers in his neighbourhood had seriously thought of buying a transformer together and shunting the electricity from the main road to their houses. The plan had not materialized because the builders had run out of money and the high-tension cable had never been connected. In the past few months, moreover, considerable lengths of cable had been stolen, so that now they could not send electricity to the project even if they wanted to.

Just as we were leaving, a big truck of the company that was building the water-purification plant on the Guandu River turned into the farm. The driver wanted to buy a crate of oranges, of the Pera variety. Why he had driven so far to buy something which he could get at any other farm, I did not understand.

2 The history of the project

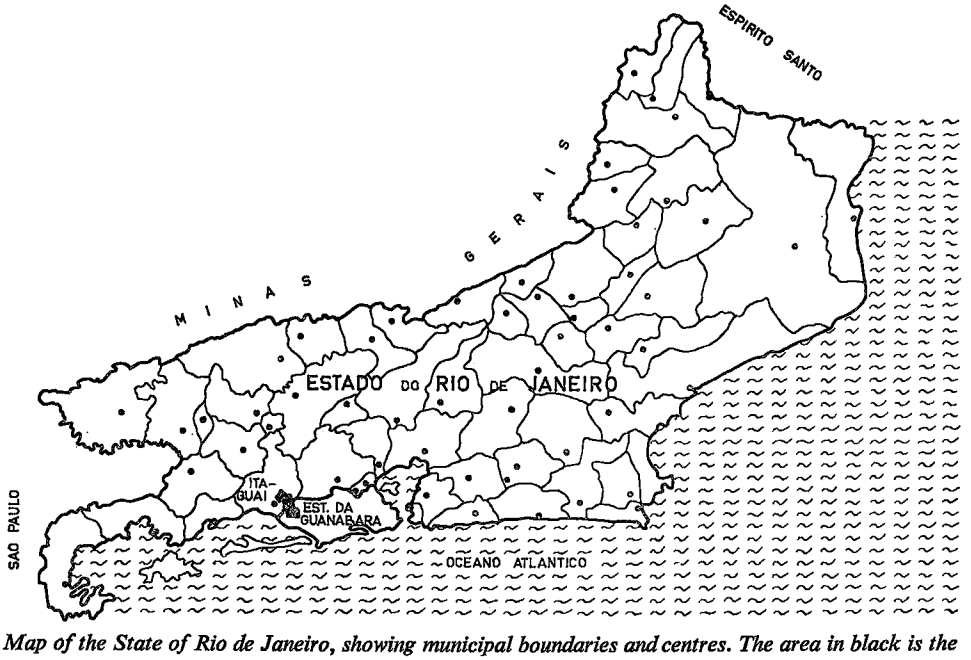
The land-settlement project of Santa Cruz occupies the southeast corner of the Baixada Fluminense, the lowlands between the sea and the mountain range that runs parallel to the coast in the State of Rio de Janeiro. The settlement has been carved out of an immense latifundium, the history of which goes back for centuries. Only some twenty-odd years after the land had been given out as a sesmaria[3] in 1567, it was partly bequeathed to and partly bought by the Order of Jesuits, which eventually managed to acquire a property of more than 180,000 hectares. Working with converted Indians and later with negro slaves, the Jesuits bred great herds of cattle, horses and sheep, and cultivated such crops as sugar-cane, cassava, maize and tobacco. In order to drain the flat marshy lands, they constructed numerous canals and diverted water from one river to another (Alonso, 1960, p. 400). For almost two centuries the 'fazenda de Santa Cruz', as the exploitation came to be called, remained in the possession of the Society of Jesus. Owing to the high prices given for sugar on the European market, sugar-cane gradually became the most important crop on the estate (Alonso, 1960). In 1759, however, the Jesuits were expelled from Brazil and their possessions confiscated. The fazenda became Portuguese Crown property. Under civil administrators it rapidly declined in prosperity. Repeatedly, in 1761, 1770, 1773 and finally in 1804, orders went out from Portugal to subdivide and sell the fazenda, but only in 1806 two engenhos[4] with surrounding lands were auctioned off. The administrator of the fazenda was against its dismemberment. The construction of the two engenhos and of cassava and coffee plantations, seems to have brought back to the region some of its former prosperity. But after a political conflict the administrator was put out and the sale or lease of lands became frequent (Tacsir, 1952). The arrival of the Portuguese royal family temporarily called a halt to this process of fragmentation; the fazenda became its country seat.

Coffee, introduced in the beginning of the 19th century, did not replace sugar-cane in the lowland. The hamlet of Itaguaí, however, developed into a relatively important commercial centre, owing to its situation near the coast and on the main road through the mountains to São Paulo. The coffee grown in the Paraiba valley was transported to Itaguaí on pack-animals and from there taken to Rio by boat (Alonso, 1960, p. 404).

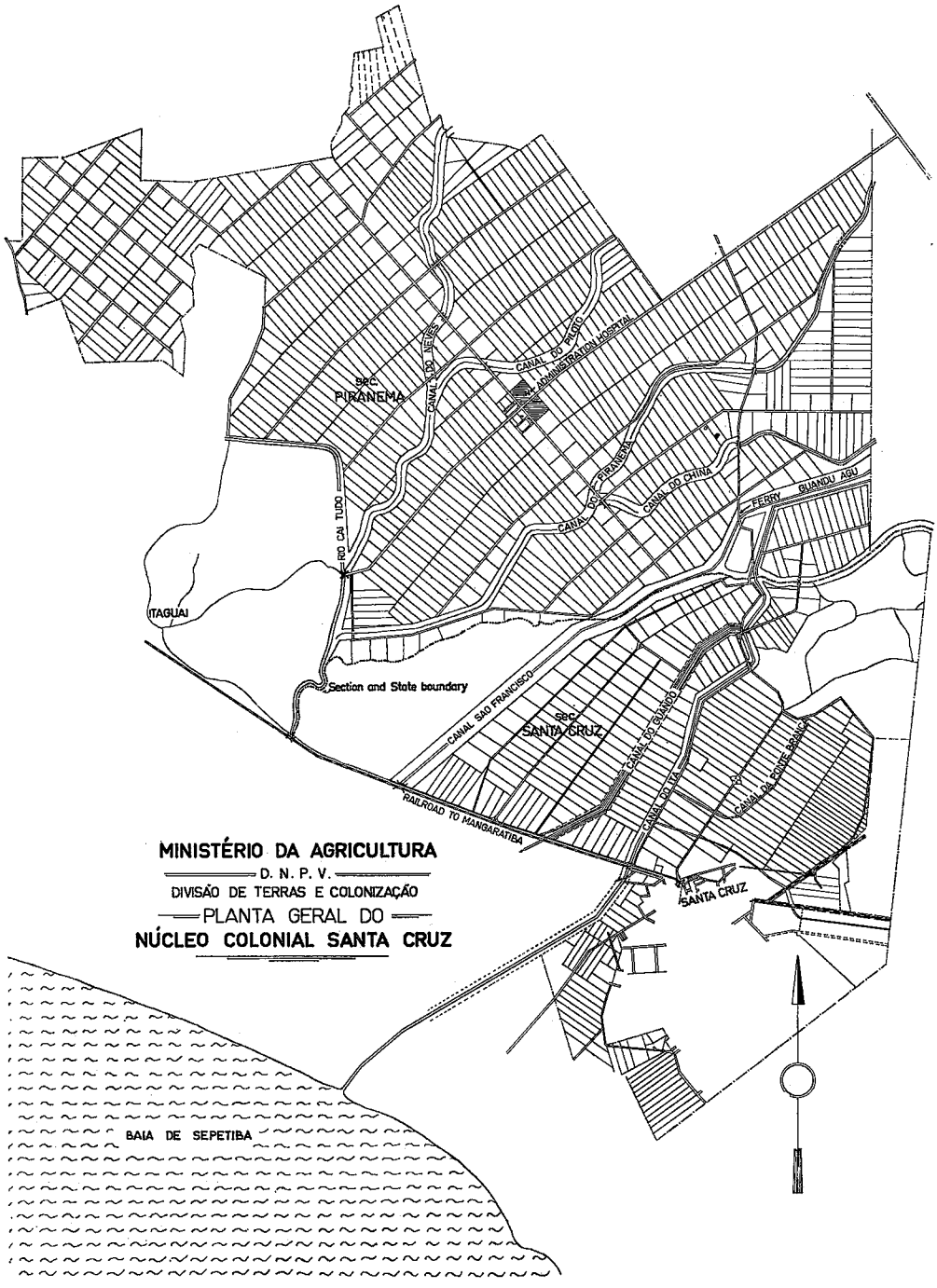
Also, it seems, attempts were made to develop the royal fazenda of Santa Cruz. Spix and von Martius, who passed through in 1817, met a compatriot of theirs who directed the recently installed charcoal works, and made mention of Chinese colonists, whose agricultural skills, it was hoped, would benefit the fazenda[5]. Most of these colonists, however, had become street vendors in Rio de Janeiro. The fazenda itself

they found to be in almost the same state of neglect as Mawe, another traveller, had described it many years before them. In spite of a multitude of slaves, the lands were badly drained and marshy, and were used mainly for raising cattle (Spix and von Martius, n.d., p. 114 *et seq.*). Kidder (1951, p. 135), who saw the fazenda twenty years later, says of it: "Up to the present, however, almost all its land is uncultivated". What development there was at Itaguaí did not last. Owing to the rapid exhaustion of the soil on the first coffee plantations and the consequent southward movement of the crop, as well as to the construction of a railway which reached São Paulo in 1875, Itaguaí lost its importance for the transport of coffee. With the advent of the Republic the fazenda became state property. Gradually many lands pertaining to the latifundium were leased. Through neglect of the extensive drainage system rivers became obstructed, and the marshes reappeared everywhere. Finally the region was almost abandoned by its population (Alonso, 1960, p. 405).

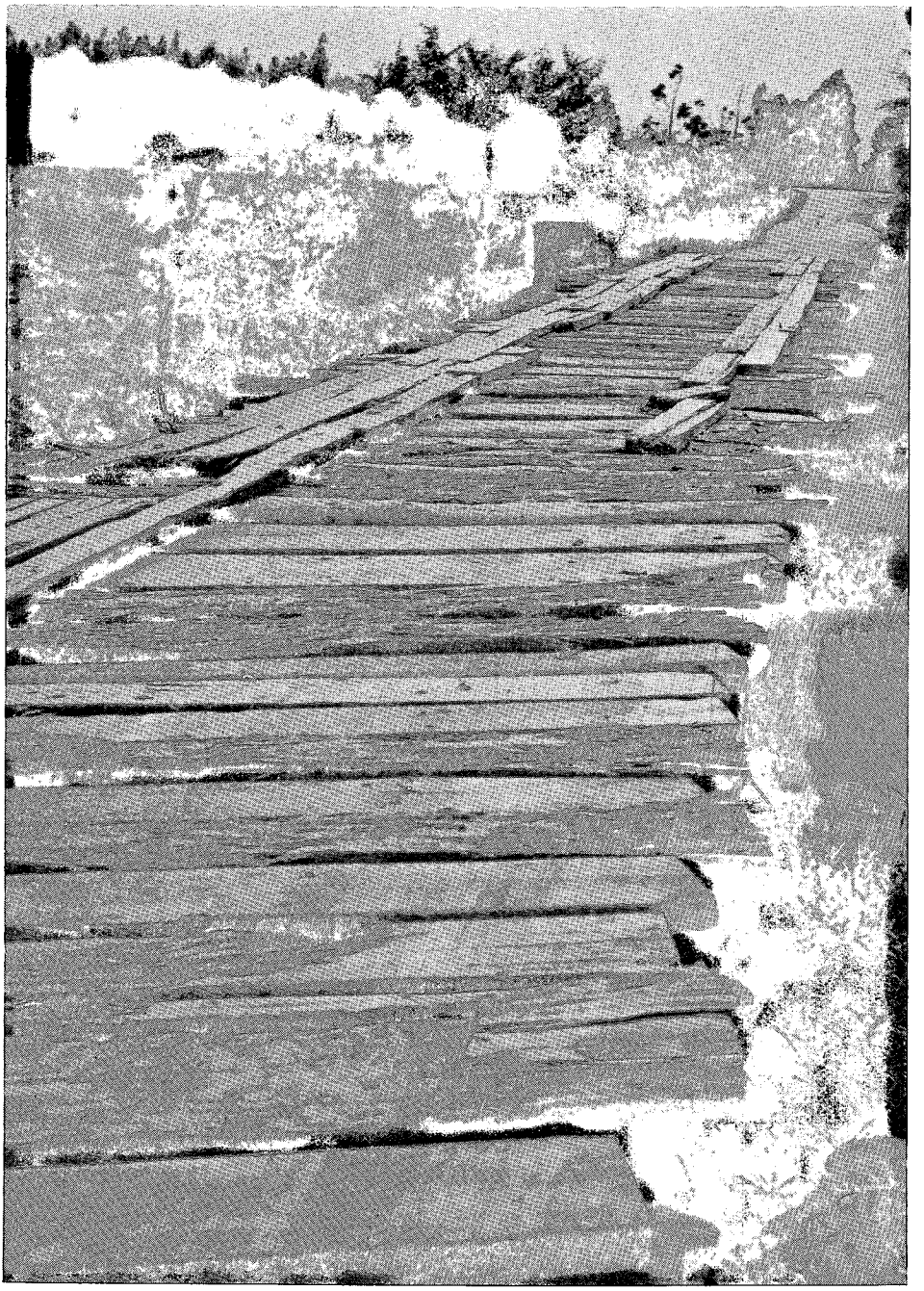
In the twenties of this century the Federal Government began to envisage the recuperation of the marshy lowlands in the Baixada Fluminense. Various commissions were created to study the technical problems (mostly drainage) of reclaiming the area. Until 1933 these studies and works which resulted from them remained patchy. In that year, however, a new commission was set up that understood the necessity of a more comprehensive approach to the planning and execution of reclamation works in the region. Upon its recommendations the Directorate for the Reclamation of the Baixada Fluminense was created.



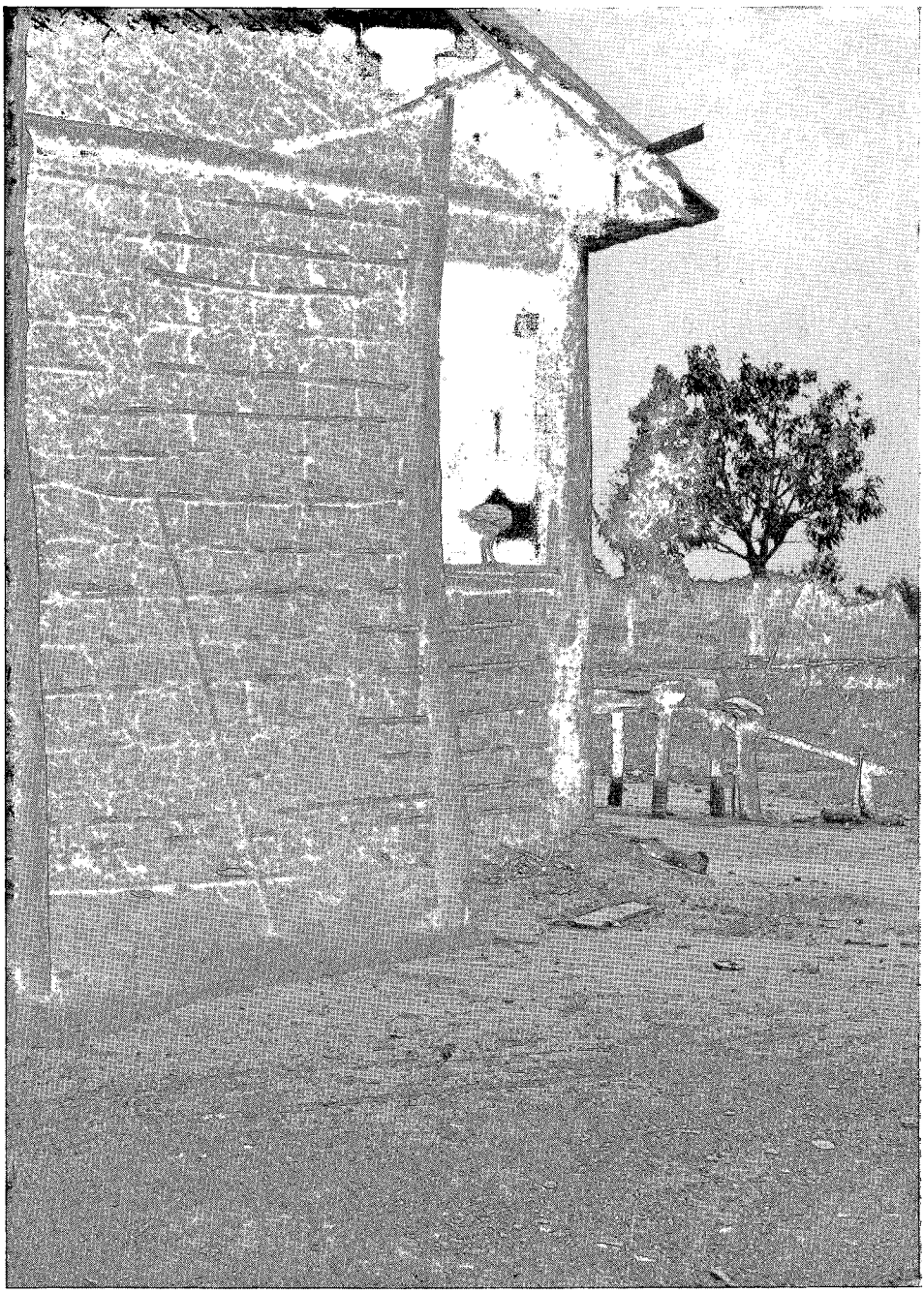
Map of the State of Rio de Janeiro, showing municipal boundaries and centres. The area in black is the project of Santa Cruz.



Map of the land-settlement project of Santa Cruz



A bridge



A house under construction

In the meantime the Federal Government had decreed[6] the establishment of a so-called Centro Agricola on the lands of the Fazenda Nacional de Santa Cruz, within the boundaries of the Federal District. This Decree marks the beginning of the land-settlement project I have studied.

Since the project has always been considered a Nucleo Colonial[7] let me first expose the most important provisions of Decree 9801. This Decree defines a Nucleo Colonial as an assembly of plots of land, each sufficiently extensive to absorb the labour of the person who acquires it. The plots must be prepared for the establishment of immigrants as their owners[8]. A Nucleo Colonial has to contain: schools for primary agricultural education, demonstration fields, and workshops. It may contain: breeding bulls, installations for the processing of agricultural produce, machines and implements, and animals that the settlers may use during the first six months.

The settlers will receive: upon arrival, three days food; during the first six months, employment in the labour force of the settlement in such a way that each adult will be employed about 15 working days per month; during the first year, free medicines; and until the date of emancipation[9] of the settlement, free medical care. Seed, seedlings and publications may be distributed by the administration[10]. After consultation with the local authorities, a local market will be organized.

The plots must be smaller than 25 hectares and normally shall include an already constructed house. The plots can be sold for cash or in instalments. Thirty per cent of the plots can be reserved for Brazilian nationals.

The settler may not alienate his plot or his benfeitorias[11] as long as he is indebted to the Colony. If, without valid reasons, he fails to cultivate his plot over three months, he shall be evicted. Only after having received definite title to his first plot a settler can buy a second plot.

Not a word is said about which immigrant or Brazilian national can become a settler.

The regulations covering the Centros Agricolas differ in some ways from these provisions. A Centro is meant for national labourers domiciled in the state containing the Centro. The Government shall provide the same installations as in a Nucleo Colonial, and with minor variations the settlers do receive the same benefits as the immigrants. There are some regulations over selection, but these are not exacting. The main condition is that the settler be an agricultural labourer. More important is, that his behaviour is subject to some prescriptions. Not only can he be evicted if he has failed to cultivate his plot for three months, he also has to live on his plot. He is not allowed to keep animals except on enclosed fields especially designated for this purpose. Finally he may not alienate his land or his benfeitorias nor conclude any other contract which impedes the free cultivation of his plot until such time as he has received permanent title to the land. After that date he may alienate his land only with permission of the Ministry, and to somebody who meets the conditions put forth in this decree.

One can see that the legislator has tried to make the sale of land both more difficult

and less attractive than for the immigrant settlers. He also made an attempt to prevent the intrusion of non-labourers, for instance landowners. Benefits and obligations seem to be meant to prevent turnover and speculation.

A short time before the colonization of the first section of the project began, the Government reduced, in a sense, the difference between the two decrees just mentioned. A decree (No. 19842) of 1930 limits immigration; establishes a special tax, the proceeds of which are to be used to promote the settlement of immigrants who have already arrived; and declares that the national settlers will from then on enjoy the same assistance as the immigrants already received.

The first (and smallest) section of the project, the section Santa Cruz, in the former Federal District, was settled on the basis of these legal texts. Settlement did not wait for the completion of the drainage and reclamation works in the area, which consisted of the excavation or repair[12] of three sizable canals and a number of smaller ones, and of the construction of dikes, bridges, roads and houses. In 1938, all the farms in this section had been handed over and provisions were made to extend the settlement to the other side of the São Francisco River into the State of Rio de Janeiro. The Federal Government decreed (Decreto-Lei 893 of 26 November) that all tenant farmers on lands pertaining to the Fazenda Nacional de Santa Cruz had to show, within three months, the documents upon which they based their occupation of the land. Many tenants could not do this (Tacsir, 1952).

Lawsuits[13] resulting from the expropriation of lands, and the construction of the necessary canals, roads and bridges delayed the next phase of colonization until 1945. After some partial revisions of the law of 1911, in 1943 a new law (No. 6117) was passed on the organization of nucleos coloniais. A nucleo now had to contain medical and pharmaceutical services and cooperatives for purchase, sale and consumption as well as schools, workshops and demonstration fields. Until the emancipation of the settlement the settler needed permission from the administering agency if he wanted to alienate benfeitorias or land in any way. The law even prohibited public notaries from drafting contracts of this kind unless such a permission was shown.

The benefits which the settlers were to receive were very similar to those stipulated in 1911: (a) Three days food; (b) Employment in the labour force of the colony; (c) Free medical assistance; (d) Medicines, seedlings, seed, fertilizers, pesticides and tools free during the first year; (e) Some implements and animals as a loan during the first year. After the first year, the services under (d) and (e) could be provided for a fee[14].

The settlers had to meet certain conditions. They had to be older than 18, could not be owners of agricultural land or of an industrial or commercial enterprise, and could not be public officials. The settler was obliged to live with his family on the plot he had received and to cultivate it personally. A settler was to be evicted if he did not cultivate his land for three months, or failed to bring a minimum area under cultivation, within the prescribed period, or limited himself to cutting the trees on his land and did not plant or reforest the clearings.

Also in the second section of the project, the section Piranema, settlement began before the projected drainage and reclamation works had been completed. In both sections the farms which were distributed measured about 10 hectares, and were rectangular. In the section Santa Cruz brick houses were built on practically all farms, but in Piranema only on about a quarter of the farms (Geiger, 1956, p. 156). Farms and houses had to be paid in ten (later thirteen) yearly instalments, of which the first was due two years after the arrival of the settler. In Santa Cruz a system of dirt roads was constructed to all farms, but in the Piranema section such a network, though planned, was not wholly executed.[15]

In spite of the canals and ditches, drainage remained a problem in many parts of the project. The area was severely flooded more than once. Particularly during periods of heavy rainfall, much farmland is still flooded every year, for a few days or for months on end, especially in Piranema, where a number of deep and extensive ditches are needed that cannot be dug by individual farmers.[16]

Although a government service enforced malarial control, the region was not declared free until 1954.

What happened in the project during the first years is little known and difficult to reconstruct. Although the settlers are fond of saying that they did not receive any assistance, there is little reason to doubt that the Administration provided them with the assistance required by law and more than that[17]. Apart from constructing and maintaining drainage ditches, roads and bridges, the Administration distributed seeds and seedlings, and, when they were available, pesticides and fertilizers. Moreover the agency plowed and harrowed land for a small fee, and employed a considerable number of settlers on its labour force. In later years it also assisted in the sale of produce, by organizing a market especially for the settlers in one of the suburbs of Rio, and by providing transport.

Incidentally also other assistance was given. But while Geiger (1956) thought the assistance still insufficient, Moreira (1962), writing about Tinguá, a comparable land-settlement scheme in the neighbourhood, is of the opinion that the aid was too easily given and encouraged the colonists to believe that it was not more than their right to receive aid. Though it is true that the servicing sector required by law was still rudimentary when colonization started, schools, workshops, storage buildings for a cooperative, and a small rice mill were eventually built.[18] In 1950 a hospital was inaugurated by the President of the Republic.

The few descriptions of the first years of the project that have come to our knowledge suggest that two phenomena have been especially important.

Firstly, farming has always meant for the settlers the production of commercial crops rather than growing their own food and selling possible surpluses. The cultivation of perennial crops and even trees (Geiger, 1956, p. 156), the difficulties encountered in finding outlets for the produce (Moreira, 1962, p. 315), the forcible way in which many settlers describe the isolation of the project during its first years, all point to this phenomenon. This means, of course, that the deficient communications,

the isolation of many farms, and the absence of any marketing organization have been more harmful than was strictly necessary.

Secondly the poverty of the settlers seems to have impeded development from the beginning. Many of them found their land upon arrival covered with trees. This was regarded as a blessing; by cutting the trees and selling wood or charcoal they could earn a living, so that forested farm land was in great demand. However, not a few settlers (and this accusation is frequent in the administrative documents) seem to have limited themselves to this extractive activity, not caring much for their plantations. Also it was rather common (and is still regarded as normal) for settlers to seek work on other farms or on the labour force of the administering agency[19], in order to gain a living. "The lack of capital on the part of the settlers", says Geiger (1956, p. 154), "is the main reason why only sixty per cent of them work (on their own farm)".

The sale of wood, and the possibility of employment elsewhere have somewhat disguised the fact that many settlers were unable to raise themselves by their own bootstrings. It is not easy to assess in how far a poor man really could have done so. But there is also little doubt that most settlers were easily discouraged by difficulties and setbacks, and had not the drive nor the persistence to develop their farm. "If you gave them credit, they ate it" said a former administrator, "and if you gave them seed, they ate that too".

Almost from the beginning of the project farms were bought and sold. When external economies, especially improved accessibility, raised the value of the land, prospective buyers appeared. For the original settler, once he had exhausted the wood on his land and had found his production insufficient, the temptation to sell was difficult to resist. As long as he received the money he did not care that the sale was illegal; that problem he left to the buyer[20].

Some writers impute this turnover not to poverty on the part of the first group of settlers, but to speculative motives on the part of their successors (Geiger, 1956, p. 159; Moreira, 1962, p. 318). This may be true if poverty is understood not in absolute terms, but as a relative, culturally determined phenomenon. The settlers saw farming as the production of cash crops for the market, for profit. To them poverty, or lack of ready money, meant failure and led to abandonment. A former administrator saw in the turnover a process of selection; the poor and ignorant were bought out by those who had more money, more education, more skill.

Much confusion reigns over what instructions were issued on the cultivation of the farms and how far they were enforced. Geiger (1956) mentions directions of 1941, according to which the settlers were obliged to bring 50% of their farm land under cultivation within two years (20% within the first six months, and 10% during each successive half-year period). But it is also said that the settlers were free to use their land as they saw fit, provided they cultivated at least 2 hectares annually (Faissol, 1950, p. 163). Some say that the settlers, at least in the beginning, were not allowed to keep cattle, but that this prohibition was not enforced (Tacsir, 1952; Geiger, 1956). Elsewhere mention is made of an obligation (that remained unfulfilled) to keep a part of the farm under forest and to reforest it if necessary (Alonso, 1960). In a report of

Table 1. Mechanical soil preparation by tractors of the Administration in the section Piranema.

	Number of farms assisted	Area plowed (in ha)	Number of functioning tractors
1952	398[1]	597[1]	12[2]
1953	326	695	8
1954	348	713	8
1955	141	216	4
1956	182	298	5
1957	193	312[3]	6
1958	57	82	2
1959	39	46	1
1960	51	68	2

Source (where not mentioned otherwise): Administration's report of 1960.

[1] Report FAO expert, 1953.

[2] Geiger (1956), p. 155.

[3] The Administration's report of 1958 mentions only 98 ha.

1953 by an expert of FAO, sent out to study how the settlement could be improved, a detailed account is given of the directions of land use then in force: 10% of farmland under forest, 20% in pasture, 20% under fruit-trees, 10% for poultry and small livestock, and the remaining 40% under annual crops. Somebody, obviously a high official, had, however, written in the margin that the expert had been misinformed; what he took to be directions were only suggestions.

It can be assumed that some directions were given but could not be strictly enforced. Many farmers held other jobs to earn a living, and not all settlers had the same luck or misfortune. Differential application and a concomitant slackening of the rules will soon have become necessary.

In spite of the difficulties and the turnover the settlement progressed. According to later administrators, in the period 1952–4 the agricultural production of the project was quite high[21]. In the latter year a new National Institute for Immigration and Settlement (INIC) was created, which took over from the Ministry of Agriculture the administration of the settlement schemes already in existence. The transition virtually left the Santa Cruz settlement without administration for some time. Moreover, INIC drastically reduced the budget of the new administration of the project, which became therefore unable to keep up the technical assistance and the other services to the settlers on the former level. Assistance became irregular and eventually ceased.

Table 1 illustrates this gradual decline.

3 The investigation

Choice and reconnaissance of the area

Though I was aware that the land-settlement project of Santa Cruz was not like the rest of Brazil or even like any single region of the vast country, I nevertheless decided to study it. Small, privately owned family farms might not be characteristic for any natural region, except for those areas in the south which had been settled by immigrants, but they did occur, covering a river basin here, filling in the spaces between large estates elsewhere. According to Queiroz (1963) they were much more numerous than the agricultural planners appeared to realize. And their number would increase; land reform was likely to be enacted sooner or later and would frequently comprise the creation of family farms on expropriated fazendas[22]. Even if land reform were delayed, land settlement would proceed, because that was one of the few measures to reorganize agriculture and combat unemployment at least locally that could be taken without raising controversy[23]. I saw the project of Santa Cruz therefore as a precursor; an example of how Brazil could look after an agrarian reform. Much money and effort had gone into the reclamation, drainage and settlement of an area that, in theory at least, was close enough to a large urban centre to be able to find outlets for its produce[24]. Here the conditions had been created under which poor peasants and agricultural labourers could develop into smallholders earning a reasonable income on land that would become, or already was, their property.

Had the efforts of the government been successful? If not, could I learn anything from the difficulties here for the benefit of future settlement projects? I thought so, if the results of a study were not regarded as undeniable facts but as suggestions. I realized that, statistically, no generalizations were allowed from any single settlement project to others, or to future smallholders on expropriated land. But the advantages of acquiring intimate knowledge of one area outweighed the disadvantage of not being allowed to generalize.

Practical considerations led to the choice of this particular project. Of the older settlement projects around the city of Rio, it was the most extensive. It had been studed by others. It could be easily reached. It was near the Universidade Rural do Brasil, which could supply information and assistance and where I hoped to recruit interviewers. Having decided to study the Nucleo Colonial de Santa Cruz, I proceeded to investigate what had happened to it. In how far had these settlers really become owners of productive and remunerative family farms? Who had become good farmers? What consistent differences were there between those who operated productive

farms and those who did not? It was with these questions in mind, and armed with some introductory letters, that I set out to explore the area, in August 1963.

The introduction I had to the Administration of the project was very good. I received all assistance I required and was allowed to examine its records at will. Since most of the employees had lived many years on the project, they knew it well and provided me with valuable information[25]. They also introduced me to several farmers. Other settlers I got to know by accompanying the extension officer of ACAR-RJ, the state agricultural extension and credit association. With his female home economics assistant, he used to visit several groups of farmers in the project once a month. On these occasions both of them gave short lectures on certain aspects of agriculture and housekeeping, and answered any questions. Once introduced, I visited some of these farmers on my own. Also simply by attending these extension afternoons, I became better acquainted with the people and their problems.

The problem

When I began the study, the main problem was the systematic differences (in terms of socio-economic status, education, urban contacts, use of extension services, etc.) between those settlers who ran productive farms and those who did not. In the circumstances, the productivity of the small farms clearly depended on the intensive use of the available land, and hence on the adoption of new, productivity raising, agricultural practices. I decided therefore to measure the efficiency of the farm-operators by the number of practices they had adopted. It did not seem wise to consider also the time the settlers had adopted each innovation, since they had arrived in the project in different years, some of them only recently, and did not hail from the same region. In other words, they progressed from different starting points in the adoption of new practices.

The preliminary reconnaissance of the project revealed, that a certain practice, for instance the use of insecticides, could be relatively common for one crop, but an exception in the cultivation of another. Also, it seemed to occur not infrequently that some practice was dropped again after having been adopted[26].

According to Iutaka (1963, p. 19) who had done a rapid survey in the same area, the adoption of profitable crops and machines (e.g. labour-saving practices) encountered less resistance than the adoption of other practices. All this suggested that it was not as certain as I had been inclined to assume (on the basis of non-Brazilian diffusion theories) that the adoption of innovations implied a change in mentality and hence a guarantee of sustained agricultural development. To the first problem therefore another had to be added: could adoption in the project co-exist with traditional values and attitudes?

This problem could be approached in two ways. On the one hand, I could ask questions about the circumstances in which, and the ends for which, some innovations had been adopted or discontinued, to find out if the high adopters were really more modern than the low adopters, or only richer. This was relatively easy to do, and

indeed a number of such questions found their way into the schedule. On the other hand, I could ascertain whether the adoption of innovations co-existed with traditional values and attitudes, i.e. whether innovativeness with regard to some practices could go together with traditional values in farming and agriculture in general. The latter approach implied that those traditional values and attitudes had to be identified first. That they were not extinct was suggested by phenomena like the rapid turnover of the settlers, the amount of uncultivated land, and the tendency to grow only one crop, evident on some farms.

In principle, the survey might have been postponed until questions had been framed to allow for all relevant values and attitudes. But it turned out to be difficult to find interviewers once the summer holidays had started. Since I did not know whether other obligations would allow me to postpone the survey for a whole year, I decided to apply the questionaires in December and thereafter to continue the study with anthropological methods.

A further reason why the survey did not probe deeply into all values and attitudes was that I prefered not to ask attitude questions, because I doubted the reliability of the answers. And I lacked the time to acquire that intimate knowledge of the history of the project that the ability to frame questions about factual indicators of values and attitudes presupposed. Therefore certain matters such as cooperation and manual labour could not be dealt with sufficiently. As to the presence of other values and attitudes, such as those to crop pattern, purchase of land, employment of outside labour, marketing and capital investment, the schedule provided indications but no indisputable evidence.

The unfortunate consequence of this early application of the schedule is that my quantitative data cover only part, though a substantial part, of the problem. Consequently, in later chapters I cannot always be as positive and certain as I would like to be.

The first months after the survey I further evaluated the traditional values and attitudes which I thought persisted in the project. I came to regard some of them as of little consequence to development, or even as beneficial. But others seemed incompatible with the prerequisites of a viable system of family farms. The persistence of these values and attitudes even carried a certain threat to the long-term existence of the system[27]. I therefore concentrated on the behaviour that seemed incompatible with the continuation of small family farms, let alone their further development.

During this second, anthropological phase of the investigation I tried to do three things:

1. To recognize behaviour that was dysfunctional to the realization of the original aims of the project, i.e. the creation of viable small family farms.
2. To indicate in which respects such behaviour was dysfunctional.
3. To deduce from this behaviour a limited number of dispositions, relating these, wherever possible, to traditional culture and social structure.

This second phase of the investigation, although intermittently interrupted for a month or two, lasted until I left Brazil in July 1965.

A theoretical interlude

For a long time I have applied the terms 'traditional' and 'modern' to the problems mentioned above. In fact, I discarded them only after I had begun writing this book. In this section I will first explain why I ever came to use the terms and then why I rejected them after all. It is not only out of a desire to justify past errors, which obviously have influenced the investigation, that I wish to deal with these concepts here, but also because I believe that others may yet learn from my mistakes.

Many sociologists use the terms modern and traditional, or comparable polar terms such as sacred and secular, folk and urban, traditional and industrial, to contrast the two types of society which exist at the beginning respectively at the end of the process of change initiated by the industrial revolution in Europe and now embracing the whole world. The dichotomy sacred-secular is the sociologist's model for the process of change the economists call economic development, says Germani (1960, p. 261). Modernization affects all aspects of human life and implies a profound transformation of personality structure (Germani, 1965, p. 70). Several studies have been undertaken to prove that farmers who are economically progressing, that is adopting innovations, are modern (e.g. Copp 1956, Benvenuti 1961, Bergsma 1963). Modernization is most commonly approached in terms of economic development (Moore, 1963, p. 91).

The literature creates the impression that the terms modern and traditional, when they are applied to persons and groups, connote respective personality traits, values and behaviour patterns which are or are not compatible with economic development. It is therefore not surprising that at first I thought that the terms were eminently suited for studying the characteristic differences between farmers who had availed themselves of the opportunities for economic advancement offered by the project and farmers who were still using traditional production methods. Later I investigated behaviour patterns at odds with the functional demands of a system of family farms and retarding the development of the community. Again there seemed to be every reason to use the terms modern and traditional.

The first objection that appeared was the difficulty of deciding which attributes of farmers should be regarded as traditional. What I soon noticed, when I explored the land-settlement scheme of Santa Cruz, was that the descriptions of traditional farmers given in the literature did not seem to apply closely to traditional farmers in the project. Van den Ban (1963, p. 22) mentions several characteristics of the cultural pattern of the traditional farmer, such as frugality, unwillingness to borrow money, the tendency to regard the farm as a security for the family rather than as a commercial enterprise, the tendency to disbelieve scientific claims about the control of nature, the tendency to value manual labour but not intellectual labour, and the value attached to hard work[28]. Redfield (1963, p. 63 *et seq.*), comparing three peasant peoples of different periods and places, "seemed to find a cluster of three closely related attitudes or values: an intimate and reverent attitude to the land; the idea that agricultural

work is good and commerce not so good; and an emphasis on productive industry as a prime virtue". Elsewhere in the same book (p. 78) he slightly modifies and enlarges his summary of peasant values:... "an intense attachment to the native soil; a reverent disposition towards habitat and ancestral ways; a restraint on individual self-seeking in favour of family and community; a certain suspiciousness, mixed with appreciation, of town life; a sober and earthy ethic".

In the project, however, manual labour seemed to be despised, non-manual labour esteemed; the farmers did not seem to work very hard; changes in prices seemed to be followed promptly by changes in resource allocation; some opportunities for monetary profit (the quick cruzeiro) were readily taken; the settlers did not concentrate on their own food but on cash crops; apparently little affection was felt for the farm or the land; frugality, if it existed, was a necessity rather than a way of life; saving for a rainy day, foresight, seemed rare (and thus also that particular form of prevision called depreciation allowance). Several authors have called attention to the diversity of traditional peasant culture and ethos. Redfield (1963, p. 17) admitted that more than one traditional culture seemed to exist, and tentatively suggested that that around the Mediterranean differed from that in the rest of Europe. However, he obviously found it difficult to discard the notion of one peasant culture: "Peasant society and culture has something generic about it. It is a kind of arrangement of humanity with some similarities the world over." Wolf (1955) recognized several types of peasant cultures in Latin America. Whereas his corporate (mostly Indian) community adheres to traditional values very similar to those described by van den Ban, the members of his open peasant community have something in common with the settlers I studied. Foster (1961, p. 1173) asserts that "most, and possibly all, non-Indian Latin American communities, when better studied, will be found to fall with the European Mediterranean type". Gillin (1952, p. 199 *et seq.*) drew some relevant distinctions between the American Indian and Ladino peasant cultures: "Indians are interested in owning land so that they personally can work on it. Even those who own so much that they must pay other men to help them, invariably also work themselves. A man has not achieved his life's goal unless he personally, with his own hands, can work milpa.... No Indian ever tries to acquire wealth or skill so that he can retire from the land, but rather the reverse. The Ladino, in contrast, personally works the land only when all other means of livelihood are unavailable. The Ladino wishes to control land, the more the better. He wishes to own it, to have other people work it for him under his orders. Control of land is a subgoal for itself for a Ladino; even if it is not financially profitable, it enables the owner to master the lives of his tenants and workmen, to exert influence in the town hall, and to bask in a certain prestige. If it is financially profitable, the return on the land places in the Ladino's hands the instrument for acquiring control in other fields". And referring to the Indians: "The weariness that comes from physical toil is one of the facts of life, not a resented punishment to be avoided at all costs, and one receives the approval of his fellows, rather than their derogation, for doing these things. Quite the opposite is true for the Ladinos. Labour in the field or in the household is, from the Ladino point of view, properly performed through the instrumental-

ity of other men or women under one's control. Toil is not only unbearably wearisome but also disgraceful". Various social scientists who have done research among peasants of the Mediterranean culture type noticed an unusual amount of mutual distrust, jealousy, hostility and strife (Lewis 1951, Banfield 1958, Foster 1960, Lopreato 1962), in sharp contrast to the "restraint on individual self-seeking in favour of family and community" suggested by Redfield to be a trait of traditional peasants.

Initially, I intended only to show that in the project of Santa Cruz (as in many other regions of rural Brazil) a type of traditional culture is found that closely resembles the Mediterranean type, and that this culture had been unduly disregarded by diffusion research and theory. Indeed, this research seemed to acknowledge the existence of only one sort of traditional culture, non-Mediterranean[29]. Van den Ban even said in so many words that "it is possible to speak of the cultural pattern of the traditional farmer" (1963, p. 22). This assertion, no doubt, is partly due to the circumstance that most diffusion and adoption studies have been undertaken in two developed countries – the United States and the Netherlands – where this type of traditional culture was predominant. Probably it also follows from the assumption in these studies that modern rural culture is similar all over the world. Such an assumption at first does not seem to be implausible (the successful use of modern farming techniques presupposes the presence of certain cultural traits) but has not really been proved. Hoetink (1965) pointed out that such an assumption amounts to a new theory of evolutionism.

The assumption of one type of rural tradition and of a single type of modern rural culture, seemed to lead to the postulate of one type of development process. This postulate, in turn, caused well-meaning foreign experts to recommend for Brazil much the same action programmes as had succesfully promoted development in their home countries. If it could be shown, I thought, that traditional rural culture in Brazil contained values and attitudes which were quite different from those ascribed to the traditional farmer in the literature but which still inhibited economic development, then it could be argued that the process of development could not possibly be similar everywhere. This approach ultimately failed because the terms traditional and modern became burdened with too many meanings. Some of the traditional attitudes of the Santa Cruz settlers were almost the reverse of those which van den Ban attributed to traditional farmers. Moreover, it seemed that agricultural development in the Brazilian project would be well served by the introduction of some of van den Ban's traditional values and attitudes. By regarding the behaviour of the majority of the settlers in Itaguaí as traditional because it was old-established and obstructed economic development, I was assuming implicitly that the term traditional also meant development-obstructing. In reality, I should first have decided as a conscious preliminary whether the term covered a definite set of attributes (those mentioned by Redfield and van den Ban) or whether it denoted attributes incompatible with development. If I had argued from the modern end I would have soon noticed that the real dilemma lies in this choice.

The fact is that instead of pointing to the existence of two traditions, I should have argued either that:

1. Even if all Brazilian [30] farmers are modern (i.e. possess the attributes ascribed to modern farmers in the literature) agricultural development does not necessarily ensue;
2. Otherwise, modern (in the sense of development-promoting) attributes of farmers in Brazil do not so much relate to the adoption of new practices as, for instance, to solidarity, a sense of community, responsibility for the common good and the willingness for sustained work over a long period of time.

Either one posits that modern also means, by definition, development-promoting (the contents of the concept in Brazil are then different from those, for instance, in the Netherlands), or one defines modern as implying those attributes that modern people in some of the earliest industrial societies were found to possess, and then the correlation between modernity and economic development almost disappears in a country like Brazil. The reality of this either-or proposition in a country with a Mediterranean type of culture is substantiated by the results of a study by Rogers and van Es (1964). They compared the differences between opinion leaders and followers in three modern and two traditional communities in rural Colombia. They expected more modern communities to have a type of opinion leader different from that of more traditional communities (p. 2), since leaders would be inclined to conform to the norms of the community. The difference between the modern and the traditional communities themselves was defined in terms of innovativeness, exposure to cosmopolite communications, degree of functional role differentiation, evaluation of change, and cosmopoliteness (orientation external to the social system of the individual).

These are characteristics of modern social systems such as have been found in the United States or the Netherlands. For short, I will call them 'modern Dutch'. Implicitly, Rogers and van Es assume that modern, in this sense, means development-promoting; that communities are more developed because they are more modern. A more modern community is one in which people live who conform to more modern norms (p. 8). The results of the study were highly interesting: the differences between opinion leaders and followers were wellnigh similar in the two types of community. Opinion leaders were more modern than their followers in the traditional and the modern communities. Either Homan's postulate that "a man of high status will conform to the most valued norms of his group as the minimum condition of maintaining his status" (p. 6) is not applicable in these Colombian communities, or the norms with respect to the variables in which leaders differed from followers in the same way in the two types of community (formal education, literacy, farm size, farm ownership, farm and home innovativeness, social status, low achievement motivation, mass media exposure, radio listening, newspaper reading, empathy and knowledgeability of public issues) are the same in the traditional and the modern communities.

I believe that the norms are the same. The implication is, of course, that the differences in development between the communities cannot really be explained in terms of the above norms. These norms are 'modern Dutch'. In Colombia, the occurence of

economic development in a community has to be explained mainly in other terms. 'Modern Dutch' is not synonymous with development promoting in Colombia[31]. The results obtained by Rogers and van Es show that the transfer of the concept modern from one culture to another poses a vexing problem. If modernity is always to be defined in terms of innovativeness, exposure to cosmopolite communications, functional role differentiation, evaluation of change, and cosmopoliteness, then in some cultures the degree of modernity of community norms no longer explains differences in agricultural development. The concept is then of little use in dealing with development. If modern behaviour is defined as behaviour that will promote economic development (i.e. for farmers, agricultural development), the set of attitudes and values to be called modern will differ considerably between cultures. If so, the contents of the concepts modern and traditional will become very ambiguous.

Having overstated the dilemma, I again admit that many studies have shown that economic development has coincided with the superseding of a traditional culture pattern by the modern one as described in the literature. This modern culture pattern is a prerequisite of development. I do not deny it, but I believe a qualification should be added: it is sometimes not the only prerequisite. It is a minimum requirement. In some culture areas, more is needed. As will be shown in subsequent chapters, the high adopters in the project of Santa Cruz did indeed differ from the low adopters in terms of the variables mentioned by Rogers and van Es such as farm size, home innovativeness, social status, education, literacy, urban contacts and exposure to extension sources. But these variables, the most important of which I believe to be social status, explain the differences between individuals, not those between communities. A stagnating community is not a community where people do not appreciate education, new appliances in the home, new practices on the land, a bigger farm or a higher level of income, although they may have obtained few of these good things. It is a community where the persistence of old-established culture patterns obstructs cooperation, directs the allocation of capital into the acquisition of new land rather than of productivity-raising practices, discourages manual work and has other unfortunate consequences.

It is necessary, therefore, to discriminate conceptually, much more than has been done up to now, between modernity and the occurrence of economic growth, between tradition and economic stagnation. I am not the first to point out that the degree of modernity of the culture and the social structure does not account for the presence or absence of development. The implicit assumption that existed in many of the studies on modernization, namely that the less traditional a society is, the more it is capable of self-sustained growth, has been disproved, says Eisenstadt (1966, p. 145 *et seq.*). Constandse (1964) provided an actual example of the lack of association between the occurence of a modern culture pattern and that of economic growth in an industrial society, in casu the Netherlands. He described farmers who, although they ranked among the most modern of the nation, were found unwilling to sacrifice their independence as farmers to improve efficiency and increase agricultural production by com-

bining holdings or sharing certain capital goods. My reasons for recommending a clearer conceptual distinction between modernity and economic development are different. I believe that the traditional 'Mediterranean type' of culture pattern prevailing in the project and in a large part of rural Brazil contains a number of elements which in the non-Mediterranean culture pattern are regarded as modern. The readiness to consider and accept change, which according to many authors (Becker, 1957; Hofstee, 1962; Germani, 1965) is the main characteristic of the modern non-Mediterranean culture pattern, is a case in point. Yet, agricultural development has been sluggish or entirely absent.When it did occur, in the past, it did not last but was followed by a decline. At the same time, the Mediterranean type of culture pattern of the Santa Cruz settlers seems to lack certain elements which, although they are not among those considered as modern in the non-Mediterranean culture pattern, are nonetheless essential for development. I hold therefore that agricultural development in the project (and in many other regions of Brazil) depends not only on further modernization, (i.e. a convergence towards the modern non-Mediterranean culture pattern and social structure) but also on the 'adoption' of values and attitudes that in the earliest industrial societies already existed before modernization began, and therefore might be called traditional. This refers to certain dispositions and values which do not bear directly upon production or productivity but which determine the structural and cultural context in which economic behaviour works itself out and development is to take place. Cooperativeness, responsibility for the facilities and services one shares with others; self-reliance; solidarity with people to whom one is not related by kinship; the willingness to work hard and dirty one's hands in the process; a feeling of care for one's land; some appreciation for agriculture as a way of life rather than as just another way of earning one's keep; they all are attitudes whose absence considerably obstructs development. For development to be beneficial to the society as a whole, the process of modernization must comprehend a change of ethos in Brazil. Without such a change, some individuals or groups may prosper temporarily but the society as a whole will remain stagnant. Booms have been rather common throughout the history of Brazil, but they have rarely contributed to permanent development, to self-sustaining growth.

If true, the contention that economic development in Brazil also depends on the adoption of certain traditional non-Mediterranean values and attitudes, carries implications for theory on the development of societies now industrialized. The implication is that their development too was not only due to modernization, i.e. change, but also to the preservation of values, attitudes and behaviour patterns which existed already before modernization started. In other words, tradition may have been inimical to development in some respects, but has been beneficial in others[32].

It may seem strange that the beneficial role of some elements of the non-Mediterranean tradition in economic development has not been observed more frequently. I believe the answer lies in the special drawbacks of the method sociologists have next turned to after speculation, in their study of the process of modernization: the sample survey. The danger is real that the researcher who must gain his knowledge mainly

from a survey, will loose sight of the actual groups to which his respondents belong and the episodes in which they are involved. Focusing his attention on the differences between two categories of people, he risks not noticing the particular manner in which the social structure and the culture affect these differences (cf. Hofstee, n.d.). When the researcher works in a foreign country, these drawbacks are even more severe, since he has not accumulated the everyday experience which in his own culture can help to replace prolonged observation and participation[33].

I have suggested that in the project of Santa Cruz, development depends not only on modernization but also on 'adoption' of certain values and attitudes which are not modern. But it cannot be assumed beforehand that the farmer who adopts new practices is also undergoing a change of ethos. A relation has as yet to be established. Until such time it would be prudent not to use the concept 'modern' at all. By traditional I shall mean, henceforth: of the past.

The survey

The schedule

The reader will remember that the survey by questionnaire aimed at collecting information on the following two problems:

1. The differences between adopters and non-adopters of productivity-raising practices.
2. The similarities between the present values and attitudes of respondents about agriculture (as far as they appeared from the selection and discontinuance of adoptions and the allocation of resources in general), and the values and attitudes that were characteristic for traditional agricultural production in Brazil.

The disinterest of the project's Administration in the first problem and the fact that discontinuance and selection of adoptions seemed to be rather common made it doubtful whether adoption of innovations was really an indication of a change in mentality. I hypothesized that, in the absence of a really thorough programme of agricultural credit, practice adoption would be first and foremost related to variables such as socio-economic status, income and wealth. Several authors have reported that the big proprietors in Brazil, once they saw the need for a certain innovation, readily adopted it (Medina, 1963; Prado, 1963; Geiger, 1956). Kahl (1965, p. 32) found that socio-economic status had more influence on a man's views about modern values than whether he lived in a metropolis or a provincial town. Bordenave (1964, p. 91) found in the North-East of Brazil that socio-economic status and education were much more important than other variables in explaining the variation in his dependent variable, the search for instrumental information.

I also included questions in the schedule on many other variables, such as schooling, literacy, urban visiting, former geographic mobility, former urban residence, age, participation in cooperatives and other associations, contacts with various sources of extension and advice, participation in informal relationships with peers, and school-

ing of children. Many of these variables had served as indicators of a modern culture pattern in countries with a non-Mediterranean type of culture (Bergsma, 1963).

Influenced by a lucid article by Hutchinson (1956), who argued that an attitude was nothing more than a sort of greatest common denominator abstracted from overt behaviour and therefore should be established on the basis of repeated observations instead of on a few answers to questions, I decided not to include opinion questions in the schedule[34]. Also with respect to values and expectations, it seemed doubtful whether the verbal behaviour of the settlers would be a true reflection of their overt behaviour. Values like hard work, a cooperative disposition, responsibility and friendly relations with others in the locality were adhered to verbally but the observation of overt behaviour did not confirm these statements. Other values and expectations were not readily acknowledged but certainly existed[35]. Observation, participation and informal interviews seemed to be more appropriate methods to study such values than a survey by questionnaire.[36]

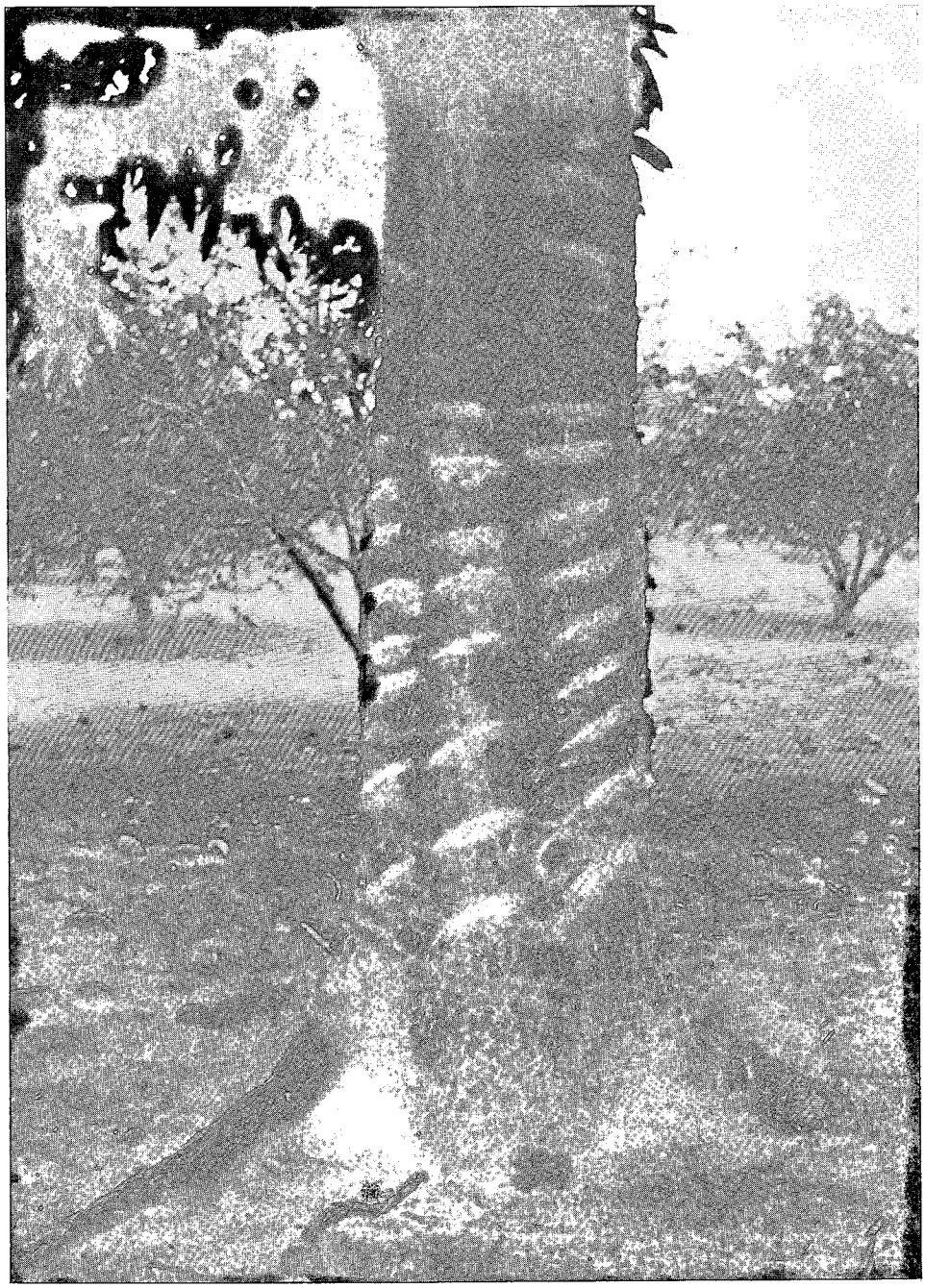
In some instances, however, I hoped that factual questions about past and present actions would provide indications, or at least illustrations, of certain values and attitudes bearing upon the settlers' agricultural performance. For that purpose questions were included on former and present land use, the state of certain machines, the use of specific innovations for various crops, the relative financial importance for the farmer of the crops he cultivated, production for the market and for home consumption, rent, lease and purchase of land, and marketing behaviour.

On family and kinship relations various questions were asked, for instance about the present occupation and abode of children. The employment of sons as reliable and cheap labour might show in the financial results obtained and hence in the adoption of modern farm practices, whereas the absence of the grown sons could be an indication of their lack of affection towards the land. Likewise, questions were included about the presence, on the farm or on the project, of members of the extended family. Their mere presence could be an indication of the strength of kinship ties. Information was asked on the employment of sharecroppers and labourers on the farms, to see how much labour was employed in relation to the available land.

Much attention was given to the farm-operator's professional and non-professional relationships. I was especially anxious to know how much social contact he had with other settlers and how far his non-professional and professional relationships overlapped. By asking not only the name of the persons chosen but also the number of their farms, it might be possible to identify the choices[37].

While the schedule was being put together, I began to train the interviewers. Several times I constructed small questionnaires around a certain problem, took the students to the project and, dropping them at random, told them to interview some settlers living in the neighbourhood. At the end of the afternoon we then discussed their experiences. A bit later, in November, we tested the entire schedule. On the whole it proved to be reasonable clear.

A settler's house



An informally recommended innovation. The cuts are believed to further fructification

Because the farms were numbered consecutively, a systematic sample was chosen. It included about a sixth of all farms.[38] The intention was to interview farm-operators. This could be either the settler-owner, or a squatter (an occupant who did not have the official title to the plot) or, if the owner was absent[39], a tenant or sharecropper. Sometimes an absentee owner left his farm in the care of an 'empregado', a salaried worker, but during the preliminary survey I found that often in such cases neither the owner nor the worker took any real decision about farming methods, the owner because he did not know what was going on or did not want to spend any money, the worker because he was not allowed to spend the owner's money and was not much interested anyhow. I therefore decided not to include such farms in the sample, but to replace them with neighbouring farms, unless the absentee owner visited it at least twice a week.

No one knew how many farms were run by a salaried worker; they turned out to be more numerous than I had expected. Another difficulty arose with farms that had been illegally subdivided and sold as building plots, and farms that had been absorbed by larger estates, thus ceasing to be part of the project. Although people were aware that this had occurred, the number and position of the farms that had disappeared were not known. These farms also had to be replaced by neighbouring farms.

During the field-work, some unexpected problems still cropped up for which solutions had to be found *ad hoc*. For instance, one farm was owned by a general's widow who lived on it but did not farm it. One settler had recently been admitted to a mental institution. Some farms turned out to be without an operator, and consisted of stretches of weed-covered land. In a few cases the next door neighbour could not be considered for interviewing either. Two interviews were discarded, three refusals were encountered, two farm-operators were away from home, and nine farms could not be replaced by others because no neighbours could be found nearby.

Of the 186 respondents who consitute the final sample[40], only 119 belonged to the original sample, 67 were substitutes. Obviously, this high rate of substitution might

Table 2. Distribution of the respondents belonging to the original sample and the substitutes over the adoption-score quartiles[1].

	Quartiles				Totals
	1st	2nd	3rd	4th	
Original sample	34	26	28	31	119
Substitutes	15	20	20	12	67
Totals	49	46	48	43	186
			$\chi^2 = 3.62$	d.f. $= 3$	$0.40 > p > 0.30$

[1] See Annex II for a short explanatory note on the statistical tests employed in this and subsequent chapters.

Table 3. Distribution of non-Japanese respondents belonging to the original sample and non-Japanese substitutes over the adoption-score quartiles.

	Quartiles				Totals
	1st	2nd	3rd	4th	
Original sample	34	26	25	19	104
Substitutes	15	19	19	10	63
Totals	49	45	44	29	167
			$\chi^2 = 1.92$	d.f. = 3	$0.60 > p > 0.50$

have introduced bias in the sample. To assess its severity, the respondents belonging to the original sample and the 'substitutes' were compared for distribution over the adoption-score quartiles. The rankordered quartiles will be used in later chapters as the dependent variable. Tables 2 and 3 show that the substitution has led to the inclusion of somewhat more respondents scoring in the second and third quartile. The chi-square values, however, do not indicate significant differences between the two categories. This is true for all respondents as well as for the Brazilians among them[41].

Interviewing

The interviewing was done in the first three weeks of December 1963. Not all interviewers were available every day; sometimes they numbered five, sometimes seven or eight. A start was made at one end of the project and interviewers worked towards the other end. Each interviewer was dropped at the gate of a farm and picked up later. If the distance between one farm and the next could be covered on foot, the interviewer walked. Although later another car was put at our disposal, transport remained a problem.

Strict supervision of the interviewers seemed necessary. I knew the names of most of the owners from the files of the Administration; that was an easy check. I also used to return from time to time to a farm-operator who had been interviewed to ask him some of the questions again. The schedule itself was rather difficult to complete with invented answers anyway, because of the many cross references[42]. Each interviewer was only paid upon the completion of a number of schedules, so that I could have applied a heavy financial sanction if I had discovered fraud. Apart from some slovenliness with subordinate questions (such as: "What else do you grow?" following a series of questions about a number of specific crops) the interviewers did not do badly. Two of them were very good and could be trusted implicitly; the others needed encouragement to the end.

The anthropological stage

After a preliminary analysis of some of the data collected during the survey, the investigation continued with anthropological methods. By this time I no longer believed that the settlers' unwillingness to adopt innovations was the greatest obstacle to agricultural development in the project. Some values, attitudes and expectations which influenced not only adoptions but all productive behaviour appeared to be much more important in this respect. I decided to concentrate first on a single small problem which obviously was related to these obstacles: the turnover of the settlers. The high turnover known to exist indicated that the project did not attain one of its main purposes, that of inducing permanent settlement. Quite apart from the obvious fact that all eventual development programmes would be seriously impaired by this turnover, and that its causes should therefore be known, I believed that by studying the failures I would come to understand better the reasons for stagnation. The main results have been published elsewhere (Galjart, 1965a).

As a result of this study on turnover, I came to see certain rather common values and behaviour patterns in agriculture and social relations as very important impediments to any development. This behaviour, the disposition to seek benefits from all formal, and some informal, relations, and the tendency to regard a family farm as a large holding in the bud seemed to prevent such apparently necessary developments as cooperatives and investments in depth and brought on other phenomena which in turn made these developments still less likely. To prove the existence and the harmful consequences of these values and attitudes, I afterwards concentrated on case histories and incidents; programmes which never came to anything; cooperatives which failed; the genesis of local physical improvements; political scheming (some still going on) and examples of cooperation. My main source of information at this stage was informal interviews with key informants, people who could be expected to know certain situations well or who had been active in specific historical events. I repeatedly visited a small number of farmers to inquire after current problems, results and developments. But I also tried to tap sources of relevant quantitative data, such as the documents on sales of farms kept by one of the public notaries in the municipality, and the attendance register and minute books of cooperatives.

In general, my informants were probably more innovative than a random sample of settlers would have allowed. But as hardly any of them have been interviewed formally, a quantitative comparison with the respondents is impossible. My best informants belonged to groups with whom the extension officer was working; others had been key figures in a cooperative or a political alliance. Establishing rapport, moreover, was not seldom a question of mutual sympathy, and therefore conducive of bias in the selection of informants. Occasionally, when I found a man repulsive and he distrusted me, I tried in vain to establish a satisfactory relation. But although my informants may have been slightly more innovative and more thoughtful, I have no reason to think that the information they gave me, either about themselves or about others, was unreliable.

4 Farming in the project of Santa Cruz

Introduction

After putting the reader into the atmosphere of the place and describing the problems and methods of the study, we can now look at some salient features of agriculture, animal husbandry, commerce and social relations in the land settlement.

This chapter serves two purposes. It provides details of the circumstances in which the respondents work and live, necessary as a background against which the findings and assertions of later chapters have to be projected. It also contains illustrations of the existence and importance of some of the values and attitudes that will be examined in more detail in chapters 6 and 7.

The crops

A great variety of crops is grown in the project but they are not equally important. Many are grown in relatively minute quantities, or by only a handful of people. The 1963 survey was confined to questions about those crops that seemed to be the most important, as to value of produce or number of growers, to wit: bananas, oranges, okra, giló, maize, cassava and pasture. The first two are perennial crops of long standing in the region; okra and giló are vegetables introduced fairly recently, which require some modern techniques of pest control and soil improvement; maize and cassava are traditional crops, sometimes planted primarily for home consumption, sometimes for cash. Part of the information on crops has been summarized in tables 4, 5 and 6.

Table 4 shows that the two sections of the project differ in some ways. While oranges and cassava are planted by more than two thirds of all respondents in both sections, bananas are more frequent on farms in Santa Cruz, okra and pasture more common in Piranema. Likewise 'other' perennial and annual crops than those explicitly mentioned in the schedule are found on relatively more farms in Piranema.

More interesting than these general differences between the sections are the proportions between crops within each section. If pastures are ignored for a moment, the tables show that cassava in Santa Cruz and oranges in Piranema are in various respects more important than other crops. Both are planted by more farmers than other crops are; and both are planted, on the average, on more land than other crops. In both sections, the frequency order of the six crops is significantly associated with their mean area order (Kendall's $\tau = 0.73$, $p < 0.03$ in both sections). Why this is so is not very clear; the relation between the two variables is not easily recognized as

a cause and effect relation. It could be that both are associated in time, rather than that the one causes the other. The association indicates that, despite the great variety of crops from which a farmer can choose, some crops are popular, in that they are planted by many on sizable plots.

One could argue that when many farmers grow a crop in relatively great quantities, that crop automatically becomes their most important cash crop, so that it is self-evident that oranges in Piranema and cassava in Santa Cruz indeed are the most important cash crops. While the order of financial importance of the six crops is significantly associated with mean area and frequency order in Santa Cruz ($\tau = 0.87$, $p < 0.01$), in Piranema these associations are not significant. Maize and giló do not conform to the trend. Maize is planted by more than 60% of respondents on plots

Table 4. Land-use in the land-settlement project of Santa Cruz (1963).

	Piranema ($N = 137$)			Santa Cruz ($N = 49$)			Entire project ($N = 186$)		
	total area (ha)	No. of farms	% of farms	total area (ha)	No. of farms	% of farms	total area (ha)	No. of farms	% of farms
Bananas	50.2	50	36	74	26	53	124.2	76	41
Oranges	286.6	117	85	57.1	33	67	343.7	150	81
Okra	150.6	88	64	15.2	13	26	165.8	101	54
Giló	29.2	37	27	9.5	9	18	38.7	46	25
Maize	150.1	88	64	36.5	22	45	186.6	110	59
Cassava	186.5	100	73	141.7	37	75	328.2	137	74
Other perennial crops[1]	–	55	40	–	18	36	–	73	39
Other annual crops[1]	–	73	53	–	13	26	–	86	46
Pasture	703	83	60	148	17	34	851	100	54

[1] Only crops covering at least ½ ha per farm have been counted.

Table 5. Areas (in ha) under various crops, per section.[1]

	Piranema			Santa Cruz		
	mean	median	range	mean	median	range
Bananas	1.00	0.5	8 – 0.1	3	1	26 – 0.1
Oranges	2.47	2	20 – 0.1	1.73	1	13.5– 0.1
Okra	1.81	1	12 – 0.1	1.16	1	3 – 0.1
Giló	0.81	0.5	3 – 0.1	1.19	1	2 – 0.1
Maize	1.92	1	30 – 0.1	1.66	1.5	4 – 0.1
Cassava	1.92	1.5	15 – 0.25	3.83	3	25 – 0.25
Pasture	9.01	4.5	150 – 0.25	8.70	6	30 – 0.5

[1] Since the area of some fields was unknown, the mean has sometimes been computed from a slightly smaller number of observations than listed in the preceding table.

Table 6. Farm-operators' most important cash crops, in percentage of choices.

	Piranema ($N = 137$)		Santa Cruz ($N = 49$)		Entire project (N=186)	
	first	second	first	second	first	second
Oranges	28	13	12	4	24	11
Cassava	11	13	53	20	22	15
Okra	26	12	2	6	20	10
Bananas	4	3	8	14	5	6
Coconuts	4	3	6	2	5	3
Giló	3	11	2	4	3	9
Anguria	3	8	0	0	2	6
Maize	1	1	4	10	2	4
Pumpkins	1	3	0	4	1	3
Rice	1	4	2	0	1	3
Other perennial crops	2	2	0	2	2	2
Other annual crops	1	6	4	0	2	4
No answer[1]	15	20	6	32	12	23

[1] Includes those to whom the question did not apply, those for whom only one crop was important, and those who mentioned a collection of crops like 'vegetables' or 'citrus'.

averaging almost two hectares but is unimportant financially; giló is grown on a small area but is financially important. Although, at this stage, we do not know if the financial importance of a crop is simply the result of the frequency and the mean area or not, we should well notice that the popular crops are cash crops and not, apparently, crops grown for home consumption.

The three tables also show that one crop need not play the same role in the two sections. In Santa Cruz cassava is not planted much more frequently than in Piranema, but it is grown on plots which are, on the average, twice as large. Also, the percentage of respondents for whom the crop is financially important is three times as high in Santa Cruz. Cassava seems to be much more of a cash crop there. Much the same can be said of bananas. They are more often planted in Santa Cruz, plantations are three times as large as in Piranema, and bananas are an important cash crop for a percentage of farm-operators three times as high. Oranges on the contrary seem to be more popular in Piranema.

Why this should be so is not clear. Since the frequency with which these crops are planted is, except only for bananas in Piranema, fairly high, differences in soil qualities do not seem to be the primary cause, although recurrent losses from floods have led to the exclusion of bananas from many farms in Piranema (Corrêa, 1964). The principal reason for the differences between the two sections probably lies in the fact that they differ in access to the same market.

There is a difference between farmers as well as between sections in the way in which certain crops are grown. While the majority of farm-operators grow various crops, others reserve a large part of their land for one crop. Most of these 'monoculturalists' are found among the orange-growers in both sections, and among the grow-

ers of cassava and bananas in Santa Cruz, that is, among those who grow crops which are financially important and rather popular.

The financial importance of the crops changed with time, as is apparent from table 7. Although the data may not be very reliable[43], the increase for oranges (13-6-3-2) is obvious, as is the decline for tomatoes (1-2-5-0), reportedly due to pests. Similar trends occurred for quantities alone: according to the reports the 1960 production of bananas was only a sixth of that in 1955, the production of tomatoes fell to a tenth. The increase in the production of oranges was very rapid: in 1958 twice as many were produced as in 1957, and in 1960 the production had again increased by almost 100%. Between 1957 and 1960 okra production almost trebled. The estimates of production of chickens and eggs seem particularly unreliable, notably in 1958: the number of eggs was said to have increased fiftyfold in five years, that of chickens twentyfold. But it is unlikely that these quantities are based on imagination only. There can be little doubt that the composition of agricultural production did change considerably in a short period. Table 8 shows that the number of farmers who planted particular crops also changed rapidly.

It is not unreasonable to assume that the increase in the production of crops that are obviously cash crops is a response to changes in price[44], a response to opportuni-

Table 7. Order of the ten most important commodities according to the estimated total value of the production, section Piranema.

Rank	1955	1957	1958	1960
1	Tomatoes	Okra	Chickens[1]	Okra
2	Cattle on the hoof	Tomatoes	Eggs	Oranges
3	Various vegetables	Giló	Oranges	Eggs
4	Milk	Pork	Okra	Giló
5	Bananas	Anguria	Tomatoes	Milk
6	Okra	Oranges	Anguria	Maize
7	Beef	Chickens[1]	Milk	Chickens[1]
8	Pork	Red pepper	Bananas	Lemons
9	Rice	Sweet potatoes	Cassava	Anguria
10	Cassava	Eggs	Pumpkins	Cassava

[1] Including broilers

Source: Administration's reports of 1955, 1957, 1958 and 1960.

Table 8. Number of farms producing certain commodities in Piranema in 1958 and 1960.

	Bananas	Oranges	Okra	Giló	Maize	Cassava	Tomatoes	Eggs	Chickens incl. broilers	Milk
1958	115	248	165	73	120	115	55	91	110	46
1960	95	426	315	138	517	400	8	112	123	57

The total number of farms was the same in both years: 822.

Source: Administration's reports of 1958 and 1960.

ties for monetary gain.[45] This is usually considered a modern phenomenon, an indication of progressiveness. But in Brazil it is behaviour of long standing, intimately associated with traditional (in the sense of old) values in agriculture and land-use: agriculture as a means of acquiring rapid wealth[46].

Pastures and animal husbandry

Table 4 shows that pastures cover much land: in Piranema about as much as the other six crops combined, in Santa Cruz about half as much. The mean areas per farm under pasture are large in both sections (table 5). In addition the difference between mean and median area under pasture indicates that the mean is raised by a number of farm-operators who have very large tracts of pasture: the 'big' owners are both 'bigger' and more numerous than is the case for any of the other crops. In both sections, 17% of the farm-operators who have pasture at all have more than 10 hectares of it. This percentage is higher than for any other crop. Grassland, where it occurs, often takes up more land than the other crops on the farm; it tends not to play a minor role as grazing for the odd dairy cow or a few oxen.

That grasslands tend to be extensive is also apparent for farm-owners who possess more than one plot of ten hectares. After excluding farmers of Japanese descent (who do not go in for cattle), there is a significant relation in Piranema between the possession of more than one 10-hectares plot and the presence of cattle on the farm. ($\chi^2 = 4.13$; $p < 0.05$). The Brazilian settlers in Piranema who own more than 10 hectares more often have cattle than those with only one plot[47]. In Santa Cruz this relation is not significant (Fisher exact probability test; $p = 0.17$). The association between cattle and the ownership of more than 10 hectares of land expressed in Yule's Q is given in table 9. As the values for Q are very similar, the sections probably do not differ but the number of cases in Santa Cruz was too small to reach a significant association.

Again, it is not easy to distinguish cause and effect. Do farmers who own cattle tend to extend their herd and acquire more land, or do farmers who already have more than one plot take up cattle-raising more often than others, who possess only one plot? Judging from table 10, the former relation seems to prevail. The mean and median number of cattle held are quite high. Farms are overstocked, as only about a third of a hectare of pasture is available per head of cattle. Although some farmers

Table 9. Association between keeping cattle and ownership of more than 10 hectares of land.

	Yule's Q	Significance (Fisher exact probability test)
Piranema	0.53	$p<0.05$
Santa Cruz	0.47	$p>0.05$
Project	0.49	$p<0.05$

Table 10. Animal husbandry of respondents per section in December 1963.

	Number of animals	Number of farms	% of all farms	Mean number of animals per farm	Median number of animals per farm	Maximum number of animals per farm
Piranema ($N = 137$)						
cattle	1,801	59	43	31	8	400
pigs	973	82	60	12	3	450
chickens	67,400	124	91	544	40	50,000
Santa Cruz ($N = 49$)						
cattle	384	17	34	23	13	91
pigs	99	20	41	5	4	16
chickens	16,500	33	67	501	25	6,000

buy concentrates or plant sugar-cane as fodder, more cattle are kept than the available land really permits. Cattle-raisers might be expected to acquire more land to accommodate the animals they already have, but if the ratio of pasture and cattle is computed for those settlers who own more than one plot, it appears that even they have less than 0.4 hectares of pasture per head of cattle. This means that almost everybody who raises cattle overstocks and that, although the number of cattle held stimulates the need for more land, there is never enough.

Milk production was low; in December 1963, production ranged from 0 to 5.3 liters per day per cow; the mean yield was 2.5 liter. Even so, of those who had cattle, 55% in Piranema and 71% in Santa Cruz kept them, at least partly, for the production of milk for sale.

I believe, therefore, that the relation between heads of cattle and acreage is almost fixed for the prevailing methods. Because of rapid inflation, the trend of prices to favour animal products and the greater independence from restive labourers, cattle raising had become more attractive, and the only way to make a living exclusively from this activity was by extending operations.

Pigs were kept by many farm-operators, but mostly in small numbers. Only one respondent raised them on a large scale; he had 450. Not more than 20% of all raisers had more than 10 pigs.

Poultry farming had similar characteristics. In Piranema almost all respondents and in Santa Cruz two thirds of them kept chickens, but most farm-operators had only a few. In both sections some settlers raised chickens on a large scale.

Farming methods

The 1963 survey provided some information on the occurrence of a number of modern agricultural implements and methods in the project of Santa Cruz. The findings have been recorded in tables 11 and 12.

Table 11. Ownership of modern agricultural machines, in percentages of respondents[1].

	Piranema ($N = 137$)	Santa Cruz ($N = 49$)	Entire project ($N = 186$)
Trucks or pickups	25	24	25
Tractors	18	24	19
Irrigation pumps	18	20	18
Pesticide sprayers	43	63	48

Sharecroppers and tenants were asked if the owner of the farm possessed one of the four machines. Such machines have been included in the table because it is conceivable that the owners would use them to render certain services to the respondents. However, one could argue that the table thus includes trucks owned by absentee landlords who use them for purposes quite different from carrying their tenant's products. If such trucks are excluded (4 in Piranema, 2 in Santa Cruz), the percentages of those who owned trucks change from 25 and 24 to 23 and 20, respectively.

Table 12. Percentages of respondents who used selected methods.

	Piranema ($N = 137$)	Santa Cruz ($N = 49$)	Entire project ($N = 186$)
Machine-plowed	65	75	68
Plowed with draught animals	4	0	3
Applied manure in 1963	44	45	44
Applied manure in preceding years	54	53	54
Applied fertilizer in 1963	12	20	15
Applied fertilizer in preceding years	19	31	22
Combated ants (once or more)	68	26	57
Applied lime[1]	9	24	12
Kept account of costs and returns	23	22	23
Irrigated in 1963[2]	9	21	12
Purchased seed or seedlings in 1963	39	31	37
Purchased seed or seedlings in preceding years	48	55	50
Had soil examined	7	16	9
Received credit from a bank in 1963	19	33	23
Received credit from a bank in preceding years	38	33	37

[1] Generally the soils in the project are acid. Samples taken by Ir K. J. Beek on ten farms, wide apart, showed contents of exchangeable aluminium ranging from 0.40 m-equiv. to 7.93 m-equiv. Six of the soils were particularly high in aluminium. In Brazil, liming is generally recommended if this value is higher than 0.2 m-equiv. An earlier study (Mendes *et al.*, 1954) of the soils in the municipality of Itaguaí recommended the correction of acidity for all soils in the section Piranema.

[2] N was 89 in Piranema, 33 in Santa Cruz, 122 in the whole project.

Quite remarkable is the number of trucks or pickups the respondents possessed, at least in comparison with the number of tractors and irrigation pumps. In the project as a whole there are more trucks than tractors, and even more trucks than pumps. This disproportion illustrates how important a truck, that is the transport (and hence the control over commerce) of produce, is in the eyes of the settlers. Whereas the price of a tractor is about the same as that of a truck, a pump is of course much less expensive.

Many farms in both sections border on canals or have other sources of sufficient water to irrigate some land. The necessity of irrigation has been officially recognized and in the fifties the Administration of the project even provided some settlers (80 of them, according to a former official) with pumps. Yet in 1963, there were more trucks than pumps.

Even those who had pumps did not all use them. In Piranema only a third of the pump-owners irrigated in 1963; in Santa Cruz 70% did. This may have been due partly to the dryness of the year so that many small canals would have dried up during the winter. Yet there were also farm-operators who had both pump and sufficient water and did not irrigate.

In both sections of the project mechanical sprayers are more numerous than the other three types of machine, but in Santa Cruz sprayers are more common than in Piranema. In itself this is not so important: the question is, how much the sprayers are really used. This question was not put directly to the respondents, but a count of those who applied pesticides to oranges, okra or giló in 1963 showed that 73% of the owners in Piranema and 51% of those in Santa Cruz had actually used them. Since pesticides are also used for some other crops, the total percentages of users are probably higher.

A considerable number of questions was included in the schedule on other modern practices in agriculture. Table 12 shows, for instance, that in 1963 two thirds (in Piranema) to three quarters (in Santa Cruz) of the respondents machine-plowed their land or had it machine-plowed for them. In Santa Cruz the percentage was higher because more farm-operators owned tractors and it was easier in this section to hire a tractor from the State Agricultural Service. Even so a quarter to a third of the respondents had not plowed; a few, possibly, because they had mainly pastures and perennial crops (although all respondents declared that they had some arable land), but others, especially in Piranema, because they could not pay to hire a tractor.

Plowing and harrowing by machine was indeed expensive: in 1962 it cost about 800 Cruzeiros per hour, in 1963 some 1000 to 1200 Cruzeiros, and in 1965 it rose to 4000 Cruzeiros[48]. A hectare was generally thought to take about ten tractor-hours. The government plow was cheaper: in 1965 a farmer had to pay 1800 Cruzeiros per hour plus petrol[49].

In spite of the high cost of hire, it was not easy to find someone to plow the land. The reason was that, when a tractor broke down, often no money was available for repair and spare parts. Not seldom a tractor stood for months. The same occurred, for that matter, with government tractors.

It is all the more surprising, then, that so very few respondents plow with draught animals, especially because the land is flat and the soil not difficult to till, except when very dry. It is true that, if plowing is postponed, weeds may become an important obstacle because of their rapid growth. Nevertheless plowing with draught animals seems feasible, though it requires some foresight. In Piranema only a few farm-operators use animals; most of those who do not plow solely clear a corner of land with the hoe, or they do nothing at all.

When asked why they did not consider plowing with animals, farm-operators in Piranema gave contradictory answers: some said that it would be even more expensive than with a tractor, others said it simply could not be done because it was such hard work, others again confessed that they had been toying with the idea for some time, wondering if having a couple of mules might not be more convenient than hiring a tractor each time.

Nevertheless in the project as a whole, machine-plowing was the most frequently adopted practice. But it should be remembered that the Administration had for many years rented tractors to the settlers, thus making adoption rather easy. Of the other practices listed in table 12, only the older ones, introduced in the distant past, had been adopted by more than half the farm-operators. At some time or other, many had applied manure, had done something against the ants, and had bought seed or seedlings[50]. More recent innovations have so far been adopted by only a minority. While some of the practices, such as manure and bookkeeping, and perhaps purchase of seed or seedlings and credit, were equally frequent in both sections, others were found more often in one of the two. It is true that seed purchase and credit differed between sections in 1963, but in preceding years the difference was reversed. The use of chemical fertilizers, the application of lime, irrigation and soil examination were more widespread in Santa Cruz. Only in ant control did Santa Cruz lag behind Piranema. One reason for this curious lag was that ants seemed less common in Santa Cruz: while in Piranema only 6% of the respondents declared that they had no ants on their land, in the other section 14% said they had none. On the whole, farm-operators in Santa Cruz seem slightly more modern than their colleagues in Piranema.

The table is further interesting for the examples it provides of interruptions in the use of certain methods[51]. In the three practices under review, the use of manure, the purchase of seed or seedlings and the application of chemical fertilizer, 20 to 30% of former adoptions were discontinued. Even higher percentages (25 to 40%) of discontinuances appeared to occur in the application of pesticides to orange-trees (table 13). The reasons for such discontinuances are not always the same. The use of manure was interrupted mainly for financial reasons. One farmer explained that he did not use manure any more because he had sold his cattle. Another explained his recent adoption of manure: "Agora é que tenho aves", "Well, I bought some chickens". Two farmers did not use manure themselves but sold it to others.

Table 13. Application of pesticides to various crops.

	Piranema		Santa Cruz		Entire project	
	%	*N*	%	*N*	%	*N*
Orange-growers who sprayed in 1963	30	115	31	26	30	141
Orange-growers who sprayed in preceding year	40	115	54	26	43	141
Okra-growers who sprayed in 1963	38	86	54	13	40	99
Giló-growers who sprayed in 1963	67	36	55	9	64	45

The inclusion of the seedlings in the question on the purchase of seeds probably caused some irregularity in the number of adopters over the years. However, I do not doubt that discontinuances did occur. There was a strong tendency to produce one's own seed. Only a minority of those who grew maize, grew a hybrid variety (14%) in spite of a campaign undertaken in the fifties to promote hybrid maize. In fact, some complaints about a good first year but a very disappointing second year make one suspect that a number of settlers continued to produce their own seed.

Only a few farm-operators had received detailed advice on the quantity and the kind of chemical fertilizers that should be applied. Of those respondents who had their soil examined (which is done free of charge by some government and educational institutions), at least five declared that they had never seen the results. Some others did get the results: a piece of paper with incomprehensible numbers and symbols. The small soil survey which Ir Beek kindly did for me showed that even the one Japanese farmer included, who diligently used chemical fertilizers, had applied far too much phosphate over the years. Because of this kind of ignorance[52] and because other misfortunes, such as droughts and pests, can still cause disappointing yields, the use of fertilizers is an expensive and somewhat hazardous investment, the returns on which can never be taken for granted.

For very similar reasons many farm-operators in the project had stopped spraying their orange-trees with pesticides. The most common pest is a mould called fumagina, from which in the dry season as much as half the plantations may suffer to some degree. Some respondents said that pesticides did not work; the responsible insects just bode their time in the grass under the tree and climbed back when the danger was past. Others said that the pesticides did work but that spraying had to be continuous and so was expensive and boring. A few said it did not pay to spray, just as it did not pay, sometimes, to pick the fruit. If it rained enough in summer the pest vanished anyway. The extension officer of ACAR-RJ believed that many farmers were unwilling to spray the few, isolated trees in which the insects survived or in which they first made their appearance. And in some years, he thought, orange prices did not make good the cost of spraying. However, not-spraying was already defended on technical grounds. According to some farmers, the best way to keep fumagina down was to allow the grass between the trees to grow quite high and cut it only once a year. This, it was rumoured, had been recommended by the University; anyway, farmer X, who was rich enough to defray the cost of spraying, if he wanted to spray, also followed this practice. Table 13 also indicates that in 1963 the vegetables okra and giló were sprayed on more farms than orange-trees were. That could mean that two relatively 'new' crops are cultivated in a way more modern than an 'older' crop. In other words, it could be that suitable treatment is adopted with the crop itself. However, the farmer who does not apply pesticides to okra or giló incurs a greater risk of losing part of the crop than the farmer who does not spray his oranges.

Table 14, in which the spraying behaviour of those respondents who grew oranges as well as one or both vegetables is analysed, shows that twice as many respondents sprayed only vegetables as only orange-trees. Yet the assumption of no difference

Table 14. Spraying behaviour of farm-operators who grew oranges as well as okra and/or giló, in percentages

	Piranema ($N = 76$)	Santa Cruz ($N = 13$)	Entire project ($N = 89$)
Did not spray at all	53	31	49
Sprayed both oranges and vegetables	16	8	14
Sprayed only oranges	8	23	10
Sprayed only vegetables	17	38	20
Sprayed only one vegetable, grew all three crops	4	0	3
Sprayed oranges and one vegetable, grew all three crops	3	0	2

between spraying only oranges, only vegetables, or both oranges and vegetables cannot be rejected (chi-square one sample test; $\chi^2 = 4.8$; $p < 0.1$). It is possible that, other things being equal, vegetables are more often sprayed than oranges are. But other things are not always equal. It is well imaginable that other variables, such as the financial importance of the crop to the farm-operator, also play a role, in the sense that those who hope to derive a good part of their income from a crop will be more inclined to spray it. Indeed in 1963 significantly more farm-operators who declared that oranges, okra or giló were of importance to them, financially, did apply pesticides to the crop, than farm-operators who did not declare so[53].

Table 14 clearly shows that an innovation, here spraying with pesticides, can be adopted selectively. One crop is sprayed, but not another. One sort of crop is given manure or chemical fertilizer, but another not[54]. One category of animals is vaccinated, but another not. For instance, of the 117 farm-operators in the sample who kept more than one species of animals (cattle, pigs and poultry), 8% vaccinated all species, 33% vaccinated some species but not others, and the remaining 58% did not vaccinate at all.

Stated in another way: of those respondents who ever adopted the practice of vaccination, including the 18 farm-operators who had only one species of animals and vaccinated, at least 58% selectively adopted this practice. The local extension officer, when I told him about my suspicion that vaccination was selectively adopted, supposed that chickens would be vaccinated more often than other animals, because a disease in the pen could wipe out the entire flock in a matter of days. But among the 39 farm-operators who had selectively adopted vaccination, cattle were most often vaccinated (23 cases out of 30), than chickens (17 cases out of 39) and pigs least often (6 cases out of 27). The farm-operators' subjective estimate of the economic importance of the animals seems to be more important for the decision to vaccinate than the diseases which threaten them. Thus one farmer can decide to vaccinate his 600 chickens, but not his 3 cows or his 20 pigs. Another vaccinates his 4 cows and 4 pigs but not his 50 chickens. In most cases it seems that the animals that bring the farmer the greatest monetary returns have been singled out for vaccination rather than others. Table 15 brings some proof of this assertion. It is a cross-tabulation of the animal spe-

Table 15. Instances of vaccination and destination of animals.

	Destination of animals			Total
	market	market and home consumption	home consumption	
Cases in which species was vaccinated	27	4	15	46
Cases in which species was not vaccinated	6	9	32	47
Total	33	13	47	93

cies kept by the 39 respondents who had selectively adopted vaccination, according to the purpose for which the animals were kept and to whether the animals were vaccinated. The relation between vaccination and production for the market is highly significant ($\chi^2 = 21.3$; $p < 0.001$).

However, I do not think that the farm-operator who does not vaccinate a certain species of animals always takes a rational decision. Rather, it does not seem worth the trouble, for a few animals, to go out of his way to obtain the vaccine. Like one informant said: "When the vet calls to vaccinate the cows, and he has got chicken vaccine with him, we vaccinate the chickens. If he does not have it, we do not vaccinate them". This respondent did not know what diseases his cows had been vaccinated against. The impression is that, if one were to offer to vaccinate all animals, free of charge and on the farm, practically no respondent would decline.

In 1952 some 150 settlers were given dairy cows on the occasion of a new land-use scheme, the Plano Granjeiro. In a report the supervising technicians state that on every farm they visited they found that the settler gave the cows concentrates, bought in a shop, though often in deficient quantities. Again it seems that, when the stakes are high (settlers who obviously maltreated their animals ran the risk of having to surrender them again), innovations are adopted at lightning speed.

The conclusion seems justified that many adoptions are discontinued or interrupted, and that innovations applicable to various crops or animal species are often adopted selectively. There are strong indications that the financial importance of the crops or the animals and perhaps also the amount of risk incurred by not adopting the innovation influence the selection. Real expenses rather than opportunity costs (in the sense of forgone benefits) seem to determine the outcome of the consideration whether to adopt or not. An exception to this tendency may be the ready adoption of a 'new', profitable, crop.

The ease with which innovations are adopted and dropped again, and the ease with which one crop is substituted for another suggest that the settlers have little trouble accepting change. If this acceptance is an indication of modernity, they are modern. There seems to be little mental resistance to technological innovations. Still, it can hardly be said that agriculture was highly developed in the project. Summing up,

I believe that the backwardness of agriculture in Santa Cruz, despite the easy acceptance of change, supports the earlier assertion that modernity consists of the internalization of other values and norms than just the readiness to accept new farming methods.

Land tenure

The respondents in the project of Santa Cruz did not all own the land they farmed but most of them did. Although legally these owners belonged to several categories[55], in practice they could all be regarded as owners.

Besides owners some squatters, tenants and sharecroppers were interviewed. Squatters were farm-operators who, without concession from the Administration, had settled on an otherwise abandoned farm and had begun to cultivate the fields. Most squatters were on land still subject to legal squabbles between the former owner and the State. Six squatters were included in the sample.

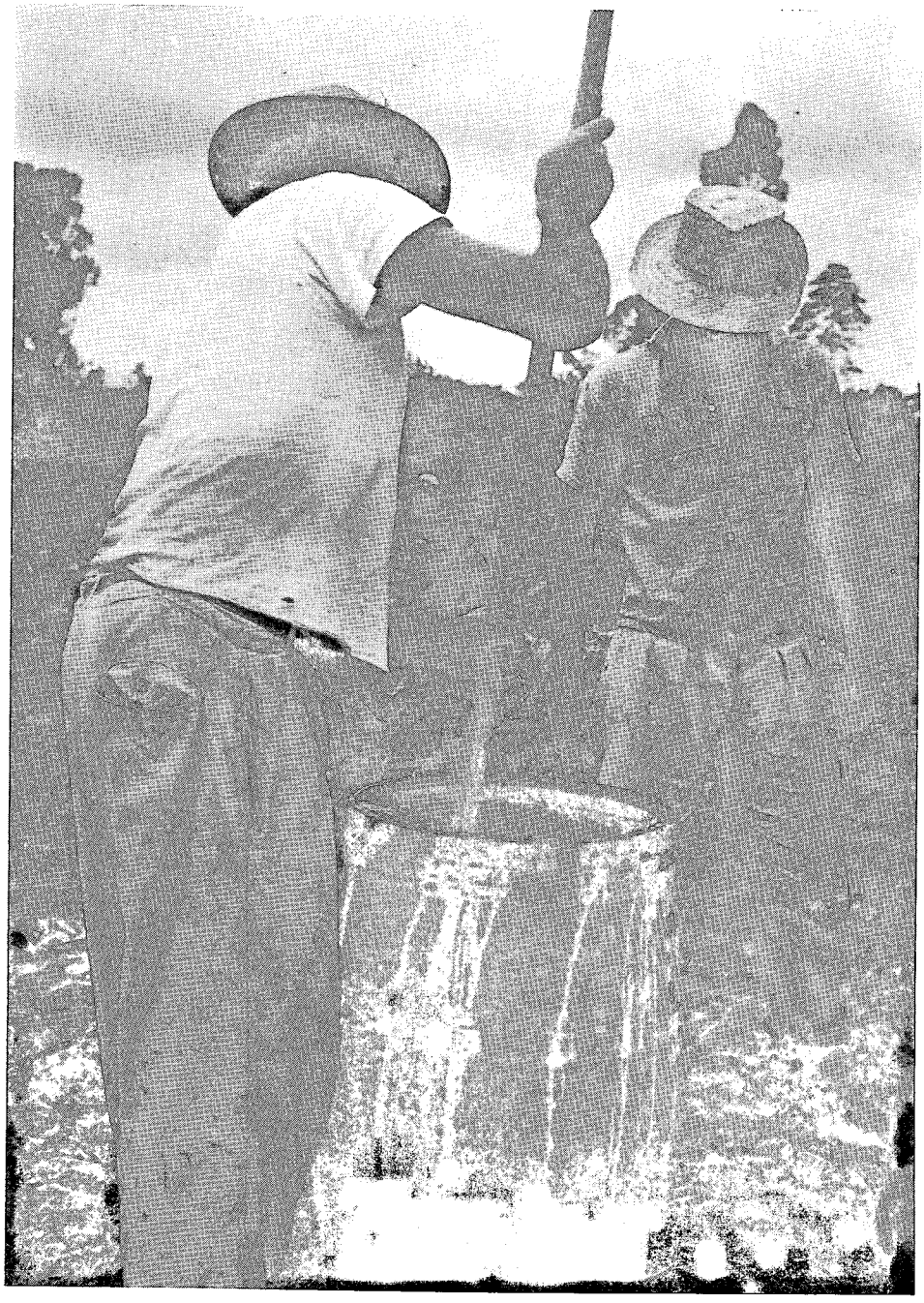
Nine respondents were tenants (i.e. they had rented a farm or part of it from the owner for a fixed sum)[56]. Rent contracts were usually in writing and valid for a number of years. If only a small part of a farm was involved, oral contracts also existed (mostly for pastures, which otherwise would remain unused).

Another category of farm-operator was the sharecropper. He often farmed only part of a 10 hectare plot. Although some variation did occur, most contracts stipulated that the owner plows and harrows the fields, and provides the seed. The sharecropper plants, weeds and harvests, after which the produce is divided equally. Manure, chemical fertilizer and pesticides were covered by various arrangements, including no arrangement at all. Usually sharecroppers were given free lodging on the owner's farm, on the understanding that they would occupy themselves exclusively with their fields and in slack periods would be willing to work for a wage on that farm. The 18 sharecroppers who were interviewed took care of an entire farm in the absence of the owner. In their case the owner not seldom reserved the proceeds of the orange plantation or of animal production for himself, leaving the sharecropper with most of the proceeds of any annual crops he cared to grow.

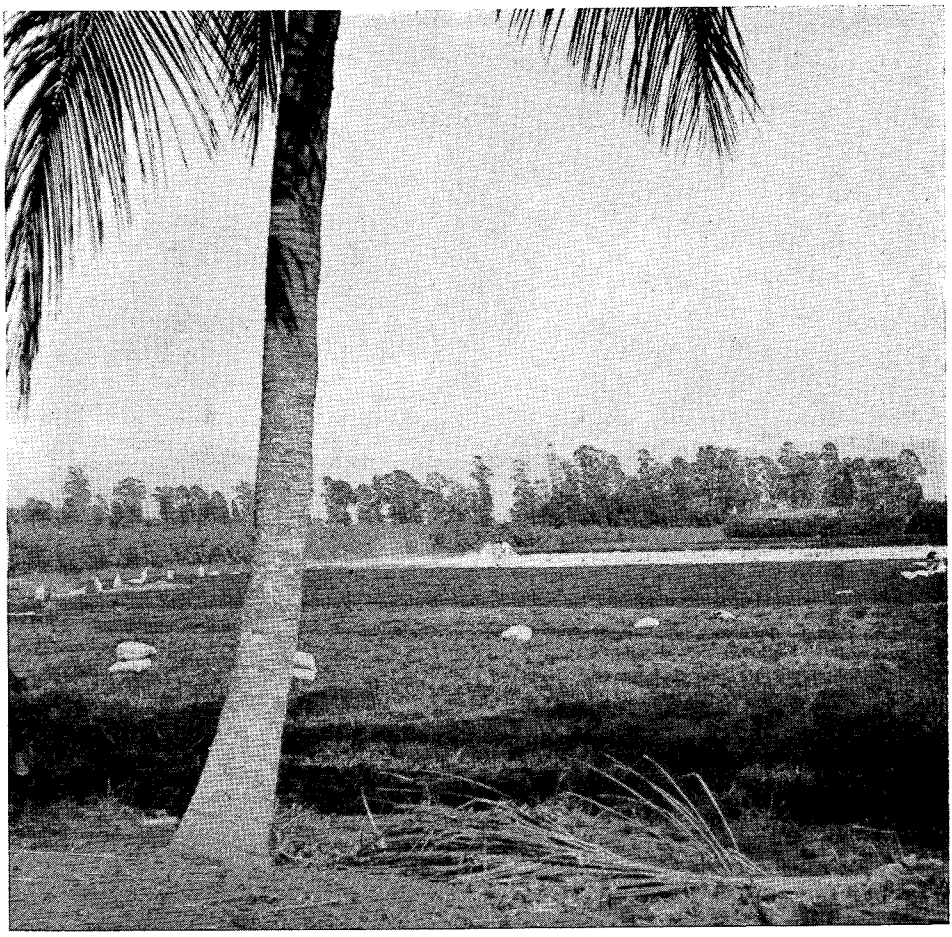
The institution of sharecropping serves several functions. Traditionally, it served to keep labour which was needed in certain periods of the year tied to the farm for at least one entire year (Prado, 1960, p. 215). This function possibly explains why 11 of the 12 Japanese farm-operators who were interviewed in Piranema employed sharecroppers, whereas none of their seven compatriots interviewed in Santa Cruz did. But the latter employed more wage workers than the former. It could well be that the Japanese settlers in Santa Cruz did not need sharecroppers because they could easily find labourers in the nearby suburb of Rio de Janeiro, whereas the farmers in Piranema, who did not live near an urban concentration, resorted to sharecropping to secure labour. The Brazilian respondents in the two sections differed less in this respect, but in the same direction: sharecroppers were more frequent in Piranema, wage earners in Santa Cruz.

An unweeded orange plantation

A cleaned orange plantation



Preparing a pesticide spray



Application of fertilizer

Not only the proximity of a population centre[57], but also the kind of crops grown influenced the need for labour. The okra-growing Japanese farm-operators in Piranema needed more labourers and for a longer period than their cassava-growing compatriots in Santa Cruz. Also, vegetables require more care than cassava, so it is understandable that in Piranema they preferred to give their labourers a stake in the production (i.e. preferred to employ sharecroppers instead of wage earners).

As well as retaining labour on the farm, sharecropping allows a farmer to cultivate his land without paying out any cash for wages. While the opportunity costs of sharecropping may be high[58], cash outlays can be kept to a minimum. Therefore some costs (e.g. manure, fertilizers and pesticides) are often not explicitly covered by the agreement between owner and sharecropper. One informant explained that he preferred to be sharecropper with a Japanese farmer, who always kept a stock of fertilizer and pesticides. All he had to do was go to the shack where these things were stored and take what he needed. Half of these costs were later duly discounted from the sharecropper's part of the harvest, but the main point was that everything was available. A Brazilian farm-owner, even if willing to pay the cost of manure, pesticides and the like, had to be asked time and again to buy it, hardly ever bought enough, and never had a stock when it was needed. The interview schedules of the sharecroppers showed that the decision to use manure, fertilizers or pesticides was taken somewhat more often by the sharecropper than by the owner, but that the owner paid for the purchases as often as did the scharecropper.

In other words, the one who could pay did not particularly want to use these resources, and had to be convinced of the necessity by the one who could not pay for them. The Japanese farm-operators made sure their sharecroppers used manure, fertilizers and pesticides but advanced the sharecroppers' half of the costs. This form of sharecropping, with the owner residing on the farm, is widespread only among the Japanese settlers in Piranema. If those respondents are excluded who were themselves sharecroppers, about 10% of the remaining Brazilian respondents had sharecroppers on their farms in December 1963.

Many more farm-operators employed wage earners at that time: 58% of the Japanese settlers and 41% of all other respondents. These wage earners could be permanent or temporary. Permanent workers often lived on the farm where they worked and received monthly wages; temporary workers mostly lived elsewhere and were paid daily. Wage labour, unlike sharecropping, appeared to be most frequent on farms run by the owner himself. Sometimes, however, absentee owners left their farm in the charge of a salaried worker. This occurred most often on farms under a perennial crop (coconuts, for instance) or used for milk production. To keep the wages and hence the monetary costs low, such a worker was sometimes allowed to plant some food crops for his own consumption.

Since a few years the pattern of land tenure in the project has been changing through farm amalgamations. There are settlers who have acquired a second, a third, and even a fourth 10 hectare plot. One settler has even bought nine farms! But more

important has been the intrusion by outsiders, who have set themselves up as big landowners. As yet they are few. One already owned a fazenda outside the project before he started buying land in the section Piranema. He raises cattle of the Nelore race for sale as breeding stock. According to some, he has the best Nelore herd in Brazil; he uses very modern techniques and invests considerable sums of money in the improvement of his farms. He has bought about 18 farms in the north-eastern corner of Piranema, though not all in his own name. He keeps aloof from the settlers, who have heard of him but do not know him. A second landowner, operating in the same part of the project, over the years has reputedly acquired some 30 farms[59]. He too raises cattle, but in the traditional manner without much investment, although he knows what his colleague is doing and thinks of imitating him on some points. This man, too, does not have any influence in the project. He may help some neighbours and approach others with offers to buy their land, but that is all. One informant suggested sarcastically that he may have set a style: a number of small settlers nearby had begun to keep cattle too, as though they hoped to become big landowners that way.

A third landowner, more industrialist than farmer, has already bought seven or eight farms. His main activity is breeding chickens, which he does as a member of a three-men firm. The firm has 50,000 hens. The sale of chickens is well organized; eggs go to the Cotia Cooperative, of which the man was one of the very few local Brazilian members. He takes more interest in what happens in the project, and in return is considered by the colonists as somebody who belongs. By some respondents he was mentioned as a good farmer or as adviser, unlike the other two.

The traditional process of concentration of land into the hands of a few owners seems to have started. It is already advanced in the north-eastern corner of the project, where the farms are more often flooded than elsewhere, and where communications are poorest. On such lands, large scale cattle raising was less hazardous than small scale farming, especially when, as in the recent past, the prices of milk and meat were remunerative and fairly stable. Since the first two landowners also own land outside the boundaries of the project but contiguous with their farms inside, it can be said that in this corner of Piranema the project has already started disintegrating. In other areas of Piranema the concentration occurs solely within the boundaries of the project.

Curiously enough, in the section Santa Cruz the concentration of landed property is less pronounced. I did not come across, or hear of, any big landowners like those in Piranema. The interview schedules also show a difference: in Santa Cruz the proportion of owners who possessed more than one 10-hectare farm, 27%, was slightly higher than in Piranema, 22%. But, the owners of more than one farm owned on average 2.2 farms in Santa Cruz, 2.8 farms in Piranema. To exclude the possible influence of a few big owners, the owners of more than one farm were classified in a 2×2 table, distinguishing between those who owned two farms and those who owned more than two farms, in each of the two sections. Fisher's exact probability test with the Tocher modification [60] was computed which showed that the observed difference

between the sections is probably significant ($p = 0.075$) That is: settlers who buy more land are liable to buy more of it in Piranema than in Santa Cruz.

Why this difference exists is not immediately clear. The section Santa Cruz was emancipated long ago, and the legal restrictions on the sale of farms consequently have been even less important there than in Piranema. Moreover, the difference between the sections is entirely due to the Brazilian settlers, not to the Japanese. A Fisher exact probability test on only the Brazilian owners of 2 and of more than 2 farms in the two sections shows a significant difference ($p < 0.05$). Probably the explanation of this difference in the concentration of landed property between Santa Cruz and Piranema must be sought in the occurrence of badly drained, rather inaccessible, and hence cheap lands in Piranema. Even if cattle raising is traditionally extensive, and therefore encourages the acquisition of more land to accommodate existing herds in both sections, the possibility of buying land cheaply is greater in Piranema. In Santa Cruz land is generally better drained and more accessible and consequently also suited to other uses than grazing. This conclusion is based on the fact that most of the really large farms in the project are situated in the north-western corner of Piranema, where the problems of drainage and access have received least attention.

Marketing

Farm-operators in Piranema are almost unanimous in saying that the middlemen who buy their products are only interested if they can make at least 100% commission on the deal. In Santa Cruz a more modest figure of 50% is sometimes mentioned as the lowest limit a merchant will accept. For several reasons it is rather difficult to substantiate such statements. Apart from similarly indignant remarks, the literature contains few clues. Price fluctuations are often so rapid, that a specific lot of a certain product would have to be traced from the farm to the consumer to estimate the profit made by the various merchants. In addition, little is known about the true cost of transport. It could well be high, considering the high price and the short life of trucks. Finally, it is often hardly possible to speak of one market or one market price for certain commodities. What do exist are monopsonies, or oligopsonies.

Price fluctuations can be both rapid and extreme. Sergio, whom we met in chapter 1, received 150 Cruzeiros per kg for his first cabbages in June 1965, but within a few days the price started to fall, and at the end of the month was down to about 70 Cruzeiros. Another informant sold his first oranges in 1965 for 2000 Cruzeiros and even more per case but a month later the price fluctuated between 500 and 700 Cruzeiros. Yet, simultaneously in another corner of the project, where the rains had made the road impassable for trucks, the farmers let their oranges rot on the trees, because the price offered, 300 Cruzeiros per case, was considered unremunerative. This price was indeed low; two years before, when the Cruzeiro had been worth three times as much, oranges already sold for 300 Cruzeiros per case.

Wholesale and retail prices are considerably higher than farm prices. In July 1965,

fruit and vegetables on one of the weekly markets in Rio de Janeiro were about four times as dear as the price then offered by middlemen in the project. According to Chacel (1963, p. 4), the discrepancy in Brazil between farm and wholesale prices for all agricultural commodities produced for the internal market has tended to increase since 1955. That is, the margin for transport, processing and commerce has widened. In view of the general improvement in communications, this is strange. Chacel ascribes it to speculation by merchants in the periods between harvests.

Although no precise quantitative data on the economics of commerce were available, the profits from transport and commerce could undoubtedly be considerable. One middleman, owner of 90 hectares in the project of Santa Cruz, said in his innocent way that he earned more with his two trucks than with his farming.

Middlemen are of several categories, and work in different ways. Some live outside the project and visit the farms regularly. Others are settlers. Some middlemen buy produce offered to them on the spot; the purchase is by cash and irrevocable. Others offer to transport the produce to the wholesale market in Rio and sell it there at prevailing prices. Which form of commerce prevails mostly depends on the amount of cash the middleman has and on the risk he cares to run. If he pays on the spot, he has to dispose of the produce at his own risk. If he only undertakes to transport the produce to the market, for a fee, he cannot lose, but may gain less. Even though he often claims that the price, after all, turned out to be a little lower than the farmer and he expected, the farmer generally profits more this way than by selling for cash on the spot. But the farmer may have some trouble collecting his money; sometimes a month passes before he is paid. Immediate cash is important to most farmers.

Some middlemen living in the project also provide credit to the farm-operators. While bank credit is only forthcoming a fortnight or month after it has been requested, and obtaining it is fraught with considerable bureaucratic snares[61], a middleman, if he is at all willing to give credit, will give it immediately. Normally the debtor is expected to repay with his produce. Theoretically he could sell to his creditor only enough to pay off the debt; in practice, however, he usually sells most or all of his produce to him. The middleman then over a period withholds payment on the sum that had been lent. The function of this form of credit clearly is to bind the farm-operators to the creditor. The latter in this way creates his own market, a monopsony[62]. He does not cheat his suppliers outrageously, but a little bit. As an official of the project explained, when the price is, say, 2000 on the market in Rio, the middleman will not tell the settler that it was 1000; he will say that it was 1700 or 1800. Otherwise the settler would refuse to sell him anymore. But when he is not cheated too brazenly, the settler will think of next year's credit, and stay with the same middleman. The middleman quoted earlier saw it as a point in his favour that he "permitted his debtors to sell to others also".

Although it would seem of great importance for sellers of agricultural produce to avoid the middleman, table 16 shows that the majority of farm-operators in the project of Santa Cruz are not able to avoid him entirely[63]. Theoretically there are four ways in which a farmer could try to control the sale of his products. He could

Table 16. Outlets for farm produce, in percentages of farm-operators resorting to each outlet.

	Piranema $N = 132$	Santa Cruz $N = 47$	Entire project $N = 179$
Middlemen	69	72	70
Retail market (feira)	23	19	22
Wholesale market (mercado)	22	17	21
Cooperatives	6	8	7
Consumers	20	15	18
Other outlets	2	6	3
Total	142	137	141

bring his produce to one of the weekly markets (feiras) in and around Rio de Janeiro. About 20% of the respondents did this. Surprisingly the percentage was higher in Piranema than in Santa Cruz, in spite of informants' assertions that many settlers in Santa Cruz were 'feiristas'. This unexpedted result was partly due to the respondents living in one small area of the project called Gambá, which geographically belongs to the section Santa Cruz, lying as it does to the south of the São Francisco River, but politically is in the State of Rio de Janeiro, and hence in the section Piranema. In this area, five of the seven respondents were feiristas. One of them – and there is no reason to suppose him an exception – had wrangled a licence from the State of Guanabara to sell on the weekly markets in that State, though he was not a citizen. Another informant in Gambá, who was not included in the sample, confessed that he did not have such a licence but went anyway, hoping for the best. Excluding these people the percentage of feiristas in Piranema decreases to 20[64].

Selling agricultural commodites in a retail market is time-consuming and often rather risky. The quantities one can expect to sell in half a day are small; moreover, vegetables that are not sold must often be thrown away, unless one goes again the next day. In the Gambá area some farmers indeed went three or four times a week to a feira. In these circumstances marketing becomes a full-time job, that cannot be reconciled with farming. The settlers in Santa Cruz (inhabitants of the State of Guanabara) have access to more weekly markets than their Piranema colleagues and it is easier for them to go often. Again in Gambá, there were farmers who did not go themselves to a feira but sold some of their produce to settlers who went. Such a sale was not really covered by the schedule which distinguished between 'selling to merchants calling at the farm' and 'taking to a feira'. The idea had been to estimate the degree of control of the farmer over the marketing of his produce; it is clear that even the inclusion of a further possibility: 'selling to settlers who take the produce to a feira', would not have made this control explicit. It depends upon the personal relation between the farmer and the feirista, whether the feirista charges the farmer for transport only or will appropriate a percentage of the sales. In all observed cases the relation between the settler and the feirista appeared to be a friendly one.

A second possibility of controlling the commerce of one's production is to sell it

oneself in wholesale quantities, which means taking it to the wholesale market (mercado) in Rio. But this needs a truck. Buying one is beyond the means of most farm-operators; in theory renting one would be easier. There certainly were a few farm-operators who used the truck of a brother or friend to take their produce to the mercado. To hire a truck from a stranger is too expensive for many, and such truck-owners soon find out that there is more money to be made as middlemen. This possibility then is limited. It is therefore understandable that so many colonists have acquired a truck: to escape the restricted markets and low prices that go with the middlemen. Some, but not all, of these settlers who owned trucks could not resist the temptation of making a fast Cruzeiro and have become middlemen. For that matter, the phenomenon that the landowner, or the big farmer, also engages in the commercialization of agricultural commodities is common in Brazil[65]. But not all the 40 respondents who owned trucks took their produce to the wholesale market: only 35% of them did, against 15% of all other respondents. (This difference is statistically significant: $\chi^2 = 6.08, p < 0.02$). Since a truckowner can of course also sell on the weekly retail markets, or directly to consumers, the truck-owners were also compared with all other respondents for the numbers of those who said that they sold exclusively to middlemen calling at the farm: 13% of the truck-owners, against 49% of all other farm-operators, depended entirely on middlemen for the sale of their produce, a difference which proved to be highly significant ($\chi^2 = 15.24; p < 0.001$)[66].

The possession of a truck undeniably increases the number and variety of outlets for the farm-operators in the project[67].

A third possibility of controlling commerce is the cooperative sale of produce. A later chapter will deal with cooperatives and cooperation in more detail; here let it alone be said that at least three attempts to organize cooperatives in the project have failed. At the time of my investigation only a local branch of the large, originally Japanese cooperative of Cotia existed, whose headquarters are in São Paulo. With only two exceptions, the members of the Itaguaí branch were all Japanese. In Piranema, most Brazilian settlers no longer belonged to a cooperative. For a number of reasons even the Japanese sold only a small part of their produce to the local Cotia branch. For one thing, many of them owned trucks and sold their vegetables on the wholesale market. For another, the Cooperative required that the produce it received be graded. The Brazilian farmers, and not a few of the Japanese, found this too troublesome. They were used to picking big and small vegetables without distinction; to sort them out afterwards was too much work. Okra, producing three pickings a week for six months or longer, makes for laborious sorting.

A final possibility of control is to sell directly to consumers or users. A surprising high number of farm-operators did so incidentally or often[68]. Milk, for instance, was often retailed by farmers. Sometimes its sale was organized more or less cooperatively. Many farmers spoke of 'um rapaz', a guy who took their milk and that of others to the factory or to retailers in Itaguaí and Santa Cruz (the suburb) for a fixed fee. Milk was one of the few products not subject to the intervention of middlemen; the farmers knew to the Cruzeiro what they should receive for a liter.

I expected to find that the farm-operators in Santa Cruz, where agriculture in general seemed slightly more developed, depended less on middlemen than their colleagues in Piranema, but most evidence is contrary. Even though the differences from Piranema are not great, more respondents in Santa Cruz sell only or partly to middlemen, while less sell on the weekly markets, on the wholesale market, or direct to consumers. Several circumstances (i.e. easier access to the feiras in Guanabara, nearness to a population center, and readier credit) make it easier for the Santa Cruz settlers to avoid the middleman. The survey results can only be explained if it is assumed that the farm-operators in Santa Cruz have less need to avoid middlemen. This implies that the middleman cannot exploit farmers there as much as he does in Piranema.

Relations with other farm-operators

The questionnaire included a number of questions about some professional and non-professional relationships of the respondents with their colleagues. Which farm did you visit during the past year to see how the other settler had done things? Which of the other settlers do you usually talk to? Do you have intimate friends among other settlers? If so, who are they? Do you ask advice from other settlers when you face a problem on your farm? From whom? Which other settlers have come to you for advice? Who are good farmers in the neighbourhood? Whom would you ask for a temporary loan of 30,000 Cruzeiros (at the time, about US $ 25), if you needed this sum?

In table 17 and in the text these relationships are henceforth called visited farmers, conversers, friends, advisers, advice-seekers, good farmers and money-lenders.

Since the respondents constituted a sample of the total population, it was not possible to locate the opinion leaders, or to record the various relationships in sociograms. The aim was, rather, to investigate how certain relationships had been established in a locality where most people had been initially complete strangers and also to what extent these relationships overlapped. Were friends and conversers also the people the respondents turned to for advice, or did they seek advice from others, for instance the good farmers in the neighbourhood?

In table 17 the relations have been cross-tabulated in the following manner. If a respondent mentioned one and the same farmer as his friend, his adviser and his money-lender, his relation with this man has been counted six times, twice as friend (under adviser and money-lender), twice as adviser (under friend and money-lender) and twice as money-lender (under friend and adviser). If it could be ascertained that the person mentioned was also a neighbour or kin, the relation was counted once more under neighbours or family-members. Neighbours were taken as settlers living in the two farms to the left or right of the respondent's farm, on his side of the road, or in the three farms nearest the respondent's farm on the opposite side of the road. Persons who were mentioned only once and who could not be identified as neighbours or kin, were counted in the row 'other persons'. Finally the numbers in each row

were converted to percentages of the total number of choices, mentioned in the penultimate row.

Table 17 shows once more that the two sections of the project differ from each other. In Piranema, neighbours form a higher proportion of all professional and non-professional relations than in Santa Cruz. The same holds true for kin. Also, the percentage of respondents who said they would seek advice or a loan from an official institution was much higher in Santa Cruz than in Piranema. If the evidence presented earlier on the difference between the sections is taken to mean that the Santa Cruz section is more modern, the table indicates that 'more modern', in terms of relationships, means that neighbourship and kinship become less important and that more use is made of the services of official institutions. But this can also be due to the better functioning of these institutions in Santa Cruz. Chapter 5 will return to this question.

If the various relationships are considered separately, the importance of neighbours for all relationships in Piranema and most relationships in Santa Cruz is striking. Not surprisingly, neighbours are most frequent among conversers and friends. The table shows that the professional relationships differ only in degree from the non-professional. Advice and visits are often exchanged with neighbours, conversers and friends. Some farm-operators, in fact as many as 30% in Piranema and 20% in Santa Cruz, said that they did not go to anybody in particular for advice. This seems to indicate that asking advice did not, to them, imply a specific relationship with someone else. And indeed, the percentage of good farmers, contrary to what one would expect, is hardly higher among the visited farmers and advisers than among friends and conversers in Piranema and not higher at all in Santa Cruz. Yet a considerable number of respondents said that they would go to the extension service or to the Administration of the project for advice. It appears then that asking advice can mean going to somebody specially capable of giving it as well as to friends or acquaintances. Inversely, the relationship between the respondents and the farm-operators who asked them for advice holds the same ambiguity: whereas most of these advice-seekers were informal acquaintances and neighbours, one third were 'other persons', with whom no other relation was recorded.

Van den Ban (1963, p. 183) reconciles these rather conflicting tendencies by supposing that farmers who consciously seek advice will go to somebody specially capable of giving it, and hence having a higher adoption score, and that the advice handed out among neighbours and friends is of an incidental nature. My data allow some further remarks on this point.

Of those respondents who declared that they were asked for advice, the mean adoption score was higher than that of all respondents together. This remained true after excluding the Japanese farm-operators, most of whom had high scores. This difference between non-Japanese self-designated advisers and other non-Japanese respondents was highly significant statistically (Mann Whitney U, not corrected for ties, $p < 0.0001$). This could indicate that in spite of their informal relations with their advisers and thus supposedly of their equality of status, advice-seekers selected

Table 17. Professional and non-professional relationships among farm-operators in % of choices.

Those chosen as: are:		Visited farmers	Conversers	Friends	Advisers	Advice-seekers	Good farmers	Money-lenders
Neighbours	Pir	27	51	45	33	40	29	15
	StC	23	39	33	9	7	22	0
	Pro	25	48	42	27	30	26	11
Family members	Pir	8	5	3	7	0	3	23
	StC	0	0	2	3	0	2	6
	Pro	4	4	2	6	0	4	18
Visited farmers	Pir		12	8	17	0	13	6
	StC		28	16	24	33	22	6
	Pro		16	10	19	10	16	6
Conversers	Pir	48		51	43	37	41	21
	StC	54		56	33	60	40	17
	Pro	51		52	40	44	41	20
Friends	Pir	25	39		32	28	28	11
	StC	18	32		27	20	30	8
	Pro	22	37		31	26	28	10
Advisers	Pir	31	19	20		17	22	14
	StC	21	15	21		13	18	6
	Pro	26	18	20		16	21	12
Advice-seekers	Pir	0	6	6	6		5	4
	StC	13	12	7	6		6	0
	Pro	5	8	6	6		6	3
Good farmers	Pir	29	22	20	26	17		10
	StC	28	27	35	27	20		8
	Pro	29	23	23	26	18		9
Money-lenders	Pir	12	10	7	14	11	9	
	StC	5	8	7	6	0	6	
	Pro	9	9	7	12	8	8	
Other persons	Pir	29	18	26	16	34	32	24
	StC	31	19	18	6	33	30	11
	Pro	30	18	25	13	34	31	21
Official institutions	Pir	n.a.[1]	n.a.	n.a.	22[2]	n.a.	n.a.	35[3]
	StC	n.a.	n.a.	n.a.	48	n.a.	n.a.	66
	Pro	n.a.	n.a.	n.a.	29	n.a.	n.a.	43
Number of choices (100%)	Pir	52	207	156	96	35	112	100
	StC	39	75	43	33	15	50	36
	Pro	91	282	199	129	50	162	136
Non-choosers in % of numbers of respondents	Pir	66	20	39	40	77	31	29
	StC	49	27	47	41	79	31	27
	Pro	56	23	41	40	78	31	28

[1] Not applicable [2] Extension service or Administration of the project [3] Bank or cooperative

people who were to some extent better than average farmers to advise them. There was no statistically significant difference in adoption scores between those self-designated advisers who had been approached by 'other persons' and those who had been approached by friends, neighbours or conversers. That means that the high score of the respondents who said they had been asked for advice was not only due to those who had been asked by 'other persons', supposedly consciously seeking advice. It could still be contended that only the better farmers asked advice, and that, even if they approached only their equals, the latter would have a higher mean adoption score than all respondents together. The data, however, do not support this supposition. Indeed the mean adoption score of the respondents who said that they would ask for advice was slightly higher than the mean score of all respondents, but this difference was not significant (Mann Whitney U, not corrected for ties; $p = 0.33$). Likewise, at first sight there seemed to exist considerable differences in mean score between various categories of advice-seekers, in the sense that those who would go to an official institution had the highest mean adoption score, those who would go to 'other persons' by far the lowest, and those who would go to persons with whom they had also other relationships an intermediate score, that did not differ much from the mean score of all respondents. However, these differences were not significant[69].

If those respondents who said that they would ask advice from another respondent were separated, pairs of advice-seekers and advisers were obtained whose adoption scores were known. There were 26 such pairs. A comparison of scores per pair showed that in 18 cases the adviser had the higher score, in 5 cases the lower. Three ties occurred. According to the sign test, there is only a probability of $p = 0.013$ that these (or more extreme) systematic differences between adviser and advice-seeker are due to chance, even if the Japanese advice-seekers are not considered. ($N = 21$; $x = 5$). The test establishes beyond reasonable doubt that these advice-seekers chose better farmers to advise them[70].

To cross-check the above result, I compared the score of those respondents who said that they had been asked for advice by other respondents with the adoption scores of these advice-seekers, but there were only 11 such pairs. In 6 cases the adviser had a higher score, and in 3 cases a lower. Two ties occurred. This result was inconclusive.

The data do not contradict van den Ban's hypothesis that the more specific the relationship between adviser and advice-seeker, the greater the difference in adoption scores between them. But they also suggest that, despite frequent informal relations between a farmer and his adviser, the latter often has the highest adoption score of the two[71].

As to the farm-operators mentioned as good farmers, about a third of them were 'other persons', the others were often acquaintances, friends or neighbours. At first it seemed that people had been chosen as good farmers somewhat indiscriminately, since some settlers with very low adoption scores had been included. But when the mean adoption score of those good farmers who had been interviewed was compared with the mean score of all respondents, I found that the good farmers' mean score

was higher. This remained true even if the Japanese farm-operators were excluded, who in general had a higher score than their Brazilian colleagues and who made up a quarter of the interviewed good farmers[72]. Among those chosen as good farmers, the number of people who received more than one choice was also considerably higher than among those mentioned in other relationships. This indicates that there was a certain consensus as to who were good farmers.

One of the open-ended questions asked was how the respondents could tell if somebody was a good farmer. The most important characteristics that could be culled from the answers were the following four: a farmer's knowledge and skill, (visible proofs of) hard work and dedication, the use of modern methods, and the quantity of produce. The inclusion of hard work and dedication among the characteristics of the good farmer indicates that, at least in the eyes of the respondents, these were no common traits for all farmers.

How strong were the relationships with friends and acquaintances? It is remarkable that the one relationship that implied a real sacrifice by the other, namely borrowing money, suddenly brought kinship into its own, at least in Piranema. And although kinship did not seem to count for so much in Santa Cruz, there also family was more important as a money-lender than in any other relationship. Many respondents said they would go to a bank or another credit institution, even though the question had been worded in such a way as to ask for persons. Also 'other persons' were mentioned as money-lenders, not a few of whom could be recognized as, or were said to be, middlemen or shopkeepers. Some of the latter lived outside the boundaries of the project, in Rio and its suburbs. Neighbours, friends and conversers are less numerous among those mentioned as money-lenders than among those chosen in other relationships. In fact, of the 110 respondents who said that they had intimate friends among the settlers, only 14 would ask these friends for a loan. The sudden importance of kinship, the widespread acceptance of official institutions and the decrease in importance of other informal relationships for loans, all lead to the conviction that relations of friendship and neighbourliness among our respondents did not necessarily imply mutual help and protection. For this there were the bank, some specific money-lenders including several middlemen, shopkeepers and local politicians, and in Piranema, at least, the members of one's family. Perhaps not really, as will be shown later, so *étonnés de se trouver ensemble.*

5 Attributes of innovative farmers

The adoption scale

Whereas chapter 4 described the context in which the farm-operators in the settlement project of Santa Cruz lived and worked, whatever their innovativeness, this chapter will deal with some pertinent differences between high adopters and low adopters. Respondents were apportioned between these categories by the percentages of affirmative answers they gave to a series of questions on the use of new farming practices. I decided to use an adoption scale consisting of fifteen items (table 18)[73]. To check the internal consistency of this scale, the method of item analysis was used (Goode and Hatt, 1952, p. 275).

Table 18. Adoption-scale items and results of the item analysis.

	Number of adopters	
	highest quartile $N = 46$	lowest quartile $N = 46$
1. Owned tractor	24	0
2. Owned sprayer	44	2
3. Plowed with tractor or animals[1]	43	20
4. Applied manure in 1963	36	3
5. Applied manure in previous years	42	8
6. Applied fertilizer in 1963	21	0
7. Applied fertilizer in previous years	29	2
8. Applied lime	20	0
9. Kept written accounts of costs and benefits	17	6
10. Had irrigated in 1963[2]	11	1
11. Bought selected seed or seedlings in 1963	25	5
12. Had soil tested	11	0
13. Received credit from bank in 1963	23	5
14. Applied pesticides in 1963[3]	35	2
15. Had vaccinated at least one species of animals[4]	29	4

[1] On condition that they had some arable land. All respondents had.

[2] On condition that they had water. In the highest quartile 34, in the lowest 31 respondents had.

[3] On condition that they had oranges, okra or gilό. In the highest quartile 44, in the lowest all 46 respondents had.

[4] On condition that they kept animals. In the highest quartile 41, in the lowest 42 respondents did.

The highest and lowest adoption-score quartiles were compared for the numbers of adopters of each single item. An item was only maintained, if the highest quartile contained at least twice as many respondents who had adopted it as the lowest quartile. Since Rogers and Rogers (1961, p. 335) showed that the effects of unequal weighting are negligible, all items were given unity weights. The analysis caused one item, 'combated ants', to be dropped, since it did not distinguish at all between the quartiles.

Socio-economic status

I expected that the adoption scores of the respondents would be associated first and foremost with socio-economic status, income and wealth[74]. Almost all innovations cost money, so richer farmers could be expected to have adopted more innovations. Chapter 4 already mentioned how some adoptions were discontinued because their relative cost had increased. In general it was found that farm-operators in the project gave more weight to monetary costs and benefits than to opportunity costs of new farm practices. I thus expected to find that farmers with more ready cash would have adopted more new practices. This expectation was strengthened by Kahl's finding that men of high socio-economic status who live in rural areas are nevertheless rather full participants in modern life, whereas people of lower status are more influenced by their local environment (1965, p. 33). Two scales were drawn up to measure aspects of socio-economic status, a scale of possessions (mostly durable consumer goods) ranging from 0 to 6, and a scale of sanitary installations in and around the house, ranging from 0 to 5[75]. The scores of the respondents on these scales were cross-tabulated against their ranked adoption-score quartile[76]. As a measure of association Kendall's τ_c was computed (cf. Blalock 1960, p. 322 and Spitz, 1965).

Practice adoption was indeed significantly associated with both aspects of socio-economic status, as table 19 shows. It might be supposed that the two status scales measure one and the same aspect of socio-economic status but that proved not to be true. Although the association between the two aspects was highly significant ($\tau_c = 0.44$; $p < 0.001$), it was not unity. Especially those farm-operators who did not own their farm and hence were subject to some uncertainty of tenure, tended to score higher on the possessions scale than on the sanitary installations scale. For them the association between the two scales was weaker, although still significant ($\tau_c = 0.27$; $p < 0.03$). Moreover, the behaviour of the two scales towards other variables was not always similar, as will presently be shown.

Table 19. *Associations between practice adoption and measures of social status.*

Socio-economic status (possession scores)	$\tau_c = 0.50$	$N = 185$	$p < 0.001$
Socio-economic status (installation scores)	$\tau_c = 0.40$	$N = 183$	$p < 0.001$
Income	$\tau_c = 0.34$	$N = 136$	$p < 0.001$
Area of land owned[1]	$\tau_c = 0.28$	$N = 162$	$p < 0.001$

[1] Farm-operators of Japanese descent were excluded.

Table 20. Partial associations between present and former status per adoption-score quartile.

Lowest quartile	$\tau_c = 0.14$	$N = 49$	not significant
Second quartile	$\tau_c = 0.22$	$N = 46$	not significant
Third quartile	$\tau_c = 0.26$	$N = 46$	not significant
Highest quartile	$\tau_c = 0.02$	$N = 43$	not significant
Simple association	$\tau_c = 0.30$	$N = 184$	$p < 0.01$

Although I did not expect their answers to be very reliable, the respondents were asked to estimate their monthly income from farming. Categorized in income classes, their estimates were found to be significantly associated with their adoption-score quartiles. As to the variable area owned I distinguished between those farm-operators who did not own land in the project at all, those who owned one 10-hectare plot and those who owned more than one plot. The Japanese farm-operators, practically all of whom had high adoption scores and many of whom owned more than one plot, were excluded, since they could have caused a significant association all by themselves. Clearly the area of land owned is not exactly the same thing as the 'size' of operations with which innovativeness has been found to correlate in many earlier studies (cf. Havens, 1962). The amount of land the respondents owned was not necessarily equal to the amount of land they farmed, although it usually was. Here however I have used it as a measure of property and as such of wealth. Table 19 shows that area owned is significantly associated with practice adoption.

The foregoing associations leave no doubt that high adopters tend to have high social status. But where did this status originate? Did wealthy respondents arrive wealthy or did they grow rich in the project? I asked the respondents whether they had enough money to live on for some time after they had arrived in the project. Those who said they did not can be supposed to have been poor when they arrived. A cross-tabulation of their answers against their adoption-score quartiles shows that there were indeed significantly more who had some money when they arrived with high adoption scores than with low scores ($\chi^2 = 11.95$; $p < 0.01$).

The association between the two variables, expressed in τ_c, was 0.21. Still, 39% of all respondents who scored in the highest quartile, and 30% of all non-Japanese respondents in that quartile, said that they had no money when they arrived. This could indicate that their present status is the result of what happened to them in the project, at least if there are no systematic differences in present status between them and the high-scoring adopters who had some money when they arrived. To ascertain whether such a difference existed, the partial associations[77] were computed between present status and former status, measured in possession scores and the disposal of money at the time of arrival, respectively, per adoption-score quartile. The results are presented in table 20. They suggest that practice adoption affects the relation between former and present status as an intervening variable, that is, like B in the chain A → B → C, since the partial associations are all smaller than the simple association.[78] The conclusion must be that, especially in the highest quartile, some respon-

Table 21. Former condition of respondents and their fathers, per adoption-score quartile, in percentages[1].

	Owned farm		Worked in agriculture but did not own farm		Worked outside agriculture		*N*	
	informant	father	informant	father	informant	father	informant	father
Lowest quartile	17	49	59	38	23	13	47	47
Second quartile	40	50	29	34	31	16	45	44
Third quartile	20	57	32	33	48	10	44	42
Highest quartile	33	64	22	14	44	21	27	28

[1] Respondents of Japanese descent were excluded.

dents have reached their present high status after their arrival in the project, by adopting innovations. In general, however, those who adopted innovations were those who had money when they arrived.

The data assembled in table 21 allow something more to be said about the former status of the respondents. The percentages of fathers who owned farms are directly proportional, and the percentages of fathers who worked in agriculture but did not own land, inversely proportional to the adoption-score quartiles of their sons, the respondents. However, these farm-owning fathers were apparently unable to provide all their sons with farms: in all quartiles the percentage of sons who owned farms before coming to the project was lower than the percentage of farm-owning fathers. Some of the sons who did not receive a farm stayed on the land, but others sought employment outside agriculture, which often implied migration. The data suggest that especially those respondents who would later score low on the adoption scale (probably the poorest) remained employed in agriculture, and that many of those who would score higher left agriculture before they came to the project. Since I did not assess the status of the non-agricultural professions taken up by the respondents, I do not know whether their transition to such employment implied a rise or a fall in status. However, assuming that a farmer owning his land has a higher status than one who does not, table 21 indicates that many respondents in the lowest adoption-score quartile had lower status than their fathers.

Education and literacy

A second set of variables expected to be associated with practice adoption was education and literacy. Education was measured by the number of years at school (from 'less than one' to 'five or more'). But as schools are rare in rural Brazil, some farmers may be self-educated. Other people may have lost the ability to read and write. Therefore also literacy was measured. All respondents were asked whether they could read and write well, somewhat, or not al all. Their answers were not tested but I gained the impression that they were truthful. Practice adoption turned out to be significantly associated with both variables (table 22).[79] Education and literacy, how-

Table 22. Association of practice adoption with education and literacy.

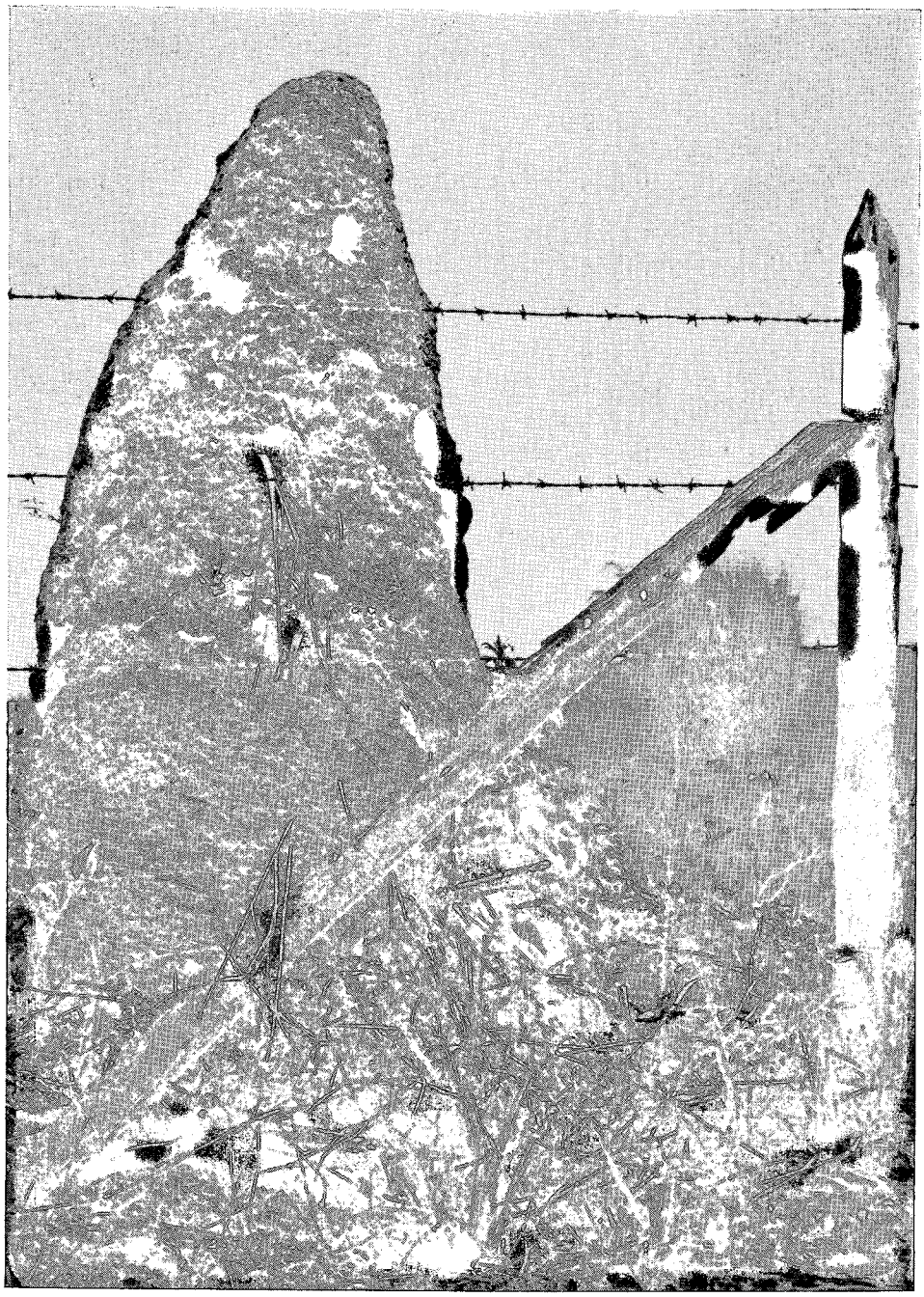
Practice adoption and education	$\tau_c = 0.39$	$N = 183$	$p < 0.001$
Practice adoption and literacy	$\tau_c = 0.33$	$N = 186$	$p < 0.001$

Table 23. Associations between various measures of socio-economic status and measures of education.

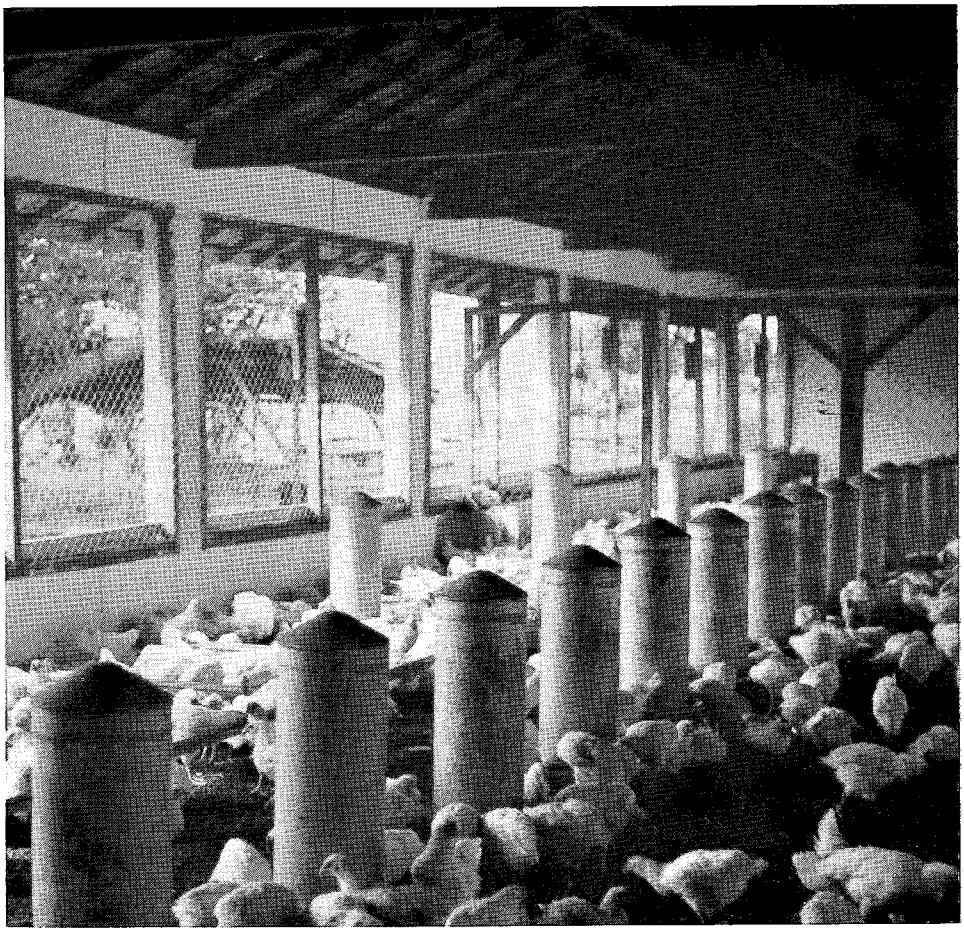
	Literacy	Education
Possessions	$\tau_c = 0.25$ $N = 185$ $p < 0.001$	$\tau_c = 0.26$ $N = 182$ $p < 0.001$
Sanitary installations	$\tau_c = 0.43$ $N = 183$ $p < 0.001$	$\tau_c = 0.38$ $N = 180$ $p < 0.001$

ever, also were associated with socio-economic status, as table 23 shows.

To inquire further into the relation between education, status and practice adoption, partial associations (τ_c) between practice adoption and the two measures of education were computed, controlled for status in three ways. The results are compiled into table 24. It appears that the aspect of socio-economic status measured by the possessions scale does not affect the association between practice adoption and education or literacy: the partial associations do not differ much, nor are they all smaller than the simple associations. But the aspect of socio-economic status measured by the sanitary-installations scale, alone or in combination with the possessions scale, does seem to affect the association between practice adoption and education or literacy: not only are the partial associations smaller than the simple association, but they also differ considerably from each other in magnitude. The first phenomenon can mean one of two things: status may be an intervening variable between education and practice adoption (as B in $A \rightarrow B \rightarrow C$), or the association between education and practice adoption is spurious and only due to the association of status with both of these variables ($A \leftarrow B \rightarrow C$), depending on whether education precedes socio-economic status as measured by the sanitary-installations scale. In reality, of course, both relations seem reasonable: the high status of the father may have led to the schooling of the son, and the schooling of the son may have helped him to attain high status later in life. In the present case the second relation seems to have been more important. If status had led to education, one would expect a comparable relation between the status aspect measured by the possessions scale and education. If education led to high status, it is understandable that it led to high status as measured by a sanitary-installations scale rather than to high status as measured by a possessions scale. This inference, and the inference that can be drawn from the second phenomenon, the discrepancy in magnitude between the τ_c values, obviously hinges on the difference between the status aspects measured by the two scales. Possessions as well as sanitary installations imply the past expenditure of money. The difference between purchasing possessions or sanitary installations seems to be twofold. The installation of sanitary fixtures implies a decision of the farm-operator to remain on the farm. A man who plays with the thought of leaving is less likely to invest in fixed installations than a man who has decided to stay. Also, an investment in sanitary installations implies a



A monument left by the ants



A modern broiler farm

Table 24. Partial associations between practice adoption and measures of education, controlled for socio-economic status[1]

	Scores	Practice adoption and literacy			Practice adoption and education		
		Association (value of τ_c)	N	Level of signific.	Association (value of τ_c)	N	Level of signific.
Sanitary installations	0–1	0.002	62	n.s.	0.01	60	n.s.
	2–3	0.04	33	n.s.	0.30	33	$p < 0.05$
	4–5	0.24	70	$p < 0.03$	0.23	70	$p < 0.03$
Possessions	0–3	0.25	71	$p < 0.02$	0.26	69	$p < 0.02$
	4	0.31	42	$p < 0.03$	0.31	42	$p < 0.03$
	5–6	0.26	53	$p < 0.04$	0.34	53	$p < 0.01$
Combined possessions and sanitary installations	0–2	0.12	30	n.s.	0.05	28	n.s.
	3–5	0.16	37	n.s.	0.12	37	n.s.
	6–8	–0.04	50	n.s.	0.18	50	n.s.
	9–11	0.29	47	$p < 0.03$	0.24	47	$p < 0.05$
Simple association		0.30	165	$p < 0.001$	0.34	163	$p < 0.001$

[1] Farm-operators of Japanese descent were excluded from the calculations after it was found that their inclusion tended to make the partial associations stronger.

certain understanding of the basic facts of hygiene, whereas the purchase of consumer goods need not imply anything more than the desire to enjoy them. But the same sort of understanding that is necessary to appreciate sanitary installations is also necessary to judge the value of new agricultural practices, and the farmer who adopts new practices is also likely to have decided to remain on his farm. That the sanitary-installations scale, more than the possessions scale, implies some insight of this kind, can be inferred from the fact that the possessions scale is less strongly associated with both literacy and education (see table 23). It appears, then, as if basically two relations obtain between the variables:

1. Education may lead to high status (characterized by insight, some means, and a wish to stay on the farm) which in turn may lead to the adoption of new practices: (A → B → C).

However, education obviously does not automatically lead to high status (as measured by the sanitary-installations scale) nor is it the only possibility of access to this aspect of status. As important therefore seems to be the following relation:

2. Education (or literacy) leads to the adoption of new practices primarily among persons who not only can afford them but also can understand (or be convinced of) their utility, and who apparently want to remain on their farm. In other words, if education does not go together with insight and the wish to stay on the farm, it does not lead to practice adoption. But perhaps this means no more than that only effective education leads to adoption. The availability of some money alone, if the status aspect measured by the possessions scale may thus be interpreted, is not sufficient to affect the association between education and practice adoption. Wealth in itself

may lead to practice adoption[80], but if of two equally wealthy men one is more educated than the other, the former will be more likely to adopt innovations.

Urban contacts

It is generally assumed that since most changes, in mentality as well as in material culture, originate outside rural locality groups, the amount of contact a farmer has with the outside world will be related to the change which he has accepted. This relation may hold because he learns of the existence of new practices earlier than do farmers who have less contact with the outside world, as well as because he may be more inclined to look favourably upon change in general. The association of contact with the outside world with practice adoption has often been found to exist (cf. van den Ban, 1963, p. 264). The schedule contained several questions about the life histories of the respondents prior to their arrival in the project. Cross-tabulating the adoption-score quartiles against the kind of work which the respondents formerly did (agricultural and non-agricultural) a significant association was found ($\tau_c = 0.25$; $p < 0.02$) between practice adoption and non-agricultural jobs before arrival[81]. Likewise, urban residence was significantly associated with practice adoption ($\tau_c = 0.28$; $p < 0.01$). However, one should not accept these findings at face value. The associations could be primarily a question of socio-economic status: those who had worked outside agriculture could have earned and saved more money and thus, upon arrival in the project, could be in a better position to finance new practices. Indeed, considerably more farm-operators of high status (as measured by the sanitary-installations scale) previously resided in cities than did low status respondents. The association between socio-economic status and urban residence was $\tau_c = 0.34$ ($p < 0.001$). To ascertain the influence of status upon the association between urban residence and practice adoption, the partial associations between these two variables were calculated controlling for status (sanitary-installations scale)[82]. Table 25 shows the results. Again, it is not known whether the (high) status of the respondents preceded urban residence or originated in the city. But the spuriousness or relevance of the relation between urban residence and practice adoption depends on the answer to this question. Again, both sequences may have occurred, though with different persons. Those of high status may have more often taken up urban residence, as table 21 indeed suggests. However, some originally low-status people may have prospered in the city. But the discrepancy in value between the partial associations suggests that another relation may also hold between the variables, to the effect that

Table 25. Partial associations between urban residence and practice adoption controlled for socio-economic status (sanitary-installations scale).

For respondents with sanitary-installation scores 0–1	$\tau_c = -0.13$	$N = 61$	n.s.
For respondents with sanitary-installation scores 2–3	$\tau_c = 0.14$	$N = 34$	n.s.
For respondents with sanitary-installation scores 4–5	$\tau_c = 0.22$	$N = 70$	$p < 0.05$

urban residence promotes practice adoption differentially, according to the status of the farm-operators. Only if that status was high did urban residence lead to practice adoption. For the poor, urban residence apparently did not have any effect on their eventual adoption of new agricultural practices.

Not surprisingly, farm-operators with high adoption scores proved to visit a city more often than those with low scores. The association between urban visiting and practice adoption was stronger for visits to Rio de Janeiro ($\tau_c = 0.25$; $p < 0.001$) than for visits brought to the suburban town of Campo Grande, nearer the project ($\tau_c = 0.13$; $p < 0.04$). But this association too might be mainly due to status. There was a significant association between status (as measured by sanitary-installation scores) and visiting Rio ($\tau_c = 0.31$) indicating that visits there were more frequent the higher the status of the farm-operator. When controlled for status the partial associations between visiting frequency and practice adoption given in table 26 were found. They differ considerably among themselves. Although the partials in the higher status categories vary according to the way socio-economic status is controlled, in general the conclusion seems warranted that status affects the relation between the other two variables conditionally: contact with the outside world (i.e. visits to Rio de Janeiro) only leads to increased practice adoption with farmers of higher socio-economic status.

Geographic mobility was not itself associated with practice adoption. The respondents were asked where they were born and where they had lived most of their lives before they came to the project. If those who mentioned two different municipalities were considered to have been mobile, the association between mobility and adoption-score quartile was $\tau_c = -0.04$.

Unlike Fliegel (1966) and Fliegel and Oliveira (1963) in Southern Brazil, in the project I found no association of practice adoption, literacy or education, with currently having non-farm jobs. As the Santa Cruz respondents included some people who had recently left non-agricultural work to take up farming, whereas Fliegel and Oliveira studied farmers of long standing, this discrepancy may not amount to much.

Table 26. Partial associations between frequency of visits to Rio de Janeiro and practice adoption controlled for socio-economic status.

Controlling variable		Value of τ_c	N	Level of significance
Sanitary-installation scores	0–1	0.02	58	n.s.
	2–3	0.08	34	n.s.
	4–5	0.25	64	$p < 0.03$
Possessession scores	0–3	0.10	68	n.s.
	4	0.32	40	$p < 0.03$
	5–6	0.19	50	$p < 0.1$
Combined scores	0–4	0.004	52	n.s.
	5–8	0.17	61	$p < 0.1$
	9–11	0.23	43	$p < 0.04$

However, among those respondents who had farmed before they came to the project, there is no association between currently doing non-agricultural work and literacy, education or practice adoption, either.

Use of extension sources and cooperatives

The effects which past and present extension services have had on practice adoption in the project of Santa Cruz[88] are not easy to assess. Some of them were poorly financed and rather inactive, so that the effects of their work were due not so much to a programme as to chance personal contacts and relationships. Also, there were some agronomists around, not attached to any extension service, who were administrators or settlers and could be approached for advice.

In such a situation, the statistically significant association found between practice adoption and having had contact with an agronomist or veterinarian in 1963 ($\tau_c = 0.42; p < 0.001$), most probably means that these contacts were due to an initiative of the farm-operators rather than to unsolicited visits by extension officers. The number of contacts (0, 1 and more than 1) with agronomists or vets in 1963 was likewise associated with practice adoption ($\tau_c = 0.25; p < 0.001$). Had the frequency of contact, in some cases where there had been contact, been known, this association would probably have been stronger. Practice adoption proved to be significantly associated also with having been visited by an agronomist or veterinarian in former years ($\tau_c = 0.47; p < 0.001$). That is, also in the past farm-operators with high adoption scores had had more contact with extension sources than their low-scoring colleagues. But it is interesting that in all adoption-score quartiles the number of respondents who had been visited in former years exceeded the number of those who had been in contact with an agronomist or vet during the year in which the survey was held, 1963. In table 27 the percentages are shown. For two reasons these percentages are not directly comparable. The length of the period covered by 'former years' is unknown; hence it may not be concluded that more farm-operators have been in contact with an adviser in each former year than in 1963. Also, visits do not necessarily exhaust the number of contacts that have formerly taken place. Yet it seems that quite a number of farm-operators, in all quartiles, did not think they had profited sufficiently from earlier

Table 27. Percentages of farm-operators who had been in contact with extension sources in and before 1963.

Adoption-score quartile	Received visits in former years	Had contact in 1963	*N*
lowest	22.4	10.2	49
second	30.4	26.1	46
third	58.3	27.1	48
highest	76.7	58.3	43
all respondents	46.2	30.1	186

visits by agronomists or veterinarians to continue such contacts during 1963. This phenomenon is similar to the discontinuance of adoptions encountered in the preceding chapter. If one year may be considered a sufficiently long period, one may say that in 1963 a third of those who were visited by an extension officer in former years, had discontinued that contact.

Contact may lead to advice, but is not synonimous with it. The respondents were asked whether they ever had received advice from agronomists or other personal sources. The results, per adoption-score quartile, are presented in table 28. Several inferences can be drawn. It is again confirmed that the higher the adoption-score quartile of a farm-operator, the more likely he is to have received advice from either an agronomist or a veterinarian (columns 1 + 3 and 2 + 3, resp.), or from both sources (column 3). Of particular interest is column 6. For all adopter categories other settlers are a very important source of advice, in fact, the most often mentioned single source. Whereas in the lowest quartile other settlers give advice to more respondents than the agronomist and the veterinarian together, in the second and third quartiles this difference is less, and in the highest quartile the order of these sources is reversed. Even so, other settlers had advised more people in the highest adoption-score quartile than in the lower quartiles. Markedly fewer of the low-scoring respondents received advice from extension sources or other settlers than of the better farm-operators. They appear to be more isolated: more than half of them reported that they had not received advice from any source. Curious is the fact that so many farm-operators in the highest quartile had received advice from middlemen, from their children and from 'other persons'. If the three first quartiles, which do not seem to differ much in these respects, are combined and compared with the highest quartile, three 2 × 2 tables emerge (table 29). Chi-square was computed only for the middleman ($\chi^2 = 6.7$; $p<0.01$) but it is obvious that the difference between the highest quartile and the other three are even more significant for the advice received from children and from 'other persons'. This finding indicates that the better farm-operators either actively seek advice from all possible sources, or are more conscious that conversations with other people often imply advice.

Table 28. Percentages of farm-operators who received advice from various sources, per adoption-score quartile.

Adoption-score quartile	Source of advice								*N*
	agron-omist	veteri-narian	agron-omist + vet.	middle-man	chil-dren	other settler	other person	received no ad-vice	
lowest	12.2	4.1	2.0	10.1	4.1	28.5	10.1	57.1	49
second	4.3	13.0	10.8	6.5	2.1	32.6	0	43.5	46
third	18.7	10.2	16.6	14.6	8.3	54.2	6.2	27.1	48
highest	30.2	16.3	34.9	27.9	32.6	67.4	27.9	9.3	43
all respondents	16.1	10.8	15.6	14.5	11.3	39.8	10.8	34.9	186

Table 29. Use of various sources of advice by the highest and the three other adoption-score quartiles.

Quartiles	Sources of advice						*N*
	middleman		children		'other persons'		
	received advice	received no advice	received advice	received no advice	received advice	received no advice	
1+2+3	15	128	7	136	8	135	143
4	12	31	14	29	12	31	43

Table 30. The effects of advice, in number of farm-operators per quartile.

Adoption-score quartile	Changed something	Did not change anything
lowest	10	11
second	9	17
third	12	23
highest	23	16

But receiving advice does not mean acting on it. The respondents were asked whether they had ever changed anything through advice. When their answers were cross-tabulated against their adoption-score quartile, as in table 30, the resulting association was weak ($\tau_c = 0.14$) and not significant. In line with previous findings, the table suggests that the highest quartile may differ from the three other quartiles in being more ready to act upon advice. After rearranging the figures in a 2×2 table this is found to be the case ($\chi^2 = 3.97; p < 0.05$). One of the main aspects in which the highest quartile differs more from the other quartiles than the first three quartiles differ among themselves, is socio-economic status. The mean possession scores of the farm-operators per quartile are, from below upwards, 2.6, 3.3, 3.8 and 5.1. Willingness to follow advice proved to be significantly associated with socio-economic status, as measured by the possessions scale ($\tau_c = 0.28$; $p < 0.003$)[84]. It seems that only above a certain level of prosperity farm-operators tend (or are able) to follow advice.

With respect to membership of cooperatives, the respondents were ranked in three categories: those who were still members at the time of the survey; those who had been members but were not anymore; and those who had never been members. The association between practice adoption and membership of cooperatives, was $\tau_c = 0.26$ ($p < 0.001$) for the project as a whole[85]. The two sections differed somewhat: in Piranema the association was weak (though still significant: $\tau_c = 0.18; p < 0.03$), in Santa Cruz it was fairly strong ($\tau_c = 0.45; p < 0.002$). Table 31 shows the frequencies these associations are based on. It is obvious that the innovation of joining a cooperative has frequently been discontinued. Discontinuances were not entirely due to resignation of individual members but also to the collapse of cooperatives. Nevertheless, many of those from collapsed cooperatives had decided that once bitten, twice shy. The percentage of discontinued membership was highest in Pirane-

Table 31. Membership of cooperatives by non-Japanese farm-operators, per quartile and per section.

		Never a member	Once a member	Still a member	Total
Section Piranema	lowest quartile	27	11	3	41
	second quartile	23	6	1	30
	third quartile	20	12	2	34
	highest quartile	7	7	6	20
Section Santa Cruz	lowest quartile	7	1	0	8
	second quartile	8	4	3	15
	third quartile	4	4	2	10
	highest quartile	1	3	5	9

ma, where more cooperatives have collapsed. Although not more than 24% of the non-Japanese respondents in Santa Cruz were still members, the proportion is significantly lower in Piranema ($\chi^2 = 4.37; p < 0.05$).

Relations with other farm-operators

As the reader will recall, the respondents were asked whether they maintained certain specific relations, professional or not, with other settlers or persons. Table 32 shows which relationships were found to be significantly associated with practice adoption and which were not. At first sight the results are disappointing. Only one relationship is associated with practice adoption in the project as a whole as well as in both sections. The better farm-operators were more often asked for advice, a fact already known. In two instances, maintaining a certain relationship is associated with practice adoption in Santa Cruz but not in Piranema. Two observations must be added here. Firstly, the significant associations refer to professional relationships. The better farmers are no more likely to maintain informal relationships than those who scored low on the adoption scale. The association between practice adoption and the number of relationships, significant in Santa Cruz, is entirely due to the number of professional relationships. Secondly, the question arises why these associations do not appear in Piranema. Perhaps the number of different relationships which a farm-operator maintains also depends on the duration of residence in a community. In Santa Cruz there was indeed a significant association between practice adoption and length of residence in the project ($\tau_c = 0.23; p < 0.05$), whereas in Piranema this association did not exist ($\tau_c = 0.08$). Yet it is unlikely that this factor alone accounts for the difference between the sections. Perhaps this difference should be looked at from another angle. If Santa Cruz is really the most developed of the two sections, the difference between adopter categories in the number of professional relationships may tend to increase as the locality they live in develops. I will come back to this possibility presently.

According to sociological theory modernization is associated with increasing speci-

Tabel 32. *Associations* (τ_c) *between practice adoption and maintaining various relationships.*[1]

Description of relationship	Piranema	Santa Cruz	Project
Visited other farm this year	–	0.35	0.16
Often talks with other farmer	–	–	–
Has friend(s)	–	–	–
Has friend among settlers who left	–	–	–
Asks advice in case of difficulty on farm	–	0.32	–
Consults with other farmers when planning innovation	–	–	–
Mentions good farmer in neighbourhood	–	–	–
Mentions money-lender	–	–	–
Has been asked for advice	0.30	0.42	0.33
Number of relationships maintained (max. 7)	–	0.23	–

[1] Only those associations have been included which differed significantly from zero at the 5% level of probability.

Table 33. Associations (τ_c) *between practice adoption and the number of different persons and institutions mentioned per relationship*[1].

Description of relationship	Piranema	Santa Cruz	Project
Visited other farms this year	–	0.24	–
Often talks with other farmer	–	–	–
Has friend(s)	–	–	–
Asks advice in case of difficulty on farm	–	0.34	0.17
Mentions good farmer in neighbourhood	–	–	–
Mentions money-lender	–	–	–
Has been asked for advice	0.12	–	0.17
Total number of different persons	0.12[2]	0.28	0.14
Total number of different persons and institutions	0.19	0.32	0.22

[1] With one exception, only those associations have been included which differed significantly from zero at the 5% level of probability.
[2] Significant at the 6% level ($p = 0.0559$).

ficity of social relations. Since it is possible, for instance, to ask advice from a friend, the number of relationships which a respondent maintains is not an accurate indication of their specificity. Strictly speaking, neither is the number of separate persons and institutions involved in these relationships. A respondent may visit seven farms of other settlers but not have any other relationship. Nevertheless, this number tells something of the farm-operator's isolation. In table 33 I have brought together the significant associations between practice adoption and the number of different people and institutions mentioned for seven specific relationships[86]. It appears that the few instances in which the adopter categories differ, again refer to professional relationships. Any difference in the total number of persons and institutions mentioned, is due to these professional relationships and not to the informal. In retrospect it can be argued that the findings presented in tables 32 and 33 are tautological. For some

professional relationships the quartiles differed in the number of choosers, so they can be expected to differ in the number of choices, when each chooser mentions only one choice. Yet, the tautology is not complete. Whereas in Piranema and in the project as a whole the number of choosers, for the seven relationships of table 33 taken together, was not related to their adopter category, the number of choices was. This suggests that the number of choices per chooser may be higher the higher his adoption quartile. To find out whether this is true the quartiles were arranged according to the mean number of choices per chooser, for each of the seven relationships. The rankings, from lowest (1) to highest (4), are shown in table 34. To determine whether there is any significant agreement between the rankings, I calculated Kendall's coefficient of concordance, W, which varies between 0 and 1[87]. For the project as a whole W was 0.76, different from 0 at the 1 % level of probability. The quartiles tend to rank in their own order (1st-2nd-3rd-4th) when they were compared for mean number of choices per chooser. This result was mainly due to Piranema. When only that section was considered W was 0.69, significant at the 1 % level of probability; the order of the quartiles was their natural order from lowest to highest. In Santa Cruz $W = 0.39$, not significant at the 5 % level. This suggests that the associations listed in table 33 may be due to number of choices per chooser in Piranema, but perhaps not in Santa Cruz.

The specificity of professional relationships was measured by counting the number of different persons (not institutions) mentioned as visited farmer, adviser, advice-seeker or good farmer, who were not also listed as friends or acquaintances of the respondent. That is, the number of those with whom the farm-operator had professional but no other relations was counted. Table 35 shows the associations between practice adoption and the number of purely professional relations the respondent maintained. The difference between the two sections is striking: in Piranema the

Table 34. Ranks of adoption-score quartiles according to the mean number of choices per chooser in each quartile, for seven relationships.

Choice	Quartiles for											
	Piranema				Santa Cruz				entire project			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Visited farmer	1	3	2	4	1	3	2	4	1	2	3	4
Converser	1	2	3	4	1	2	3	4	1	2	3	4
Friend	1	2	3	4	3	1	2	4	2	1	3	4
Adviser	2	1	4	3	1½	1½	4	3	2	1	4	3
Advice-seeker	1½	1½	3½	3½	–	–[2]	–	–	1½	1½	3	4
Good farmer	2	1	3	4	3	1	2	4	2	1	3	4
Money-lender	1	3	2	4	2½	2½	2½	2½	1	3	2	4
Total	9½	13½	20½	26½	12	11	15½	21½	10½	11½	21	27

[1] 1 = lowest rank.

[2] In second quartile, no choosers.

Table 35. Associations between practice adoption and specificity of professional relations.

Piranema	$\tau_c = 0.12$	$N = 124$	$p < 0.08$
Santa Cruz	$\tau_c = 0.40$	$N = 42$	$p < 0.003$
Entire project	$\tau_c = 0.16$	$N = 166$	$p < 0.01$

Table 36. Choices falling on neighbours in percentage of all choices per quartile.

Choice	Piranema						Santa Cruz					
	quartiles					N	quartiles					N
	1st	2nd	3rd	4th	all		1st	2nd	3rd	4th	all	
Visited farmer	14	40	20	33	27	48	100	37	9	9	24	33
Converser	51	54	49	47	51	196	60	44	38	33	42	65
Friend	50	44	48	27	44	135	60	38	30	20	34	38
Adviser	37	27	28	44	34	89	33	0	12	10	11	27
Advice-seeker	50	20	54	27	39	33	0	–	17	0	8	13
Good farmer	30	30	17	33	27	106	33	25	18	12	20	45
Money-lender[1]	9	15	4	33	13	94	0	0	0	0	0	30

[1] Not included in calculation of W for Santa Cruz.

association hardly exists, in Santa Cruz it is quite strong. Once more, this suggests that the difference between innovative and less innovative farm-operators in specificity of professional relationships is a function of the development of the locality in which they live[88].

In accord with this inference it was found that in Santa Cruz the percentage of choices falling on neighbours decreased as the adoption score of the chooser rose (table 36). This decrease was often small but it occurred in five of the seven relationships, and the overall agreement in order of the quartiles was significant ($W = 0.77$; $p < 0.01$). In Piranema this concordance was entirely lacking. Since in Santa Cruz the order also occurred for the two non-professional relationships included, there is reason to argue that innovative farm-operators in a developed locality also begin to choose their friends and informal acquaintances with more care.

The difference between the sections was rather consistent and did not seem due to chance or measurement errors. If it is permitted to interpret the difference between the section Santa Cruz and the section Piranema in terms of economic and institutional development, the findings suggest that in less developed surroundings (i.e. Piranema) the innovative farm-operators differ from their low-scoring colleagues primarily in the somewhat greater number of persons and institutions with which they have some relationship, rather than in whether they maintain a certain relationship at all.

The only exception is that the better farm-operators are more likely to have been asked for advice. The low-scoring farm-operators maintained as many kinds of relationships but with a smaller number of persons and institutions. In a more developed locality (i.e. Santa Cruz), innovative farm-operators differ from their less innovative

colleagues in their tendency to have professional relations with more specific people with whom they have no informal relations. They also more often maintain professional relationships at all. They seem to have started to associate with other people for specific reasons. This attitude also seems to affect informal relationships.

Family and kin

In societies where family and kin relations entail mutual assistance and protection (cf. Leeds, 1964, p. 1331) and where strangers are still regarded with mistrust, there is reason to expect that succesful, innovative farmers will make more use of the collaboration of family and kin than less innovative farmers, and will have stronger family ties, and more contacts with relatives. Azevedo (1962, p. 21), quoting from an unpublished paper by Wagley, states that an analysis of seven community studies carried out in Brazil showed that extended nets of kinship were especially characteristic for the higher social strata in these communities. But in the project of Santa Cruz, the aversion to farming said to exist among the sons of the respondents could have resulted in migration of the better educated, presumably the sons of the more innovative farm-operators. Unfortunately, the survey allows only a few conclusions on matters relating to family and kin.

There is a weak but significant negative association between family size and adoption-score quartile ($\tau_c = -0.13$; $p < 0.03$)[89]. As I did not find any association between practice adoption and age ($\tau_c = -0.04$), this result indeed means that innovative farm-operators tend to have somewhat smaller families. Soares (n.d.) found in the farm population of Piranema a negative association between status (measured by education) and family size.

How do the settlers see their children? Are they sent to school or employed on the farm? The older sons and daughters[90] of high adopters had more often completed primary school than those of low adopters. The association between father's innovativeness and children's education was $\tau_c = 0.26$ ($p < 0.04$) for the older sons and $\tau_c = 0.21$ ($p < 0.03$) for the older daughters. It is unlikely, however, that the reason why many older children of low adopters did not complete primary school, lies with some hypothetical attitude towards education on the part of their fathers. No significant association between a father's innovativeness and his children's school attendance was found for the sons and daughters who were still of schoolgoing age in December 1963. Most likely, past school attendance is linked with the former urban residence of many of the innovative respondents and with their greater wealth. At the time of the survey the low-scoring farm-operators were as aware, or had become as aware, of the advantages of education for their children as their more innovative colleagues.

As regards the present employment of sons on the farm, the adoption-score quartiles do not differ appreciably. For the younger sons, there was a weak, negative and not significant association ($\tau_c = -0.13$); for the sons who were at least 18 years old, a weak but positive association ($\tau_c = 0.15$; $p < 0.1$) between their employment on the farm and the adoption-score quartile of their fathers. If this level of probability be

accepted, innovative farm-operators employ their older sons slightly more often than do low-scoring farm-operators. Although the association is admittedly very weak, the important thing is that it runs counter to expectations. Since more older sons of innovative respondents had received at least primary education, I expected that they would be employed less often on their father's farm (instead of somewhat more often) than the sons of low-scoring respondents. I assumed that agriculture was so much depreciated that those sons who could leave would do so. Fliegel and Oliveira (1963) found that the innovative farmers in São Sebastião do Cai less often preferred farming for their sons than farmers who were less innovative. If my finding is not due to chance, it suggests that agriculture is regarded as a business like any other: a thing worth doing as long as it is remunerative but not if it is almost certain that one will remain poor. It is the poor who are most likely to leave the project[91] and by implication, the sons of the poor. Table 37 illustrates the suggestion. In the lowest quartile more younger sons and less older sons are employed on the farm than in the higher quartiles. Sons seem to be employed as long as they depend on their parents and can be ordered to work on the farm. They tend to leave when they become adults, often after their military service which obliges them to leave temporarily anyway (Galjart 1965 a). Although not equally strong, this urge to leave the farm exists in all quartiles. As a result there are, except in the second quartile, more farms on which wage labourers are employed than farms on which older sons work. This may imply that many farms will be up for sale sooner or later for lack of heirs willing to continue farming. Together, these findings impart the impression that Brazilian farm-operators (and their sons), at least in the project, consider farming as only one way of making

Table 37. Percentage of farm-operators employing sons and wage labourers, per adoption-score quartile.

Quartile	Sons < 18 years old		Sons > 18 years old		Wage labourers	
	%	N	%	N	%	N
Lowest	60	20	29	21	33	49
Second	59	17	48	25	38	45
Third	44	9	42	24	48	44
Highest	43	7	42	12	52	29

Table 38. Percentage of farm-operators who have relatives on the farm or in the project, by quartile.

Quartile	Relatives on the farm (no sons)[1]		Relatives in the project (no sons or father)	
	%	*N*	%	N
Lowest	14	49	40	46
Second	16	44	35	41
Third	26	44	43	43
Highest	24	27	45	27

[1] Number of fathers 4, one in the lowest, three in the highest quartile.

a living among many others, and that the high adopters value it more than the low adopters. The latter certainly do not seem to regard it as a way of life hallowed by tradition.

The presence of relatives on the farm or in the project is not associated with practice adoption. Table 38 shows the frequency of relatives. For a settlement scheme both percentages seem rather high. The table shows that there is certainly no negative association between the innovativeness of a settler and the presence of relatives. This is in line with the finding of Wilkening, Bosco and Pastore (1967, p. 14) in the State of Goias that people of higher status are more likely to maintain ties with relatives of all types than people of lower status.

Some aspects of resource use

Credit

The settler who invests in new agricultural practices is likely to be better off than the settler who does not. In theory, the settlers can obtain credit from banks or other sources. In practice, it remains to be seen whether they are willing to accept credit and thus go into debt. Van den Ban (1963) calls the reluctance to accept credit one of the characteristic traits of traditional farmers.

To avoid tapping their repulsion from bureaucratic delay and red tape, I did not ask the respondents whether they would request credit but whether they would accept a certain sum (the equivalent of about 500 US dollars) if a credit bank should offer it to them. Somewhat surprisingly, no association at all was found between practice adoption and the acceptance of credit, mainly because so many farm-operators in the lowest quartile would accept it. Table 39 shows the frequency of acceptance. It could be that in the lowest quartile, credit would imply a liberation from debts to shopkeepers and middlemen. Although the highest quartile seems to differ from the three others, when a Chi-square was computed on the corresponding 2×2 table it turned out that this difference was significant only at the 10% level. The *use* of credit (an item of the adoption scale), however, was associated with practice adoption. This

Table 39. Percentage of farm-operators who would accept bank credit equivalent to 500 US $, by quartile[1].

	%	*N*
Lowest quartile	59	49
Second quartile	53	45
Third quartile	51	43
Highest quartile	73	29
Total	58	166

[1] Farm-operators of Japanese descent were excluded. Their inclusion would not greatly alter these percentages, however.

means that for the more innovative farm-operators it was easier to get credit. The low adopters wanted it as much, but could not get it as easily. I also asked the respondents what they would do with this credit, and classified the answers into three categories: a) those who would begin something new, b) those who would extend existing operations (i.e. buy more animals of a species they already had, or plant more of a crop they were already planting), and c) those who would do both. Afterwards categories a and c were combined, thus separating those who would solely extend existing operations from all others. Although the association ($\tau_c = 0.20$) between practice adoption and the extension of existing operations was not significant at the 5% level ($p < 0.09$ when not corrected for ties), the more powerful Mann Whitney U test showed that there was a significant difference in adoption-score quartile between the two categories ($z = 1.85$; $p < 0.04$)[92]. The difference is that those who scored in the highest quartile would, with few exceptions, apply their credit exclusively to something they were already doing, whereas the respondents scoring in the three lower quartiles were about evenly distributed over the two categories. This result, too, is intriguing. It may mean that a farm-operator, once he has adopted some modern methods and machinery, tends to expect a further rise in income from extending his operations, that is, from using more land, rather than from an increase in productivity. He envisages investments in width rather than in depth. For cattle breeding, a need for more land to accommodate the existing stock has already been mentioned. The result could also mean that the extension of existing operations does not become remunerative until some investments have been made in productivity-raising machinery and methods. Results to be reported in chapter 7 make the latter interpretation more likely.

The tendency among the high-scoring respondents to use credit for the extension of existing operations does not imply that they are less innovative than their low-scoring colleagues. Apart from the obvious fact that the former had adopted more innovations, there was also a significant association between practice adoption and 'having tried a crop that failed', an indication of having taken a risk, though possibly a small one, trying out an innovation. The association, which concerned only the non-Japanese respondents[93], was $\tau_c = 0.20$ ($p < 0.03$). This result shows that the high adopters in the project are not entirely unwilling to try out something new. However, unless it pays, it is dropped. The criterion against which most adoptions are judged seems to be short-term profitability.

Lease and rent

In line with the finding that high adopters want to extend operations, practice adoption was significantly associated with the lease and rent of land ($\tau_c = 0.45$ with the Japanese respondents included, and 0.41 without them; $p < 0.03$ and < 0.05, respectively). Those who leased land tended to score in lower quartiles than those who rented it. In the highest quartile land was only rented, not leased.

Labour

There was no association between practice adoption and the presence of sharecroppers on the farm. Sharecroppers occurred in all quartiles.[94] Neither was farm size (i.e. area owned) associated with the presence of sharecroppers. Paid labourers, however, were employed somewhat more frequently as the adoption score of the farm-operator rose. When the Japanese respondents were excluded, the association between practice adoption and the occurrence of wage labour on a farm was weak ($\tau_c = 0.16$; $p < 0.06$) but, if we are willing to take 1% more risk, significant[95]. When all outside labour (i.e. both sharecroppers and paid workers) was considered together, there was still only a weak association between practice adoption and the employment of such labour ($\tau_c = 0.16$; $p < 0.06$). Table 40 shows the frequency of employment for the Brazilian respondents. The farm-owners among them turned out to employ outside labour significantly more often than others ($\chi^2 = 5.25$; $p < 0.03$). Among the farm-owners, in their turn, those who owned more than one farm (and thus presumably cultivated more than 10 hectares) employed outside labour more often than those who owned only one 10-hectare farm ($\chi^2 = 5.72$; $p < 0.02$). Expressed in Yule's Q the association between the two variables was $Q = 0.62$. Area owned, which probably means farm size, seems to influence employment more than practice adoption.

Table 40. Percentages of non-Japanese respondents employing outside labour (sharecroppers and wage labourers).

	For all respondents		For all owners	
	%	*N*	%	*N*
Lowest quartile	43	49	55	33
Second quartile	49	45	50	36
Third quartile	62	44	62	37
Highest quartile	62	29	64	28
Total	53	167	57	134

Use of middlemen

Relative to the sale of produce, I had expected to find a strong association between practice adoption and avoidance of the middleman. But when the respondents were classified into those who sold all their produce through such people and those who sold only part of their produce or none at all that way, no association between selling through middlemen and practice adoption was found. Table 41 shows the frequency distribution. As can be seen, the two higher quartiles depend markedly less on middlemen than the two lower, but in the highest quartile a number of exceptions occur that reduce the association. It is possible that the relation between the manner of selling and practice adoption is affected and obscured by other variables, such as the posses-

Table 41. Percentages of non-Japanese respondents dependent on middlemen for the sale of their produce.

	Sold only through middlemen	Sold partly or not at all through middlemen	*N*
Lowest quartile	54	36	46
Second quartile	49	51	43
Third quartile	35	65	43
Highest quartile	39	61	28
Total	45	55	160

sion of means of transport, the location and accessibility of the farm (Santa Cruz or Piranema), and the kind of produce sold (milk or vegetables). Chapter 4 indeed showed that these variables were important. Finally, it is also possible that the more able a farmer is to circumvent the middleman, the less need there is for him to do so because the less the intermediary can (or is inclined to) take advantage of him.

Nationality and ethos

In this last section of the chapter some of the available quantitative data on nationality and ethos are brought together. They anticipate the post-survey stage of the investigation to be dealt with in the following chapters. Here it is not so much the intention to explain differences in practice adoption as to suggest, and if possible prove, that agricultural activities in the project are indeed characterized by certain cultural values and goals. To achieve this, the differences between farm-operators of Japanese descent and others will be used[96].

The Japanese did indeed have higher adoption scores than the other respondents. Table 42 presents the relevant data; a distinctly significant value for the association was found ($\tau_c = 0.25$; $p < 0.01$). They also owned significantly more often than the others more than one plot of ten hectares. But when only the respondents who scored in the highest quartile were considered, this difference disappeared. This could imply that, if Japanese respondents are likely to own more than one plot, it is because they score in the highest quartile, not because they are Japanese[97].

More than other high adopters, the Japanese seem to allow for the small size of their farms. Perennial crops generally cover only a small part of their land. They are market-gardeners, producing huge amounts of vegetables on small plots, whereas the Brazilian's ideal is frequently still the old one of farming large tracts of land. The Japanese mentioned an annual crop as their most important product, financially, significantly more often than other farm-operators ($\chi^2 = 8.60$; $p < 0.01$). And this difference was not due to their high scores. When the comparison was again restricted to those respondents who scored in the highest quartile, a Fisher exact probability test ($p < 0.01$) showed that the difference persisted. When the fields [98] under annual and those

Table 42. Distribution over the adoption-score quartiles of Japanese and other respondents.

	Number of Japanese	Number of non-Japanese
Lowest quartile	0	49
Second quartile	1	45
Third quartile	4	44
Highest quartile	14	29
Total	19	167

Table 43. Land-use by farm-operators of Japanese descent and by others.

	Number of fields	
	under annual crops	under perennial crops
Japanese farm-operators	53	19
Other farm-operators	404	277

under perennial crops were added for the Japanese and for all other farm-operators, the frequency distribution shown in table 43 appeared. A Chi-square showed that the Japanese had less fields under perennial crops than the other respondents ($\chi^2 = 4.98; p < 0.05$). Although the Brazilians in the highest quartile did not differ in a statistically significant way from all other Brazilian respondents, they reported slightly more often that a perennial crop was of financial importance to them and they had slightly more fields under perennial crops. Anyhow the conclusion seems justified that if the Brazilians in the highest quartile differ at all from their less innovative compatriots it is in a direction away from that taken by the horticultural Japanese. A further indication that the Japanese in the highest quartile cultivate their land more intensively than the other innovative (i.e. highest-quartile) farm-operators was that they more often employed sharecroppers ($\chi^2 = 4.23; p < 0.05$). The difference in the employment of paid labourers was not significant statistically but in the same direction.

The Japanese have other traits which enhance their chances of success. One is their community sense. In table 44 the Japanese are contrasted with the Brazilian farm-operators in the highest quartile for membership of cooperatives. Although the difference is only significant at the 8% level (Mann Whitney *U*), which means that the Japanese could be members of cooperatives because of their high scores, it is in the predicted direction. When the same two categories are contrasted for memberships of all other associations (e.g. farmers' associations, sportclubs) the Japanese are ahead, significantly so ($\chi^2 = 4.49; p < 0.05$). This is chiefly due to memberships in farmers' associations; for other associations the differences are not significant. The greater community spirit and cooperation among the Japanese finds expression in various activities and accomplishments. As examples can be cited the monthly reunions in the section Santa Cruz, during which professors of the Agricultural University

Table 44. Membership of cooperatives by Japanese and by other farm-operators scoring in the highest quartile.

	Never a member	Once a member	Still a member	*N*
Japanese farm-operators	14%	21%	64%	14
Other farm-operators	28%	34%	38%	29

often deal with technical problems; their own primary school in Piranema, with a community building attached to it; cooperative working parties to repair roads in their neighbourhood, also in Piranema; periodic feasts (the one thing of which their Brazilian neighbours speak with envy); a sort of 4-H Club for youngsters, affiliated to their cooperative; the establishment in Itaguaí of a branch of the huge Cotia cooperative, which was itself originally an entirely Japanese affair; and the election of a Japanese councilman to the Itaguaí municipal council. Although their sense of community also has its worse side (discouragement of mixed marriages for instance; withdrawal of support from some who marry Brazilian girls) there can be no doubt that it has enabled them to overcome difficulties that would have been insurmountable for a lone individual.

Another trait which has helped the Japanese to reach their present position in the project (but which cannot be illustrated by quantitative data here) is thrift[99]. For long years many Japanese settlers lived in poor hovels, some of which were still in use as sheds in 1963. The contrast with the brand-new, well-equipped bungalows in which most of them now live was so great, that a less ambitious improvement in living conditions would have been clearly possible much earlier but was postponed until after acquiring the tractor and the truck. Although I have no proof of their thrift, it is clear that the Japanese farm-operators are less afraid of incurring recurrent costs

Table 45. Use of manure and fertilizer by farm-operators scoring in the highest quartile.

	Used manure				Used fertilizer			
	1963		former years		1963		former years	
	yes	no	yes	no	yes	no	yes	no
Japanese farm-operators	11	3	13	1	12	2	13	1
Other farm-operators	22	7	27	2	8	21	13	16

Table 46. Use of lime and pesticides by farm-operators scoring in the highest quartile.

	Used lime		Used pesticides	
	yes	no	yes	no
Japanese farm-operators	10	4	12	1
Other farm-operators	10	19	22	6

than their non-Japanese colleagues. The four frequency distributions in table 45 show the use of manure and fertilizers by Japanese and non-Japanese respondents who scored in the highest quartile. As far as the use of manure is concerned, the two categories did not differ nor had done so in the past. But then, many Brazilians in the highest quartile kept cattle, as was shown in the preceding chapter, so they could use manure without having to buy it, whereas only one of the Japanese high adopters kept cattle. Although the manure could also be from their own chickens, many of the Japanese probably had to buy manure. Be that as it may, it is certain that fertilizer had to be bought for cash. The table clearly shows that Japanese farm-operators, in 1963 and in former years, were much more willing than their Brazilian colleagues to make these costs[100]. Table 46 shows the use of lime and pesticides by the same categories of respondents. The difference in lime use was significant ($\chi^2 = 3.80$; $p < \frac{1}{2}$ (0.06), that in pesticide use was not significant at the 5% level (Fisher exact probability test) but in the same direction. More than the Brazilian high adopters, the Japanese seem willing to use capital in cultivation.

A last Japanese trait that should be mentioned in connection with their success in the project is their resilience. Many of my Brazilian informants attached great importance to this trait. Time and again I heard how a Brazilian settler was soon inclined to fret and give up when a crop failed, whereas a Japanese simply plowed it under and planted something else. He was not afraid, it was said, to go deep into debt to treat a crop properly with fertilizer or pesticides. There are no quantitative data to corroborate their resilience, but it is certainly true that the Japanese had, in fact, less often given up (i.e. sold their farm and left the project) than the Brazilians.

To see whether other cultural differences led to differences in adoption score, I compared the Brazilian respondents who were born outside Brazil of non-Brazilian parents with those born inside the country of Brazilian parents[101]. A Mann Whitney U showed that the difference in scores was not significant at the 5% level ($p < 0.06$; corrected for ties). Neither did I find an appreciable difference in adoption scores or in socio-economic status between Roman Catholics (70% of the respondents) and Protestants[102]. Willems (1955) mentioned that in the São Paulo region where he studied them, Protestants differed markedly from Roman Catholics in some ways, Protestant farmers showing "an unusual degree of progressiveness, manifest in technological achievements and level of living" (p.330), and also a higher degree of participation and group cohesiveness. In the project, however, I found no indications that religious affiliation affected cooperative membership, but it should be born in mind that Willems referred to members of one denomination, whereas in the Santa Cruz project at least six Protestant churches and sects operated. In the sample, the numbers of respondents who belonged to the same Protestant church were exceedingly small.

6 Ethos and social relations

Introduction

This chapter and the next will be concerned with the cultural reasons why so few settlers in the project did what had been expected of them, that is, did become efficient, productive farmers. The analysis of the differences between high and low adopters has repeatedly led to the conclusion that innovativeness was primarily associated with high socio-economic status. Other factors appeared to be less important, anyway less closely associated with practice adoption, or proved to be of importance only in conjunction with high status. In the conditions prevailing in the project, there seemed to be few exeptions to the rule that only those who had money could progress. Most of those who scored in the highest quartile (61 %) indeed had some money when they arrived. If Japanese respondents were excluded, this majority increased to 70 %. The remaining 30 %, it is true, arrived without funds and still made good. But it should be remembered that these people, who progressed by their own efforts, made up only 5 % of all non-Japanese respondents. What are the conditions that must be met if farmers of low socio-economic status are to modernize their farms and to earn a reasonable income from farming? An indication is given by the success of the Japanese farm-operators, a success that has been noticed elsewhere too[103]. As has been demonstrated, they differ in two important respects from their Brazilian colleagues. Firstly, they do not pin their faith to large farms but to the intensive cultivation of a small area. Secondly, they can do certain things together. This chapter will deal with this ability to cooperate; the next will discuss the respondents' attitudes and values about agriculture.

One of the most essential conditions for the success of any rural development project attempting to improve the general standard of living, is the presence of solidarity, of willingness to act jointly, of feelings of responsibility for mutual interests. Only joint action in the purchase of seed and fertilizer, the use of machines, the marketing of produce and the maintenance and amelioration of facilities such as roads and drainage, can overcome the stagnation and impotence stemming from the poverty of isolated individuals. The only substitute for joint action of this sort is massive government assistance until the farmers earn enough to sustain their own progress individually. Even then, of course, they will have to miss some of the advantages of cooperation, such as the price support that cooperative marketing implies, or the independence of outside assistance when, for instance, additional large drainage works become necessary. Naturally, government aid on such a scale would be extremely ex-

pensive and would restrict the allocation of funds to a few regions. Therefore, if agriculture is carried out by smallholders some form of cooperation is necessary if the community is to develop as a whole.

In the project of Santa Cruz considerable government assistance has been provided for a number of years and several attempts were undertaken to establish a cooperative. Nevertheless, when I left the project in mid 1965, in Piranema at least these attempts had come to nothing[104]. Since the Administrative Agency had then terminated its interference in the project and was preparing to depart, a later appearance of cooperation seemed unlikely. How did this happen? Why did so many attempts to establish cooperatives fail? In the following pages I shall describe certain aspects of the Brazilian rural ethos which, in my opinion, are inimical to the emergence of cooperative attitudes and joint action by social equals. For reasons of clarity, I will not follow the sequential order in which observations and insights succeeded each other during my stay in the field. At first, I saw no relationship between the various phenomena which I observed in the project; only much later could they be assembled as a syndrome. Although this synthesis derived much from the literature and from discussions with colleagues, it only grew upon me after most of the field data had been collected. I did not enter the project looking for a syndrome. Yet, in the following sections I shall first present the values and attitudes assembled into the syndrome. Secondly I shall show that these cultural elements, although not the syndrome, have been reported before in the literature. The purpose here is to convince the reader that the syndrome is part and parcel of a traditional culture. Thirdly, I shall present and analyse incidents and case histories that show, qualitatively, that the syndrome still operates in the project of Santa Cruz, and that it obstructs development in various ways. A final section will consider how the syndrome may be circumvented.

The patronic syndrome in traditional culture

The cultural elements that are incompatible with cooperation seem to occur together rather than in isolation but this circumstance alone is not the only justification for speaking of a syndrome. It is mainly for reasons of convenience that I use the term patronic syndrome[105]: to avoid repeatedly using several terms instead of one. I do not suggest that I know the cause of the interrelation between the elements of the syndrome: I cannot even demonstrate that the elements are interrelated. The syndrome is an abstract construction, a generalization deduced from the observation of concrete acts, which clarifies the apprehension, and hence facilitates the observation, of certain categories of behaviour. The Brazilian farm-operators in the project behave *as if* they hold the values and attitudes subsumed under the term patronic syndrome, and it is only in this sense that their behaviour will be explained.

Three elements may be distinguished in the patronic syndrome:

1. The assumption that any real improvement in one's socio-economic situation depends not so much on one's own efforts as on favours granted by secular or supernatural powers, or on a stroke of luck.

2. The disposition to seek to establish patronage relations with people who are, or in the future may be, able to do one a good turn.
3. The absence of feelings of solidarity towards people with whom one is not related by kinship, friendship or patronage. This absence is associated with a disbelief in the presence of such feelings in others.

Let us take a closer look at each of these three aspects of the syndrome separately. It should be noted at the outset that a man's belief in his dependence on others may rest upon a rational evaluation of an objective situation. In the past, the slaves on the plantations depended absolutely on their masters. Even today, many poverty-stricken peasants and labourers depend to a considerable extent on the benevolence of their employers. This sort of dependence would be recognized as such in any culture. There are also situations which in other cultures would not be considered as characterized by dependence of this kind, but which in Brazil may rightfully be. Take for example the government-employed clerical worker who knows that his eventual promotion does not hinge upon the quality of his work, but upon the recommendation of (and hence his personal relationship with) some superior. He is not far wrong if he considers himself dependent on that person. In another culture, where his promotion would be contingent on the quality of his work, he would not feel, and in fact would not be, dependent. In Brazil, it is not easy to distinguish between situations in which dependence is a reality and situations in which it is not.

To complicate matters, the dispositions and expectations which constitute the patronic syndrome repeatedly act as self-fulfilling prophecies and create dependence. However, there can be little doubt that in Brazil the belief in one's dependence on the favours of others or on a stroke of luck, persists in situations where the dependence itself no longer exists. This belief does not mean that people will wait, arms crossed, for fortune to knock at their door, although in the past it has, apparently, meant just that. It means that they are inwardly convinced that without luck or assistance from others there is no point in making a hard effort. It implies the absence of that indomitable, but also unscrupulous, almost cruel will to succeed that pioneers sometimes display[106]. 'Going it alone' is deemed an unattainable ideal; it is thought wiser to solicit the assistance of others before embarking on an undertaking or in the face of difficulties.

"All local success stories of economic and social mobility", writes Wagley, "relate how a successful young man was successful elsewhere, but not in Itá, through the help of a benevolent godfather, relative or employer, or by some other stroke of luck". And: "The difficulties of economic and social advancement reinforce the belief, so common throughout Brazil, that only a stroke of luck can lead to economic success" (Wagley, 1953, p. 127). Rosen, who carried out socio-psychological research in two Brazilian cities found evidence corroborating the statement that "Brazilians tend to think of success and failure as originating outside of the individual" (1964, p. 349). Marvin Harris, who studied a small town in the State of Bahia, made similar observations. "In the eyes of the townspeople the principal duty of all government is to produce 'progress'. But for basic improvements in the general welfare, the people

look beyond the local authorities. The prevailing attitude is, 'we are to weak to help ourselves. O Governo tem que dar impulso (The government has to give us a push). O Governo, in this case, refers to something beyond the county, but to no specific bureau or agency. What the townspeople have in mind is the 'boss' of super proportions embodied in the state and federal governments. Everyone, from mayor and councilman to artisan and store-keeper, is firmly convinced that herein lies the solution to Minas Velhas's troubles" (1956, p. 183).

What among the lower classes is a belief in one's dependence on outside assistance, among the higher classes often becomes a disposition to use public funds, whose allocation they can influence, for private ends. Illustrative of this dispostion is the ease with which planters and industrialists have traditionally looked to the government for relief in times of crisis. Taunay (1945, chap. 20) tells of several attempts, undertaken at the turn of the century by coffee-growers, to secure the support of the government. Various laws which were proposed at the time endowed the federal government with a purchase or export monopoly of coffee, but none envisaged a curtailment of production. Stein (1955, p. 443 *et seq.*) described similar attempts by groups of textile manufacturers to get government regulations enacted. Even when there was no crisis, entrepreneurs often preferred to be on the safe side. Perhaps it was because of their thoroughly politicized view of economic development, writes Dean (1966, p. 147), referring to the industrialization of the state of São Paulo in the early twentieth century, "that the planters restricted themselves largely to undertakings that the state government could concede as monopolies, such as railroads, utilities and emission banks and to projects that could be strongly assisted through government favouritism... if a particular project of the planters proved unprofitable, the government could be induced to buy them out".

The traditional Brazilian disposition to consider oneself dependent on the support from more powerful sources can also be seen from the following contrast. Whereas in the Netherlands the traditional and conservative smallholders who are being forced out of agriculture because they cannot keep up with the rapid pace of agricultural development tend to blame the government for interfering in agricultural affairs (Houttuyn Pieper, 1962), in Brazil farmers who are faring badly are apt to put the blame on the government's inactivity. In the one culture traditional farmers believe that they could improve their lot if only the government would leave them alone, while in the other culture traditional farmers declare themselves unable to improve matters unless the government helps them.

Many contemporary students of Brazil, instead of postulating this unbelief in the results of prolonged individual effort, have deduced another attitude from the same overt behaviour, namely the dislike of hard work, especially manual work (cf. Moog, 1954; Queiroz, 1957; Candido, 1964; Hutchinson, 1966). Formerly this dislike of work seems to have given rise to spectacular demonstrations of indolence, apathy and laziness, as witnessed by numerous travel-stories by European visitors to Brazil[107]. Nowadays resources are less plentiful in the rural areas and the number of competitors has grown enormously, so that extreme inactivity has become impossible in all but

the remotest parts of the country[108]. According to the Dutch historian Romein (1964, p. 61 *et sqq.*) the aversion to work, the lack of enthusiasm for work for its own sake, was formerly a common trait of what he calls the 'general human culture pattern'. It was in Europe that a departure from this pattern occurred, a deviation which in our time is gradually being adopted in other cultures too and is thus becoming the norm in its turn. Be that as it may, a European intellectual certainly should be careful to avoid the fallacy of equating work with life. Many people work to provide their basic needs, and if their provision is assured for the next time period (a day, a season) they can think of more agreeable things to do than working. Yet it is doubtful whether that lack of enthusiasm for work so often observed in Brazil is due only to the conception of work as a necessary evil and to a lack of ambition, as Candido and Queiroz suggest for subsistence farmers. There can be other reasons, such as an enervating climate[109], ill health and inadequate diet. Besides, the lack of an ethos of work does not necessarily mean that people will not work. Brazilian historical accounts abound with examples of people who did work very hard in certain circumstances, when there was a real possibility of considerable returns. Some observers have remarked on both the aversion to work and the slumbering hope for rapid riches in the hearts of Brazilians (e.g. Moog, 1954). It is especially when this hope is absent that work is regarded as a drudge, to be avoided if possible. But this is the same as saying that sustained effort will only be called forth by this hope and for as long as it is entertained. Nowadays the discovery of new sites of gold or precious stones is unlikely; the source of rapid wealth must be a stroke of luck, like winning the lottery, or a 'golpe', a shrewd, not necessarily honest deal or manoeuvre, some successful speculation, or a favour granted by more powerful persons. The dislike of work and the disposition to look for rapid wealth, taken together, are not very different in their effects from the trait posited before: the belief in the necessity of outside help for any basic improvement in welfare. Very few people, after all, are in a position which allows them to acquire wealth rapidly without any outside assistance whatsoever. Especially for the poor the most likely source of wealth is a benefit granted by a more powerful person or organization. The belief in one's fundamental dependence on favours is a sort of justifcation of the inactivity that ensues when the situation does not allow people to entertain the hope that a substantial rise in welfare can be achieved without sustained effort. Although it remains uncertain which dispositions better fit as interpretations of overt behaviour, there is one advantage in positing, as I did, the belief in the indispensability of some sort of assistance instead of the attitudes relating to work and rapid wealth. The reader is led to expect what in fact happens, namely that people will try to elicit such assistance. People strive to obtain patrons. This quest is the second aspect of the patronic syndrome.

The patron-client relationship can be defined as a dyadic contract between persons unequal in social status, according to which the person of superior status dispenses protection, recommendations and favours in kind, money or opportunity, in exchange for prestige and support, given him by the lower ranking person. Although Foster (1963) is right in arguing that the patronage relationship in principle operates between

two persons, this does not mean that a dyad cannot, on occasion, become part of a chain, A → B and B → C forming A → (B) → C.[110] Patronage relationships have also been found between one person and a group of people, and between organizations (Galjart, 1964; Palombara, 1964).

The predominance of vertical over horizontal relationships, and hence the importance of patronage, has been manifest throughout the history of Brazil. Ever since the Colony was founded, land was mostly allocated in large tracts of thousands of hectares, to encourage the enterprise of the private individuals on which the Portuguese Crown depended for the settlement of the huge country, but also because the planters of what was to be for centuries the most important crop, sugar, had to be rich men, in order to defray the cost of the refining process (Antonil, 1963, p. 10; Freyre, 1946, p. 252). According to Viana (1933, p. 74), this custom of granting large tracts of land excluded the poor and less fortunate classes from landed property. All those who asked for a grant of land always took care to stress the fact that they were not without means. In fact, they requested land because they had monetary resources. In other regions of the country, which were settled at a later date, the emergence of a profitable crop often led to conflict and litigation between squatters, who occupied and cultivated small pieces of land without benefit of title, and the persons who had obtained the official title to the same land. As a result, the squatters were often forced off the land or were otherwise subordinated to the neighbouring big landowners. Stein, who gave a historical account of coffee-growing in the municipality of Vassouras, which formerly adjoined that of Itaguaí, says: "Once the advantages of coffee cultivation became apparent, the only possible remaining source of free labour, squatters and other smallholders, were eliminated. Without adequate funds to hire lawyers, unable to proceed to the town of Vassouras to defend their lands before the local judge, without connections – official or social – in the capital, the squatters and smallholders became hangers-on of the planters. They lingered as agregados, who lived isolated from the plantation centers, less often as renters on small plots where they could raise subsistence crops and a little coffee, as overseers of the ever-growing slave gangs of men and women, as hired hands, and as artisans in the town" (1961, p. 67).

It may be said, then, that the actual allocation of the land gave rise to dependence; the dependence of peasants and labourers on an owner who, until rather recently, in fact was little less than the absolute ruler of a fief. It came as something of a shock when in the 18th century the police, instead of stopping at the gate, dared to enter the plantation of a proprietor who harboured a fugitive from justice (Freyre, 1961, p. 16). Even in those areas where smallholders managed to hang on to their land, they were well advised to stay on good terms with neighbouring plantation owners. Apart from the harm that such powerful neighbours could do them personally, if mutual relations were bad, the smallholders also needed the protection which the big landowners could provide[111]. All this meant that even small family farms were often to some extent dependent.

A second and most important cause of dependence was the employment of slave

labour. By definition, slaves depend on their master. It seems that in Brazil the relationships between household slaves and their owners were not seldom rather personal and friendly (Freyre, 1946, p. 369) and that slaves who were treated well were not particularly anxious for liberty (Freyre, 1961, p. 523 *et sqq.*). This intimacy, however, implied that the slave could win or lose a lot according to how far his master trusted him. Any improvement in his situation was a favour and therefore depended on the quality of his personal relations with the owner. Even after the Abolition of slavery in 1889 this pattern continued. A sharecropper, labourer or agregado could not normally improve his situation except through favours obtained from his employer. To obtain them, he had to be on good terms with the latter.

A third factor making for dependence was the traditional patriarchal organization of the family, which did not encourage individual independence. Freyre (1961, p. 70) has very vividly described the manner in which a paternal authority, bordering on despotism, was maintained in the 17th and 18th century. Although this authority has undoubtedly grown much weaker since, Rosen (1962) recently found that, even in a city like São Paulo, the patterns of independence and achievement training of boys still reflected the traditional authoritarian, father-dominated family structure. One informant in the Santa Cruz project imputed the departure of grown sons to the existence of discord between them and their fathers; they had been beaten and scolded too often and preferred to leave when they could[112]. Agreeing with this suggestion, the son of another informant said that his relationship with his father was good. He respected him, and did not, for instance, smoke in his presence as the sons of other fathers did. Paternal authority, in its turn, was intimately connected with the traditional importance of family and kinship ties. To maintain itself and to prosper, a family had to operate as a unit. So as to preserve status and economic goods in a society filled with mixed breeds and adventurers, says Candido (1951, p. 297), marriages were contracted in line with a policy designed to strengthen the parental groups. Unions within the same group occurred frequently. The solidarity among relatives constituted the greatest guarantee in a patriarchal society, permitting the undertaking of new enterprises and assuring the stability of existing ones. Networks of related extended families were further strengthened by the custom of creating relations of godparenthood either within or without the family, and by the attachment to the household of many more members than the kin of the pater familias: servants, retainers, slaves and the children of all. The importance, in Brazil, of kinship relations as a means of establishing new connections and of obtaining assistance of every sort even now, is stressed by Leeds (1964, p. 1331).

Accounting for the persistence of patronal relationships in Brazil, some authors also implicate the religious beliefs of the rural population. "Contrasting sharply with Protestant teaching emphasising self-reliance and the guidance of the individual conscience, popular Catholicism... presupposes the helplessness of mankind in the face of the problems that constantly beset it. To search for a protector is a logical response to such an assumption; the closer the patron's powers approach to omnipotence, the better for the supplicant" (Hutchinson, 1966, p. 10). Hutchinson goes on to

say that the relationship with the divine is not direct. Intermediary patrons (the saints) are sought, who will intercede with God on one's behalf. However, according to Willems (1961, p. 137) rural popular belief holds that the saints do not intercede so much as act on their own behalf, that is, are self-reliant patrons rather then mediators. In earlier centuries, this belief was not restricted to the humble. Referring to the sugar planters and their private chapels, Bastide (1951, p. 336) says that "the Catholic saints who were adored received that worship only to the extent that they also integrated themselves in the domestic life and took on the character of protectors of the family.... The chaplain was less the representative of Rome than a servant of the senhor do engenho (plantation owner)".

There are several indications that saints are indeed often regarded as patrons, of whom one may become a sort of client. In the region around Itá, on the Amazon river, "the cult of the saints provides the caboclo (peasant) with the means of attaining welfare in general, good harvests, good health and the security of the collectivity as well as of the individual" (Galvão, 1955, p. 188). It is important to stay on good terms with the saints, therefore. Whereas adultery and murder are judged by secular standards, and do not constitute religious offences, properly speaking, "to go back on a saint is the sort of sin that preoccupies people and of which they talk" (Galvão, 1955, p. 89). The belief that a saint will punish someone for not fulfilling a promise but not for infringing any of the commandments, is almost general among lower-class rural and urban people all over the country (Azevedo, 1962, p. 73). However, the patron saint in his turn is expected to do his bit. Not long ago his image was often punished when he failed to intervene in a person's favour as he had been requested to do (Bastide, 1951, p. 345; Azevedo, 1962, p. 73). It even seems to have happened that the saint was forced by other means than promises to 'deliver': by beating his image, by tying it up, or by hanging it by its feet down a well[113]. The urban newspapers carry many paid announcements of promises made to a saint that will be fulfilled if he grants such and such a favour. The promise will be kept only after the favour has been bestowed upon the client. Referring to the rural communities he studied, Willems (1955) stated that the greatest obstacle to the conversion to Protestantism was the implicit loss of the saints as sources of assistance "from whom security could be obtained in exchange for small sacrifices. The compacto (contractual relation with the saint) and all related phenomena are expected to disappear from the religious activities of a true crente (Protestant)". However, it had been replaced by a compacto with Jesus and the Holy Ghost. Despite the reserve of the ministers, popular religion stressed devils and miracles. One is led to understand that upon conversion the need for a patron grows less urgent but does not disappear. Another example of the strength of popular belief in the effectiveness of mediators between man and the supernatural is provided by the multitudes that assembled, time and again, around messianic leaders. Some of these movements led to the settlement and organization of religious communities, in the last century and in the 1930's and 1950's (cf. especially Queiroz, n.d.). The probity, industry and loyalty which the leaders to all accounts inspired in their followers are truly astounding. A later section, which will deal with the subject of

leadership, will again refer to these movements. Taken together, the evidence suggests that Roman Catholic popular belief, by its emphasis on the patronage that can be obtained from the saints, actually reinforces the disposition to seek secular protection and assistance.

The distribution of land, the need for protection against hostile elements, slavery, the need for familial cooperation and religious belief have contributed, and to some extent still contribute, to relations of dependence and a concomitant quest for patronage. In many spheres of life, patronal rather than communal relationships were and still are important. Dependence in these spheres was not merely given, it was also actively sought, since welfare, promotion and success could only be achieved through patrons. Dependence should not be understood solely as a consequence of the unequal distribution of power and wealth; it also became the channel through which favours and benefits flowed to those who were less powerful and wealthy. The master could treat his slaves well and send a bastard-son to school; the landlord could feed his peasants when the harvest had failed, and protect his confidence man from the police when he had killed somebody in a saloon brawl; the uncle could further his nephew's career; the saint could grant his supplicant's request. Once a system of vertical relations does fulfil, albeit only poorly, such protective and patronage dispensing functions, it tends to be self-perpetuating. It operates on all levels of society and can benefit everybody. Attempts to destroy it are often half-hearted and limited to certain specific manifestations of patronage and not to others. Dependence calls for mitigation by patronage, but patronage perpetuates dependence. The system may change, and in fact has changed, in that patrons gradually came to have specific rather than diffuse functions, and in that the State, sometimes consciously (cf. Wolf, 1966, p. 95), has tended to replace private individuals as provider of certain benefits. But these changes did not mean that the quest for patrons was abandoned, not even where any objective dependence seems to have vanished. The belief that really worthwhile improvements cannot be achieved without outside support or that such support would greatly increase the result of any effort while reducing the effort itself, may help to explain this. Obviously, such a belief gets another lease of life every time it is confirmed whereas it can hardly be belied.

A corollary to the two already mentioned elements of the patronic syndrome is the lack of solidarity between people who are not related by kinship, friendship or patronage. This lack is most noticeable in an inability to cooperate, in a certain indifference to the fate of strangers and to the state of public or common property, in a tendency to distrust other people's motives, and in an absence of responsibility for the common good. It does not necessarily imply active hostility or coolness; on the contrary, it can go together with great, if superficial, cordiality. Solidarity may be defined as a willingness to strive for common objectives even if that implies putting aside individual interests. Parsons distinguishes between several aspects of solidarity, such as "the willingness to make specific contributions in exchange for somewhat diffuse benefits (or even none except glory and reputation)", and "the willingness to maintain the

integrity of the system, in fact, an acceptance of responsibility for doing so" (Morse, 1962, p. 118). These definitions point to two elements of solidarity, namely the willingness to make contributions and the existence of common objectives (or of a collectivity, in Parsons' terms). In Brazil lack of solidarity means that the common objectives are lacking, that the collectivity does not exist.[114] The absence of solidarity is most noticeable in situations in which the unheeding observer would expect a collectivity to exist: between people whose habitat would be called a community in other cultures, for instance. Indeed, the close outward resemblance between such a habitat and a community elsewhere has often led to an interpretation of Brazilian rural 'communities' in terms of Gemeinschaft[115].

The lack of solidarity follows logically, at least in part, from some of the phenomena described earlier. For example, it can be argued that the importance attached to the establishment of patronal relationships may lead to the neglect of communal, peer, relations. In that people seek patronage from superiors, they may even be inclined to regard their equals as competitors[116]. The more clients a person has and the more easily he can get them, the less he will value and repay each single client. Secondly, it may be noted that historically only a limited number of collectivities have been of importance: the following of the landlord, including his household, the joint family, and relatives. Even if it is true that in some areas the neighbourhood has been important as a cohesive social group, especially to the small farmers, as some authors maintain (Willems, 1961; Candido, 1964), compared to the large holdings the 'bairro' has always been marginal. The contemporary neighbourhood described by Candido consisted to a large extent of people who were related to each other[117]. However that may be, all observers agree that solidarity based upon the neighbourhood has been on the wane for a long time now (Willems, 1961; Caldeira, 1956, p. 84). In general the rural community in Brazil has never been important as a basis for relationships of solidarity between equals.

The supremacy of hierarchical groups has had other consequences. A patron values clients because he may reckon on their support, their armed support if necessary, if a conflict arise. Throughout the history of Brazil such conflicts between powerful individuals or families, in which at times thousands of men were involved (cf. Moraes, 1963), have pitted peasant against peasant, slave against slave, landowner against landowner. Historically, alliances did not follow class lines but cut across them. "Two caboclos, two agregados, two sitiantes (terms designating various kinds of peasants) were declared enemies if one of them belonged to the following of colonel Chiquinho and the other to that of Henriquinho de Almeida, in spite of their similar social, economic and political situations; each one belonged to his colonel and it was with him that they felt solidarity" (Queiroz, 1957, p. 61). It is not far-fetched to say that the emergence of solidarity between equals has been obstructed to a considerable degree by the links between unequals in the traditional alliances. Not only are social equals not used to acting together; upon meeting an 'unknown' equal, they will also wonder whose 'man' he is. Conversely, a stranger in the interior of Brazil need not worry much about theft, I was told, precisely because the potential

thief, not knowing whom else he might prejudice apart from the victim, hesitates to commit the crime.

So far, the examination of factors connected with or responsible for the posited lack of solidarity between social peers has been limited to those which followed logically from the traditional patterns of dependence. However, two other factors may be mentioned that are less intimately connected with these patterns. In the first place, that relationships between equals also often take the form of dyadic contracts[118]. In the project of Santa Cruz, as elsewhere in rural Brazil, the most clearly recognizable relationships organized on the basis of the dyadic contract are those of co-parenthood. Although co-parenthood relations have not seldom been sought, and are still being sought, with persons of superior status (Hutchinson, 1966, p. 14), most of them are with peers: sometimes family members, sometimes neighbours or acquaintances. Unfortunately, questions regarding 'compadrio' were not included in the survey schedule; I only know from informal interviews that the practice is relatively widespread in the project. Sergio, for instance, reckoned that he had acquired about fifty compadres during his lifetime. In the project, he or his wife were God-parents of nine children. One man he had not even known before he came to ask him as compadre. The man had heard people speak well of Sergio. In a few cases his daughters in their turn were God-mothers to younger children of the same parents, thus further strengthening the bonds between the two families. Although by far the majority of Sergio's compadres were persons equal in status, the God-father of his youngest son was a rich shopkeeper in a suburb of Rio, where they had lived for some time. This man had sold to him on credit when he had been out of work. The bond between them had not been relinquished after Sergio's departure to the project in 1959; the shopkeeper had visited them once or twice. "It is clear", writes Foster (1961), "that co-parenthood can never be the basis of any kind of group. No two people have the same combination of compadres."

Finally, it should be noted that also for solidarity the mechanism of the self-fulfilling prophecy operates. If one expects others to neglect their duties and to lack responsibility, one is inclined to be neglectful and irresponsible oneself, thus confirming and reinforcing the expectations of others. Repeatedly informants said that in their opinion, a man did best to keep to himself. Their tone of voice indicated that they considered this sound advice such as a man might give his son, a piece of wisdom wrested from life itself, and not at all a somewhat cynical or despairing, but necessary attitude.

The patronic syndrome in the project of Santa Cruz

In the previous section three related elements of the traditional culture pattern of rural Brazil have been presented. For reasons of convenience they were brought together under the heading patronic syndrome. The historical circumstances which may have contributed to their emergence and permanence have been indicated briefly. Also an attempt was made to convince the reader that the syndrome was not a mere

word, but concords with observations and descriptions by others.

This section intends to use a number of case histories and incidents that took place in the project of Santa Cruz, to show that the patronic syndrome operates among the settlers too. It intends to demonstrate also that the syndrome is incompatible with one of the conditions that a system of small family farms must meet in order to be viable, namely that there is a fair degree of cooperation among the farmers.

Allocation of land and assistance

In a culture where belief is widespread that if a person is getting ahead, he owes it to favours received from others rather than to his own achievements, there will be a tendency to apply this frame of reference to whatever happens. If the events support such an interpretation, people will try to achieve the same results by soliciting favours rather than in any other way. In two respects, the interpretation in terms of favours seemed to fit the situation in the project almost from the beginning, namely with regard to the distribution of farms and technical assistance. Obviously, the actual distribution of cheap land was fertile ground for suspicions of favouritism. Mostly there were more applicants than farms to concede. But a number of incidents may have strengthened these suspicions. For instance, whereas until 1940 it was not explicitly forbidden to grant farms to civil servants, in that year a prohibition to that effect came into force. Yet, in an administrative document of 1947 some twenty farms were said to belong to civil servants. In the same year a certain Onofre complained that he had to choose between a job with the Administration of the project or a farm, while others had both. Since the Administration employed settlers to help them through the first difficult years, it is hard to know whether Onofre had a point. Certainly the number of farms owned by officials increased in later years. For a time it was fashionable for the higher civil servants of Itaguaí to have a farm in the project. In the eyes of the other settlers, anyway, the fact that some officials had farms was proof enough of favouritism. That they believed that favours were important is shown by other documents, according to which on several occasions applicants paid money to a go-between who said that he would settle the matter with the Administration. It is quite possible that such men acted on their own behalf and were not at all intermediaries, as the documents maintain. The point is that they could operate. In 1945, a man who, according to the Administration, was illegally selling plots of land he did not own, in his turn accused the officials of favouritism. One of his charges was denied; with regard to another, to the effect that a son, a father-in law and a son-in law of a settler had all received farms in the project, the Administrator declared that these were in terms of the law four separate nuclear families, each of which could be given land.

One must not think that the favouritism of the administrators, if it existed at all, was a matter of corruption or venality. Rather it was a question of knowing an applicant personally and believing that he would make a success of his farm. A clerk said that in 1961, when a tract of 100 hectares had been subdivided and distributed, she had recommended three farm labourers whom she knew, and they had been given a farm.

With some amazement she added that two of them, for unspecified family reasons, had already sold theirs to others persons. She had been wrong about them, and would not recommend anybody again. Still, applicants thought that it was helpful to know (and to be known by) somebody in the Administration. One reason why João went to the extension meetings in the Santa Rosa neighbourhood, about two kilometers from his house, was that they were held in the house of Vercingetorix, an employee of the Administration. Noting his interest, Vercingetorix would see that he, João, deserved a farm. Unfortunately, Vercingetorix himself was not much interested in the meetings and was rarely present. In a few cases favouritism was clearly observable. Several settlers who had illegally bought a farm managed to avoid being evicted by somehow bringing pressure to bear on high officials of the federal agency which administered all agricultural settements. Some resolutions to evict a settler, taken in Rio by the competent department of the agency, were never carried out.

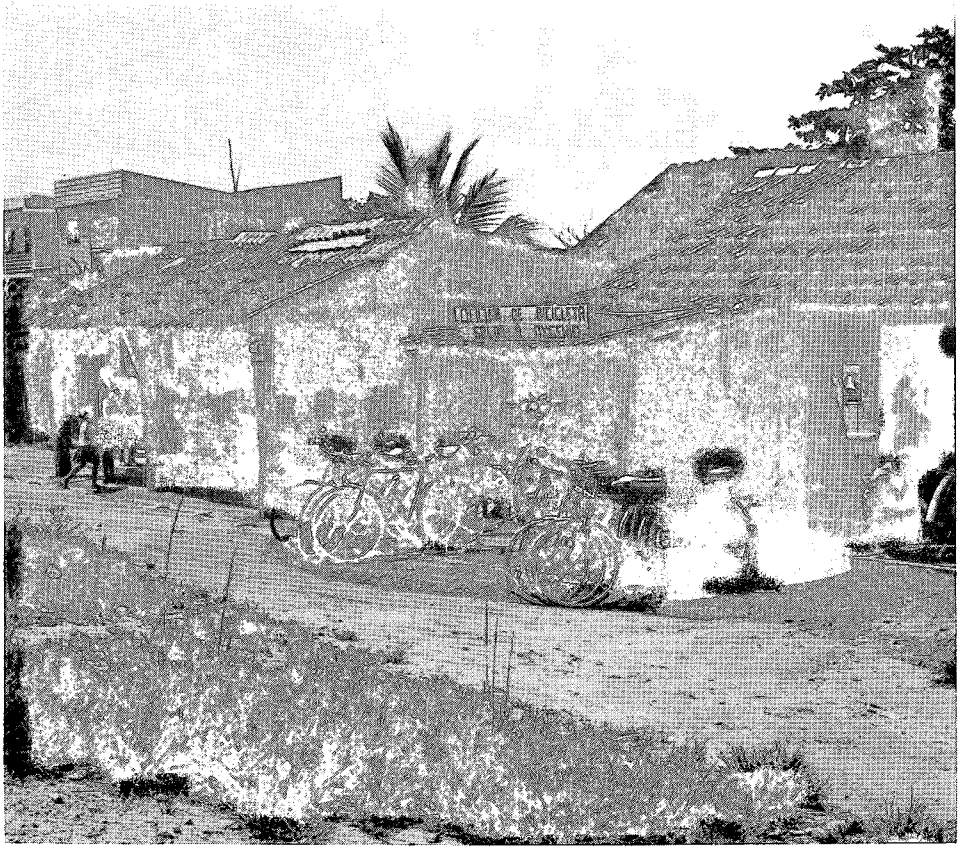
The second way in which the situation in the project lent itself to an interpretation in terms of favours and patronage was the giving of technical assistance to the settlers. As was shown in chapter 2, the laws on agricultural settlements contained clauses concerning assistance of various sorts, to be given for varying periods. One of the most important and lasting components of the assistance given in the project was the plowing and harrowing of land by tractors belonging to the Administration. This was done for a small fee which did not cover costs. Table 1 clearly showed that this form of assistence has been very irregular and of diminishing importance. At one time or another, during the history of the project, the settlers have been provided with irrigation pumps, seeds and seedlings (the Administration kept a nursery going for this purpose), free transport of produce to Rio markets, hybrid maize seed, road repairs, new drainage ditches, cattle, employment, medical services, clerical and administrative assistance to the cooperative, and doubtless other things. But almost always, assistance of some sort was rendered for a short period only; budget cuts or a considerable delay in the receipt of the allotted funds time and again caused the discontinuance of certain forms of assistance. A conscientious local administrator would then advance the money needed for small repairs or petrol for some time but inevitably the moment came when he would get fed up with the incompetence and indifference of headquarters. Thereafter he would, sometimes deliberately, allow everything to go to pot, as a sort of revenge on his superiors. To illustrate the budgetary fluctuations the funds allotted to the project during a number of years are listed in table 47.

It stands to reason that such unreliable but beneficial assistance will be regarded as

Table 47. Funds allotted to the project of Santa Cruz, section Piranema, 1953–62.

Year	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
Funds in millions of Cruzeiros	5	5.5	3.2	4.5	2.5	2.7	3.9	0.7	0.5	0

Executive agencies: Ministry of Agriculture (1953–'54) and INIC (National Institute for Immigration and Settlement), other years.
Source: Administrative Report 1962.



The commercial centre of Piranema section. The schoolchildren are hoping for a sweet

Cannibalized machines

a windfall profit, a favour. But a favour to which, in view of the law, the settler feels nonetheless entitled; if it is denied he feels absolved from any obligation to get ahead without it. It is possible that the irregular, unpredictable character of the technical assistance has had worse effects than no assistance at all would have had. Many settlers have become addicted to government help and feel free to vegetate when they do not receive it. So pervasive is this atmoshphere of impotence and inaction that, sooner or later, each observer comes to see the settlers's viewpoint as justified under the circumstances. The extension officer of ACAR-RJ once told me of his plan to improve the market possibilities for oranges by cleaning and packing them. The Agricultural University, he said, possessed a packing house which had been standing idle for years but was otherwise in good repair. He was planning to ask the University for permission to use it. If the permission was granted, he would use the installation to clean and pack the oranges of the settlers *with whom he worked*[120]. If the results were satisfactory, maybe later a private individual would build a packing house. The beauty of the plan and the reason why he expected an enthusiastic response, was that it would hardly cost the settlers anything. When I pointed out to him that he was planning something which he had hotly condemned in others, namely to give free benefits, his spirits fell.

To illustrate the way in which assistance was sometimes given, and the consequences it could lead to, let us consider a programme that started in 1952. It was called Plano Granjeiro, and was based on the idea that the various agricultural settlements around Rio de Janeiro were eminently suited for providing the capital with milk[121]. The plan also aimed at providing those settlers who had land of poorer quality with an additional source of income. The plan was implemented only in the Santa Cruz project. About 130 settlers were promised a couple of pedigree dairy cows if they (1) had already planted or would plant two hectares of pasture, (2) fenced in this pasture, and (3) constructed a shed to protect the cows from the inclemencies of the weather. Further conditions were that they had to feed the cows well (giving them concentrates if milk yields rose above 5 litres)[122], provided the cows with fresh drinking water, and in general followed the indications on health and treatment given by the technicians who directed the programme. Only artificial insemination carried out by a competent specialist was allowed. Calves would receive pedigree documents. The settlers were to pay for each cow they got with the first yearling heifer. Later calves would be their own. The response of the settlers, the reports tell, was enthusiastic, "as can be seen from the number of settlers who have constructed or started to construct the fences and sheds". Barbed wire could be obtained on credit. However, a report written by a technician in September 1952 was already a bit critical. He had visited 78 farms which together had been benefited with 233 cows. The quality of the pastures was inadequate and they had not been divided into small plots; the shedding could not possibly be more rustic than it was. Most important, production was low. He recommended that the cows henceforth be entrusted to the settlers only during lactation and afterwards be handed back to the Administration so that they could be fed well during the last months in calf. I do not know whether this was done. In

fact, hardly anything is known of the programme for the years 1953 and 1954. It continued, despite a high turnover of the veterinarians who directed the programme. In two years, four of them were in charge. Altogether, 118 settlers received cows. In 1955 it was reported that the herd had produced 139 calves, and that 5 cows and 19 calves had died. By then, the Ministry of Agriculture which had started the programme had had to transfer all settlement tasks to a new agency, INIC, the National Institute for Immigration and Settlement. New people came to direct the project, and misunderstandings ensued. Out of the blue, INIC decided that the settlers were to pay in cash for the cows which they had received, "in order to prevent still greater prejudices". However, the administrator of the project demurred, as did the settlers themselves. It was true, so he said, that for a variety of reasons many settlers had not yet paid for their cows with a calf, but it was unjust to demand payment in cash for animals originally promised as a gift by no less an authority than the President of the Republic, who had visited the project years ago. He suggested to give the settlers who had not yet handed over a calf the opportunity to do so, to sell the cattle which the Administration itself owned, and to forget about the whole affair[123]. A decision to this effect was taken. By the time of the survey, 1963, the whole episode had been forgotten. People hardly ever referred to it. I heard of only one man who had prospered with the cows he had been given, perhaps because he had started to sell the milk himself in Itaguaí. Gossips said he diluted the milk so indiscriminately with water, that a small fish once choked the tap of his milk-can. Otherwise, the Plano Granjeiro had left no visible traces. There was not any longer an organization for artificial insemination; the pedigree register was no longer kept; the feed-mill had stopped working. Perhaps more farmers had cows than had been the case ten years ago, but that was about all. Obviously, one should not blame the settlers for what happened. The pattern is to be blamed: the promises made by high authorities, the 'unearned' favours, the lack of foresight and control, the final administrative 'collapse'.

The story of the Plano Granjeiro shows that benefits were, at times, actually conferred on the settlers. It is therefore not surprising that they came to be actively sought. Sometimes in an inncocent way, as for instance in the mending of roads, which needed constant repair. The settlers of the Gambá neighbourhood somehow or other got a federal agency to improve a dirt road for them, and afterwards rewarded the men with a churrasco (a barbecue). A municipal councillor from Piranema used his influence to loan a scraper from another official organization for a day or two. One informant, who was at first under the impression that I was employed by the Administration, asked me whether I would lend them a truck for repairing a road at Morro dos Cochos; he would make sure that there were enough men to help. Except for the Japanese in Chaperó, who filled the holes in their roads twice a year, the settlers only rarely cooperated to this end. I know of only two other cases. Mostly the expectation of assistance meant that nothing was done if no assistance was forthcoming. Not even when a road became impassable on rainy days and the middlemen began to stay away. Nowhere, except among the Japanese, was any such cooperation really institutionalized.

In other cases, the quest for favours and the lack of solidarity had graver consequences. In Piranema three attempts to organize a cooperative have failed. Of the first attempt little is known. The cooperative was founded around 1950 by some settlers who had recently arrived from the city. Apparently they have been too much concerned about their personal advantage. They started to use the truck and the tractor which the cooperative had acquired as if these were their private property. At a later stage they wanted to receive payment for the administrative and executive services they rendered to the cooperative. The other members would not stand this. About the other two cooperatives, I am better informed. Since it is often the details that are most revealing, both case histories will be dealt with extensively.

The 'Cooperativa Mixta do Nucleo Colonial Santa Cruz' was founded in November 1954. During the first years, the guidance of the Administration of the project was evident. Nine of the 47 persons who signed the deed of foundation were employed by the Administration. Its first executive director (gerente) and its first secretary were Administrative officials. In fact, until the 'disturbances' of 1956, Administrative staff sat on every committee. The Administration assisted the cooperative also in a variety of other ways. It provided storage facilities and a shop, and loaned it two trucks to take produce to the market in Nilopolis on Saturdays. The Administration also supervised the book-keeping and lent a hand when the Cooperative was behind on its clerical work. At times, it may have been inclined to take too much into its own hands: during a meeting in October 1955 the secretary of the cooperative, an employee of the Administration, threatened to resign unless the cooperation between the members of the committee improved and decisions were taken only after consultation with the committee members who were settlers. On the whole, however, things seem to have gone reasonably well.

Participation by the members of the cooperative was poor. From the beginning, their attendance at the general meetings used to be insufficient to reach the required quorum. As a result, a meeting could often only be held after the third notice, when the number of members present did not matter any more. After a while, this situation was acknowledged as normal, and instead of three notices, one notice with three different dates was sent out. For a few months in 1956, however, participation soared. It began during a meeting in May. Following the election of a new committee, one of the settlers present, a certain Armando, mentioned the possibility that INIC, (the State agency at that time responsible for the project) would provide a number of tractors for the settlers. Armando had already come to an agreement with a high official of INIC. Attendance at the meetings shot up sharply. In June, the Administration of the project announced the existence of a Mechanization Plan, drawn up by Armando, the upshot of which was that the cooperative was to be provided with 200 tractors, that could be let to the members. Various officials had the floor during this meeting; all were eager and full of enthusiasm. In the beginning of July

another meeting was called. The President noted with satisfaction that more members than ever before were present, although only one notice had been sent out instead of the customary three. But the Plan had changed somewhat. Its name now referred to the Financial Assistance to Cooperatives in the Baixada Fluminense. The meeting elected three settlers to sit on the regional committee which would further elaborate the Plan. Armando was the first to be chosen. The next two months seem to have been very turbulent. Unfortunately however, the minute book of the cooperative did not have any further entries, although only 23 of the 100 numbered pages had been filled. In October a new minute book was opened. But the attendance register provides some additional information. It is certain that the president and gerente of the cooperative resigned or were forced to resign. According to one informant, they were ill at ease with the course of events and were jockeyed out by the settlers themselves. The president and the gerente opposed the intrusion of political patronage into the cooperative and would not leave others enough room for manoeuvres[124]. The legal argument for their dismissal was that somebody employed by the Administration could not sit on the board of a cooperative. That indeed was the law, but it had never been operative before or since. The first explanation therefore is not improbable. Both had been in function for only a few months, far shorter than the normal duration of such functions. Some years later the gerente, who had become the Administrator of the project, again resisted the intrusion of political patronage into the settlement, in another context. In August a new committee was elected but that did not last long either. In September elections were again held. One can only guess at the manoeuverings going on at the time, but it is evident that the cooperative had fallen prey to political patrons. Although on the 16th, the 23rd and the 30th of that month more people than ever before signed the attendance register, the first two meetings could not be held through a lack of quorum. This would imply that the number of members had grown extraordinarily in a short time. There are indications that the chief figures during this period were not 'ordinary' members of the cooperative. Armando, though a settler, never attended a general assembly before May 1956, and only twice after October 1956, namely once in 1957 and once in April 1961. (Note this last date). But between May and October 1956 he signed the attendance register nine times. Other settlers, who could not attend for some reason, empowered him to represent them at meetings. On 30 september 1956 Armando signed for seven other members. His chance association with some high official of INIC propelled him into a leadership role. The irony was that Armando had a farm in the Santa Cruz section. Logically he would be expected to join a Santa Cruz cooperative. But as his valuable contacts obviously were with a high official of INIC, and the Santa Cruz section had long since been emancipated, i.e. had become independent of INIC, Armando operated through a Piranema cooperative. Another man, a certain Roberto M., who was even elected president of the cooperative for a short time during this period, signed the attendance register seven times between June and November 1956, but only three times afterwards, namely in April and May 1961 and in September 1962.

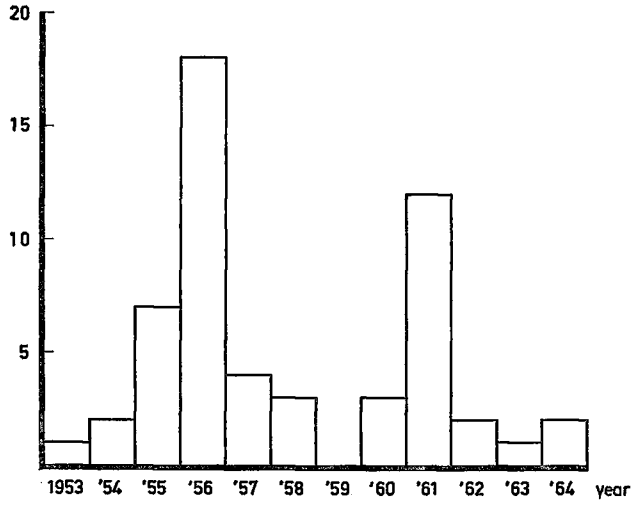
In October the excitement died down rapidly, to judge from the number of members

that attended the meetings. It must have dawned on the settlers that they had been taken in by promises of politicians. The tractors never materialized. Instead, INIC proceeded to establish a central cooperative in Rio de Janeiro that was to purchase the produce sent to it by the cooperatives of the various settlement projects in the Baixada Fluminense. This central cooperative failed from the outset. For a while it purchased the produce but it did not manage so sell it all. As a result losses were incurred, debts accumulated, credit was never amortized. Moreover, politics soon entered the central cooperative and spread from there to the local cooperatives, which were asked to support certain candidates up for election.

The Cooperativa Mixta in the project of Santa Cruz had grown considerably. In March 1957 membership stood at 268 persons. Nevertheless, one gets the impression that the unrest and excitement of 1956 had done more harm than good. It had become obvious to some people that the cooperative could be used as a political organization. The result was that the staff of the Administration, at least those who did not believe that any advantage would come from association with politicians, washed their hands of the whole affair. They could hardly tell their superiors in Rio de Janeiro not to meddle with the cooperative. Yet the people who did look for benefits from patronage had seen that the cooperative was vulnerable. Any credible promise of benefits attracted the settlers as sugar does ants. But the political leverage of the cooperative was insufficient to obtain any benefits. Although no outright politicians were elected to the committee[125], its quality deteriorated steadily. One president simply quit and did not come back, accused of corruption; another drank all the cachaça he could find on the shelves of the cooperative shop. The members were quick to believe that the people they had elected were enriching themselves but nobody had enough backbone to denounce them at a meeting. The balances of 1956 and 1957 were still approved by the general assembly, although the president called the financial situation of the cooperative very serious. After 1957, no other balance was ever approved.

In April 1961 politics again invaded the cooperative. At a meeting held in the beginning of that month many outsiders were present: two professors from the nearby Agricultural University, a representative from ACAR-RJ, the state agency for agricultural extension and credit, a reporter from a Rio TV station, and a councillor from Mangaratiba, a municipality further down the coast. The latter promised to invite a Federal Deputy of some renown to visit the project. He said that the people of Piranema should unite in order to obtain "benefits proper to the community". What he meant was that the Deputy was soon going to need their votes. The representative of ACAR-RJ promised agricultural credit to the cooperative if some definite arrangements could be made about future meetings. It was agreed that meetings would be called on the first Sunday in every month.

The members, this time, hardly stirred. Only the considerable number of meetings held in 1961 betrays the activity (see diagram). During the next meeting, in May, mention was made of a letter sent to the President of the Republic about the development of the cooperative and how the Agricultural University could assist. (About this time, the Piranema section of the settlement was emancipated by presidential



Frequency of meetings called by the cooperative, 1953–1964

decree. This terminated the official interference by INIC in the project). In June, another letter was mentioned: this time, addressed to the director of INIC, about giving the cooperative any of INIC's machinery then present in the settlement. One of the University professors said that this director awaited a further declaration of intent from the cooperative. He also told the assembly that the Federal Deputy of some renown (mentioned above) expected to receive the verba (funds) with which to reopen the hospital of the project any time now. He was chosen as 'technical assistant' of the cooperative. Another professor lectured on hybrid maize.

However, in September, after a row with the gerente, the president of the cooperative resigned. A month later the gerente himself resigned. Although others replaced them, the end was near. In April 1962 the assembly decided to ignore all documents which dated from before October 1961 and to open new books. But this emergency measure was of no avail. Only one other assembly was ever convened afterwards, in January 1964. It had been called to propose the liquidation of the cooperative.

Although the story of this cooperative admittedly presents lacunae, some conclusions can be drawn. Without outside technical and financial assistance and control, it is highly improbable that the cooperative would ever have been founded, or, once founded, would have functioned reasonably well for a couple of years. If solidarity is lacking in a locality, it is unrealistic to expect cooperatives to come into existence and work solely on the basis of collaboration between members. In such a context a functioning cooperative would have to be quite different from the ideal type of cooperative, so common in the literature[126]. Outside assistance, however, can be functional as well as dysfunctional. It is functional when it tries to foster the responsibility, participation and solidarity of the members, when it tries to make itself

superfluous. The assistance is dysfunctional when it increases the dependence of the organization on outside support and perpetuates the patronage system so ubiquitous in Brazil.

In the project, the dysfunctional assistance necessarily put an end to the functional assistance because they had to follow the same channels. INIC could not at the same time be a-political locally and part of a political patronage network regionally. In general too it seems that functional assistance, which implies political neutrality, cannot last long if dysfunctional assistance is offered to the same people, because to obtain favours they will have to shed their neutrality. An association promised extraordinary benefits will be undermined from inside, by members willing to believe the promise, and from the outside, by the benefactor. It is extremely difficult to establish and maintain efficient, politically neutral, functionally specialized associations or institutions in a society where the benefits go, or seem to go, to followings (i.e. groups tied to a patron).

Although the dysfunctional assistance remained limited to promises, people reacted to it more avidly than they did to the functional assistance. They were also quite willing to follow those individuals through whose connections the benefits were most likely to be obtained, even if this implied a change of leadership.

The history of the third cooperative seems to corroborate these inferences.

In 1962 a new political group was formed in the project. Its headmen were Matias, an employee of the Administration, and Achilles, a settler and middleman. Although Matias nominally held a subordinate post, he had outlived various Administrators of the project. He had much experience with practical and bureaucratic problems and knew many settlers. Over the years he had been able to buy or otherwise acquire a fair amount of land inside and just outside the project. He had, in fact, become one of the bigger proprietors in the area. Achilles had arrived in the early fifties from a suburb of Rio, where he had kept a shop. After some time he had managed to buy a very old truck and established himself as middleman.

At that time the settlers often found it difficult to dispose of their produce, so Achilles' endeavours had met with approval rather than scorn. He had, so I was told, personally organized a market for the cassava from Piranema. Anyway, he had prospered. In November 1963 Achilles owned two trucks, a tractor, and nine farms in the project. Possibly (this is just conjecture) following the death of the Federal Deputy of renown mentioned earlier, who had received some support in the project and who in his turn had tried to be instrumental in bringing improvements, Matias and Achilles decided to support the candidacy of a man called Brandão for Federal Deputy. Unlike some other municipalities in the region Itaguaí did not 'belong' to a particular politician. Brandão was not a stranger to the municipality; his uncle was one of the public notaries in the village. It is therefore possible that Matias and Achilles were approached by Brandão and not the other way around. First, rumour had it later, the Administrator was removed from his post. He was accused of having permitted a grader of the Administration to improve a dirt road outside the project. The real

reason was that he would not allow his staff to engage in politics. He was sent to Israel to attend a course and afterwards given a desk job in Rio. His successor was not, as had been customary for thirty years then, a University graduate in agronomy, but an administrative clerk. Apparently there was much underhand work in this appointment. Another man, an agronomist, seems to have been recommended for the job and his appointment had even been published in the Diario Oficial. It was said that Matias, Achilles and others thereupon travelled to Brasilia to reverse this appointment. This was only hearsay, but it shows that plotting is not considered abnormal when so much is at stake. We can only guess at the role played during this episode by Brandão's brother, who held a high administrative post in SUPRA (Superintendency for Agrarian Reform Policy, which had succeeded INIC, retaining its technical personnel). Anyway, this move made Matias in effect the chief administrative employee in Piranema. The promoted clerk cooperated with him, content, gossip had it, to draw his considerably increased salary. The Administration was not handed over properly; no receipt was signed.

At some time it was also decided that Achilles would run for the municipal council of Itaguaí. In a contest against ten other candidates, Achilles won. Brandão got elected to the Chamber of Deputies at about the same time. He received more votes in Itaguaí than other candidates; to some extent the municipality had become one of his political bulwarks.

This development again increased Matias' importance and prestige. I once witnessed how a woman came to ask him for a job. She said that the prefect of Itaguaí had promised her a job but had failed to fulfil his promise and had even started to 'persecute' her after his election[127]. The same afternoon a settler, a retired military man, who called Matias compadre, came to ask for a job for his son on one of the construction gangs that were busy in the project.

Once elected, the deputy repaid his voters and vote-brokers. Through SUPRA, money suddenly became available for the project, for the first time in years. In November 1963 some wooden bridges were replaced by concrete ones. The hospital, which had been closed for some years through lack of funds, was being painted and cleaned and would be opened shortly[128]. Even something that had previously been impossible: electricity, seemed on its way. A high-tension cable was being constructed from the old Rio-São Paulo road to the center of Piranema.

In December 1963 political capital was made out of the achievements. The President of the Republic was to visit the project, open the hospital and hand out 2000 title deeds to landless peasants, as part of his campaign to force the Chamber of Deputies to vote his basic reforms[129]. The dilapidated tractors and trucks that had been rusting in the field across from the administrative office, were hidden (and because they were out of sight, it became still easier for people looking for spare parts to cannibalize).

Two weeks later, a new move was made. The president of the old cooperative, which had been moribund for years now, convened the members. Matias, also present at the meeting, explained that the cooperative, although it had been closed for

over a year already, juridically still existed. Ignorance of the members had led to this sorry state of affairs. However, a cooperative was a necessity, but it should be run by people with a different mentality. Therefore they, the members, should turn to people who were concerned with the common welfare. Matias thereupon proposed the dissolution of the old cooperative, to which those present agreed. This was done because legally no other cooperative could be founded while the old one was still in existence. A new cooperative had the advantage that it did not have to take over the debts and the unfinished business of the former one.

A month later a new cooperative was founded by Matias and Achilles. A total of 42 settlers were present at its founding. It was no secret that, once SUPRA had settled its affairs in the project, and possibly even sooner, certain installations and buildings (ware-houses, a hangar, a shop, a broken-down rice-hulling plant) would be handed over to the new cooperative. Later I was told that SUPRA had also promised to build a cassava-flour mill to be run by the cooperative. Anyway, between the draught of the regulations and the actual founding of the cooperative, its name was enlarged to include the word 'industrial' among its future functions. Although Achilles had told me two months before that he would become the first president of the cooperative, it was Matias who was elected to this post.

However, owing to the 'revolution' of 31 March 1964 this cooperative never started. The Deputy Brandão, who was affiliated to the Brazilian Labour Party, at the time the most radical of the big parties and the one which supported President Goulart and his programme of basic reforms, lost his political rights and his deputyship, being among those who had taken the most radical stand. His brother lost his job in SUPRA. Although he continued to live in the project, Matias was given another task which made long trips to the north of the country necessary. Only Achilles survived relatively unscathed. In spite of this, he told me that the cooperative was finished. Everything in the project, in fact, acabou (had come to an end), he said gloomily. Staff of the Administration saw it was a matter of course that when the official backing (cobertura) lapsed the new cooperative died a quiet death.

To others it should not be so obvious. About 60 settlers, some of them rich (for instance, the biggest poultry-keeper and several middlemen) had signed an adhesion list for a new cooperative. 40 had signed the foundation deed and 31 had paid the equivalent of US $ 22 each as initial share. Nevertheless, when the leaders, a middleman and a relatively big landowner, found their political connections severed, so that the chance of financial or other governmental support diminished greatly, the cooperative, although existing juridically, was never heard of again. To my mind, this strongly suggests that (1) the cooperative was the initiative of a few people who saw a chance of obtaining benefits, including, probably, personal benefits, and was not organized by a group who wanted a cooperative: (2) those benefits were not seen as the fruits of the normal operation of the cooperative but as favours from the government, that could not otherwise be obtained; and (3) the change of government not only put an end to the hope of obtaining the favours in question, but made the whole organizational build-up superfluous.[130]

It is a pity that the cooperative never had the opportunity to operate, because it is not impossible that it would have been fairly successful. In a country where community and impersonal solidarity are weak, the answer may be an association run authoritatively by a few people, almost as a private company, yet with enough control to prevent misuse of their position.

About a year later, when I left the project, I was told that Matias and Achilles had begun to look for new sources of support. This time they were seeking rapport with the local Church.

It is easy, of course, to mock at these attempts to seek patronage. But one must not forget that the benefits can be considerable. Matias had almost succeeded in getting electricity to the project. Funds ran out after the high-tension cable had been installed but if the regime had not changed he would probably have obtained more funds. It is not unlikely that he would have initiated other schemes[131].

It is therefore not surprising that the disposition to seek assistance through patronage can at times be obstinate. How obstinate is illustrated by Goat's story. Having been deeply involved in politics, Goat is certainly not representative of the majority of the settlers. But his story makes clear what involvement in politics at village level may mean, in terms of patronage.

Goat's story

Goat accosted me one day when I was drinking coffee at Manoel's roadside bar. He was dressed in white as an employee of the hospital, but he started to talk about the bad state of the road which led to his farm, in the north-east corner of the project. They needed a truck to transport sand. He would provide the people to carry out the repairs; fifty men, or a hundred if I wanted that many. Goat thought that I belonged to the newly organized Institute for agrarian reform, INBRA, which had succeeded SUPRA after the 'revolution'. I explained what I was doing in the project and offered him something to drink. The conversation became general. Those present knew Goat and they pulled his leg continuously. He had been one of the leaders of the Peasants Association of Itaguaí and for some years been active in politics. After the recent 'revolution' he had been kept in custody for some weeks but had finally been released. The others derided him, but not in a nasty way. They said he had become engaged in politics as a wag. The leaders had taken to their heels in time (they knew what it was all about, said the bar-tender with heavy sarcasm), but Goat had had to take the blame. Those present did not believe Goat's stories and caught him out asking for particulars. The way in which they differed in opinion, however, was remarkable: friendly, in good humour and as if they were not really serious. "With your permission, Goat; afterwards you finish with your story", interrupted the bar-tender him.

Goat was class-conscious. He told of landowners who drove their cattle at night into the fields of a neighbour, to force him to sell his land, but he did not mention any names. That would be too dangerous, he said. The project he saw as a result of

presidential actions. Getulio had constructed it all. Janio Quadros had emancipated it because he had not known what was happening. The new concrete bridges, the recovery of the hospital, that was the work of Jango.

A week later I went to see him in his house. It was well kept and seemed fairly new. Inside, however, it looked as if the constructors had just left and the family had not yet moved in. A table was the only piece of furniture. We sat on crates. A young boy was sitting on the concrete floor, playing.

Goat had been living in the project for 25 years. His father had been settler on a farm in Santa Cruz once but he had sold it and now lived in Seropedica, a hamlet near the Agricultural University. His brother, though primarily a shopkeeper, still owned a farm in the project. Goat's political career had started in 1952, when he founded an Association of Peasants in Nova Iguaçu, a suburb of Rio. Apparently it had not been a great success, because in 1955 he had gone to work in São Paulo. A year later he was back again and founded the Peasant Association of Itaguaí. He earned his living as a sort of freelance reporter. Armed with petitions to redress particular abuses, he went to politicians to ask for their assistance. Nothing much was accomplished until a newly elected Governor of the State of Rio de Janeiro instituted a programme for agrarian reform, called Plano Piloto. The Itaguaí Association received money for a concrete bridge in the project and teachers' honoraria for adult education. Goat also reaped some personal benefits during this period. He said that the Governor wanted to name him tax inspector, but this was impossible because he was illiterate[132]. Instead, he was made the local representative of the Plano Piloto programme. He also made a trip to Italy, all expenses paid, to study land reform there, and was invited to sit on the committee of the State Federation of Peasant Associations. But the Governor of the State had died suddenly, before the end of his term. Goat had an old newspaper photo which showed him being carried away unconscious from the bier of his patron. The new Governor discontinued the Plano Piloto and Goat's local organization began to wither away. For almost two years he searched for another patron, without being very successful. One politician whom he supported was not elected. Another was: the Federal Deputy of renown, already referred to. This Deputy carried one of Goat's petitions to Brasilia and took the matter up with the authorities. But he died in 1962. In the meantime, Goat ingratiated himself with a local point-4 programme, which gave him a small allowance, and for which he carried out a socio-economic survey of lower class families in the municipality.

Locally, political influence went to another group, headed by Matias of the Administration and Achilles, a middleman. Together with eleven others, Goat stood for municipal councilman, but after he lost the election (which Achilles won) he got in with the new group. Matias got him a job in the hospital, which was to be reopened soon. Although he had lost his local following (he only received five votes at the election) Goat continued to be active in the State. At least on paper his Association still existed, and he made the most of it, visited other associations, went to political rallies, and was around generally. At one time he also managed to get Deputy Brandão to be God-father to one of his children. Later Matias also became a compadre. The latter

(who had lost his influence after the recent 'revolution') was like a father to him, Goat said. Only yesterday he had lent him some money. The irony was that some years before, Matias and Achilles had undone the only direct local action of Goat's Association, the invasion and occupation of an area of the project then still undistributed, where Matias had been grazing his cattle for years. They had fired a few shots in the air and had put the invading peasants' huts to the torch. Goat now explained that Matias was not to blame for this episode; he had been under orders.

The farm on which Goat lived belonged to a Rio lawyer, who was, he said, a friend of his. He did not have to pay rent. The land was lying fallow; Goat grew beans on a plot of maybe ten by thirty meters and he had planted some bananas. Despite his fervent pleas for land reform and government assistance to peasants, he himself obviously had no stomach for agriculture. People called him maluco (crazy). Perhaps he was but at least he had not enriched himself, like the big shots. But then, as the cynical bar-tender had said, they knew what it was all about, Goat did not. "You do not even know how to steal, Goat", he had snorted.

Although Goat's story is only indirectly connected with the project, it is told here to show that it contains the same elements encountered already in the foregoing case histories:

1. Association in the expectation of benefits
2. Actual favours
3. A change of administration
4. Termination of the benefits as a result of this change
5. Dissolution of the group.

Noteworthy too in Goat's case is the number of his patrons and the instability of his personal relationships and alliances owing to the many changes of patron. Matias had once been if not his enemy then his opponent. His relation with the President of the Itaguaí Peasant Association (Goat himself had been vice-President) had cooled considerably, witness the fact that they had both stood for election as municipal councillor. The Brazilian agronomist who had directed the point-4 programme in Itaguaí was accused by Goat of having cheated him of his allowance. This may be untrue and an effort to dissociate himself publicly from somebody who, after the 'revolution', was considered a subversive element; but even so, the effort was made.

The ordinary farmer

If one is to assess the importance of patronage in the daily life of an ordinary farmer who is not involved in politics, one has to know him rather intimately. Since I never came to know many farmers that intimately, I am unable to indicate precisely how far the one example I am going to relate is representative. It is certain that the great majority of settlers had similar patronage relations, but I cannot say whether they had as many, or whether these relationships served the same purpose. The man I am referring to, João, was possibly a bit more dependent than others, having no land of his own, but his case is illustrative of many others.

João maintained relations with several persons who were of higher socio-economic status and who could become, or to some extent already were, patrons. I am not saying that he consciously maintained these relationships to tap possible sources of favours; that was not so. I am only saying that in addition to sympathy, friendship and other considerations, patronage undoubtedly played a role. To avoid an accumulation of small stories, I have made a list of actual and eventual patrons whom João frequented (table 48). With some patrons, it is true, the actual favours given were not

Table 48. Patronage relationships of a farmer in Piranema.

Category of patron	Actual favours	Possible future favours	Return service
Extension officer	free samples, seed, advice, protection	recommendation to be granted land	pressing others to attend meetings, regular attendance
Priest	free gifts of food (milk powder), medicines	grant a piece of land for house	attendance at mass and other meetings
Employee of Administration	resolution of conflict	recommendation to be granted land	prestige
Shopkeeper (local)	credit, sharecropping contract		frequenting shop also when not in debt
Storekeeper (not local, co-father)	credit	presents to son, interest in son's career, assistance	unknown
Politician (through others)	recommendation for job in industry, participation in invasion of fazenda	help to acquire land	praise, prestige, votes
Sociologist	gifts	recommendation to be granted land	information, hospitality, introductions
Prominent Japanese settlers	sharecropping contracts, favourable treatment		help to repair road, prestige
Employee of prefecture	resolution of conflict, assistance in bureaucratic matters, appointment of wife as school janitor(?)		unknown
Neighbour (non-local merchant)	milk, fruit		keep an eye on farm, keep him informed
Peasant Association[1]	none	access to land	bridge construction, prestige to leaders

[1] Membership for two years, discontinued because Japanese settlers did not look favourably upon Association.

really personal benefits that could not have been obtained otherwise than through patronage. In those cases, however, the possible favours clearly were important. In addition to illustrating active patronage-seeking, the list shows how often apparently 'normal' relations become tinged with patronage. Some of the eventual patrons moreover obviously saw themselves as such. The extension officer spoke to me more than once of his attempts to help João to acquire a piece of land. The patronic syndrome enters into a relationship quite naturally. Recourse to patrons comes naturally too. Once João's other neighbour (not the one on the list) complained to the Administration of the project that João had built, about seven meters behind his house but not on land belonging to this neighbour, a very rustic bamboo fence to prevent his chickens from straying. I was not in Rio at the time; João told me the story afterwards. Apparently he got into a panic, fearing that the complaint would attract official attention to the fact that his house stood at the roadside on public property. He saw patron No. 3 about it who introduced him to the Administrator if the project, he visited the prefecture in Itaguaí (patron No. 9) and saw the extension officer (No. 1), all with the purpose of obtaining protection against the complaint. Only after he had seen these people did he talk with the discontented neighbour, and found that the matter could be easily settled to the satisfaction of both parties. He convinced the man that the fence did not in the least imply intended encroachment upon his land, and in return received permission to leave things as they were.

I believe that the stories and case histories leave little doubt that the disposition to seek patronage is widespread and that the quest itself endangers all associations based on cooperation and solidarity.

Everyday examples of the lack of solidarity and unity among the settlers are hard to come by. The absence of something is more difficult to demonstrate than its presence. The observer does not so much see something as miss something. Besides, after a while he is liable to get used to this deficiency. I have never come across or heard tell of examples of institutionalized mutual help (mutirão), and I do not believe that I missed them. What one observes is a settler who deliberately drains onto the land of his absentee neighbour (deliberately because he has dug a ditch in that direction). Or another settler who sighs that his neighbours are not willing to help solve their common drainage problem by digging a deep ditch to the nearest canal. Or one hears settlers lament that, since their neighbours do not combat ants, they may as well stop doing it themselves. Why don't their neighbours do it? "Sauva não come pé de boi" (Ants are not meat-eaters). Or one hears of the numerous rows because cattle have strayed, a fence has caught fire when a neighbour's field was burnt off. One notices the eventual paralysis and disappearance of most recreational associations, such as the Liderança Football Club, the Piranema Athletic Club, the Teatro das Fantochas, so that in 1964 only the recreational association founded by the Japanese settlers survived in Piranema.

A quantitative illustration of the lack of unity in this section is given by table 49, which presents the outcome of the 1962 municipal elections in the project. Although

able 49. Distribution of votes in 1962 local election, Piranema.[1]

Number of candidate	Number of votes he received	Remarks
1	374	Achilles, elected councillor
2	104	–
3	70	employee of Administration; left afterwards
4	69	–
5	54	–
6	46	brother of Goat, shopkeeper
7	36	President of Itaguaí Peasant Association
8	31	a president of 2nd cooperative, ran shop in project
9	20	employee of prefecture, later of hospital in project
10	13	one-time manager of 2nd cooperative
11	5	Goat, Vice-President of Itaguaí Peasant Association
total	822	

[1] All candidates lived in Piranema.

all candidates were, at least on paper, affiliated to some political party, it was the number of candidates and not the number of parties which caused the list to be so long. Ideological differences played a minor role, if any. Among the candidates were several shopkeepers, a middleman, two public functionaries, and some settlers. Achilles, middleman and up-and-coming landowner, was affiliated to the Labour Party. The extreme vote-splitting which occurred prevented a second municipal councillor from being elected by the settlers. This would have been possible and would have given Piranema a greater voice in the allocation of municipal funds.

There are, of course, also examples of cooperation in the project. Mostly between relatives, sometimes between friends. Incidentally the members of a larger group cooperate, such as a neighbourhood that repairs a road, or the members of a sect who construct a chapel. But such cooperative endeavours are few and far between. Something is needed to enhance cooperation and solidarity. The following section will deal with the possibilities I see in this respect.

Remedies to the lack of solidarity

In the recent past, Brazil has known groups of peasants or farmers who were cooperative and united. I am referring to the groups which assembled around charismatic religious leaders such as Antonio Conselheiro, Padre Cicero, João Maria, or Pedro Batista. There can be no doubt that these leaders roused in their followers very strong feelings of solidarity and unity, a great willingness to work hard and sustainedly, and great religious fervour (cf. especially Queiroz, 1957, and Queiroz, n.d.). Of at least one of them, Batista, a contemporary leader, it is known that he promoted the introduction and acceptance of a host of innovations (Queiroz, 1963). It is of importance to note that these leaders did not augur in a break with the pattern of dependen-

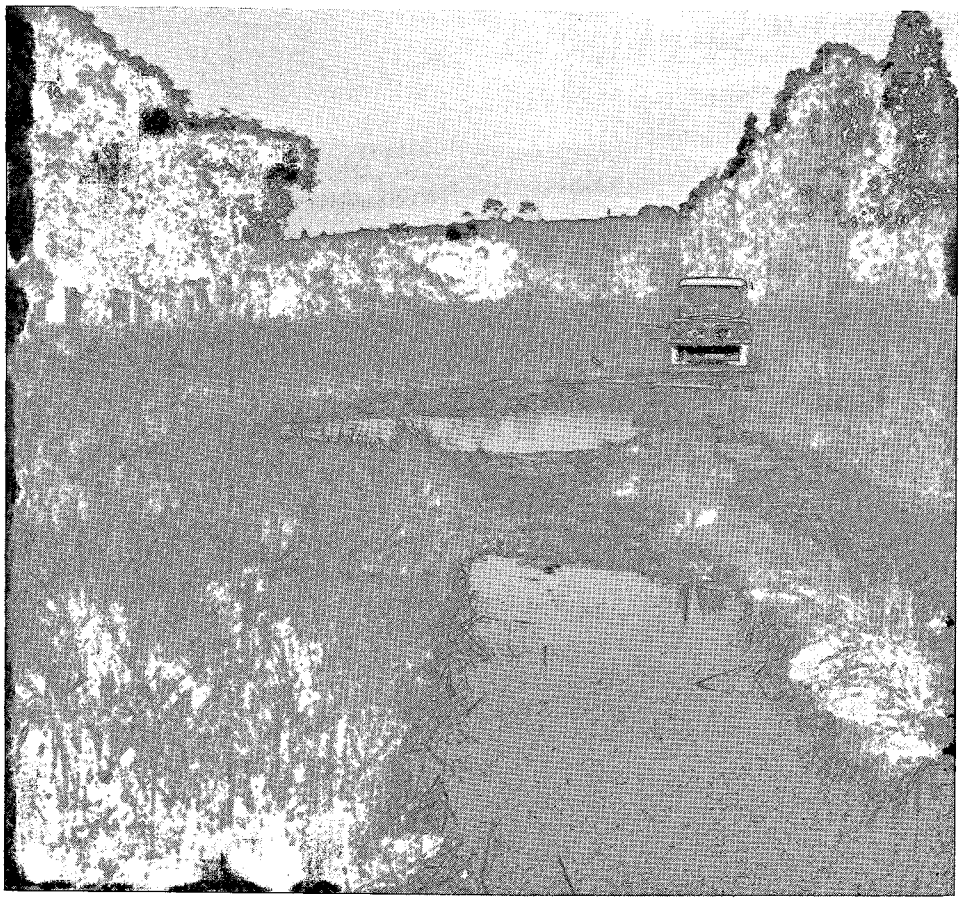
ce and patronage. They were regarded as patrons and they acted as patrons, providing people with pieces of land, arranging loans, counselling, blessing. But essentially they were messianic patrons; it was believed that the real benefits which would be obtained through them consisted of some future salvation or paradisial state of affairs on earth. It is difficult to judge in how far the long duration of the attitudes of cooperation, hard work and solidarity, instilled in the followers, was due to the sacred nature of the hoped-for ultimate benefits. It is likely that the followers were on good behaviour to obtain these ultimate benefits. This raises the question whether a secular leader would have achieved similar results. There are examples of group solidarity vis-à-vis outside groups, infused by non-religious leaders (Moraes, 1963) but I know of no non-religious leader who dedicated as much attention to the day-to-day behaviour of his followers as the religious leaders did. It is not impossible that a hope for materialistic, secular benefits would soon flag if the latter failed to materialize. However, the effects of the cooperation and the sustained effort which the religious leaders evoked were beneficial in themselves and reinforced the hope for further sacred benefits entertained by their followers.

It seems that within the prevailing culture, of which the patronic syndrome is an important part, an incorruptible leader, who is not after his own interest, can achieve a considerable change for the better. His leadership derives from the fact that he is a patron. His patronage is not limited to a single favour but is continuous. Because of this, and also because of the moral authority stemming from his incorruptibility, he is in a position to demand from his followers a continuing effort in return, not just one short burst of loyalty. It certainly helps if such a leader is regarded as the embodiment of spiritual values which emphasize surmounting one's egoistic inclinations. Not only the changes wrought by the charismatic leaders, but also those observed by Willems (1955) in small contemporary groups of people in rural São Paulo, suggest that everyday behaviour is altered more easily when religious sanctions are brought into play.

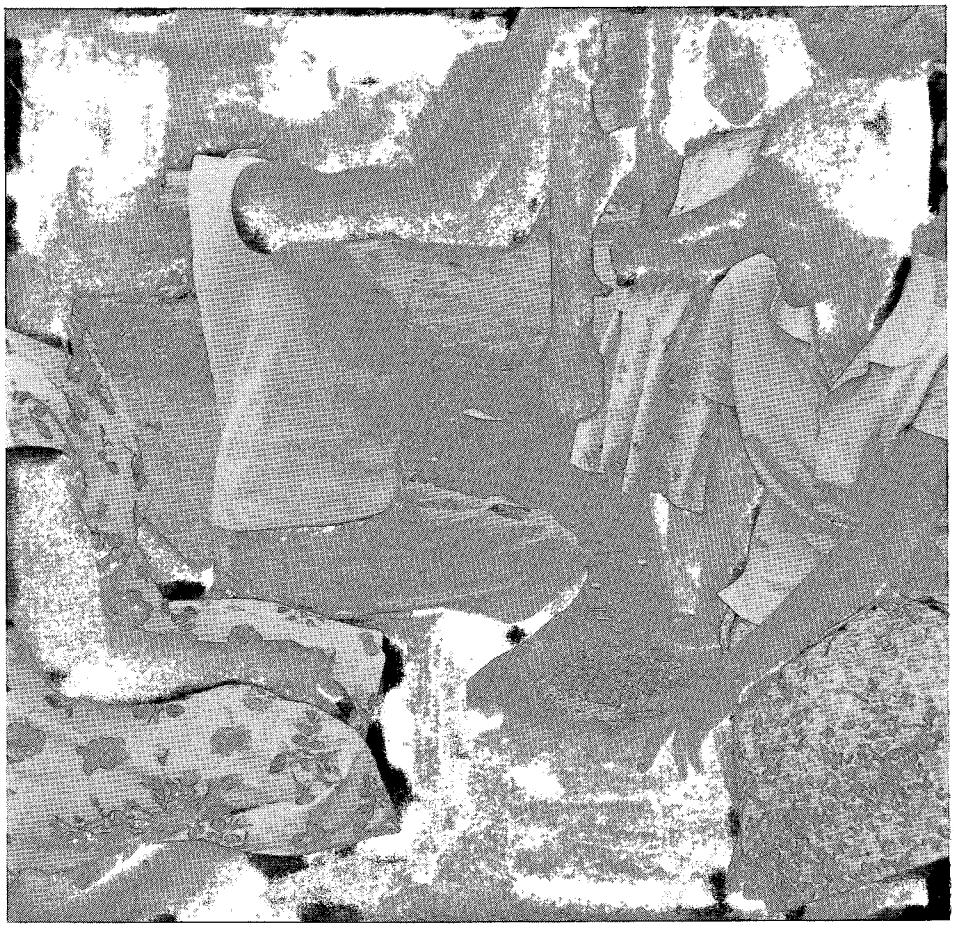
Further sociological and historical research is needed to clear up this point and to answer the question whether, and how, it is possible to create such leaders. If it remains a matter of chance whether they will appear or not in certain places and at certain times, we cannot do more than cross our fingers and hope that they will in fact come forward. In the project of Santa Cruz, they have not yet appeared. There are a few indications of the importance of honest, unselfish leadership; indications consisting of the sad decline of some association or endeavour following the departure of the leader. One of the reasons for the rapid failure of the Plano Granjeiro after 1954, I was repeatedly told, was the sudden death, in a traffic accident, of the female veterinarian who was directing the programme at the time. The 1958 report of the Administration noted that a youth vocational training course, which had been running for almost two years and even had been provided with its own farm in the project, had lapsed when the leader, an Itaguaí priest, returned to Italy. The second cooperative began to degenerate when the agronomist who had been its gerente was squeezed out "because he was employed by the Administration".

President Goulart visits Piranema. The platform is filled to capacity with clients of clients.

Awaiting the march-past



A road in Piranema after some rainfall



Pounding rice

Even though one cannot very well recommend the creation of charismatic leaders in the project of Santa Cruz, the past achievements of such leaders suggest where a first remedy to the problems attendant upon the patronic syndrome must be sought. The charismatic leaders were incorruptible (or rather were thought to be incorruptible), durable, diffuse patrons who demanded a certain behaviour in return. They were compatible with the syndrome; in a way, it can be said that they *used* it.

I believe therefore that, in the absence of charismatic leaders, the next best is to institutionalize patronage. The agency which executes a project should not leave it, but stay on as its official patron. Although its incorruptibility is not automatically assured, measures can be taken to prevent its local agent, the administrator, from using his position to his personal advantage. Government assistance in agricultural production, marketing, public facilities, education, or health can be officially and consciously directed to the project through this agency. At the same time, steps can (and should) be taken to protect the agency itself from non-governmental political pressure. In this way the durability and diffuseness of the patronage can be assured. Finally, the agency can be given the power to apply sanctions.

To some extent, the various agencies which ran the project of Santa Cruz did play this role of patron. But they never functioned as such officially and consciously. The gerente of the cooperative could be shouldered out when he obstructed some political machinations. Later he could be made to resign as Administrator of the project. Sanctions against those who illegally sold or bought plots were, at best, applied halfheartedly, often not at all. In short, although the administrative agency sometimes did function as a patron, it was never explicitly meant to do so. Administrators never learned to see their own patronage dispensing role clearly. One Administrator (the gerente of the second cooperative who was made to resign) recommended during an interview that the State assign executive directors to all agricultural cooperatives in land-settlement projects but at the same time deplored the paternalism which, he said, up to 1950 had marked the actions of the Administration of the project of Santa Cruz.

I believe that the patronage dispensing role of the agency which administers development projects such as Santa Cruz should be officially recognized and defined. This seems to have several advantages

1. Agricultural development is not conditional on the prior disappearance of the patronic syndrome, since the syndrome can be held in check, as it were, by the agency. Anyway it is questionable whether traditional culture can change rapidly in such a way that the syndrome disappears.
2. As the agency functions in many respects as a local patron, a relapse into the traditional social structure, marked by private patrons who misuse their position to a greater or lesser degree, can be prevented. In the project of Santa Cruz, such a relapse has occurred.
3. Allowance is made for the fact that, on the regional and national level, the institution of patronage remains necessary to obtain benefits which cannot otherwise be obtained, such as public works and services.

Such an institutionalization of patronage does not mean that no attempt at all is

undertaken to weaken the attitudes and values that form the patronic syndrome. The agency which administers a project can gradually transfer many of its tasks to the people themselves and just keep a close watch on the course of events. The powers should be retained to intervene and stop undesirable developments[133].

As to the organization itself of cooperatives, it may be useful to take up an idea mentioned to me by the Brazilian sociologist C. A. de Medina. He envisaged grouping a small number of farmers, who know each other informally, say 8 or 10 neighbours, in subcooperatives. Some cooperative activities and tasks, such as the mechanical preparation of the soil and various marketing and buying operations, could then be delegated to these subcooperatives. Bank credit could be given directly to them or through a parent cooperative consisting of several such groups. The intimate informal relations between the members of a subcooperative could be much more successful than the weak control exercised by relative strangers in preventing committee members from abusing their position. Abuse, venality, irresponsibility would become much more of a sin and would be subject to more severe and immediate sanctions. Although such subcooperatives would be unsuitable for certain tasks, the idea deserves a try.

Larger cooperatives should, I believe, fall under the control of the administering agency of the project, or of a special State agency where there is no project. The conscious use of patronage, recommended above, should include the direction of, or at least control over, cooperatives[134].

7 Ethos in agriculture

Introduction

In the project of Santa Cruz, traditional values and attitudes appear not only in social relations but also in agricultural production. This chapter will deal with the values and attitudes which affect production and allocation of resources in the project. These cultural elements are part of a traditional culture pattern that will be called here the 'Grand Tradition'. After describing briefly its most characteristic historical traits, I will seek reasons why this tradition, derived from great landowners, and not some other tradition has been transferred to the settlers in Santa Cruz. In the last section I will try to find how far the respondents adhere to the 'Grand Tradition'. It will be seen that many of the values and attitudes pertaining to the 'Grand Tradition' can be observed in the project but that the high adopters sometimes do not hold to it any longer. It will become clear that not all elements of the tradition are incompatible with the success of a system of small family farms. Some are, some are not. It will be necessary to state each time which conditions of the system a particular value or attitude does not meet, or more generally: in how far it imposes a certain line of development by restricting alternative lines.

The 'Grand Tradition' of agriculture

Except for a short period after the Colony of Brazil was founded, in which extraction of Brazilwood was his main occupation, the Portuguese settler has concentrated from the beginning on commercial agriculture. In the absence of gold or precious stones, which were found only much later, his aim was to acquire wealth by cultivating, processing and exporting sugar. He did not turn to agriculture because he had always been a farmer, or because he wanted to ensure his subsistence. He did it because it was the only way he saw to grow rich. "The truth of the matter is that many of the colonists who here became big proprietors had no real love for the land and no taste for its cultivation.... The ideal for them would have been not a plantation economy, but another India, with which they might, in the manner of the Israelites, carry on a trade in spices and precious stones; or a Mexico or Peru from which they might extract gold and silver" (Freyre, 1946, p. 32).

After sugar, which was grown along the coast, and cattle ranching, which was taken up in the drier regions of the interior, later centuries saw the rise of other commercial crops. Some, such as coffee and rubber eventually covered enormous regions,

though rubber remained part of the natural vegetation and was only sporadically grown on plantations; others, such as cotton, cocoa, citrus and sisal, remained restricted to smaller areas, mainly for climatic reasons. But in all cases (except rubber which was collected) the pattern was the same: large holdings, production for the market with slaves or indentured labourers, and monoculture. This had become the 'Grand Tradition' of agricultural production, a norm and a value. The objective was the acquisition of wealth (Prado, 1961, p. 34).

Land and soil

In the last chapter it was shown that the Portuguese Crown granted large tracts of land to a small number of rich men, to stimulate the settlement of the country by private entrepreneurs, and also because the production of sugar required a large capital outlay. This concentration of land has endured to the present: plantations and fazendas still tend to be large. One of the reasons for the permanence of the large-scale agricultural exploitation is that the sheer quantity of land has come to fulfil important functions in the production process.

The abundance of land permits the owner to increase production, when the price is attractive, by simply increasing the area under a crop (Medina, 1964, p. 82). Conversely, production can be decreased by reducing the area under cultivation. In line with this behaviour, landowners tended to acquire more land when the crop they were planting was in high demand and the price therefore remunerative. A boom meant further concentration (cf. Stein, 1961, p. 19). When the cultivation of a crop became unprofitable, estates broke up (Prado, 1960, p. 225 *et seq.*), though not always. Another possibility was for the fazenda to fall back on subsistence farming. That way it could weather a period of crisis without a radical change in the tenure system (Furtado, 1963, p. 56 *et sqq.*).

The quantity of land was also functional in view of the rather primitive methods of production. The more land he had, the better the owner could rotate fields. By fallowing used land he could prevent or at least postpone soil exhaustion. However, the slow southward movement of coffee for the past hundred years, from Espirito Santo through the States of Rio de Janeiro and São Paulo to Paraná, due to soil exhaustion, shows that maintenance of fertility had little to do with the size of coffee-estates.

In fact, the landed proprietors generally cared very little for the soil. There was so much land that it seemed inexhaustible, a resource that did not need protection. It was seen as a sort of mine. The indifference to maintenance of soil fertility and to erosion control led everywhere to decreasing yields and soil exhaustion. Only in some cases, a period of fallow re-established a measure of fertility; in other instances soil deterioration became permanent and led to the replacement of the original cash crop by tolerant food crops or pasture. The most dramatic example of the disappearance of a crop from an entire region is provided by coffee, which can hardly now be found in the State of Rio de Janeiro where in the nineteenth century it was by far the most important cash crop. Even in our day, it seems that cocoa is being gradually replaced by

pasture in the State of Bahia (CIDA, 1966, p. 496 *et sqq.*).

Some authors argue that for a long time it was more advantageous for the owner to buy land elsewhere and open a new fazenda in a sparsely settled region rather than incur costs to maintain soil fertility in the old place (James, 1955; Prado, 1963). Only recently, with the growing scarcity of virgin land, has it become more profitable to employ modern techniques for maintaining fertility (Prado, 1963). In the forties and fifties of this century coffee reappeared in areas where it had been replaced by other crops and pasture some decades earlier. This time the growers gave manure and fertilizer, and controlled erosion by contour-planting or terracing (Monbeig, 1957, p. 184).

But this does not detract from the assertion that the 'Grand Tradition' of agriculture did not contain any love for or attachment to the soil. Traditionally, the commercial production of crops has been followed by declining yields and soil deterioration. The exceptions are still few.

Crops

Also the attitudes towards crops were shaped by the 'Grand Tradition'. To produce for a market implies the existence of a market. For centuries, the only profitable market for which Brazilian agriculture could produce has been the export market. Sugar, tobacco, cotton, rubber, coffee and sisal were entirely or mostly produced for export. The cultivation on a large scale, especially of sugar, inhibited the production of foodstuffs. The authorities attempted to redress matters by obliging big proprietors to plant food crops too, but they did not meet with much success. One landowner protested openly that he "was not going to plant one single cassava stalk, so as not to commit the absurdity of desisting from the best crop of the country in favour of the worst that could be found" (Prado, 1961, p. 43). Many foreign visitors have wondered in the past why Brazil still imported foodstuffs (such as butter, wheat and cheese) that it could produce at home (cf. Spix and von Martius, n.d.). Paradoxically, food prices were often high in Brazil, but as markets were small and could not absorb great quantities of a product without a fall in price, an extension of food production was a real risk. The preference for commercial agriculture therefore implied a preference for export crops, and later also for crops which were sufficiently in demand on the internal market to assure the sale of large quantities. In short, a preference for cash crops rather than subsistence food crops. Sometimes a preference for perennial cash crops, since these gave less work than annual crops (Amaral, 1954, p. 263).

Work

Working and the employment of labour were also influenced by the practice and ethos of the 'Grand Tradition'. Since the expansion of the sugar industry in the North-East of the country in the sixteenth century, labour on the estates has been furnished by slaves, first by autochthonous Indians captured during expeditions to the interior,

later by Negro slaves imported from Africa. After the Abolition of slavery in the late nineteenth century, the São Paulo coffee-planters for some time paid the fare to Brazil of European labourers who came to work on their fazendas.

It is not surprising, therefore, that for centuries manual work was associated with slavery and hence despised. Work was for negroes (Santos Filho, 1956, p. 37). "As soon as they set foot in Brazil", said an eighteenth-century governor of Rio de Janeiro, "the Portuguese ..., even if they grew up with a hoe in their hands, do not want to work any more" (Viana, 1933, p. 84). Landowners particularly were inclined to show by conspicuous idleness that they did not need to work. "It was the slaves who, literally, became their masters' feet, running errands for their owners and carrying them about in hammock or palanquin. They also became their masters' hands, at least their right hands; for they it was who dressed them, put on their trousers and their boots for them, and hunted over their persons for fleas", Freyre (1946, p. 428) tells us, referring to the golden age of the sugar region in the North-East. Although such extreme idleness has disappeared, not to have to work has remained a value in agriculture. Farming is done with labourers (cf. Amaral, 1958, I, p. 21; II, p. 153).

Work was held in contempt, yet a labour force was necessary if anything was to be produced. It was also something that had to be acquired at a cost. For centuries, rural labour has been rather scarce and expensive. After Abolition, the institution of share-cropping became one of the means of tying labour to the estate at no monetary cost. Other arrangements also existed, from granting peasants a piece of land just to assure their presence at the time they would be needed as paid labourers, during planting and harvesting, to the cambão, the obligation to work without wages or for a low wage for a certain number of days for the proprietor in exchange for the use of a piece of his land. Proprietors generally tended to employ many workers but at a low monetary cost to themselves. Payment in kind or in land seems to have been more widespread during times of economic recession than during booms. Then many owners took to money wages and cultivated the lucrative crop on the vacated fields (Prado, 1960).

Capital

Another of the peculiarities of the 'Grand Tradition' of agricultural production was the allocation of capital. Since production was normally increased by an extension of the area under the crop, very little money was spent to raise productivity per acre or per man. Capital was rarely employed in cultivation but in purchasing slaves, and in processing and transporting the product. It was, of course, also used for acquiring new land.

The São Paulo coffee planters may have financed the building of railways (Dean, 1966), but in earlier centuries transport was not a matter of cooperation. With the exception of the cattle-ranchers, whose products transported themselves, every large landowner possessed his own means of transport, organized his own mule trains, and sometimes also the storage of his produce (Viana, 1933, p. 236).

As to processing, much ingenuity went into the improvement of sugar-refining meth-

ods, and inventions were readily adopted (Simonsen, 1962, p. 99 *et sqq.*), although in the nineteenth century the steam engine was slow to replace water-power and draught animals in the sugar refineries (Andrade, 1963, p. 83 *et sqq.*).

It is therefore not surprising that observers are contradictory about the innovativeness of Brazilian landowners. Agricultural production methods did not change much for centuries and from this it was concluded that the proprietors did not accept change[135]. Yet processing methods were sometimes readily changed[136], new lands were impetuously brought under cultivation, and this gave rise to a contrary conclusion (Simonsen, 1962; Rodrigues, 1956, p. 56). But if I have correctly appraised the features of the 'Grand Tradition' it follows that agricultural production methods remained static for centuries not because they were in any way sacred or hallowed by tradition, but because they were, or seemed to be, the most immediately profitable. It is true that agricultural and industrial development in São Paulo and Paraná has been dynamic during the last seventy years or so. This development has led some observers to posit the theory of the two Brazils (e.g. Lambert, 1953), one archaic, colonial and resistant to change, the other modern, open to change and marked by great mobility. Yet I believe that the difference, apart from the contribution of immigrants, is due to changed circumstances rather than to changed mentalities. Prado (1963) described how proprietors from the 'old' rural zone of Paraíba participated in the settlement of those dynamic pioneer zones of São Paulo and Paraná. Dean (1966) writes that "the entrepreneurial success of the Paulista planters as a class may be attributed not to innate or to cultural endowments but (1) to the operation of a profitable market, which attracted outsiders and rewarded the capable; (2) to capital brought from other places and other activities; (3) to the necessity of conforming to the requirements of a market economy, particularly to free labour; and (4) to the nature of coffee cultivation, which rewarded the capitalistic, i.e. reinvesting planters". Dean qualifies this last adjective by saying that reinvestment was in new land and in laying out new coffee plantations.

Attitudes toward innovation, then, have not necessarily been negative in the past. They seem to have varied on three criteria.

1. The immediate financial rewards expected.
2. The extent to which the innovation would interfere with other vested interests, established prerogatives or values of the proprietor.
3. The financial status of the proprietor; whether he still had to make his fortune (or was counteracting its certain decline such as resulted from the ageing of the coffee trees) or was already rich (cf. Freyre, 1961, p. 528).

Capital or wealth was not an end in itself but a means to an end. Money was spent easily by the great landed proprietors of the past. Their wealth enabled them to live in the grand style described by Freyre (1946) for the sugar regions in the North-East, and by Stein (1961) for the coffee zone in the State of Rio de Janeiro. Luxury was no sin, whatever Calvinist sects in Europe taught (Weber, 1956); on the contrary, it raised a man's prestige and was seen as the natural reward for acquired wealth. There

was little merit in saving, in frugality. The purpose of having money was to spend it. It is not surprising, therefore, that both the sugar and the coffee planters used credit to meet operating costs and before Abolition to purchase slaves. In times of crisis, many planters lost their estates through debts to creditors, often bankers or commercial houses (Azevedo, n.d., p. 111; Freyre, 1961, p. 10; Stein, 1961). After Abolition, the same thing happened during the crisis of the 1930's to the cocoa planters (Semenzato, 1963, p. 7).

The relevance of the 'Grand Tradition'

The 'Grand Tradition' originated among great landed proprietors. Though some of the settlers in the Santa Cruz project, owning 200 or 300 hectares, may be called landowners, the great majority are clearly smallholders. So my claim may seem strange that this tradition, and not some other, influences farming in the project. Apart from the 'Grand Tradition', perhaps two other agricultural traditions may be distinguished in Brazil. One is the food-cropping that went on in between and on the big estates. Usually this subsistence sector was a secondary activity, subordinate to the commercial sector (Furtado, 1963, p. 131). Slaves grew their own food; the peasants and labourers who lived on the fazendas often received a piece of land to grow food crops for their own use. A fazenda could be well-nigh self-sufficient, and yet have commercial agriculture as its basic reason of existence (Santos Filho, 1956, p. 35). In some regions between the big estates belts of small farms existed on which food crops were grown. But this sort of food-crop production hardly deserves to be called a tradition. Even when it occurred on independent small farms and not on the estates themselves, it seems to have been a matter of necessity rather than of choice. Food-crop production expanded when the cultivation of some commercial crop became unremunerative and retracted when a new commercial crop became lucrative[137]. Almost without exception the ideal seems to have been to grow a crop that could be sold or else to keep livestock that could be transported to a market, if necessary over great distances.

The other tradition may have been the subsistence tradition of independent settlers and squatters in peripheral regions. Such people of course had no choice but to produce their own food. Referring to the colonial period, Prado (1967, p. 185 *et sqq.*) asserts that subsistence farming was often found in regions where commercial agricultural ventures had failed and was, in the main, carried out by people who had settled there because they had found no place in the more prosperous agricultural regions. The accounts which European travellers have written of their peregrinations through Brazil in the nineteenth century abound with observations on the poor quality and small scale, in a word the neglect of agriculture in the interior of the country. What these travellers saw was, in fact, the absence of any tradition based on the family farm. It was a surprise and relief for Wells to come across a well run, prosperous family farm (Wells, 1886, II, p. 241). He also met proprietors who owned "eight miles of river frontage, by several miles deep", or "considerable herds and hundreds of square miles of land", yet were relatively poor and lived in mud houses, thatched with grass

(I, p. 315 *et sqq.*): proprietors who lacked means and a market, but held to the 'Grand Tradition'.

The description that Candido (1964, p. 57 *et sqq.*) gives of such a subsistence tradition in the State of São Paulo makes clear that it is not so much a tradition of peasants as one of seminomads, whose cultural ideal is the bandeirante, the adventurer-explorer of earlier centuries. The caipira, as these peasants are called, attached great importance to such leisure activities as hunting, fishing, and social gatherings. Given their contentment with a low level of living, they did not have to work hard. The precariousness of their title to the land which they occupied, and the bringing of a new piece of land under cultivation every few years, reinforced the ephemeral character of their settlement and their agricultural production[138]. Yet, even in the São Paulo municipality where Candido in the 1950's studied the caipira tradition or what remained of it, half a century earlier there had been a considerable production of coffee on large estates. In 1950 the area under cultivation in the municipality was only 73% of what it had been in 1904, the number of coffee trees had fallen to 51% and coffee production to 32% (p. 74). Also in that municipality the 'Grand Tradition' had been predominant once. The subsistence tradition only reappeared when coffee production declined and was not replaced by any other commercial crop.

I believe, therefore, that the two subsistence traditions were both almost forced upon the rural population by particular circumstances (the absence of a marketable crop foremost among them). They have seldom, if ever, been regarded as ideals worth realizing under all circumstances. Apart from the 'Grand Tradition', Brazil has never possessed a proper tradition for smallholders[139]. Agriculture is either a way to riches or something one cannot avoid doing, but hardly ever a way of life[140].

The relevance of the 'Grand Tradition' in general is also suggested by the fact that in the most important areas which were settled during the last hundred years or so, the tenure structure and the methods of production that came to prevail were similar to those of the 'Grand Tradition'. The cocoa region in the State of Bahia, settled some 70 years ago, is at present in decline because the cocoa-trees have not been replaced in time by young trees and yields per tree have declined considerably. That is, not enough capital was plowed in to at least maintain yields per hectare (Semenzato, 1963). The success of the São Paulo coffee planters was due to the opening up, in time, of new plantations somewhere else and not to their investing in the maintenance of fertility and yields of their actual plantations (Dean, 1966).

Even though some time after settlement the tenure structure and the ways of production in new areas came to resemble closely those prevalent in the traditional areas, it can be argued that this was due to the fact that some settlers in the new area were, or had been, great landed proprietors elsewhere (Dean, 1966; Moraes, 1963). Only of the cocoa region in Bahia I know that plantations were opened up by "anonymous men, without history" (Semenzato, 1963, p. 5). In other cases I do not know what part was played by former landowners and what part by poor peasants. Most investigators have been preoccupied with the rigidity of the tenure structure characteristic for the 'Grand Tradition'; I know of no study that focuses on the upward mobility

resulting from the occupation of new areas. Hence, it is often unknown whether it were the relatively poor, anonymous settlers or the former proprietors who were mainly responsible for establishing a tenure and production structure resembling that of the 'Grand Tradition'. Not seldom authors introduce 'commercial interests' and merchants who buy land and become landowners in new areas, but again the status of these people is not specified (Brandão, 1963, p. 43; Geiger, 1956; Medina, 1958). Only casually is it sometimes observed that the smallholders in a region behave and farm in the same way as the landowners (Brandão, 1963, p. 28; Geiger, 1956, p. 56; Nogueira, 1962, p. 90). The second argument for the relevance of the 'Grand Tradition' is, therefore, that in recently settled areas it at least prevailed over other traditions, as long as a commercial crop could be grown. If circumstances are propitious, smallholders also seem to adhere to the 'Grand Tradition'.

Other reasons for believing that it is the 'Grand Tradition' rather than some other agricultural tradition that influences people's behaviour in the project of Santa Cruz concern the local situation itself. The project is situated near one of the largest internal markets of Brazil, the city of Rio de Janeiro. There is no lack of market for crops in Santa Cruz; the farmers are not forced, by their isolation, to grow subsistence crops. On the contrary, the presence of so huge a market may be expected to solicit productive behaviour focused on commercial crops, i.e. in line with the 'Grand Tradition'.

Secondly, the Santa Cruz area is a settlement project, a newly occupied agricultural region without an established agricultural tradition. The previous chapter showed to what extent the concession of farms came to resemble the distribution of favours. Those benefited will often have considered their receipt of land as proof that the support from superior powers, for which they had been waiting to improve their lot, was finally forthcoming. This reaction, while it lasted, will have induced behaviour similar to that subsumed under the 'Grand Tradition', i.e. an effort to bring about such an improvement by growing rich.

Thirdly, it should be noted that the great majority of the farm-operators were of rural stock: 86% of the Brazilian respondents had fathers who worked in agriculture, 54% had fathers who owned a farm. This means that a good many of them would have been exposed to the 'Grand Tradition' during childhood and adolescence, either because their fathers adhered to it, or because the most prestigious people in the neighbourhood where they grew up, the landed proprietors, did.

Lastly in 1961 a sample survey[141] of male heads of households and single independent farmworkers living in Piranema showed that 66% of the respondents preferred a non-farming profession for their sons, and only 18% farming (Galjart, 1965a). This result again indicates that farming is, in general, not regarded as a way of life to be preferred above others, but as one way out of many of earning an income, and certainly not the best. It is unlikely that farming behaviour in the project is a reaction to circumstances rather than a result of any tradition. Chapter 5 has shown, and this chapter will show again, that the Japanese farm-operators often differ markedly from

the Brazilians, despite the similar circumstances. Indeed, implicit in my effort to show these differences is the idea that they can have derived only from differing traditions.

The 'Grand Tradition' in the project of Santa Cruz

Now that the most important elements of the 'Grand Tradition' in Brazilian agriculture have been outlined and its relevance has been argued, an attempt to show that it still influences production and investments in the Santa Cruz project will follow. As far as possible the various aspects of the tradition will be dealt with in the same order as in the second section, but some of the quantitative material to be presented involves two or more aspects.

Crops

Chapter 4 has shown that the crops grown in the project are mainly cash crops. Only maize and cassava are cultivated also as food crops for home consumption. The most popular crops, in terms of the number of farm-operators who cultivated them, were also the crops that were planted on the largest mean area. This is not a matter of course. The project should not be compared to some hypothetical region where, let us say, potatoes and barley are the most frequently planted crops and where it is found that farmers dedicate the largest part of their land to these two crops. In such a region, other crops would be more marginal. In the Santa Cruz project, however, many crops do well; there are farms dedicated in their entirety to crops that are not often planted by others: coconut palms, maracock, bananas in Piranema. Other fruit-trees and crops are planted almost exclusively for home consumption but produce very well, such as genipap, mango, jackfruit, sweet potatoes, yams, and several kinds of vegetables.

This means that other than natural factors restrict the production of such crops. These factors are (1) the tendency to grow crops for sale; (2) the fact that the market is badly organized: most farm-operators are dependent on a limited number of middlemen, who have their own specialized outlets and do not buy everything; (3) the necessity for the individual farm-operator to find his own outlets for 'unusual' products, such as maracock, mango and other fruits which spoil easily[142]; (4) the fact that some crops need more care than others.

Chapter 4 also mentioned that the number of farms on which a certain crop was grown could change rapidly in a short time. Farm-operators seemed to follow changes in prices keenly. But it appears now that the lack of marketing opportunities imposes restrictions: some crops could be grown on a larger scale, but are not because they are too difficult to sell.

Chapter 5 showed that the Brazilian respondents had a certain preference for perennial cash crops. The Japanese differed significantly from the Brazilians in that they planted more annual crops, and this difference was not due to their high adoption

scores; the fourth-quartile Brazilians did, if anything, plant perennial crops more often than the Brazilians who scored in the three lower quartiles. The Japanese also more often mentioned an annual crop as being of financial importance to them. I believe that the Brazilian preference for perennial crops is at least partly due to the traditional aversion for sustained manual work that cultivation of annual crops entails without outside labour. Yet, for small farmers the risks in cultivating perennial crops are greater, or anyway last longer, than the risk in planting an annual crop for which demand turns out to be disappointing. Orange-trees take four years before they begin to bear any amount of fruit; once planted, the cost is made and the farmer hesitates to cut them down solely because prices are low.

The preference for cash crops which marked the 'Grand Tradition' in the past seems to continue practically unabated in the project of Santa Cruz. For agricultural development, this preference has advantages as well as drawbacks. The advantage is that farmers react quickly to price differences. The drawback is that, at least in the project, the tradition results in (1) an emphasis by many on particular crops for which more or less organized markets exist and not on others that would grow equally well; (2) the occurrence of periodic gluts and hence of low prices, either owing to a phenomenon similar to the famous pig cycle or to market imperfections; (3) greater risks and losses than small farmers can reasonably bear. In June 1965 I saw oranges rotting on the trees in the north-eastern, rather inaccessible part of the project. Such losses may lead to disappointment, discouragement, impoverishment, and eventually to sale of the farm and departure from the project (cf. Galjart, 1965a).

In these circumstances, I believe that most farm-operators (especially those without access to their own organized outlets) would be much better off with (a) an increase in the cultivation of food crops for home consumption; (b) the cultivation of a greater number of crops per farm to reduce the risk inherent in monoculture; and (c) an increase in the area under annual crops, to reduce dependence on income from perennial crops. This does not necessarily imply a reduction in the area under perennial crops because the change could be at the expense of fallow.

It is not the persistence itself of the 'Grand Tradition' in the kinds of crop that are planted that obstructs development, but its persistence under the limitations imposed by the marketing system. In the past only the big proprietors, by organizing their own marketing, were able to prosper despite these limitations.

Chapter 4 already mentioned that the respondents also strive for individual independence from the middlemen, thus emulating the big landowners of the 'Grand Tradition'. Although it is possible that some will succeed in this endeavour, their very success will imply a gradual transition from a system of small family farms to a system of latifundia and minifundia.

Land

Owning much land, a value associated with the 'Grand Tradition' of agriculture in Brazil, was to some extent still a value for the respondents. The concentration which

Table 50. Frequency distribution of farm-owners according to national descent, practice adoption and investment.

Category of owners	Bought tractor only (1)	Bought land only (2)	Bought both land and tractor (3)	Test and level of significance
Non-Japanese	11	18	8	$\chi^2 = 8.32$; $p<0.02$
Japanese	7	1	7	
Non-Japanese of 1st, 2nd and 3rd quartile	6	14	1	combining (1) and (3)
Non-Japanese of highest quartile	5	4	7	$\chi^2 = 4.75$; $p<0.05$
Non-Japanese of 4th quartile	5	4	7	not significant
Japanese of 4th quartile	7	1	5	

occurs in the project leaves no doubt that some people at least are trying to acquire great tracts of land. It is true that those who bought the most land in the project (220, even 300 hectares) did not start as settlers on a ten-hectare farm but came from outside. However, also among those who began with only one farm there are people who now own 40, 60, or even 90 hectares. The settlers are not averse to owning much land. The tendency of high adopters to extend existing operations when offered credit and to rent land but not to lease it, make a further concentration likely.

In the past, the possession of a lot of land had several functions. One was that production could be raised easily by increasing the amount of land under cultivation instead of adopting productivity-raising practices. It appears that many of the Brazilian respondents are still inclined to buy more land before they invest in such methods. Table 50 contains the frequency distribution of farm-owners who had acquired more land, a tractor, or both. In terms of cash outlay, a tractor is roughly comparable to a ten-hectare farm in the project. The two top rows of the table show that, whereas the Japanese have tended to buy a tractor first and then land, the Brazilian farm-owners gave higher priority to buying more land. The third and fourth row, however, indicate that this preference is found among the less innovative Brazilian farm-owners rather than among the owners who were high adopters. This is in line with the lack of significant difference between the Japanese and the Brazilians in the highest adoption-score quartile. Innovativeness seems to coincide with a change in value in that land is no longer preferred over a tractor.

Table 50 shows that in the lower quartiles the purchase of more land was more common than the adoption of a tractor. Traditionally, an abundance of land often replaced the use of soil protecting or improving practices. Since the need for erosion control was small in the project and the difficulties involved in estimating, on each farm, the need for additional drainage works would have been considerable, no questions about these two practices were included in the schedule. That leaves the use of manure, lime and fertilizer as indicators of how far the respondents tried to maintain and improve the fertility of their land. Table 51 shows the frequency with which these practices were used by various categories of respondents who scored in the highest

Table 51. Use of manure, fertilizer and lime by highest-quartile respondents.

Category	Used manure		Used fertilizer		Used lime		*N*
	yes	no	yes	no	yes	no	
Brazilians, operators[1] of 1 farm	13	5	6	12	6	12	18
Brazilians, owners of more than 1 farm	9	2	2	9	4	7	11
Japanese	11	3	12	2	10	4	14

[1] Owners and non-owners.

Table 52. Adoption of sown pasture by various categories of farm-owners who had pasture, in percentages (Japanese excluded).

Quartiles	Respondent owned	Wild grass (1)	Partly sown (2)	Wholly sown (3)	*N*
1st, 2nd and 3rd	1 farm	77	10	12	67
	> 1 farm	80	10	10	10
4th	1 farm	82	9	9	11
	> 1 farm	44	33	22	9
Total		75	12	12	97

quartile. Although in use of lime and fertilizer, Brazilian high adopters differed significantly from their Japanese colleagues (see chapter 5), the two Brazilian categories did not differ among themselves. The possession of more land does not appear to be any longer a substitute for the use of these three innovations.

Table 52 provides some further data on this issue. It shows the adoption of sown pasture by Brazilian farm-owners. Its adoption was not associated with practice adoption in general; the percentage of those who had their pasture partly or wholly sown was 20 in the lowest quartile, 37 in the second, 14 in the third and 35 in the highest quartile. The only category of respondents that seemed to do a bit better in this respect was the owner of more than one farm who scored in the highest quartile. The difference between him and all others was significant at the 5% level[143]. In the lower quartiles, the possession of more than one farm did not affect the adoption of sown pasture at all.

The literature indicates that in Brazil, unlike some non-Mediterranean culture areas, rural tradition was marked by a lack of attachment to the land. One indication of attachment can be that people are unwilling to leave the farm. Chapter 5 showed a slight positive association between practice adoption and the employment of older sons on the farm for non-Japanese respondents ($\tau_c = 0.15$, significant at the 10% level). If the employment of older sons may be interpreted as an indication of their attachment the finding suggests that it was not among the sons of the low adopters that such attachment was found. Farming seemed to be accepted mainly when it

provided the farmer with a reasonable income. In line with this tentative inference, it was found that among the fathers of absent older sons (i.e. sons who did not work on their fathers' farm or on another farm in the project), those who scored in the highest quartile had more often sons who farmed elsewhere (43% against 20% of all other non-Japanese fathers) and less often sons who worked outside agriculture. This difference, however, was not significant at the 5% level. It was also found that those Brazilian respondents who would accept a job in industry or commerce at the (then prevailing) legal minimum wage, generally scored in a lower adoption-score quartile than those who would not accept such a job (Mann Whitney U; $p < 0.001$). For one thing, the former were also much less likely to own the land on which they farmed than the latter ($\chi^2 = 3.93$; $p < 0.05$). Finally, it may be recalled that in the section Santa Cruz (but not in the section Piranema) there was a significant association between length of residence in the project and practice adoption. In Santa Cruz, at least, the more innovative farmers have stayed longer in the project. That this association exists at all is meaningful, because it is mitigated by the fact that the high adopters are more likely to have an urban background and slightly less likely to have been the first concessionaires to their farm.

To recapitulate, it was found that the respondents in the three lower adoption-score quartiles still tended to adhere to some traditional values placed on land, whereas those in the highest quartile seemed to be more free from these values. We may ask how far the existing attitudes and values for land are inimical to agricultural development. Chapter 5 provided a significant association between area owned and practice adoption. Table 50 suggests that this significance may be mostly due to the highest quartile: 42% of all non-Japanese farm-owners who owned more than one farm scored in that quartile. The example of the Japanese and Brazilian high adopters indicates that it is advantageous to modernize and mechanize before buying more land. To the extent that the tendency in the lower quartiles to buy land before buying a tractor is due to adherence to the value traditionally placed on much land, this value is inimical to agricultural development.

Ten hectares are, of course, not much land for a modernizing farmer, unless he cultivates it very intensively, a thing the Brazilian respondents seldom do. One cannot therefore seriously object to an increase in farm size to, say, thirty or forty hectares. However, farms of a hundred or even three hundred hectares, specializing in cattle-raising, run counter to the original aims of the settlement project, dislodge people and entail a loss of employment opportunities. It is true that the biggest of these cattle estates are found in the least accessible parts of the Piranema section, where prices of land have been lowest and agriculture, perhaps, more difficult and less remunerative than elsewhere in the project. In places, that is, where the original settlers have become discouraged more rapidly and have been more inclined to sell. Yet, some other 'estates in the making' consist of discontiguous 10-hectare plots spread all over a section.

It is certain that the present concentration will continue. I do not know how fast; rather, I do not know for certain whether the high adopters and others like them have

a definite maximum farm size in mind when they buy land, nor what that size is. The two biggest owners in the latifundium part of Piranema were not interviewed, but I do not doubt that they would have scored in the highest quartile, if they had been. Two 'smaller' big proprietors with land in the same area were interviewed and did score in that quartile. This means that scoring in the highest quartile is not of itself a guarantee that a man will stop acquiring land when his farm is reasonably large. If there are many farmers who are thinking in terms of a hundred hectares or more, the danger exists that in another twenty years the project will have ceased to be a system of family farms, and a reversal will have occurred to the traditional tenure pattern of a few big, possibly even innovative proprietors[144] and a mass of dependent workers. Whether one wants this to happen or not depends on a value judgement. The least one can say, however, is that it is neither practical nor cheap to begin with 800 farms of 10 hectares each if it is agreed to end up with 30-odd farms of 300 hectares.

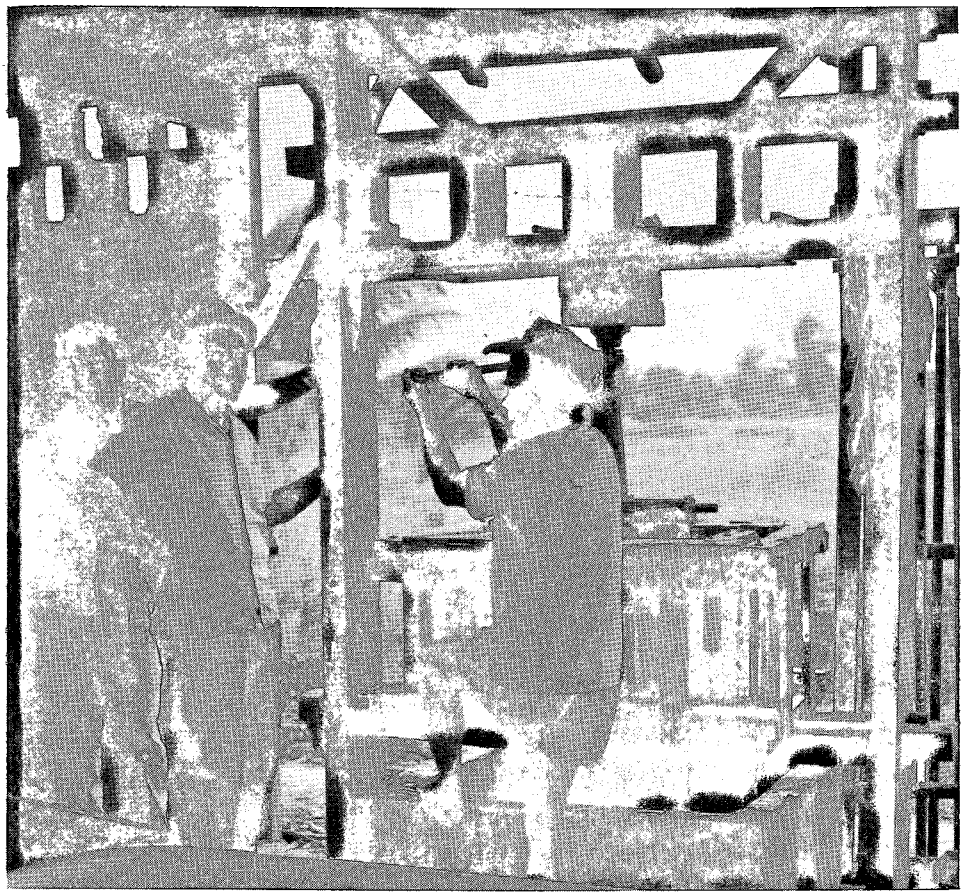
Labour

The next values to be considered are those towards work and the employment of labour. Traditionally manual work, and thus most agricultural work, was held in low esteem in Brazil. I did not, however, measure the degree to which the respondents disliked work, nor whether they worked hard themselves. The conviction that the traditional dislike has persisted stems especially from qualitative information obtained during informal interviews or by observation. All the same, some quantitative data can be used to support the argument.

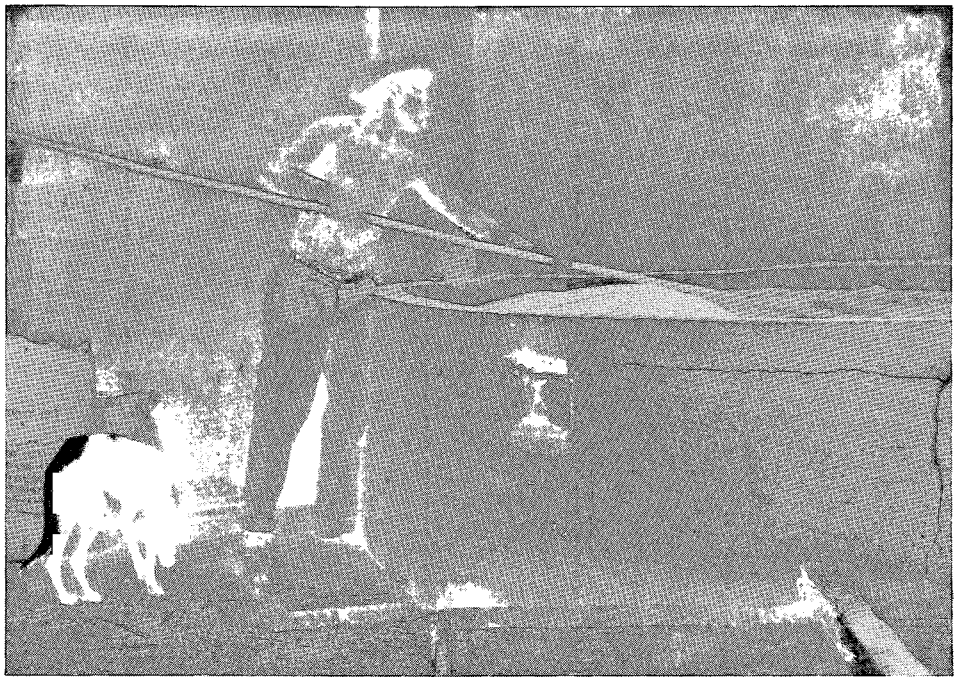
If the respondents really hold work in low esteem, one would expect to find that they avoid it, as far as possible, themselves. This could happen in two ways, by reducing the amount of labour that is needed on the farm, and by employing others to do the work. A reduction in the amount of labour needed could be achieved in a variety of ways. Firstly, by planting labour-extensive perennial crops, or keeping cattle, instead of planting labour-intensive annual crops. Chapter 5 has shown that significant differences exist in cropping between the highest-quartile Japanese and the highest quartile Brazilians, but not between the Brazilians themselves. If anything, the high-adopters planted more perennial crops than the low adopters. Now the Japanese farm-operators did not only work harder themselves than their Brazilian peers (as could be observed) but they also employed more outside labour. To neutralize the variables ownership and innovativeness, in table 53 the Japanese and Brazilian farm-

Table 53. Employment of outside labour by Brazilian and Japanese highest-quartile owners, in percentages.

	Employed labour	Did not employ labour	*N*	
Brazilian	64	36	28	Fisher exact probability test: $p = 0.048$
Japanese	93	7	14	



The press of a primitive cassava flour mill



The cassava flour is dried and slightly roasted on top of an oven

owners who scored in the highest quartile are compared for employment of outside labour. As the former had not more often more land than the latter, the significant difference between the two categories is most probably due to the crops they grow and not to the size of their farms.

Some informants indeed said that they kept cattle because labour had become so expensive that farming could not pay for it any longer; if necessary, one man could look after a thousand head of cattle. But as farm-workers were equally averse to work and took employment only of necessity, the complaint was often heard among dairy farmers that it was difficult to find a conscientious and careful labourer. To counteract this disinterest, the Japanese settlers in Piranema usually paid wage-earners 15 or 20% more than the Brazilians in the neighbourhood were paying.

Despite the fact that some labourers only earned a quarter of the legal minimum wage and the right to plant something in a corner of the farm, the settlers generally complained that labour was expensive and difficult to get. Two Brazilian farmers said that they were averse to some alternative way of using their land because it would give too much work. Such honesty was more common when the speaker was referring to others than to himself. Then he rather often accused a person of laziness, lack of initiative, or a similar fault. A second way of reducing the amount of labour needed on the farm was to leave land fallow unnecessarily, for instance because "no tractor was available" and the settler regarded plowing with animals as too much work. There is no doubt at all that this happened. More farm-operators in our project did not plow than plowed with animals, although interest in this method of soil preparation seemed on the increase. Such inactivity was not new. The many allusions to partly or entirely uncultivated farms in the annual reports of the Administration show this.

Thirdly, labour needs could be reduced by not carrying out certain tasks. The weeding of the orange orchards is an example. I doubt whether leaving the trees standing in tall grass really reduces the risk of fumagina. Rather it seems merely a justification for not doing something that is not absolutely necessary. Of the Brazilian respondents who grew oranges not exclusively for home consumption 7% had not weeded their orange orchard in 1963, 25% had not pruned in that year[145]. In both cases these percentages were highest in the lowest quartile and decrease through the quartiles. These practices, however, can hardly be considered as innovations. They are often carried out by hired labour. The findings suggest that in the lower quartiles it is a bit more common to leave a certain task undone than in the higher quartiles.

A very curious way of not doing something was 'the sharecropper's coup'. This coup consisted of the sharecropper deliberately seeking a row with the owner of the land and being dismissed, at a time that the crop was growing nicely but harvest still a long way off. The case was then taken to the project Administration for mediation and the owner was forced to pay his sharecropper half the value of the growing crop. Of course, not all such rows have been deliberate, but some undoubtedly had been. The fact alone that a (Brazilian) informant, himself a sharecropper, interpreted some rows in this manner, is suggestive.

A fourth way to reduce labour needs is by leasing part of one's land. Chapter 5 men-

tioned a strong association between practice adoption and the lease and rent of land. In fact, when only the Brazilian farm-operators are considered, it turns out that the three lowest quartiles do not differ significantly from each other, the frequency of lease being higher in the first and third, lower in the second quartile. But the highest quartile differs significantly from the other three (Fisher exact probability test, $p = 0.007$) in that it only rented but did not lease land. It appears, then, that the high adopters rented land from the low adopters. The findings are interpretable, however, not only in terms of reluctance to work on the part of the lower quartiles, but also in terms of their lack of resources.

Work can be avoided by employing others to do it as well as by reducing the need for it. One source of labour consists of the farm-operator's children. In chapter 5 it was found that, whereas the association between practice adoption and employing sons younger than 18 was negative but not significant ($\tau_c = -0.13$), that between practice adoption and the employment of sons older than 18 was positive and, though weak, significant at the 10% level. It could be that there is a tendency for the lower quartiles to 'exploit' their younger sons, a source of labour for which no extra cash costs have to be made. When these sons are old enough to break away from paternal influence, they often do, and the pattern of employment is reversed. A number of informants actually stated that the sons left because they thought that they were not earning enough. Only one father paid his older son a wage; 24% of the Brazilian farm-operators ($N = 55$) said that they gave their son a part of the production. Again, this percentage was lowest (8%) in the lowest quartile ($N = 14$), highest (45%) in the highest ($N = 11$). The other farm-operators provided their older sons who worked on the farm with board and lodging and gave them some pocket-money. In a few cases a son actually rented a piece of land from his father and farmed on his own.

The wives of the farm-operators rarely work on the land. One of the differences between Brazilian and Japanese settlers, some informants remarked, was precisely that the wives of the latter much more often helped on the land.

A second source of labour consists, of course, of hirelings. Chapter 5 showed that employing sharecroppers was not associated with either practice adoption or farm

Table 54. Mean socio-economic status scores of employer categories of Brazilian owners of one farm.

	Respondents employ				All employers	Total
	share-cropper	wage-earner	both	neither		
Lowest quartile	4.2	3.7	3.0	4.2	3.8	4.0
Second quartile	7.2	7.0	3.5	6.1	6.5	6.3
Third quartile	6.4	5.9	9.0	6.9	6.4	6.6
Highest quartile	9.5	8.6	–	8.7	8.8	8.8
Total	6.3	6.4	5.2	6.1	6.2	6.2

size, employing paid workers was. Farm size and to some extent practice adoption affect the employment of outside labour. To find out whether wealth also did, I have compared the combined socio-economic status scores of those who employed outside labour and those who did not, among the non-Japanese owners of a single 10-hectare farm. Table 54 shows the mean scores per quartile of various categories of employers. In general no category of employers had mean scores consistently higher than that of those who did not employ outside labour. Table 55 shows the frequency of employment of such labour, by quartile and socio-economic status category. Neither in any particular quartile nor in general is high status significantly associated with employment; not even in the highest quartile. Unless they are more innovative at the same time, the more prosperous farm-owners do not more often employ outside labour than the less prosperous owners.

Disregarding the possibility that the status scale does not measure wealth (a possibility that in view of its earlier behaviour seems remote) this finding can be interpreted in two ways. Either the low status farm-owners unexpectedly often employ hired labour, or the high-status farm-owners less often employ workers than could be expected. It is possible that other variables, such as differences in crop pattern, intensiveness of land use, and employment of sons or relatives on the farm, completely mask the association between socio-economic status and the employment of outside labour, but I believe it is unlikely. I was so often told that the settlers could not do certain things (cultivate tomatoes, adopt innovations, continue farming) because they were poor, that I had expected to find that they could not employ workers for the same reason. The complaints about the expensiveness of labour induce the same expectation. The scores in table 54, however, suggest that these complaints did not mean: "labour is so expensive that I cannot employ it", but: "labour is damned expensive but I have no choice". I am inclined to believe that the figures mean that low-status farm-owners unexpectedly often employed outside labour. After all, fully 50% of the owners of one

Table 55. Frequency of employment of outside labour by Brazilian owners of one farm, by socio-economic status and by adoption-score quartile.

		Socio-economic status (combined scores)		
		0–4	5–7	8–11
Lowest quartile	employers	8	4	2
	others	9	3	2
Second quartile	employers	3	4	5
	others	5	6	5
Third quartile	employers	4	6	7
	others	2	3	7
Highest quartile	employers	0	2	9
	others	0	2	4
Total	employers	15	16	23
	others	16	14	18

farm in the lowest quartile employed hired labour (table 40). This is certainly a high figure, but it is a matter of conjecture whether it is 'too high' or higher than it would be if they themselves also worked hard. A standard of comparison for employment is lacking. The CIDA report (1966) classified Brazilian farms into minifundia, family farms, multi-family farms and latifundia. The size ranges of the classes, however, differ greatly according to whether this classification was based on the 1960 Census data or on field estimates of the land needs of one family[146]. For Itaguaí, one of the municipalities studied, minifundia, i.e. farms considered to be too small for one family, range from 0 to 1 hectare, when Census data are used. But when field observations are used, minifundia range from 1 to 10 hectares, family farms from 10 to 20 hectares (CIDA, 1966, p. 126 and table 36). If these field estimates can be regarded as essentially correct, it follows that 10-hectare farms (whose owners have been considered here) are minifundia and do not even provide employment for one family. The needed standard of comparison has then been found; it implies that our respondents definitely employed too much outside labour; in fact, they should not employ any. If the Census data are normative, however, the report says that farms in the 1 to 20 hectare range do employ, on the average, between 2.7 and 3.8 workers. They still fall in the CIDA category of one-family farms, but if we regard as workers only those who actually work (i.e. do not assume that the farmer's wife is a worker) then the employment of outside labour by the Santa Cruz respondents does not seem excessive. But in this case the standard of comparison was the practice in the municipality of Itaguaí; the respondents have been compared with themselves[147]. Although it weakens my argument, I believe that the CIDA field estimates do not differentiate sufficiently between the amount of land which a family in theory could cultivate and the amount of land it does cultivate when it is not forced to work as hard as possible.

Although it has not been possible to prove beyond doubt that the respondents employed outside workers or otherwise obtained income from their land without working it, partly because they hold manual work in low esteem, the evidence about the allocation of labour certainly does not contradict this hypothesis. If the more innovative or greater farmers employed more hired labour, slightly fewer younger sons, slightly more older sons, and rented more land, this does not imply that their attitude to manual work had changed, that they worked more themselves. They had less need to work. They could better afford to have others work for them and to mechanize. It is the small farmer who is the 'victim' of the traditional value. If he is to progress by his own efforts, he has to work hard and sustainedly and to cultivate intensively the small amount of land he possesses. Above all, he must be motivated to work and reject the idea that agricultural toil is degrading.

Capital

A last value which should be considered is that regarding the allocation of capital. Traditionally, capital was employed in transport and processing rather then in pro-

Table 56. Frequency of owning a truck, a tractor or both by various categories of respondents.

	Had truck (1)	Had tractor (2)	Had both (3)	Test and level of significance
Brazilians, all quartiles	18	10	10	$\chi^2 = 10.61$; d.f. = 2;
Japanese, all quartiles	1	4	11	$p < 0.01$
Brazilians, 4th quartile	5	5	7	Fisher exact probability
Japanese, 4th quartile	0	4	8	test; $p = 0.0521$; (2) and (3) combined.
Brazilians, quartiles 1–3	13	5	3	$\chi^2 = 2.78$; $p < 0.10$; (2)
Brazilians, 4th quartile	5	5	7	and (3) combined.

duction. Are there indications that this pattern still persists? Table 56 shows the frequency with which several categories of respondents had invested capital in respectively a truck, a tractor or both. The differences in the frequency distribution between the Japanese and Brazilian farm-operators are highly significant. The Brazilians tend to buy only a truck, or at least first a truck, before considering a tractor. This difference is not due to the fact that the Japanese score predominantly in the highest quartile; if the highest-quartile Japanese are compared with the highest-quartile Brazilians, it turns out that the probability that the actual or a more extreme frequency distribution is due to chance is still only between 5 and 6%. The Japanese really seem more likely to buy a tractor first. All the same, the highest-quartile Brazilians also seem to differ from the other Brazilian farm-operators, although the difference is significant only at the 10% level. The Brazilian high adopters seem to be intermediate between the fourth-quartile Japanese and the other Brazilian respondents.

The reader will recall the strikingly similar data in table 50 about investment in a tractor or in more land. Together, these results suggest that the less innovative farm-operators are still inclined to follow the traditional pattern of investing in more land and in transport instead of (or before) investing in production. If innovativeness rises, this disposition tends to disappear gradually and may even be replaced by a contrary disposition.

However, the difference between the Japanese and Brazilian fourth-quartile respondents in the investment of capital in trucks rather than in tractors, and in the adoption of productivity-raising innovations such as fertilizers, lime and pesticides (tables 45 and 46) seems to indicate that, although the likeness between the two categories may be increasing, the Brazilians are still influenced by traditional attitudes. The differences are not apparently due to a greater prosperity of the Japanese fourth-quartile respondents; their mean socio-economic status score is in fact a bit lower than that of the Brazilian high adopters, 8.7 against 9.1.

Without a detailed economic analysis of costs and returns it is impossible to prove that heavy investments on small farms 'pay'. It has been assumed here that they do pay, simply because the informants appeared to be cost-conscious enough not to go in for unremunerative investments and also because those respondents who had in-

vested most capital per hectare, the Japanese, obviously were among the most prosperous farmers. Nevertheless, it was sometimes said that the pedigree bull of a particular farmer, or the new stable of another, or the new coconut-palm plantation of a third, were a matter of 'vaidade', vanity, rather than a paying proposition. These judgements sounded very much like a defense of the traditional pattern of capital allocation, but I am unable to say whether they have any truth.

Chapter 4 showed that some innovations were adopted selectively because people expected immediate benefits with one crop but not with another. Selective adoption was particularly notable in the use of pesticides and the vaccination of animals. Capital was employed in production if cash returns were expected, or if cash losses through failure to adopt could be considerable. This behaviour, too, may be not dissimilar from the traditional attitude. Instances already mentioned of cane-growers who planted other varieties (Andrade, 1963) and of coffee-growers who reinvested in new plantations (Dean, 1966) come to mind. If the failure to adopt did not entail cash losses, capital was less likely to be employed in cultivation. For maize, not an important cash crop in the project, an unusual cash outlay like the purchase of hybrid seed was resisted, as was shown in chapter 4. Only 14% of the maize growers did plant a hybrid variety, despite a campaign to introduce hybrid maize some years before.

The drawbacks of the traditional attitude towards capital allocation are partly obvious, partly not. It is obvious that on small farms only high capital investments can lead to an increase in production and income, and that the insistence on short-term returns may entail the rejection of innovations whose returns are spread over many years. The traditional use of capital for land and transport, rather than in innovations may limit the total effect of investment. This is certainly true for the national economy. But it may also be true for private welfare. If a farmer does not profit so much from an increase in production because the middleman will offer lower prices at the farm, it is only good sense that he will try to become independent of middlemen. But if he invests in transport without really having much to sell himself, or (and this has occurred in the project) subsequently stops producing much himself, the only result will be that a new middleman has appeared. Investments in land and transport thus may lead to the perpetuation of a pattern. Once he has bought his truck, our not so hypothetical farmer will become less interested in a radical reorganization of the market; when he becomes a middleman himself, a continuation of the status quo will be in his favour. Certainly the advent of a well organized cooperative will make his truck less necessary and hence reduce its profitableness.

8 Summary and suggestions

The aims of the study

Originally the intention of the investigation was simple: to find out what important pertinent differences could be distinguished between successful and unsuccessful settlers in a land-settlement area. For various reasons the Santa Cruz project near the city of Rio de Janeiro was chosen as site for the study. One part of this project (the Santa Cruz *section*) had been settled in the 1930's, the other part (the section Piranema) in the 1940's. All farm-operators had begun on an equal footing, with a farm of 10 hectares. What differences had come into existence since? Given the small size of their farms, the success of the farm-operators seemed to depend on the degree to which they had adopted technical innovations; indeed, in the beginning I intended to regard their adoption score as an indication of their sucees. It was the literature on diffusion and adoption of innovations that suggested which differences between high and low adopters might be most meaningful.

During the first reconnaissance, however, I found that the adoption of innovations might not be the only relevant, or even the most relevant, aspect of behaviour that determined agricultural development in the project. Traditional values and attitudes seemed to be at least as important as adoption. Unfortunately, the planned survey by questionnaire had to be carried out at an early stage and the schedule could, for that reason, contain only a limited number of questions on these values and attitudes. But much information on traditional culture could be gathered by anthropological methods after the survey had been completed. During this second stage of the investigation attention was focused on traditional values and dispositions relating to cooperation and agricultural production which were still adhered to in the project and which seemed to be inimical to its development as a system of family farms.

Implicitly I have assumed that a project like that of Santa Cruz, consisting of small family farms, did not represent a form of agricultural organization that is, in Brazil, under all circumstances incompatible with development. It may be that there are other organizational forms which, considering the ethos of the rural populace, are better suited to further development. But it can hardly be suggested that the family farm is an economic impossibility.

Once I had observed that there existed other obstacles to development than the use of traditional agricultural techniques, I had to stop using the terms 'modern' and 'traditional' which I had until then employed to distinguish between the high and the low adopters. There was no telling, beforehand, whether the adoption of technical innovations by a Santa Cruz farmer would go together with a value and attitude change

in other respects. The concepts 'modern' and 'traditional' implied much more than merely the adoption or rejection of innovations; their contents, so far as they could be gleaned from the (non-Brazilian) literature, mostly seemed inapplicable to the situation in the project. Yet the terms did not imply those value and attitude changes that, in the project, seemed to be indispensible for further agricultural development.

The results

The results of the study are presented in chapters 4 to 7. Chapter 4 contains a description, based on quantitative material, of the important aspects of agriculture in the project such as crops, animal husbandry, technical level, land tenure, marketing and professional and informal relationships of the farm-operators.

The settlers had a marked preference for cash crops over crops grown for home consumption, and were not averse to changing the cropping pattern, replacing one crop by another, if the price was more remunerative. Having cattle was associated with farm size, the dependent variable being farm size. Independence of middlemen was valued enough to have caused the purchase of a sizable number of trucks. Some innovations were adopted selectively, that is, used for one crop but not for another. The criterion appeared to be the importance of the crop as a source of cash income, and hence also the magnitude of the financial loss that the non-adoption of the innovation could entail. Innovations were also discontinued: used for some time and then dropped.

Chapter 5 deals with some differences between high and low adopters of agricultural innovations. Practice adoption was found to be positively and significantly associated with the following variables: socio-economic status, income, area owned, education, literacy, former urban residence, urban visiting, contact with extension officers and with other personal sources of extension and advice, membership of cooperatives, and education of older children. The use of partial associations, controlling for status, suggested that education, literacy, former urban residence and urban visiting were partly consequences of high status and only significantly associated with practice adoption in the highest (or higher) status categories. Owing to the difficulty involved in 'dating' socio-economic status as compared with education, former urban residence and urban visiting, the associations between practice adoption and these variables may be spurious. Yet the consistency with which practice adoption was associated with these variables only in the highest status categories, seems to warrant the conclusion that education and familiarity with urban ways of life and ideas do only foster practice adoption if the farmer has the means to adopt an innovation, the insight necessary to assess its usefulness and the wish to remain on his farm.

Practice adoption was differently associated in the two sections of the project with having professional relations. In Santa Cruz, by far the oldest of the two sections, practice adoption was associated with visiting a farm, with asking for advice when the farmer met with a difficulty on his farm, and with having been asked for advice. In Piranema, the section which was settled much later, only the last association existed.

In neither section was practice adoption associated with having non-professional relationships. In Piranema the number of choices per chooser, for professional and for non-professional relationships, tended to be higher the higher the adoption-score quartile. In Santa Cruz, the specificity of professional relationships, i.e. the degree to which a respondent reported having only one sort of relationship with another person, was strongly and significantly associated with practice adoption. The innovative farm-operators in that section seemed to choose, much more than in Piranema, with whom they would have a certain relationship. In line with this, in Santa Cruz the percentage of choices falling on neighbours decreased when the adoption score of the chooser increased.

Remarkably, practice adoption proved not to be associated with the education of children of school age. The employment of sharecroppers likewise was not associated with practice adoption, but the employment of wage-earners was.

The last section of chapter 5 showed that the Japanese farm-operators not only differed significantly in adoption score from their Brazilian colleagues, but also in how they operated their farm.

Chapter 6 opens with a description of a cluster of traditional rural values and attitudes which I have called the patronic syndrome. This syndrome consists of three elements: the belief that one's own efforts to improve one's condition will be ineffective unless assisted by superior (or supernatural) powers; the disposition to seek to establish patronage relations with people with whom one is not related by kinship or friendship; and the absence of feelings of solidarity towards people with whom one is not related by kinship, friendship or patronage. The existence of this syndrome in traditional rural Brazil is possibly a result of historical circumstances. I have tried to indicate its functions. In the project, however, it is its dysfunction that appears to carry most weight: the fact that it hampers the establishment of cooperative action. An analysis of some case histories and incidents related with cooperation leads to the conclusion that the patronic syndrome is still operative in the project of Santa Cruz and that it is dysfunctional in the sense described above. Some suggestions are given as to how the syndrome can be not so much overcome as used: the institutionalization of patronage is recommended. In practice this means that the government agency which administers a particular project should be accorded the role of patron.

Chapter 7 deals with how traditional values and attitudes towards agricultural production (land use and resource allocation) still influence matters in the project of Santa Cruz. Like the preceding chapter, it starts with a description of this value pattern (which I have called the 'Grand Tradition' of agriculture), such as it has been found to exist in the past in Brazil. The pattern is shown to have been intimately associated with certain historical developments in Brazilian agriculture, and its functional aspects are stressed. The few relevant quantitative data which were available and the qualitative information from interviews and observation were used to assess how much the 'Grand Tradition' is still adhered to in the project. Somewhat surprisingly, rather consistent indications were found that the high adopters among our respondents are freer than others from at least some of the values and attitudes involved. This was

true of the attitude to land as a substitute for capital investment (not of the attitude to land as a good thing on its own) and of the attitude towards the allocation of capital. The high adopters seem to realize, or are coming to realize, the necessity of using capital if agriculture is to become more remunerative. In the choice of crops and the partaking in farm work they probably hold the same values as the low adopters. The consistent differences between the Japanese and Brazilians in the highest adoption-score quartile show that the Brazilians are only approaching the Japanese but have not overtaken them as yet. Perhaps they will never consider intensive vegetable growing as practised by the Japanese as an ideal to be imitated. The Brazilian low adopters seem still to adhere to values and attitudes of 'the Grand Tradition'. They tend to plant cash crops, to buy more land before they mechanize or otherwise invest in capital goods, to 'exploit' their children a bit and hence to contribute to the children's subsequent departure, to employ much outside labour and to be, in general, somewhat work-shy themselves. Since the 'Grand Tradition' has been made by big proprietors, to adhere to it is much more dysfunctional for smallholders than for larger and more prosperous farmers.

Even though the high adopters may have undergone a change in value away from the low adopters, it is far from certain that this change is due to the project, that is, to the fact that the tenure structure was drastically altered in a certain area. The Brazilian farm-owners who scored in the highest quartile seem to differ from those in the other three quartiles combined in that they are less often the first concessionnaire of their farm. The occurrence of high adopters thus may partly be due to the fact that they have bought a farm in the project later instead of obtaining one when it was settled. The project will have meant an opportunity to progress for some settlers. Other high adopters probably did not need the project; they could have settled elsewhere. For the great majority of the settlers the project has made little difference; they have remained at a low level of living and agricultural development. Part of the reason for this stagnation lies, as asserted, in the persistence of traditional value patterns in farming and social relations.

Suggestions for further research

Having been in part exploratory, this study has failed to provide definite answers to some pertinent questions. Sometimes I could not prove with quantitative data the existence of a relation between certain variables; elsewhere the data gave only a first indication that an association suggested here may indeed exist. Even if their existence had been proved, they would give rise to new problems. Further research seems necessary on the following subjects and problems.

1. The quantitative measurement of the various aspects of the patronic syndrome (preferably not by means of attitude questions) and the associations between these aspects.
2. The relation between the patronic syndrome and various individual and group

variables, such as farm innovativeness, gregariousness, socio-economic status, prestige, education, political preferences, anomie, group cohesiveness, efficiency of goal oriented associations, efficiency and extent of cooperation, etc.
3. The relationship between sensitivity to public opinion and the strength of the patronic syndrome. If there is a negative association, the next question must be how this sensitivity can be increased.
4. Research into the personality structure and the sociological attributes of the exemplary leaders who manage (or have managed) to overcome the dysfunctions of the patronic syndrome, and into the conditions which give rise to such leaders.
5. The views on farming (e.g. goals and ideals for farm size, cropping patterns, farm work, employment and treatment of labour, investments) of innovative farmers. If these views are still 'traditional', the implication is that the adoption of new farming methods covers only a minor part of the problem of agricultural development. The question then arises how these views can be changed.

The rather consistent differences between the section Piranema and the section Santa Cruz suggest that these studies should be undertaken in localities which vary in infrastructural and institutional development.

Some suggestions about future settlement projects

The findings of the study carry implications for the organization and management of future land-settlement projects. It is not my intention here to describe in detail what should be done and what omitted in such a project. I only want to draw attention to a number of acts or omissions of the administering agency which in Santa Cruz had grave consequences, and may have had elsewhere. I also want to present, for further consideration, some suggestions on the organization of similar projects in the future.

Although it will be assumed in subsequent paragraphs that future land-settlement projects will be carried out more or less along the lines followed in Santa Cruz, it may first be asked whether that is really the most suitable organization. The study has proved that poor peasants are unlikely to build up a modern, efficient and profitable family farm from scratch. Nevertheless, ideally this is the aim of a settlement project: to provide the poorest with the means of progress. With some technical and material assistance, they are expected to do well. In Santa Cruz, this first contradiction between aim and reality has led to further contradictions. Not having any reserves, or rapidly exhausting any he had, a poor settler had to look for work outside his farm when some misfortune befell him. The administration permitted this and even created jobs to help such people out. But once a settler works full-time on another farm or in another occupation, he cannot dedicate much attention to his own land. He seldom manages to return to farming his own land. In the end he often sells his farm and leaves the project. The conclusion must be that the poor are often too poor to start farming on their own and make a success of it. If they are to be helped (and they should be) perhaps it is better to provide them for the first five years or so only with employment. For instance, by running part of the project, or the entire project,

as a plantation managed by the State Agency for Land-Settlement, and employing the poorest settlers-to-be as labourers. Having proved their competence, after these five years they can be provided with farms of their own, which could be carved out of the plantation itself. Such a system would have several advantages.

1. There is time to do some field experiments with crops, fertilizers and pesticides.
2. As wages are guaranteed, the risks attendant on bad drainage, pests, imperfections of the market, bad harvests in general, and illness of the settler (who is insured) are carried by the administering agency, not the settler.
3. The market can be organized centrally and on a sufficiently large scale.
4. The settlers-to-be can be thoroughly trained in the cultivation of the crops that are most suited to the soil. Extension can be much more thorough than if each farmer has to be approached individually.
5. The settler-to-be does not receive a benefit which he can sell immediately to the highest bidder. He has to prove his conduct for several years. Potential speculators will hardly be attracted by a coup that can be brought off only in five years.

It need hardly be said that such an organization[148] will be unsuccessful if the appointment of the managers, or the employment of the workers, become political favours and sinecures.

If it is assumed that future land-settlement projects be similar to the Santa Cruz project, the following remarks can be made on the administering agency.

1. Since it would be extremely difficult to get several different government services to cooperate, the field of action of the administering agency should be comprehensive and embrace, next to agriculture: education, extension, credit, marketing and medical care.
2. The administering agency must be safeguarded against the intervention of politicians or other pressure groups who defend private interests.
3. The administering agency must be able to count on a fixed budget.
4. The staff in the field should be rewarded for being in the field instead of sitting in some metropolitan office. The agronomists on the field staff should be encouraged to visit the settlers often.

On the management and operation of the project the following remarks are in order.

1. All projected works such as roads and drainage canals should be executed. If drainage or accessibility remain poor in some areas they should be improved by the administering agency.
2. Well defined responsibilities over maintenance of roads, ditches, bridges, buildings and machines should be laid down in the regulations governing the administration of the project. Funds should be kept in reserve at all times to meet maintenance and repair costs. Although there will be a temptation to employ such funds 'more productively', a different allocation would be unwise if it results in the inability to defray maintenance and repair costs. It is better that one project succeeds than that two fail.
3. As to technical assistance, the agency should not offer to do in one year what it

cannot also guarantee to do in the next. After one or two years, payment for these services should be gradually introduced. The agency could consider transferring certain services after a number of years to contractors, on whose profit rates a watch could be kept.

4. One of the most important tasks of the agency refers to the reduction of risks. This embraces supervision in maintenance and improvement of drainage ditches and dirt roads, and in enforced pest control activities; the provision of supervised credit, and, if necessary, the organization of marketing.

5. The purchase of fertilizers, seeds, etc. and the marketing of the produce make a cooperative a necessity. The administering agency should assist at the founding of a cooperative and should help to run it for a number of years. It should be authorized to keep a close watch on its operations and to intervene if undesirable developments occur.

6. The agency should be prepared, if need be, to function as patron to the new community when the acquisition of certain community benefits depends on preferential treatment by the authorities, hence on some form of patronage. The agency should furthermore be authorized to prevent a local backsliding into traditional social (and tenure) structure. This does not mean that the local population should not be consulted on the course of action to take, or that decision making powers cannot be gradually transferred to representatives elected by the people. It means that the power to intervene and to put an end to undesirable developments should not be relinquished too soon.

7. The extension service should be prepared to indict traditional values and attitudes, in so far as they influence farming and social relations between the settlers, as well as to give technical information. It should be made clear to the settlers what disadvantageous effects values they consider normal may have in terms of the future local tenure situation and social structure.

8. The purchase and sale of farms must be permitted and regulated. It is an illusion to think that turnover can be prevented. There will always be unsuccessful farmers willing to make a good deal of money on a benefit they received, and richer farmers willing to pay for land which they are less likely to receive on the same terms as the original settler. The agency should, for instance, function as an unpaid broker, whose task it is to record all sales of farms. Unrecorded sales can be declared illegal and result in the buyer being evicted from the farm.That way the maximum farm size can be controlled much better.

9. The agency should institute a recurring evaluation of its own performance. Evaluative surveys should be carried out regularly and their findings should lead, if necessary, to changes in administrative policy. The participation of sociologists in such evaluations should be considered.

Annex I. The socio-economic status scales: an explanatory note and item-analysis

For the construction of the two socio-economic status scales the starting point was the study of Belcher and Sharp (1952) on a scale to measure the level of living of farm families. Their scale contained 29 items, relating mainly to the construction and furnishing of the house, the possession of a number of appliances, reading and church attendance. For the project, I discarded all items about the last two activities. Reading might in some respects be important as a medium of communication with the outside world but in others it had not yet replaced oral communication or had been bypassed by the radio. In Itaguaí no bookshop existed. Church attendance did not seem to be

Table 57. Item-analyses of the socio-economic status scales.

	Number of adopters	
	lowest quartile $N = 46$	highest quartile $N = 46$
Possessions scale		
has bicycle	17	45
has cart (or in absence of cart, tractor)	4	42
uses cylinder gas for cooking	3	46
has radio	18	46
has sewing machine	12	46
owns lorry or pick-up truck	3	28
Sanitary-installations scale		
has bathroom	2	45
has piped water	1	44
has septic tank	0	46
has concrete-lined well	11	43
has water-filter	4	45
Combined scale		
has bicycle	19	46
has cart (or in absence of cart, tractor)	8	40
uses cylinder gas for cooking	5	45
has radio	17	45
has sewing machine	13	45
owns lorry or pick-up truck	2	26
has bathroom	2	44
has piped water	1	43
has septic tank	1	46
has concrete-lined well	15	39
has water-filter	5	44

a good indicator of socio-economic status either. The various denominations which existed in the project had different norms in this respect and so were not comparable. I felt that political participation, which might have done well as an indicator of status, was too intimate a subject for a survey. The scale used here was therefore restricted to items related to the house, the possession of household appliances and of vehicles. Since some houses had been built by the Administration of the project before the arrival of the settlers, whereas other farmers had had to build their own houses, I doubted whether the construction of the house or the number of rooms were good indicators of socio-economic status. Instead, I preferred to include items about various sanitary installations, relatively cheap ones (water-filter, concrete-lined well) as well as expensive ones. The scale likewise included items about both cheap and expensive household appliances and vehicles. Because some farm-operators did not own their farm, and thus lived in houses which were either not their own or were not thought of as more than temporary abodes, they could be expected to be less inclined than others to improve their houses (see chap. 5; also Fals Borda, 1963, p. 113). Therefore the scale was divided in two parts, one part for movable appliances and possessions and the other for fixed sanitary installations. Whenever in doubt whether the possessions scale behaved in the same way as the sanitary-installations scale, I used both, or the combined scale. All items received a weight of one. As table 57 shows, all items of the separate and the combined scales discriminated between the highest and the lowest quartile. In the highest quartile at least twice as many respondents have any one item as in the lowest quartile.

Annex II. Statistical treatment of the data

To establish a relationship between two (or three) quantitatively measured variables, statistical tests have been used. Most of these (χ^2, Fisher exact probability test, Mann Whitney *U*, Kruskal Wallis one-way analysis of variance, and sign test) are meant to decide whether there *is* some relationship between the variables, that is, what probability there is that an observed difference between categories of respondents is due to sampling error (chance) rather than to a similar difference between the categories in the population. Usually a difference was considered significant when this probability was smaller than 5%. Which one of these tests is used in any particular case depends on the level of measurement of the variables (nominal or ordinal), the number of samples (categories of respondents) involved, and the size of *N* (the total number of respondents included in the calculation).

The other tests used (Yule's *Q* and Kendall's τ, τ_c and *W*) measure the degree of association between variables, i.e. indicate how strong an association is. The measures may vary between 0 (no association) and ± 1 (perfect association). *Q* is a measure of association between dichotomous variables (2×2 table); τ measures the association between two rankorders; *W* the concordance between three or more rankorders; τ_c is a measure of association between two ordinal variables when the data are grouped in a $m \times n$ table. Also for these measures I have examined whether the value actually found was significantly different from zero, that is, what risk I incur when I conclude, on the basis of the sample data, that an association exists between the variables that does not exist in the population.

As levels of significance had to be calculated by longhand, I have generally used formulae which did not contain a correction for ties and therefore were simpler, unless this resulted in a significance level above 5%. If so (given, of course, the presence of ties), I resorted to the formula that contained the correction, so as to arrive at the lowest possible level of significance.

The reader may consult Siegel (1956) for all tests except *Q* and τ_c. These are dealt with by Blalock (1960). The significance test for τ_c is treated by Spitz (1965).

Notes

1. Since November 1963 three of these wooden bridges have been replaced by concrete ones.

2. This city lies in the State of Guanabara, not in the State of Rio de Janeiro.

3. Lands given out by the Portuguese Crown or its deputies to applicants were called sesmarias.

4. Installations for the extraction and refinement of sugar that used animal- or water-power.

5. According to Rugendas (1954, pp. 155–6), these Chinese were brought to Brazil as part of an attempt to introduce the cultivation of tea. They numbered about three hundred. They planted tea in the Botanical Garden of Rio de Janeiro and in Santa Cruz. Today a small hill just outside the project is still called Morro do Chá, Tea Hill.

6. Decreto 19133 of March 11, 1930.

7. Curiously enough, none of the authors I consulted mentions the fact that a Centro Agricola and not a Nucleo Colonial was created, although Decreto 19133 and later also Decreto 21115 of 1932 categorically speak of a Centro Agricola. At one time or another this Centro must have become a Nucleo Colonial, but I have not been able to find the relevant legal text. Furthermore, it seems that the first farms were handed over in 1931 mostly to Central European immigrants (cf. the 1962 report of the Administrator of the project), that is as if a Nucleo Colonial and not a Centro Agricola had been installed. The very difference between the two had to do with the nationality of the settlers; a Nucleo Colonial (regulated by Decree 9801 of November 1911) was primarily meant for the establishment of immigrants, a Centro Agricola (regulated by Decree 9214 of December 1911) was meant to promote the settlement of Brazilian agricultural labourers.

8. It is not clear what 'prepared' exactly meant.

9. The juridical incorporation in the municipality in which the settlement lies.

10. The Decree literally says that some things may or can be done, implying that they were not obligatory. It is obvious that such a lenient text cannot have been very efficient in guaranteeing the complete equipment of land-settlement projects. The text possibly means that the Federal States could include expenditures made according to the benefits which they 'could' distribute. They could then receive reimbursement from the Federal Government for 25% of the costs of settling immigrants.

11. Benfeitorias, literally improvements, ameliorations, can be considered as value added to the land, e.g. crops, trees and buildings.

12. Two of these canals had, in fact, been constructed by the Jesuits in the 17th century. See Alonso, 1960, p. 406.

13. Some cases still ran in 1965.

14. Again the wording of the law was vague: "os fornecimentos poderão ser feitos". However, one would be guilty of ethnocentrism if one were to hold the law responsible for the irregularity of the assistance later rendered to the settlers.

15. In the 1957 report of the Administration it is said that of the 87 km projected roads only 47 were built by that time. Although later some of the missing roads were constructed, there can be no doubt that when the section Piranema was emancipated its network of roads was still incomplete.

16. But in at least one instance the further extension of a drainage canal was successfully opposed by a landowner outside the settlement, who feared that his land would dry out if such a canal ran across it. By the time he repented his opposition it was too late.

17. See Moreira, 1962, although he refers to the nearby land-settlement project of Tinguá; and Geiger, 1956, p. 155–6.

18. Most of these buildings are near the Administrative office in Piranema, but they were originally meant for the whole project. The early emancipation of the section Santa Cruz, and later the destruction of the only bridge between the two sections, has separated them rather drastically. The section Santa Cruz was thus cut off from the services provided by the Administration, but because of its proximity to the Rio de Janeiro suburb called Santa Cruz, and the relative wealth of the government of the Federal District, the section gained rather than lost by the transition.

19. This possibility was not unimportant. In some years the Administration had up to 400 persons on its payroll, most of them settlers or members of their families.

20. During the first years of the project, such a sale always concerned the benfeitorias: the crops, fruit-trees and buildings on a farm. The Civil Code concedes the ownership of such benfeitorias to the person who created them, even if they are on somebody else's land. So, in a certain sense, it clashed with the laws on settlement which prohibited the sale of benfeitorias. For instance, when asked to intervene in a conflict between a settler and a sharecropper who, upon his dismissal, wanted to receive an indemnity for the benfeitorias he had planted, the Administration always had recourse to the Civil Code and decided in favour of the sharecropper. By allowing the settlers to sell the wood they found on their land and to dispose of their produce as they saw fit, the Administration did, in fact, acknowledge their right to their benfeitorias. Maybe for this reason, the right of the buyer to the benfeitorias which he had bought was never, to my knowledge, contested. Rarely the Administration has thought of acquiring, in its turn, the benfeitorias from the buyer, but the lack of ready cash, bureaucratic impediments and countermeasures taken by the buyer made this procedure an exception. Normally the Administration transferred the concession to the farm to the buyer of the benfeitorias.

21. But Corrêa (1964) says that in 1953 only 90 of the 714 farms in the section Piranema were entirely under cultivation; the others were poorly cultivated, uncultivated or abandoned altogether.

22. In the States of São Paulo and Rio Grande do Sul, for instance, where timid beginnings were made with land reform, the governments resorted to land-settlement projects.

23. That other, equally possible, ways of organizing agricultural production are often rejected on ideological rather than economic grounds needs not detain us here.

24. The lack of roads and transport facilities had apparently caused several settlement schemes in the interior of the country to fail; cf. Rios, 1961, p. 205.

25. I soon noticed, however, that my first problem, the differences between innovative and traditional farmers, did not seem to interest them very much. To them it was obvious that the more education, the more income, the more contacts with the outside world a farmer had, the more he would apply modern farming methods. They did not think that adoption would be resisted once certain conditions (a higher income, or government assistance) were met. They were also curiously ambivalent in their opinion about traditional farmers; at times they explained the traditionalism of the settlers by the absence of assistance – "eles não tem condições" –; at times the traditionalists were called "lazy bastards". It took me some time to realize this ambivalence. In the beginning the Administration's lack of enthusiasm for my problem only served to make me wary myself.

26. This phenomenon has also been observed elsewhere, for that matter (cf. Rogers, 1962, p. 93 *et sqq.*).

27. It was at this point that I became conscious of the difficulties involved in the use of the concepts modern and traditional, a question that will be taken up in the next section.

28. See also Rogers, 1962, p. 63 *et seq.*

29. Or a non-Mediterranean one. Redfield (1963) is willing to admit the existence of at most two general types of traditional culture, but it does not seem advisable to keep to a definite number. The question whether originally (whenever that may have been) there did or did not exist one type of traditional peasant culture is also left unanswered. Traditional here is that culture which existed before the industrial revolution.

30. Although the present study was restricted to the project of Santa Cruz, I do believe that many of the findings and inferences will apply also to other areas in Brazil where circumstances are similar. The reader should, however, be warned that I will not prove this claim. At most it will be supported by a converse procedure: cultural traits found to exist in other regions of the country seem to apply to the settlers I studied. Especially where dealing with the culture of the settlers, I was inclined to call them Brazilians, instead of Itaguaí or Santa Cruz farmers. This generalization may be disallowed.

31. The insight that the structural and cultural context deeply affects the relative importance of these norms (and hence also the relative usefulness of research findings on these norms) is growing (cf. Felstehausen, 1967).

32. Basing himself mainly on Indian data, Gusfield (1967) has argued that tradition is both more specific and more ambiguous than is usually realized, and much less incompatible with modernity. However, Gusfield equates modernity with the realization of various goals, thus compounding the difficulties, since modern goals need not be compatible with one another. A breakdown in political modernization, i.e. a shift from a democratic structure to a totalitarian regime, may very well enhance the modernization of the economy, for instance. If one intends to maintain the concept, it is necessary to state beforehand which goal is the truly modern one.

33. This insight is gaining (Hursch, in preparation). However, too little is said of the period necessary to become acquainted with a foreign culture. A year seems to be the minimum.

34. The confusion to which the concept of attitude may lead is demonstrated in Bergsma's (1963) otherwise excellent book. He hypothesized that the attitudes of

respondents would correlate with their overt behaviour; this may be called the 'attitude as a deeper cause' hypothesis.

However, in two cases it turned out that the attitude did not correlate with the corresponding overt behaviour. Instead of accepting this as very interesting, Bergsma blamed the questions, upon which the attitudes were established. In a sense, this was logical. If a result is present, the cause should be present. However, even though 'better' questions would have resulted in significant correlations, nothing would have been proved that had not been brought in beforehand, to wit, the significance of the correlation. That is, only the significant correlation tells whether the question has been 'good' or 'bad'.

In the absence of proofs, however, one cannot speak of an attitude as if it caused something. And proofs are lacking because it is impossible to establish an attitude otherwise than through the observation of its "results", the overt behaviour. To posit attitude as a deeper cause is a category mistake, according to Hutchinson (1956). (cf. De Fleur and Westie (1964) who also reject what they call the latent process definition of the concept of attitude).

35. This does not necessarily mean that the respondent will tell lies. Sometimes mutually incompatible values seem to exist (Moog, 1954, p. 333 *et seq.*). In other cases the respondent will have recourse to 'codigo', language in which the literal meaning of the words masks another message (see Kellemen, 1963). It is also possible that the conditions under which a value is held by a respondent differ widely from those obtaining in the culture of the interviewer. For instance, responsibility may be regarded as a value applicable only in relationships with family members. If the interviewer does not know this, he will assume that the value is held under the conditions to which he is himself accustomed.

36. Even if the investigator learns to phrase his questions in such a way that the respondent is left no room for misunderstanding or evasion, these questions tend to be too intimate for a formal interview, and will only solicit truthful answers after a certain rapport has been established.

37. This has met with only partial success, because respondents sometimes did know neither the full name nor the farm number of a relation. Also nicknames and patronymics abounded. For this confusing phenomenon see Candido, 1964, p. 196 *et seq.*

38. Originally the idea was to select a sample on the basis of random numbers, but I discarded it because the substitution of blanks would put too heavy a strain on our transport facilities and time. For instance, if farm 969 had to be replaced by farm 123, a trip of some twenty kilometers became necessary. However, a simple random sample without substitution, but sufficiently large to attain the desired sample size despite the presence of blanks in the sampling list, would have been best.

39. That is: did not live nearby and visited his farm less than twice a week.

40. In the tables presented in subsequent chapters the number of cases will sometimes vary slightly because information was not complete on every subject.

41. As will be shown in more detail in chapter 5, the Japanese farm-operators tend to score in the highest quartile and also differ in other ways from the Brazilian respondents. They will be often excluded from the statistical calculations, if their inclusion makes the association between some variables much stronger than if the Brazilian respondents are considered separately, and also where the Brazilians are especially examined.

42. One of the precautions I had taken was not to precode the answer *does not know*. If the respondent did not know, the interviewer could write this down.

43. Both the quantities and the prices are subject to errors in estimation. Only in 1958 have maximum and minimum prices been recorded. For some products (chickens, oranges, okra) the maxima were three times the minima. The value of production was calculated by multiplying the quantities with the arithmetic means of these two prices, a procedure that leads to an overestimation of the results. It was not possible to trace how production was calculated in other years.

44. The prices mentioned in the annual reports cannot be very well compared, as in one year they refer to weights, in another to numbers. Furthermore they do not allow for inflation and (judging from the 1958 report) fluctuate greatly over the year.

45. See Geiger (1956, p. 144), who mentions a switch from vegetables to bananas induced by a rise in price in the early fifties in Itaguaí.

46. Candido (1964, p. 130 *et seq.*) mentions an extremely fast increase in groundnut production by otherwise traditional peasants when merchants promised satisfactory prices.

47. Alves (n.d., p.11) found in Viçosa, Minas Gerais, that the area under pasture increased with farm size as well as with number of cattle. Since here only two size classes are distinguished (10 hectares and over 10 hectares) and since more settlers in the project have pasture than have cattle, the first relation could not be found.

48. Expressed in US dollars, to exclude the influence of the periodical devaluations of the Cruzeiro, this cost ranged from US $ 1.5 to 2.5 per hour.

49. Even at this rate, the cost of plowing and harrowing one hectare equals the farm price of 400 dozen oranges.

50. Some orange growers buy their seedlings because they are unable to graft, but the question in the schedule did not distinguish between seed and seedling and therefore did not entirely serve its purpose: to single out those farm-operators who buy selected seed because it is supposed to give higher yields than seed produced on the farm itself.

51. Strictly speaking, it was not asked, and therefore is not certain whether the earlier use of a practice was a trial or an adoption. But remarks made by some respondents such as: "I could not pay for it this year", or: "it does not pay", and my own observations, make it probable that it is justified to speak of discontinuances or interruptions of adoptions rather than of rejections after trial. Rogers (1962, p. 88 *et seq.*) distinguishes between rejection of an innovation before the adoption proper, and discontuances which are "decisions to cease use of an innovation after previously adopting". Discontinuances can be provisional, as the figure on p. 95 of Rogers' study shows.

52. As far as I know, no field trials with fertilizers (or any experiments, for that matter) were ever carried out in the project.

53. For oranges $\chi^2 = 3.3$, $p < \frac{1}{2}(0.1)$; for okra $\chi^2 = 3.7$, $p < \frac{1}{2}(0.1)$; for giló $\chi^2 = 4.0$, $p < \frac{1}{2}(0.05)$.

54. Geiger (1956, p. 73) mentions a similar phenomenon. "Look at the example provided by the fazenda Coqueiros, in Maricá: the owner is interested in the production of milk and bananas and in consequence the pastures and the banana-plantations receive dressings of manure; meanwhile, the fields on which the tenants grow vegetables are not dressed". He attributes such differences in treatment to the fact that for some cash crops credit is easier to obtain than for crops grown for home consumption. This would imply that, once all farmers can get credit for all their crops, selective adoption will no longer occur, which seems hardly likely. Although the availability of credit promotes the adoption of innovations, more fundamental seems the principle that money is spent only if returns are likewise obtained as cash.

A somewhat different instance of the selective application of modern farming methods is reported by Fliegel (1966). In an area in the state of Rio Grande do Sul, he found that "techniques employed in tobacco production contrast sharply with other agricultural practices". But "...tobacco is usually grown under contract, with decisions not made by the grower, but by the contractor...". It may be asked if the last assertion is really essential. Medeiros (1963), who studied a very similar county in Rio Grande do Sul, does not resort to contractual obligations to explain the adoption of innovations in tobacco culture, but to the activities of the extension agents ('instructores de fumo') employed by the industry, and to the provision, on the farmer's request, of seed, fertilizers and insecticides on credit. Here again better methods are employed in growing cash crops and the adoption of these methods is apparently greatly stimulated if no cash need be paid down.

55. Some were still paying off their debt to the Administration, others were already in possession of the title deeds to their land. Some had received a concession to the farm, others had purchased their farm from a concessionaire.

56. Of the respondents who were not interviewed in their capacity as tenants, 17% either let out land to somebody or rented land.

57. Medina (1963) found in the State of São Paulo that the adoption of agricultural machinery permitted landowners to dismiss many of their permanent labourers, thereafter meeting their seasonal demand for labour with the unemployed from a nearby city.

58. Consequently, when opportunities arise, for instance a boom in a certain crop, wage labour sometimes replaces sharecropping (cf. Prado, 1960, p. 215).

59. He said that he owned 13 farms but others assured me that he owned at least twice as many. It is rather difficult to find out how much land such people own, since many of their farms are on record as belonging to sons, daughters, uncles, and cousins where records exist.

60. The Tocher modification implies that, when the probabilities of more extreme frequencies than the one actually found are less than the specified rejection level, the frequency actually found may be considered significant in a proportion of cases.

61. It is in such cases customary for foreign consultants to urge the simplification of bureaucratic procedure. The solution, however, is not so simple. Bureaucratic procedure has an important function, preventing favouritism and other undesirable allocations of funds.

62. A comparable phenomenon occurs with the shops in the project. Short term credit is normal. Between harvests a farm-operator may be short of money for his purchases (e.g. some foodstuffs) and may have to buy on credit for several months, running up a sizable bill. For instance, in each of the three years that I knew him, Sergio went heavily into debt between January and June with a local shopkeeper. When his cabbages and okra came into season, he paid off his debt but continued to buy in this shop, despite the slightly higher prices. He regarded this as a sort of obligation, in return for service. Willems (1955, p. 328), describing a similar situation, says: "The whole system works because buying is non-competitive to the extent that one prefers easy credit, general accessibility and a group of friendly people – who habitually gather in the store – to lower prices". I believe that it is mostly the credit that creates a monopoly. I did also come across farm-operators who went out of their way to avoid buying at an expensive local shop.

63. The percentage of those who sold only through middlemen was considerably lower, 41% of all respondents.

64. It is possible that the percentage of feiristas in Piranema rose not long ago. Staff of the Administration asserted that after a decree which exempted farmers from State customs duties up to a certain value of agricultural produce, "everybody now wants to sell on the feira livre" (a market open to all farmers).

65. See Geiger (1956), p. 74 and p. 109.

66. In the section Santa Cruz the relation between truck-ownership and independence of intermediaries was not clearly significant. A Fisher exact probability test yielded $p = 0.101$. The probabilities of more extreme frequencies than those actually found added up to $p = 0.019$. If an error of 5% is accepted, this means that in about a third (to be exact 0.3177) of the instances in which the frequencies actually found occur, the difference may be considered as significant. The impression is that this inconclusive result is mainly due to the small number of Santa Cruz truck-owners in the sample ($N = 10$). Simply doubling all numbers in the 2×2 table would yield a χ^2 significant at the 5% level. The association between truck-ownership and entire dependence on intermediaries in Santa Cruz is: $Q = -0.58$.

67. The association between truck-ownership and the absence of complete dependence on middlemen, expressed in Yule's Q, is, for the project as a whole: $Q=0.73$.

68. According to Geiger (1956, p. 185), direct sales to consumers are not rare in the Baixada Fluminense.

69. The Kruskal Wallis one-way analysis of variance by ranks was performed ($H = 5.35$; $p < 0.2$).

70. Only in two instances was the adviser chosen an 'other person' with whom no other formal or informal relations were mentioned. The exclusion of these two pairs does not impair the significance of the relation (sign test; $p < 0.05$). But among the 7 pairs of neighbours, in 3 cases the adviser's score was equal to or lower than that of the advice-seeker.

71. Other instances of farmers seeking advice or information mainly from slightly more innovative colleagues are reported by Rogers and Burdge (1961, p. 23 and 1962, p. 15), Rogers and van Es (1964, p. 42) and van den Ban (1963, p. 176 *et seq.*).

72. To measure the significance of the difference in adoption scores between the non-Japanese good farmers and the other non-Japanese respondents, a Mann Whitney U was calculated, not corrected for ties ($p < 0.03$).

73. Originally this scale was slightly different. To distinguish as sharply as possible between production and marketing, two items that referred to marketing were discarded. The present items 14 and 15 were originally included in a crop-treatment scale and an animal-husbandry scale, respectively, but these scales had to be dropped because too many respondents had only one or two of the crops or animal species involved.

74. Socio-economic status is here taken as: the position an individual or family occupies by the prevailing standards of cultural and material possessions and income (cf. Belcher and Sharp, 1952; Chapin, 1933).

75. For the items of these scales and the results of the item-analysis see annex I.

76. To calculate associations, the 4 ranked quartiles rather than the absolute scores were used as a measure of innovativeness. This reduced the number of categories considerably. The lowest quartile consisted of 49 individuals with scores from 0 to 14; the second quartile of 46 respondents with scores from 15 to 27; the third quartile of 48 people with scores from 29 to 47; and the highest quartile of 43 people with scores from 50 to 93. The four quartiles did not contain exactly 46 individuals, because I wanted to avoid the inclusion, for instance, of three of the eight respondents who had a score of 47 in the highest quartile just to have 46 people in this quartile. Only for the item-analysis of the scales has this cumbersome procedure been followed.

77. What are called here partial associations are normal associations between two variables computed per category of the control variable. For a similar use of partial associations see Coughenour (1960).

78. For this inference see Kendall and Lazarsfeld (1950, p. 148 *et seq.*) and Hyman (1960, chap. 7). It is assumed here that former status preceded practice adoption.

79. In a county in southern Brazil Oliveira (1964) found neither schooling nor literacy significantly related to practice adoption.

80. When controlling for years of education, a significant association is found between practice adoption and socio-economic status (possession scores) within each category. In other words: when farm-operators are alike in education, the degree to which they adopt new practices is associated with their socio-economic status.

81. Most Japanese farm-operators had been farmers all their lives and would unduly influence the results, so they were excluded from the calculations in this section.

82. Controlling for status on the basis of the possession scores or the combined possession and sanitary-installation scores gave roughly similar results:

possession scores	0–3	$\tau_c = 0.15$	$N = 70$	n.s.
	4	$\tau_c = 0.38$	$N = 42$	$p < 0.04$
	5–6	$\tau_c = 0.24$	$N = 54$	$p < 0.05$
combined scores	0–4	$\tau_c = 0.07$	$N = 55$	n.s.
	5–8	$\tau_c = 0.11$	$N = 62$	n.s.
	9–11	$\tau_c = 0.24$	$N = 47$	$p < 0.06$

83. In Piranema: ACAR-RJ, the Posto Agricola of the Ministry of Agriculture, and from time to time the Agricultural University. In Santa Cruz ACAR-RJ did not work, but the Posto was much more active than in Itaguaí. Also in the section Santa Cruz University staff sometimes acted as advisers.

84. The value of τ_c varies with the way in which the scores are grouped. Since the difference between the highest quartile and the three others is the most relevant here, the lowest possession scores were combined. This resulted in three classes: 0–3, 4 and 5–6.

85. The Japanese respondents tended to be members and had high adoption scores, so they were excluded from the calculation. Their inclusion would have increased the association in Piranema (to $\tau_c = 0.30$) but would have hardly altered that in Santa Cruz ($\tau_c = 0.43$).

86. The Japanese respondents were excluded form these and the following calculations in this section. They were generally rather reluctant to mention the names of people they had relationships with; not infrequently the answer was: "with my compatriots". That they often tended to associate solely with each other was another reason.

87. See Siegel (1956, p. 229 *et seq.*)

88. In communities in the Netherlands, Bergsma (1963, p. 185) found that modern farmers tended to choose specific persons as advisers, whereas the choices of traditional farmers were diffusely spread.

89. The farm-operators of Japanese descent have not been taken into account in this section.

90. That is: all children aged 18 or over.

91. Farm-operators who said they were willing to accept a job in industry for a wage equal to the legal minimum were found to differ from those who would not in

that they tended to score in a lower quartile (Mann Whitney U; $p < 0.001$). A significant number of those who would accept the job, if it were offered, did not own their farm ($\chi^2 = 3.93$; $p < 0.05$).

92. The respondents of Japanese descent were excluded from the calculation.

93. The inclusion of the Japanese farm-operators would not have significantly altered the result.

94. Leaving out the Japanese respondents, and also those who were themselves sharecroppers on farms owned by absentee owners, 20% of all respondents employed sharecroppers ($N = 148$). By quartile the percentages were: lowest 20% ($N = 40$), second 21% ($N = 38$), third 24% ($N = 41$), highest 17% ($N = 29$).

95. Those who adhere to the 5% level may be set at ease by the fact that a Mann Whitney U did indicate a difference in quartile between those who employed labourers and those who did not at an even lower level ($p < 0.04$).

96. These differences will also explain why the Japanese respondents were so often excluded from previous calculations.

97. It should be added that the sample included no Japanese farm-operators with more than thirty hectares; several Brazilians had.

98. Not fields in a physical sense, really, but times of reported cultivation of annual and perennial crops, respectively.

99. The literature on the project of Santa Cruz is ambiguous when it comes to explaining the success of the Japanese farmers. Faissol (1950) says that the Brazilian settlers were favoured above the Japanese and other foreigners; but Geiger (1956) asserts that their reputation as good farmers made it easier for the foreign settlers to obtain favours.

100. For the use of fertilizers the probabilities of the frequencies actually found were $p = 0.0004$ for 1963 and $p = 0.002$ for former years (Fisher exact probability test). I did not calculate the probabilities of more extreme frequencies, since they can only be smaller than the ones above, and thus cannot raise the level of error even to 1%.

101. Other categories, theoretically imaginable, did not occur.

102. Buddhists, of course, were not included in the calculation.

103. The literature contains other instances of immigrant farmers who did better than their Brazilian neighbours. Brandão (1963, p. 142 *et seq.*) noticed it in a land-settlement scheme in the State of Bahia, Galvão (1965) in São Paulo. But Wagemann (1949) and Waibel (1949) showed that immigrant farmers were not always successful.

104. In the section Santa Cruz two cooperatives survived, a general one and a cooperative for poultry-keepers, both founded by the Administration before the emancipation of the section. They were not very active. The illustrative material in this chapter is drawn from Piranema, however, where failure was more evident and its effects more harmful to the settlers.

105. Hutchinson coined the term dependency syndrome for this but speaks of the patron-dependent relationship when referring to the same phenomena (1966). Patronic is used here for the sum total of the values and attitudes involved in the syndrome (lack of individual effort and of communal spirit, an attitude of dependence and striving for patronage). The word stresses the most important element. Patronal is used in the more restricted sense of pertaining to the relation between patron and client.

106. For an almost ideal-typical description of such a man, in this case her husband, see the autobiographical novel of Hollander-Bronder (n.d.).

107. Pohl and Leclerc, quoted in Hutchinson (1966), and also Wells (1886).

108. But the dislike for work has not disappeared altogether. Some years ago the leading article in the farming section of a Brazilian newspaper described a clock which, installed on a tractor, counted the hours that the machine was actually moving. This was said to be a great improvement over earlier devices which had only measured the time the motor ran for, thus allowing tractor drivers to take a nap in the shade of a tree while the motor idled (Jornal do Brasil, 30-6-1965).

109. One of my informants, who had lived for years in the mountainous region of Nova Friburgo, complained of the climate in the Baixada. In Nova Friburgo, he said, he had been able to work twelve hours a day without feeling tired, now he was exhausted after six hours.

110. Boissevain (1966) makes the same point and gives some striking examples of chains in Sicily.

111. Viana (1933, p. 199 *et seq.*) asserts that protection was needed above all against what he calls the white anarchy, the corruption and venality of officials, especially judges. See also Bloch (1965, p. 142), who imputed the emergence of feudal ties in Europe to the fact that kinship ties alone were too weak to offer sufficient protection.

The ties he describes so much resemble certain patronal relationships in Brazil between big proprietors and smallholders or agregados that the latter have been repeatedly called feudal too.

112. See the observation of an administrator of the project, already mentioned, that many sons leave after completing their military service. The service forcibly withdraws the sons from paternal authority, and so helps to make a later separation easier. No quantitative data are available to confirm the relation between the father's authoritarianism and the sons' departure from the project, but what is known does not exclude the possibility of such a relation. Respondents with high adoption scores report more often that they had received advice from their children, which may indicate that they are more inclined to regard them as a source of advice, and hence are less authoritarian. They also have sons of 18 or older slightly more often working on their farms, that is, sons who did not leave the project, and they use their younger sons less often as labourers on the land.

113. Reported in José Verissimo de Mattos: As populações indigenas e mestiças da Amazonia (1887) and quoted by Galvão (1955), who, however, had not observed these practices himself.

114. With McClelland (1961, p. 186 *et seq.*) one might speak of an orientation toward a 'peer' collectivity. He found that rapidly developing countries differed from slowly developing ones in that requests or demands for cooperation from the peer collectivity were often more successful in making the individuals conform. He draws a parallel between this orientation to a peer collectivity and Riesman's concept of 'other-directedness'. He concludes that the sensitivity for the opinion of others is an essential feature of rapid economic development in its early stages, as it may be a new source of morality or social cohesion.

115. The difference of opinion between Redfield (1930) and Lewis (1951) over the 'real' nature of human relations in the village of Tepoztlán relates to the same problem.

116. To explain the strife and distrust that has been observed in rural Latin American communities, Foster (1960) has put forward the hypothesis that it is due to the fixed size of the 'pie' (the total production). The consequence is that "if someone is seen to get ahead, logically it can only be at the expense of others in the village" (p. 177). It may be doubted, however, whether this hypothesis is tenable in Brazil, where resources have hardly ever been used to the full.

117. It was C. A. de Medina who pointed this out to me.

118. Foster (1961), who originated the concept, regarded the dyadic contract as one of the most important principles of social organization in the Mexican village he studied. It will be clear that using the term contract for patronal relationships (i.e. persons of unequal status) has advantages as well as drawbacks. As far as the term connotes an agreement freely concluded, it is perhaps not felicitous, because the dependence implicit in the relationship is sometimes given, not sought. In as far as the term connotes the quid pro quo character of the relationship, it is useful. For some relationships between persons of equal status the term dyadic contract is illuminating, because it calls attention to a pair of significant traits of such relationships: that they are formal rather than informal (although they may be intimate) and that they involve only two persons (who accept similar obligations).

119. Without mentioning names or otherwise providing proof, Geiger (1956) and Moreira (1962) assert that political connections affected the distribution of farms in the settlement projects of Santa Cruz and Tinguá.

120. Other settlers, of course, could join in.

121. That is what the preamble stated. It is possible that the whole plan started not with an idea, but with a couple of wily individuals who saw a chance of selling several hundred dairy cows to a government agency. This is by no means certain but illustrates the danger in a country like Brazil of accepting a plan at face value, however serious it may sound. Some plans are indeed serious; others are partly or wholly a cover for a big private deal; still others are made 'para ingles ver', which in our time can be translated by: to convince the American government of one's good intentions.

122. To assure the availability of concentrates, a small feedmill was planned and later indeed built.

123. Obviously, this would enable the settlers to buy any old calf instead of paying for a pedigree cow.

124. Implicitly the presupposition here is that a plan which originates in such a way cannot be anything else than the façade of a scheme meant to benefit other individuals than the settlers. I cannot prove this; in such cases only the most important participants know what is going on and they will not tell. But the question what kinds of individuals may benefit from such a scheme can be answered. The politician who uses his influence to allocate the necessary funds may win popularity, support and votes. The producer of the tractors may win an important order. The high civil servant whose appointment is political (i.e. tied to the election of a certain politician or to the influence of a political group) may avoid losing his job. Also, the handling of a lot of money raises his prestige and power within his service. The small-time local electoral bosses (the brokers of votes) may win patrons and material benefits: if there are more

than 200 candidates for the tractors *they* are certain to get one. The settlers may obtain a tractor, and will have no objection to return this favour with their vote. A further implicit supposition is that such a plan is not likely in the long run to benefit the settlers because that is not its principal objective. The plan is not serious. When the votes are in, or when the politician is not elected, or when the budget is cut, the plan will be quietly shelved, the programme discontinued. Yet such a plan may benefit the settlers temporarily.

125. But at least two committee members of the cooperative later stood for the municipal council.

126. Abma (1962, p. 17) regards a cooperative as a voluntary association to be placed in the same sociological category as a sportsclub or a social club. In such a definition there is no room for the role of the government as founder and executive of cooperatives.

127. This should not be taken in the obvious sense. Her meaning would be that the prefect used his influence to prevent her from being employed by others, or something of the sort.

128. A digression to illustrate how much all details were connected with each other. One of the new physicians employed at the hospital was of Japanese descent. He was a brother of one of the informal leaders of the Japanese settlers in Piranema. I was present when Matias told him that Deputy Brandão would visit the project on the day when the Japanese settlers traditionally organized a festivity. It was arranged that Matias would present the Deputy to the Japanese settlers and that they would stay for lunch. Although only a first encounter was involved, this sounded like a departure from the usual Japanese distrust of politics and politicians. Matias, of course, was trying to enlist their political support.

129. Where the number came from is a mystery. The three nearby settlement projects, Santa Cruz, Santa Alice and Floresta, contained at most 1700 colonists. In the first two many farmers already owned title deeds or were well on their way to getting them. Employees of the Administration moreover confessed that the legal complications involved in drawing up such deeds took so long, that they would have at most 60 or 100 of them ready on the big day. Also, Santa Cruz and Santa Alice had been settled long before Goulart came to power, and thus were not of his doing. Only the Floresta project, involving 210 families, had recently been started. The President finally gave out one single symbolic title, to a man who already owned several farms in the Santa Cruz section. But he was obviously not conscious of all the ironies involved.

130. For a cooperative organized by landowners and middlemen it is strange that it was associated so closely with a seemingly radical politician and a government which fell because it so valiantly urged basic reforms in Brazil. No doubt this riddle will give the many Marxist interpreters of Brazil food for thought.

131. For instance, he was looking for labourers who could be willing to go with him and settle on a fazenda in Mangaratiba, expropriated by SUPRA and completely under forest. Each would receive a plot.

132. How Goat managed to be a reporter and illiterate at the same time is somewhat of a mystery. He probably could read fairly well; at least he knew what the subject was of the newspaper clippings he showed me. His reporting consisted mostly of calling the attention of real reporters to noteworthy abuses and to his own antics.

133. For a further elaboration of these ideas, see Galjart (1967).

134. One of Harris' informants thought that any cooperative in Minas Velhas would be doomed to failure as long as its committee had to be elected. He pleaded for the appointment of a paid expert as executive director (Harris, 1956, p. 205).

135. Especially Rodrigues (1962, p. 54 *et seq.*), who quotes foreign travellers. But Andrade (1963) affirms that several changes, such as new sugar-cane varieties, the plow and new processing methods were rapidly adopted.

136. Though not always. Freyre (1961, p. 527) describes the irritation of a British traveller, Mawe, when noticing the unwillingness of certain cane-planters to change their distilling methods. Mawe (and a few years later Walsh, another traveller) attributed this aversion to improvements to the reliance of the owners on their slaves and to the slaves' dislike of the increased responsibility entailed in new processing methods. Interestingly, Dean (1966) did find that the substitution of free labour for slaves was one of the factors contributing to the development of São Paulo agriculture.

137. For examples of such 'tidal movements' that occurred in the nineteenth and twentieth centuries in various regions of Brazil, see Brandão (1963, p. 56 *et seq.*), Candido (1964, p. 74), Geiger (1956, p. 35) and Semenzato (1963, p. 5).

138. For a similar description of such a peasant subsistence culture, see Queiroz (1957).

139. The rural traditions of European immigrants are not relevant to the present argument and have been ignored here.

140. The only exception may be the urge of peasants in the dry interior of North-East Brazil, the sertão, to return after they have been expelled by drought, as soon as they hear that some rain has fallen (Semenzato, 1963, p. 7, quoting Paul Walle; Medina, 1958).

141. The survey was carried out by Professor Glaucio A. D. Soares and Professor Ivan Freitas.

142. The one farmer who had planted maracuja on a large scale had first solved his marketing problems. Also the main poultry-keepers had done so. In their case, of course, it was the quantity and not the kind of produce that would have caused marketing difficulties.

143. A Fisher exact probability test was calculated after combining columns (2) and (3) of the table. For the frequency observed p was 0.035. For the first more extreme frequency p was 0.005. Still more extreme frequencies were not calculated.

144. One of the findings of Nicholls' and Paiva's study of the structure and productivity of Brazilian agriculture was precisely that the large agricultural establishments were remarkably well managed (1965, p. 361).

145. The percentages per quartile, from lowest to highest, were for weeding: 12 ($N = 34$), 8 ($N = 35$), 5 ($N = 37$), 0 ($N = 23$); for pruning: 35, 31, 19 and 9, respectively.

146. The writers of the CIDA report assumed that, because of population pressure on the land, a classification on the basis of census data would not reflect the 'true' land needs of rural families. Sometimes, even often, this may be a correct assumption, for all I know."In all cases but one (Santarem, Amazonas) the observers interviewed reported that a family of 2–4 workers needed more land than the amount of land in farm classes established through Census computations" (p. 125). In the Santa Cruz project, however (and it is extremely unlikely that the remainder of the municipal area of Itaguaí was very different), it was found that 10 hectares was often too much land for one family. The frequent employment of outside labour and the absence of sons invalidate the hypothesis of population pressure on the land. In Itaguaí labour is not hired and sons do not leave because otherwise there would be starvation.

147. Nicholls and Paiva (1965) remark on the unexpectedly large labour force employed by the big proprietors among their sample of farmers. The CIDA report tries to prove otherwise. It is remarkable that among the eleven municipalities studied by CIDA, only in Santa Cruz do Sul (Rio Grande do Sul) does one worker, on the smaller farms, appear to farm consistently more land than elsewhere. Santa Cruz

was populated by descendents of German immigrants who adhered to a different cultural tradition (table 36).

148. Similar systems are possible. In Spain, for instance, the settlers in irrigation projects are employed as sharecroppers of the administering government agency during the first five or more years.

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