
SOCIAL CONTROL IN THE PROCESS OF
AGRONOMY EDUCATION AT THE
NATIONAL AGRARIAN UNIVERSITY, IN PERU, 1975/6

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Abstract

The thesis explores the process of social control involved in the teaching of agronomy at the National Agrarian University in Peru, 1975/6. It is concerned with the social origins, the organisation, the mechanisms, the implications and the consequences of the process of social control.

It considers the agronomy course within its social context by examining the Agrarian Reform under the Military Government and the role of agronomists in the changing social division of labour. The analysis is developed in a wider social context considering the social policy of 'participation', and focusing on the role of education in the process of social control. This is to place the analysis of the subtle controls in the educational process within a general theory of social control and also to begin to explore the relationship between the educational experience, and power and control in society.

It further considers:-

- 1) The Education Reform
- 2) The influence of 'financing'
- 3) The influence and beneficiaries of research
at the University
- 4) The influence of employment prospects.

While examining these issues the analysis of agronomists as part of a coherent social group within the 'middle class' in Peru, who have acquired socially legitimate technical expertise and are committed to the concept and practice of 'developmentalism' is developed.

It then develops the argument that the subtle controls inbedded in the pedagogy and course structure are part of a wider process of

social control that can reproduce power relations.

A consequence of this is the social product of an agricultural model which is 'scientifically' legitimated and yet intimately and exclusively concerned with the problematics of 'developmentalism' on both a social and technical level.

In conclusion, the teaching of agronomy is argued to be characterised by the process of social control and reproduction, and closely involved in the process of legitimating reproduced social relationships, social positioning and social development.

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CHAPTER 1

INTRODUCTION

The basic problem I am addressing in this thesis is the relationship between the system of classification of knowledge underwriting the structure and organisation of the university and the wider process of social control, selection and social reproduction. I am concerned with the process whereby despite any changes in curriculum and pedagogy designed to meet the social needs of the new 'Revolutionary Peru', these actually represent changes in 'habitus',^{*1} not in function. So although there has been a change in the distribution of occupations people go into, this has not changed the way people use their knowledge.

I am therefore concerned with the classroom as a microcosm of social organisation and I shall be examining the process of control that results in the relationship between the micro and macro levels.

Various writers such as Bernstein^{*2} and Bourdieu^{*3} have been concerned respectively with the way in which the transmission of knowledge produces social positioning and how the structure of educational systems leads to social reproduction. My intention is to draw on and apply the theoretical arguments and concepts developed in their work to examine a concrete situation - the teaching of agronomy at the National Agrarian University (U.N.A.) in Peru, 1975/6.

In examining the educational process within its social context with reference to social control, I am not attempting to discuss or

broaden the debate over the relative autonomy or dependence of educational institutions. While I shall indicate areas of apparent autonomy and dependence the point of departure for the thesis is this:- given that the educational process involves both a degree of autonomy and dependence, how then is the dependence organised and controlled? What are the social origins, mechanisms, implications and consequences of this aspect of social control?

In order to explore these questions I will draw on both recent sociological theory and also examine the taken-for-granted elements of social influence and control.

If the main thrust of the sociology of knowledge from the 1970's^{*4} has been that subtle controls within the process of teaching, course organisation, selection, assessment and validation can reproduce aspects of power relations, then in practical terms what is the relationship between these 'subtle' or covert controls and the overt controls and influences? If a social analysis of agronomy education is to be undertaken, then both these aspects of the social context must be considered in relation to each other.

In effect there are a number of influences and elements in the process of social control that limit the apparent degree of autonomy.

I shall begin my analysis by considering the agricultural context in the light of the Agrarian Reform^{*5} under the Military Government and the role of the agronomist in the changing social division of labour. I shall develop this analysis in the wider social context of social 'participation' and consider the role of education in the process of social control.

This is to place the analysis of the subtle controls in the educational process within both a general theory of social control and also within the context of the overt means of social control - legal restraints supported by military action and financial influences over the U.N.A.

I shall argue that these influences including the effect of 'financing' to shape and orientate the nature of agronomy acted in conjunction with the social role, coherent interests and world view of agronomists as part of a social group within the middle class in Peru.

Having developed an analysis of the nature and role of this group within the middle class, I shall consider the social origins of the agronomy students and their expectations and aspirations as agronomists of the future.

So far I will have examined a range of influences and controls that effected the nature of agronomy education at U.N.A. These can be outlined as:-

- 1) The effect of the Agrarian Reform.
- 2) The role of agronomists in the process of production and in the process of social control.
- 3) The form of social control in the light of the social reforms of the Military Government.
- 4) The effect of the laws relating to education.*6
- 5) The influence of 'financing' agronomy education.
- 6) The influence of research.
- 7) The influence of social class and social position.
- 8) The influence of employment prospects.

I shall argue that the subtle controls inbedded in the pedagogy and course structure are part of a coherent process of social control that can reproduce power relationships. I shall examine the process of legitimation in considerable detail, focusing on the crucial concept of 'science' among agronomists. I shall identify the agricultural model that is encouraged and scientifically legitimated and I shall clarify its social origins and consequences.

In this way I intend to use the teaching of agronomy at U.N.A. as an example of the process of social control and reproduction and in concrete terms examine how this process operates.

The fieldwork which provided the original research material for this thesis was conducted at the National Agrarian University (U.N.A.)^{*7} in La Molina district, Lima, Peru from 7th August, 1975 to 7th March, 1976 and the social analysis refers to that time. This fieldwork was financed by the Social Science Research Council (S.S.R.C.)

The Agronomy Course at U.N.A. was one of many courses organised and taught at the University. Although the 'University City' was in a state of disrepair following a major earthquake, the University still ran eight undergraduate courses.^{*8} These are called Academic

Programmes:-

- 1) Agronomy
- 2) Science
- 3) Forestry
- 4) Economic Planning
- 5) Industrial Foods
- 6) Agricultural Engineering
- 7) Fishery
- 8) Zoology.

Although accurate statistics in general were extremely difficult to find, I would estimate that over 2,000 undergraduate students were studying courses full time over the academic year 1975/6. During the same year 320 students were following a course at various levels in 'Agronomy'.^{*9}

The model of educational organisation at U.N.A. was defined not by the University but by the 'Revolutionary Government of Armed Forces' (the Military Government). The Law of General Education (Law 19326)^{*10} was enacted in 1969, following the coup in October, 1968. The Law was enforced by the Council of Peruvian Universities (CONUP).^{*11} Among other things the law decreed that the University should organise Academic Departments and Academic Programmes.^{*12}

Academic Departments were free to develop discrete courses.

Each Department offered up to 40 courses. There were 22 Academic Departments. These were:-

- 1) Biology
- 2) Nutrition
- 3) Human Sciences
- 4) Fishery Technology
- 5) Oceanology and Fish Farming
- 6) Economic Planning
- 7) Rural Constructions
- 8) Statistics
- 9) Physics and Meteorology
- 10) Animal Production
- 11) Phytology
- 12) Chemistry
- 13) Horticulture
- 14) Water and Land Resources
- 15) Forest Industries

- 16) Forest Management
- 17) Animal Health
- 18) Vegetable Health
- 19) Soils and Geology
- 20) Mathematics
- 21) Agricultural Mechanisation
- 22) Food Technology and Agricultural Production. *13

The Academic Programmes selected discrete courses to organise total courses. The Academic Programme of Agronomy could select any number of these courses to compose the total course defining prerequisite courses, obligatory courses and optional courses. In practice, four Academic Departments provided the greatest number of courses for Agronomy. These were:-

- 1) Department of Phytology, which offered 19 courses from the Chemical Control of Diseases to Agricultural Technology and employed 32 agronomists.
- 2) Department of Horticulture, which offered 13 courses from the principles of Plant Propagation to the Principles of Ornamental Horticulture and employed 10 agronomists.
- 3) Department of Soils, Fertilizers and Geology, which offered 7 courses from Soil Conservation to Soil Fertility, and employed 16 agronomists.
- 4) Department of Vegetable Health, which offered 18 courses from Microbiology to the Diseases of Industrial Plants and employed 18 agronomists. *14

The Academic Programme of Agronomy was organised into four 'orientations' and five complementary studies.*15 Each of these had a small number of obligatory courses and a range of optional courses. In the final stages, the student was expected to specialise in one of the four 'orientations' which were:-

- 1) Horticulture
- 2) Agricultural Production
- 3) Vegetable Health
- 4) Edaphology.

The student who entered the university had to follow a general obligatory course before deciding on an 'Academic Programme'. This general introduction consisted of a number of discrete courses:- Algebra, Peruvian National Resources, Inorganic Chemistry, Biology, Economic Principles, Calculus, Physics, Introduction to Sociology, Spanish, Statistics, and the Evolution of Peruvian Culture.

All the courses were organised on ten levels and it was necessary to gain a variable of about twenty credits on each level before advancing to the next. In this way once on the course, the time taken to complete depended on how many credits each student could gain in each semester.

The re-organisation of the University into Academic Programmes and Departments was accepted by the staff, but not necessarily liked.*16 In some cases individuals held posts of responsibility in both Academic Programmes and Departments. The Director of the Academic Programme of Agronomy (Eng. Mario Zapato) was also the Head of the Vegetable Health Department during the academic year 1975/6. When asked if there was any clash of interest involved he replied:-

'There is no clash of interest, only of time.*17

The Directors of Programmes and Heads of Departments were voted into office by teaching staff.

The main aim of the Academic Programme of Agronomy was stated to be:

'To form Professionals in the area of agronomy capable of taking basically correct decisions concerning technical, economic, social and human knowledge.'^{*18} (my translation)

Generally, agronomists at U.N.A. were proud of the Agronomy course and emphasised its academic and scientific excellence. Mario Zapato stated that:-

'This is the highest status course in the country, and if you are asking if we control the other university courses, I can say that we do.'^{*19}

The research would have been impossible without the cooperation between the Institute of Education and the U.N.A. which allowed me access to all personnel (both formally and informally), available information, documents and archives including the official university statistics and library facilities, as well as allowing me to accompany various rural extension projects, by officially registering me as a post-graduate research student under the auspices of the Humanities Department at U.N.A.

The research was also particularly aided by the facilities provided by the library of the Peruvian Agrarian Information Centre (CENCIRA), and interviews and conversations with officials in the 'National System of Support and Social Mobilisation' (SINAMOS) which are detailed in the thesis.

* footnotes*

- 1) I am referring to Bourdieu's concept of habitus which I will clarify and develop in context.
- 2) e.g. B. Bernstein - 'Class, Codes and Control', Routledge and Kegan Paul, Vol. III, 1975.
- 3) Bourdieu, P. and Passeron, J-C, 'Reproduction in Education, Society and Culture', Sage Publications, 1977.
- 4) I am referring in particular to the work of M. Young (ed), 'Knowledge and Control', Collier - MacMillian, 1971, and B. Bernstein (op.cit.) at London University Institute of Education, and Bourdieu (ibid).
- 5) Law of Agrarian Reform No. 17716, 1969.
- 6) Law of General Education No. 19326, 1969.
- 7) Universidad Nacional Agraria.
- 8) U.N.A. 'Memoria', OCTEI, 1972-74 pp.37-8.
- 9) Based on entrance statistics, and course statistics available at U.N.A.
- 10) Law of General Education: op.cit.
- 11) I will discuss the organisation and role of CONUP in more detail later.
- 12) Law of General Education, op.cit. In section XI, Chapter III, the law requires the establishment of 'Academic programmes', rather than departments, - 'Cada programa es el plan de formación que desarrollan los educandos.' This is argued to provide greater 'flexibility'.
- 13) U.N.A. Memoria, op.cit. pp 42-64.
- 14) U.N.A. Memoria, op.cit. pp 229-40.
- 15) This and the following course information is drawn from the official 'Agronomy Academic Programme' enclosed. See Table No.60 in the Appendix.

footnotes cont'd

- 16) In discussions, some staff voiced the opinion that it was an 'unnecessary political intervention'.
- 17) Stated in an interview on 7th October, 1975.
- 18) U.N.A. mimeograph. 'Informacion Basica Sobre el Programa Academico del Agronomia.' U.N.A., 1974. pg.14.
'Es objetivo principal del Currículum de Estudios de Agronomía. Formar Profesionales en el sector Agronómico capaces de tomar decisiones correctas basadas en conocimientos técnicos, económicos, sociales y humanísticos'.
- 19) Interview cited in footnote 17.

CHAPTER 2

THE AGRARIAN REFORM:

INTRODUCTION TO THE STRUCTURES AND FORCES UNDERPINNING THE CONCEPT AND PRACTICE OF THE NEW AGRICULTURAL EDUCATION.

To understand the scope and consequences of the Agrarian Reform it is first necessary to outline the historical relationships between the development and practice of agriculture and -

- i) the shift from agriculture to industry of various kinds
- ii) the industrialisation or 'modernisation' of agriculture
- iii) its relation to Peruvian society.

In particular we must look initially at the social groups which sponsored and benefitted from the reform and their relation to education. Hence my purpose in this chapter is to look at the context of Peruvian agriculture, provide an initial definition of the constituent social forces of Peruvian society as well as some initial indications of their interest in the forms of education stemming from or encouraged by the 'Peruvian Revolution'.

Although it is difficult to establish accurate data and statistics concerning the Agrarian Reform, I shall argue that three social groups were the main beneficiaries of the Agrarian Reform.

- i) The permanent rural workers, particularly those on the large sugar estates who represent a small proportion of all rural workers.
- ii) Middle sized landowners.
- iii) A faction of the 'middle class' with 'scientific expertise' characterised by a common belief in the need for the 'scientific development' of Peru.

I shall argue/^{that} these three social groups are the main beneficiaries even though the 'Peruvian Revolution' and the Agrarian Reform were partially in response not only to the relative decline of agriculture but also to the social pressure of the rapidly growing marginal urban population, and the marginal and diminishing rural population.

Background:

In 1975 Peru contained approx. 13.6 million people in an approx. area of 130,000 sq. kilometres. This can be redivided into 3 distinct regions which will be examined in more detail later particularly with respect to agriculture. The jungle (known as the 'Selva') lies on the eastern edge of the Andes and slopes east into the huge Amazon basin. It is largely unpopulated and unknown by the majority of Peruvians, but from the mid 1960's, it has been considered a huge and potentially profitable natural resource ripe for exploitation. A colonisation process of the delicate ecosphere has begun. In the 'high selva', close to the Andes, coffee predominates; but coca, fruit and cattle are also produced by colonisers. The Indians native to the 'selva' are extremely marginal to the colonisation process and are withdrawing further into the jungle, and their survival is in jeopardy.

The Andes (known as the 'sierra') forms the backbone of the traditional Incan Peru. Cuzco, the original Imperial city of the Incas, sacked by the Spanish conquistadores, lies in the centre of the 'sierra'. Despite technology, spectacular railways and roadways (at the mercy of landslides), the Andes are difficult to negotiate except by air. In fact the 'sierra' is composed of various geographical identities. There is the high plateau

at a height of 5,000 - 6,000 mts. stretching from Colombia, past Lake Titicaca, down to Chile. Here some root vegetables are grown, alpacas and some sheep are herded by peasant ('campesinos') farmers. Llamas are used as pack animals. The Indian customs and traditions are in full evidence in the small agricultural communities. Many observers, such as Pierre de Zutter^{*1} and León de Ponce^{*2} claim that the Indian communities still recall exactly how the traditional Incan communal plots were defined and which family groups were meant to be farming them. Traditional peasant farming methods are characterised by family labour where all the members, including children, normally work as much as is considered necessary for the survival or benefit of the family. Madeleine Zufiga points out that in this context, formal or even informal education provided by the State is often seen as an intrusion by peasants, or not necessarily in the interest of the farming family.^{*3}

The actual farming methods are based on empirically tested and proven techniques, organised around recycling waste materials, growing a variety of foods, and cash crops when possible.

In the lower altitudes to the west, the high snow-capped peaks of the Andes are cut deeply by valleys of various sizes and degrees of fertility. Travelling through this area, the massive terracing of Incan origin can be seen in disuse and erosion has destroyed much of the land. At this altitude cotton is still economically important, cereals, maize, and some fruits are grown up to an altitude of 3,600 mts, sheep and cattle are herded.

Mines are worked, largely owned and controlled by U.S. capital. Market towns flourish but are becoming increasingly geared towards the more lucrative, but highly volatile tourist economy.

Since the 1920's the sierra population has begun to migrate significantly towards the coast and particularly in favour of the Lima-Callao district.^{*4} Geographically the coast is semi-desert, but includes many hundreds of valleys that cut into the Andes following river courses and, when irrigated, are not only fertile, but are also close to both the growing industrial cities and the sea for easy transport to the world market. While the Incan empire centred around the sierra, the Spanish had always favoured the coast, founding Lima-Callao for the purpose of trade with Spain. In more modern times the coast has been characterised as the modern sector of a 'dualistic society' (Bourricaud and others^{*5}) with a strong emphasis on exporting raw materials (sugar, anchovy fishmeal, mining products, cotton, etc.). Sugar is the most economically important crop in Peru and until the Agrarian Reform the estates were owned or controlled by foreign capital.^{*6} In particular Grace^{*7} controlled marketing and distribution channels. Simply in land ownership, foreign capital owned almost 60% of the total area of sugar estates. Ignoring the satellite estates surrounding these large estates, foreign investment owned or controlled 77% of the total area.

These sugar estates could be characterised as industrialised and the labour essentially wage-labour. The coastal region is frequently referred to as the modern sector of the economy characterised by its urban centred industrialisation and a rapidly expanding sector of professional and clerical groups of

white collar workers and services. The attraction of the coast was not based on the coastal agriculture, even though migration labour was a commonplace. In 'Power and Society in Contemporary Peru' Bourricaud states that the first wave in the 1920's was composed mainly of 'clerks, artisans and day-labourers in search of work.' However, it was not until the 1950's that the second more massive wave of migrants began to leave the countryside in search of employment in the cities. ^{*8} Jose Matos ^{*9} undertook a detailed study of the urban migrants from October 1956 to July 1957. At this time a huge shanty-town of improvised houses ('barriadas') sprang up around Lima. He found that only 10% of these people were illiterate (of these three quarters were women), 90% claimed some level of schooling and the level of education among the men was higher than the average of the whole country, which would support the idea that the migration resulted from an increased expectation based on an increased education.

More accurately, I would suggest that those who succeeded in school were, to use Bernstein's terms, 'coded' for the urban division of labour. I am suggesting that the educational process would have developed an internalised basic underlying interpretive framework ('habitus' in Bourdieu's terms) that itself estranged them from the social division of labour in the rural communities, and which provided them with:-

- i) urban 'know how'
- ii) urban values.

The examination of the 'barriada' community by Matos indicated that the urban immigrants considered themselves to be urban employees as the following table shows:-

(see over)

Table 1 Employment Among 'Barriada' Community, 1957

Artisans and workmen	60%
Servants, janitors and watchmen.....	15%
Travelling salesmen (hawkers).....	15%
Transport workers.....	5%
Office workers.....	2%
Nurses, midwives, teachers, accountants, etc.,.....	1% * 10

Matos also reports that 70% were in 'stable' employment (i.e. lasting at least one month) and only 1% declared themselves unemployed. The service industries (salesmen, servants, and clerks) composed 37% of the wage earners while workmen composed only 20%.

Perhaps most interestingly and in sharp contrast to traditional patterns of community life, the family compositions were as follows:- Table 2

62%.....	nuclear families
26%.....	extended
5%.....	single parent
2%.....	lived alone
5%.....	no data.

Furthermore, Matos states that the great majority declared themselves satisfied as compared with their previous lot. This interesting study, in general terms, outlines an aspect of a divided society undergoing rapid social change. Urban industrial life was expanding rapidly along with an increasing need for service industries, while the more educated of the peasantry deserted the traditional farming life of the sierra for the benefits of urban employment.

By the end of the 1960's, the agricultural population had become less than 50% of the national total. The majority of these were small-scale, family farmers working either communally in traditional communities, or as tithe labourers in all its various forms, or as small-scale family plot owners. In these rural contexts, the population was politically marginal since literacy was a pre-requisite for voting. The education received was minimal and often considered to be irrelevant. It has been suggested that this irrelevance was not only limited to educational content, but was imbedded in the forms of reasoning used, for school logic is deductive, while traditional agricultural logic is inductive.*11 In practice, education mainly served to divide the peasantry into the marginal rural population on the one hand and the marginal urban population on the other.

Sugar, cotton and coffee form the basis of the agricultural exports and are therefore 'economically important'. Actual food to be consumed is produced mainly by the small-scale farms as the Peruvian Governmental agencies themselves recognise.*12

In many cases food grown by the small-scale farmers/^{is}for self-subsistence, but nevertheless it is the small-scale/^{labour-intensive}farms that produce the majority of food and even meat and poultry for the market places and for the towns. I shall examine later the decline of the small farm sector which was due to a number of causes including:-

- i) problems of land tenure
- ii) lack of access to markets and market back up systems
- iii) the need for many families to provide members to work at least part-time as labourers
- iv) the resulting pressure on women and children and on the structure of the family itself

- v) lack of economic and appropriate technical support
- vi) the economic aims of the agricultural policies of the military government.

I shall argue that the Agrarian Reforms of the 'Peruvian Revolution' have not seemed to be concerned with the small-scale farmers as food producers, but more with the rationalisation of the economic role of agriculture in a 'developing' economy. The urban migration and the increasing role of a marginal rural education are just one aspect of the emerging social pattern.

The 1960's were marked by conflicts between peasants and landlord. Llamojha reported that over 300 peasants died during police action between 1956 and 1964.*¹³ Much of peasant activity involved seizure of land considered deserted or previously taken from the peasants. Perhaps the most famous case is the peasant syndicate which was led by Hugo Blanco in La Convención Valley which, under the commonly revived slogan 'Land or Death', won important concessions for the syndicate to grow and own coffee on the slopes of the valley.

However, as Hugo Blanco himself points out in his personal account (apparently written while in prison and entitled 'Land or Death')*¹⁴ these concessions were limited to the permanent workers only. Gerassi claims in his article 'Imperialism and Revolution in America' that a guerrilla group active in the Peruvian Andes were napalmed in 1965 and most of their leaders were killed.*¹⁵

Despite the political, economic and social crisis noted by Bourricaud and others, the 1960's were also characterised, as Zalvidar, Malpica and Quijano have pointed out, as a period of industrial and administrative growth that had begun in the early 1950's. In particular the 1960's saw the rise of what I shall loosely call the 'middle-class' at this stage.

Traditionally,

the 'middle class' were those groups of wage earners in specialised employment requiring more specialised education, knowledge and skills, (what Bourdieu refers to as 'cultural capital'). However, from this decade lawyers, doctors, architects, corporation managers and the other 'traditional middle class' were joined by all manner of professionals in both the 'service/scientific' areas such as teachers, professors, social scientists, agronomists, engineers and so on, and also employed in the more overt forms of social control, in particular the educated military.

It is noticeable in Peru that the intermediate rungs of technical skills or expertise are relatively absent, such as mechanics, electricians, plumbers and so on. The main thrust of the expansion has been in the higher status areas cited, all of which include a 'semi-scientific' and more academic educational basis and a concomitant view of the world.

There is evidence to suggest, which I shall examine later, that a 'new middle class', possibly a third world equivalent of Bernstein's concept of the 'new middle class' in the industrial countries, composed of 'educated experts' in various professional employment emerged in the 1960's and grouped around the concept of 'development'.

This group, which was at the forefront of the 'Peruvian Revolution', saw education (or perhaps more accurately - educated expertise) as a panacea for the multitude of problems facing Peruvian society. This view, as Bourdieu suggests, is largely derived from the pattern of its socialisation and its expectations. Bourdieu argues that:-

'School provides those who have been subjected to its influence not so much with particular and particularised patterns of thought as with that general disposition, generating particular patterns that can be applied in different areas of thought and action which may be termed cultural habitus.'¹⁶

In other words, the educated became socialised, or perhaps more accurately, 'schooled' into defining reality and acting upon it within the terms of reference they were expected to use during their education.

If this is the case, then it would be logical to expect the scientifically based disciplines to see the process of 'development' (as the case in point) as less of a social problem and more of a scientific or technical problem, which only the professional 'experts' have the ability and skills to manipulate and solve. In this way 'development' could be seen as both an ideal for the future of Peru, and also as a vehicle for professional expertise and employment. I shall argue that it is this equation, that monopolised knowledge equals the right, and even necessity, to control 'development' which characterises the shift in 'habitus' of the traditional middle class to the 'new middle class'.

Traditionally, such professions as doctors, lawyers, architects and so on, were 'professional' more in the sense that their 'careers' were 'vocational' and their expertise was to serve (in practice it would have been normal for the employer to define the parameters of 'service'). I shall argue that this 'new middle class' deem themselves 'professional' because of the self-styled 'scientific objectivity' of their knowledge, and their 'expertise' is designed to control, as we will see later with particular reference to the military social scientists, and agronomists.

The importance of the distinction I am making is not so much how the relative size of the different professional groups have changed, but to emphasise that a critical change has been how the professions are conceived, perceived (in Bourdieu's terms, how much cultural legitimacy they have achieved) and behave. We could expect

that the change in 'habitus' of the professional groups would alter the role of probably most professions, and also effect the relative importance and popularity of professions in a position to effect the nature and course of the process of Peruvian 'development'. Similarly, in line with Bourdieu's theory of 'habitus' being closely related to social class, we could expect scientifically orientated professional education courses to attract urban middle class students, even when the course concerns agriculture. If we look briefly at the relevant statistics provided by the National Agrarian University for the year 1973-74 we find that approximately 70% of the students came from Lima-Callao and surrounding district of Lima.^{*17} Almost 52% came from the urban centre of Lima-Callao itself. I shall examine these and other relevant statistics in greater detail in context later on, but it is clear that they lend some support at this stage to the more general idea that the social changes prior to the Peruvian Revolution of 1968 and the following Agrarian Reforms were more complex than a simple class analysis would allow for, and that the process of change actually involved a further development of the nature and role of the 'middle class', the importance of which I begin to examine as I sift through the events and character of the Agrarian Reform process. Later, I will begin to tie up the inter-relationships as I examine in considerable detail the education of agronomists at the University itself.

An Appraisal of the Agrarian Reform

At the time of the Agrarian Reform Peru could be represented demographically by the following table.^{*18}

Table 3 Peruvian Demography, 1968.

Region	Area (sq.km.)	% of total area	Population	% of total pop.
Coast	140,000	11	5,850,000	43
Selva	805,000	63	1,350,000	10
Sierra	340,000	26	6,400,000	47
TOTAL	1,285,000	100	13,600,000	100

The Agrarian Reform constituted a massive reallocation of land and is generally considered to be the most significant Latin American agrarian Reform outside Cuba.

I am concerned with the outcome of the Reform; the consequences in its application in practice. I shall examine the Reform by considering specific areas which I have characterised by the following categories:-

- 1) The setting up of sugar cooperatives ('cooperativización')
- 2) The division of land for private use ('parcelización')
- 3) The conversion of peasant smallholders who worked for others into private owners of the land they work
- 4) Conversion of livestock estates into 'Farming Societies in the Social Interest' ('S.A.I.S.')
- 5) Conversion of peasant communities ('comunidades') into 'C.A.P.'s' (production cooperatives)
- 6) Credit
- 7) Education.

1) The setting up of sugar cooperatives

(a) Background - It was estimated by the Panamerican Committee for Agricultural Development ('C.I.D.A.)*¹⁹ during an evaluation of the

agrarian reform under the previous Belaunde government^{*20} (1963-68) that there were 1.3 million hectares of land under cultivation on the coast. Since sugar estates existed over a total area of 86,285 hectares in 1968^{*21} this represents only 6.6% of the arable coastal land. Nevertheless, sugar is generally regarded as Peru's most important agricultural crop, specifically because of its important role in the export economy. In 1967 sugar exports totalled 62.3 million dollars.^{*22} Carlos Malpica emphasises the importance of the sugar cooperatives because of their economic importance and foreign control.

'As a consequence of the Law of Agrarian Reform no. 17716.....all the agricultural enterprises with some economic significance have been, or are in the process of being expropriated. The most important, that is to say, the sugar producers were the first to be transformed into agroindustrial cooperatives.' (my²³ translation)

He further points out that the agro-export companies constitute part of the 'basic power group':-

' Large producers of raw materials for export (large mining firms - no more than three - large agricultural firms - no more than two)' (my translation)^{*24}

The two major sugar companies in Peru were Grace and Gildemeister. Casa Grande was the largest single sugar estate in Peru, producing 30% of the nation total^{*25} and owned by Gildemeister. The Peruvian land reform information office^{*26} reported that at the time of its expropriation 55% of its invested capital was Dutch, 9% Swiss, 6% German, 4% American and only 26% Peruvian. Carlos Malpica reports that Gildermeister were investing heavily in the Anchovy fishmeal industry.^{*27}

W.R. Grace corporation, although only the second largest producer (18% of national total) dominated the sugar industry since it controlled 75% of the refined sugar destined for export. It operated the Caltavio and Paramonga estates. The major interest of W.R. Grace Corporation is

shipping (Grace lines). J.M. Paige notes in 'Agrarian Revolution' that the 9 million dollars invested in Peruvian land represents only 0.5% of W.R. Grace corporation's total assets. Furthermore, its major source of profit was from refining and related manufacturing activities as well as controlling diversified enterprises throughout Peru, including textiles, paper, industrial chemicals, paints, foods, ore concentrates, distribution, internal transportation and rum.

The expropriation of the sugar estates was specifically an expropriation of land, not the industrial plants which were retained by the various companies.^{*28} Consequently, W.R. Grace remained in control over commercial channels, particularly in the export sector.

(b) The Reforms - A great deal of emphasis was placed on the expropriation of land, and it was included in the 'Basic Principles' of the Agrarian Reform Law:-

'Article 3(f). To regulate agrarian contracts and eliminate indirect forms of exploitation with the aim that land will belong to those who work it.'^{*29}

It was this aspect of the reform in particular that was used to encourage popular support amongst the peasant workers for the actions of the military government. One aspect of this basic principle was that it was only the permanent workers who could become cooperative members ('socios'), although 'permanent workers' included both the administrative staff, agronomists and agricultural engineers ('Ingenieros'). This effectively divided the workers into the wealthier 'socios' and the poorer landless peasant workers.^{*30}

The state took control of the sugar estates and acted as a stakeholder during the intermediate phase of expropriation. The state undertook to value the land expropriated on the basis of the former owner's declarations for tax purposes.^{*31} The state then paid this 'agrarian

debt' in bonds, redeemable only after 20-30 years, accruing 4-6% interest. However, if the former landlord invested the bonds in 'approved industries' they were redeemable after 10 years. The 'agrarian debt' then was an explicit and conscious attempt to divert both national and foreign capital from agriculture to industry. The 'Plan Inca', the Government's manifesto states:-

'Action

d) To use the system of expropriation, paying part to a purser, and the rest in bonds, and orientate the capital coming from the said bonds towards industry.'^{*32}

While the 'Banco de Fomento Agropecuario del Peru' would use the money derived from the 'agrarian debt' to finance industrial companies, the attempt to encourage the old landowners to actively participate in their expropriation and their investment in industry appears to have been largely unsuccessful. Although Quijano reported in 1970 the official claim that many companies had applied for this form of amortisation,^{*33} officials at CENCIRA^{*34} stated that this was not the case, and that by the end of 1975, no such amortisation had actually begun.

The first stage of the setting up of sugar cooperatives was the election of organising committees. As Ramon Zalvidar points out in 'Algunos conceptos para el enfoque de la Reforma Agraria' in practice it was the technical and managerial 'experts' that dominated these committees - Table 4

Results of the elections for organising committees^{*35}

Sugar estate	Engineers	Administrative staff	Workers	Total
Cayalti	14	-	1	15
Laredo	7	4	25	36
Paramonga	3	5	6	15

He also reports that in every case, the committee president was an engineer or high grade technician, which highlights the emerging role of the 'Ingenieros' and 'tecnicos' who gained control over the cooperatives by virtue of their 'expertise'.

In November 1969 the 'Cooperative Development Office' (ONDECOOP) issued its regulations for agricultural cooperatives. This established, among other things:-

- (i) Conversion of the land into production cooperatives
- (ii) Cooperative ownership of land and capital
- (iii) Cooperative members 'socios' would be all permanent workers including in that category the 'Ingenieros' and higher level workers (technicians and administrators)
- (iv) Temporary workers cannot be 'socios'
- (v) The working of family plots on the cooperative is prohibited
- (vi) The cooperative fund is assigned to pay for the bonds.

Apart from the organising committees (which acted as executive committees) cooperative assemblies were set up, composed of 120 cooperative members in each cooperative. However, the government insisted that 25% of the delegates must be either engineers or else high level technicians. Finally the Government assumed the right to appoint members of the assemblies, so that 'the payment of the agrarian debt could be guaranteed in the interests of the nation'.^{*36}

Table 5

Composition of the delegates on the cooperative assemblies ^{*37}

Estate	Delegates elected by workers	Delegates nominated by the Government	Total
Tuman	22	98	120
Cayatli	98	22	120
Laredo	44	76	120
Paramonga	32	88	120
Cartavio	55	65	120
Casagrande	24	96	120
<u>Total</u>	<u>275</u>	<u>445</u>	<u>720</u>

The reimbursement for the nationalised loan known as the 'agrarian debt' deserves further analysis at this point. The expropriation of the landlords did not constitute a confiscation, since the land was valued and the 'agrarian debt' paid in bonds. From the point of view of the landlord, the valuation of the land is problematic and usually thought of as a gross undervaluation.^{*38} Furthermore, government bonds are considered to be relatively worthless, since the interest rate is relatively low and they cannot be redeemed for many years. Nevertheless, it is difficult to conceive of a different form of payment, since the peasants have no capital.

Jacques Chonchol in 'Eight Fundamental Conditions of Agrarian Reform in Latin America' insists that indemnification should be limited.^{*39}

Edmundo Flores in 'Financing Land Reform : a Mexican Casebook' goes somewhat further when he writes:-

'To expect that when a revolutionary government undertakes agrarian reform it should compensate the landowning oligarchy is equivalent (reductio ad absurdum) to proposing that an industrial country should indemnify income-tax payers.'^{*40}

In other words the concept of indemnification is essentially one of value position. It relates in practice to what extent agrarian reform is seen as a reallocation of wealth. In the case of Peru, the agrarian reform acted as a reorientation of private capital (both national and foreign) from agriculture to industry. In practice the 'agrarian debt' constituted a massive long term burden on the peasantry to pay the price of this reorientation, as the following table indicates.

Table 6

Distribution of the Residual Gross Income of the Sugar Cooperative
of Tuman *41

Residual gross income (intake less outgoings)		S/. 228,411.00
Less a) Tax (predial)	S/. 76,000.00	} - S/. 118,000.00
b) 'Agrarian debt'	S/. 42,000.00	
Difference : residual net		S/. 110,411.00
Further redistribution of residual net		
Reserve Fund	S/. 12,206,000	
Educational coop.fund	5,520,000	
Social Provision fund	11,042,000	
Investment fund	43,000,000	
Coop. Development fund	5,520,000	
 TOTAL		 S/. 77,288,000
Difference		S/. 33,123,000

Since this cooperative has 2,100 members, the maximum income possible is S/. 15,500. Certainly the greatest single beneficiary is the state, and the former landowner. The majority of the internal budget money forms the investment fund which is closely controlled by the 'technical experts' by virtue of their expertise, as are the other funds by virtue of their controlling position on the executive committees. To control the process of cooperativisation, the government set up a special select committee composed of delegates from the Ministry of Agrarian Reform, the state agricultural and industrial banks and 'worker delegates' who were engineers ('Ingenieros'). This was to support the role of ONDECOOP and defend the intended direction of the agrarian reform by combatting 'saboteurs of the Agrarian reform', seen as political agitators. Under their direction, strikes were seen as acts of sabotage and prohibited. Nevertheless conflicts arose between the workers and the technical and administrative 'experts' (identified

as both the 'Ingenieros' and the military government) based on wage discrepancies between the two groups, and the increased wages of the cooperative managers. Although probably not a typical example, the managers of the sugar cooperative Pomalca raised their monthly salaries from S/.18,600 in February, 1970, to S/.40,927 by October, 1970.*42

The state organisation, 'the Executive Office of the Agrarian Reform' that was controlling the administrative councils of the cooperatives was converted to the 'Sugar Cooperatives Centre of Peru' although the personnel remained the same. Under their direction an attempt was made to convert the peasant unions into information centres to channel complaints and demands to the delegates that acted on behalf of the state.*43 However, the attempt to integrate the managerial groups with the workers in this way failed to achieve any harmony. This was due to the technocratic indifference of the delegates to the workers problems on the one hand and the workers' realisation of the new role of the 'experts' as a power elite supported by the state. Pierre de Zutter puts it slightly differently in 'Campesinado y Revolution' when he writes:-

'.....the experience of participation of the peasants at managerial levels is insufficient. It is well known that, all too often, the management of the enterprises are detached from their base. In numerous cases the management represents either the professional interests of the technicians (tecnicos) who act as executives, or personal interests, or else it supports the prestige of peasant managers who try to imitate, consciously or unconsciously, the old prerevolutionary owners.' (my translation)*44

The struggle between management and workers led to the occasional strike (e.g. at Pucala over wages) and at Cayalti an attempt was made to expel workers from the cooperative for criticising the conduct of the Executive Committee.*45

The workers response was to maintain their old union and syndicate apparatus which led to the anomaly of having to bargain with themselves over wages.^{*46} Increasingly a policy of non cooperation with the state and the 'technical experts' developed which eventually led to a crisis between the peasants and the state. On 31st March, 1976, President Morales broadcast a televised speech which denounced 'left wing infiltrators', 'striking workers' and 'uncooperative peasants'. In particular he condemned their lack of respect for the 'tecnicos' sent to help them increase productivity, adding that if they do not respond '....we will look for suitable methods of getting from them what Peruvian Society expects, and to which they have obligations.'^{*47}

The effect of the Agrarian Reform was to strengthen the hierarchical position of the technical experts over the cooperative workers which was emphasised by the marked difference in wages between the two groups. Similarly the permanent cooperative workers were in a relatively powerful position over the seasonal and temporary workers who were institutionally excluded from cooperative membership. The full hierarchy looked something like this:-

- a) The Government
- b) Agronomists employed by Agrarian Reform institutions
- c) Agronomists as cooperative administrators
- d) Agricultural Engineers as cooperative administrators
- e) Permanent Workers as administrators
- f) Permanent Workers
- g) Seasonal/Temporary Workers.

I would suggest that this hierarchy represents a particular social division of labour that is reproduced by the vision of agronomists, as members of the emerging 'new middle class', and that once adopted

makes this form of vertical hierarchy/inevitable.^{almost}

Since the sugar estates remained the most profitable section of agriculture, the cooperative workers became the wealthiest group of all the peasantry. Consequently they strongly resisted any possible plans to enact profit sharing across all agricultural enterprises since this threatened their relatively high income.^{*48}

2) Division of land for private exploitation

The Agrarian Reform law set limits of land and size of sheep and cattle herds. It also organised the application of the law to take place gradually over seven years, zone by zone. This made it possible for landowners to subdivide estates between members of their families, a strategy of avoiding expropriation common to many countries undergoing agrarian reform.^{*49} Nevertheless, the Agrarian Reform Law set out detailed conditions of exemption which are represented in the following table.

Table 7

	Exemption limits (hectars) * 50					
	①		②		③	
	lower limit	higher limit	lower limit	higher limit	lower limit	higher limit
coast	150	200			1,500	6,000
Sierra and higher jungle					5,000	20,000
Zone (a)	15	45	30	90		
Zone (b)	30	90	60	180		
Zone (c)	35	105	70	210		
Zone (d)	40	120	80	240		
Zone (e)	45	135	90	270		
Zone (f)	50	150	100	300		
Zone (g)	55	165	110	330		

According to the 1961 CIDA report the Property structure of the land was as follows.^{*51}

Table 8 Property Structure of Land, 1968

	No. of owners	%	Area (hectares)	%
Less than 5 hectares	708,257	83.2	1,054,720	5.5
From 5 to 100 hectares	131,827	15.5	1,859,443	9.9
From 100 to 500 hectares	8,061	0.9	1,624,643	8.7
Greater than 500 hectares	3,792	0.4	14,065,694	75.9

The immediate conclusion from this data is that over 0.4% of the landowners and 76% of the arable land would be expropriated. Most of the largest estates were being converted into cooperatives which left much less land available for division. Zalvidar puts the figure at around 35% of the total land. * 52

The process of land division set into action by the Agrarian Reform under the legislation of Caption IX, 'land division for private initiative' Arts 108 - 114, can be characterised as follows:-

There were a number of models for the division of land. These included;

- i) the division of land into an uneven society, on the basis of the quantity of shares held by each society member.
- ii) division of land for sale.
- iii) division into independent plots.

Before division took place the owner had to terminate contracts with the workers. Due to an old unrepealed law, the owner after the division of land could hire whomever was wished, consequently the old landowner remained in a position of power over the conduct of the peasants. Those workers that were not rehired, but were needed became seasonal or temporary workers. Through this process peasant syndicates were divided and many previously permanent workers lost

their homes.*53 Often land was sold to people from other parts of Peru when they were considered 'more dynamic' than the local peasants. Much of the division of land was actually fictional, based on merely the legal subdivision of land among family members.

The process of land division tended to strengthen the position of the middle sized farm owner at the expense of the large-scale land owner in terms of land. The peasants were divided into different groups depending on whether they benefitted, or suffered from the agrarian reform. Those who gained ownership of land were in a strong position over those who did not, or those who had lost permanent labouring jobs. Many peasant groups protested over the loss of rights by permanent workers*54 which led the Government to modify 'Caption IX' and establish new norms:-

- i) that before the process of land division a communal plot (of half the land) would be reserved for the permanent workers.
- ii) that there would be a greater number of small owners.

However, by the time this modification was made (November 1969) between 80% and 95% of the division of land had already begun since this form of agrarian reform was an accelerated version of the agrarian reform under the previous government and the modification was not retroactive.

Table 9
E.G. Evaluation of the Private Division of Land in the Valley
of Cañete from 1964-9*55

year	area effected (hectares)	% of total area	time lapse
1964-1966			
1967	6,848	54.0	5.5 years
1968			
1969 until 24/6			
1969 from 24/6 to 25/11	3,652	28.0	6 months
after Nov. 1969	1,500	15.6	
Total	12,000	97.6	

As David Bayer points out, based on a detailed study of the effect of the Agrarian Reform on the organisation of potato production at Huasahuasi, the middle sized landowners were the principal beneficiaries of the reform and could be characterised as a 'rural petty bourgeois class'^{*56}

3) The conversion of peasant smallholders who work for others, into private owners of the land

As in the previous category of the Agrarian Reform, this sector represents an acceleration of the agrarian reform of the previous government, aimed at eliminating traditional, 'semi-feudal' relations of production that were considered to be :- 'an attack on human dignity'^{*57} This reform benefitted three types of rural worker.

(1) Traditional peasants ('Feudatorios') who lived and worked on the traditional estates in the sierra. They worked some land for themselves and paid for the privilege by providing 'personal services' under conditions of servitude. In this case work for the landowner constituted the rent for having the privilege of their own plot.

(2) Tithe labourers ('Aparceros') who were allowed to work plots owned by the estate landlord in exchange for a part of the produce.

(3) Lessees ('Arrendatarios') who paid rent in money for land. This group was generally only found on the coast or in the most modern areas.

The Agrarian Reform law^{*58} (Art 188) limited the size of the plots to be expropriated to fifteen hectares on the coast and thirty hectares in the sierra. By the 3rd April, 1973, these limits were further reduced considerably to five hectares of low lying irrigated land, ten hectares of unirrigated land, and thirty hectares of natural pasture.^{*59}

Although the small landowner was liable to have land (that wasⁱⁿ anyway sublet) expropriated, in practice this very rarely happened.^{*60}

More normally the lessee was given written assurance of security of tenure.^{*61}

The major significance of this law was in relation to the traditional estates. It can be argued that this part of the Agrarian Reform went some way to recognising the legitimacy of peasant struggles against 'semi-feudal relations of production' and the attempts to regain land since the late 1950's,^{*62} Since the Agrarian Reform Law to some extent institutionalises the right of peasants to own the land they work. However, this is a 'right' in principle alone, and not a reallocation of wealth. The 'agrarian debt' and payment by bonds to the old landowner represents a flow of capital derived from the labour of the peasants, towards private investment in industry.

Van de Wetering^{*63} estimates that 800,000 families have rights to claim land under Art. 84 of the Agrarian Reform Law. The official figure of families to benefit under the Agrarian Reform Law from 1967 to 31st August 1974 is 197,607.^{*64} (On 28th June 1975, the Peruvian political magazine 'Marka' placed the figure at 220,719 families.) Using the estimates of the Ministry of Labour, the average rural family consists of 5.5 people. Consequently, 220,719 families represents 1,213,955 people. According to the census in 1970,^{*65} the rural population is approximately 6,530,000 people. Consequently, this interpretation of official figures estimates that only 18.5% of the peasants had actually benefitted from the reforms by 1975. Using Van de Wetering's figures, only 28.4% of those eligible to benefit from the reform had actually done so by 1975.

David Bayer^{*66} explains this occurrence in terms of the lack of available land. Discounting natural pastures as being inadequate for agriculture, he estimates (using figures provided by Barroclough and Domike^{*67}) that there is only an average of two hectares per family. However this structural limitation to the reform was not the only factor involved. The impact of the Agrarian Reform on the

traditional sector of agriculture varied tremendously from area to area. Some landlords complied with the reform, others totally abandoned their land in the hope of a total expropriation and consequently a larger share of bonds invested in industry.*68

George Turner points out that many livestock owners, in an attempt to maximise short term profits systematically slaughtered their livestock which led to increasingly severe shortages of meat from 1970. This was possibly due to the slow process of expropriation in this area. By 1972, only 5% of the total cattle population was in the hands of new associative enterprises or temporary committees, 12% of the sheep and 10% of the alpacas and llamas.

George Turner argues that:-

'The need to control this evasive action by landowners must be considered one of the important lessons to be learned from the Peruvian experience' *69

The combined effect of the reduction of the limits for the division of land by the government and the evasive action taken on various levels by the landlords can only be seen as further reducing the number of beneficiaries, particularly in the amount of land division where many peasants were persuaded by the landlords to buy the plot they worked outright before the government 'seized' all the land.*70

4) The conversion of livestock estates into Farming Societies in the Social Interest (SAIS - sociedades agricolas de interes social)*71

The model of SAIS has in practice been limited solely to the modern livestock estates in the sierra. Originally the model was for general application and there was some debate between ONDECOOP (The office of cooperative development) and the Management of the Agrarian Reform (la Direccion de Reforma Agraria) over whether the sugar estates should become cooperatives or SAIS before a decision was made in favour of cooperatives. The SAIS model is intended to

benefit the surrounding peasant communities, or satellite farms as well as the permanent workers of the actual estates. The surrounding smallholders are officially considered to become a part of the SAIS estate and both the permanent workers on the former private estate and the permanent workers/owners on the satellite farms become society members ('socios'). However, profits from the SAIS cooperative are not distributed evenly. Profits are proportionally divided in direct relation to the amount of the 'agrarian debt' paid by each individual 'socio'. Consequently, the workers on the previous private estate who were generally wealthier than the surrounding peasants were able to benefit from a larger share of the profits, increasing their relative wealth. It was frequently reported that the wealthier 'socios' used their capital to employ the poorer peasants to do their share of the work. Moreover, the 'Ingenieros' and administrators who controlled the management of SAIS enterprises were in an even stronger financial position.

Martinez Alier reports in 'Los Huacchilleros del Peru':-

'...the SAIS are administered by highly qualified professionals agronomists and veterinaries, contracted by the Agrarian Reform authorities, being in many cases the same old administrators having exchanged estates.' *72 (my translation)

With the expropriation of the previous landlord, these 'technical experts' gained more autonomy and began to increase investment in machinery, which displaced the need for labour which heightened the problem of labour exploitation. Attempts were also made to incorporate the community owned livestock into the livestock of the whole SAIS, which was strongly resisted by the peasant communities,

even though they had become 'socios', since this could represent a real loss of earnings. * 73

5) The conversion of peasant communities into cooperatives

(CAPS - Cooperativas Agrícolas de Produccion)

This form of Agrarian Reform was not instituted by the initial Agrarian Reform Law but by the Statute of Peasant Communities. *74
Nevertheless, Art. 4 of this law decreed that this process of setting up cooperatives would be controlled by the same organs of reform as the other cooperatives. The statute recognised four distinct kinds of organisation existing among the peasant communities, that serve to categorise who and which groups constituted 'peasant communities'.

- (1) Family groups with each member working a separate plot of land.
- (2) Cooperative, where the community collectively exploits the land in common. (Pasture land was used in this way, but the herds were privately owned.)
- (3) Special production enterprises related to agricultural activities, servicing or supplying agriculture needs of the communities from within. Art. 23 establishes that to count as a 'comunero' the peasant must be an agricultural worker and not have a source of income from outside the community that is greater than the income gained from within the community. However, the government later altered its position accepting that 'comuneros' exist who do not basically work in agriculture, which implies that these special production enterprises need not necessarily be agricultural.
- (4) Communal, that is the collective work of the 'comuneros' in 'conservation, improvements, or the construction of works in the social interest or other collective activities.'

As Barraclough observes in 'Agrarian Structure in Latin America' many of the peasant communities had conserved the Incan-derived tradition of using the natural pastures in common, but there was a growing section of peasantry who had enclosed and privatised pastures.^{*75} Title (IV) of this decree represents an attempt to purify the category of 'peasant community' by requiring the peasants to have been born in the community, or a son of a member of the community, to permanently reside within the community, to essentially work in agriculture, to own no property outside the community and to have no source of income from outside the community that was larger than the income within. Some of these requirements were altered after pressure mostly from the richer 'comuneros' who would have otherwise been excluded from the benefits of the cooperative. In November, 1970^{*76} the government included those peasants who had a source of income outside agriculture which was not greater than an 'average income of a family group in agriculture'; 30-50 thousand soles a year. Nevertheless this represented an attempt to deal only with the poorest and most traditional sector of the peasant communities. Cooperativisation represented an attempt to modernise production amongst the traditional peasantry through collective organisation, state credit, and technical aid from 'Ingenieros' employed by the state, or on a state aided scheme. It did not represent a process of expropriation, but a process of consolidation.

- 6) Credit The Agrarian Reform Law sets out an order of priority of both credit and technical assistance (Art. 91). The first order of priority is the beneficiaries of the Agrarian Reform as opposed to the non-beneficiaries. Within this order of priority:-

'The order of priority will be the following: cooperatives, peasant communities, SAIS, small and medium farmers.' Art.91 (my translation)^{*77}

Therefore, despite the fact that the large cooperatives (notably the sugar estates) were in a relatively highly favourable position to generate self finance from the profits derived from exporting produce, they received /^{top} priority for technical assistance and credit facilities. In other words, the Agrarian Reform Law favoured /^{the} more heavily industrialised, export orientated sector of agriculture at the expense of the more labour intensive food producing sector. George Turner*⁷⁸ suggests that administrative factors also play a part.

He argues that even though the needs of the applicant for a loan were intended to take precedence over the financial backing and guarantees that could be offered, other factors proved to be of greater significance. Since beneficiaries of the Agrarian Reform were required to reimburse the government for the nationalised loan, they were already in debt. In particular, individual beneficiaries frequently had no other resources than their newly acquired land. Consequently further credits were granted on the security of productive capacity which effectively limited credit to the more profitable forms of agriculture, that is larger-scale industrialised agriculture orientated to the urban or export markets. Turner emphasised that official credit was unavailable to enterprises or individuals who couldn't offer good prospects of repayment with interest.

There are a further two major reasons why credit was effectively limited to the large-scale agricultural enterprises. The first is the lower administrative cost due to -

- (i) fewer applications for credit to examine
- (ii) fewer loans to supervise.

The second is the advantage of dealing with the 'campesino leaders', farm managers, or technicians, who could be given a training



programme in credit. Whereas the less hierarchical social division of labour in the traditional communities, for example, would require a greater expenditure of effort since a large part of the community would expect to understand and approve the whole process. Although food production was favoured to the extent that the interest was maintained at 7% for a larger initial amount than for other agricultural produce, however loans to large scale associative enterprises were maintained at 7% no matter how large the loan for agricultural or livestock production.

The amounts and direction of credit since the Agrarian Reform came into effect are perhaps the clearest indication of priority. The following table (see over) of 'Agricultural Credit' is based on two sources: 'El Banco de Fomento Agropecuario'^{*79} - covering the years 1968, 1972 and 1973, and David Bayer who cites figures presented by the Ministry of Agriculture to the newspapers 'Comercio' and 'Expresso' on 24th June, 1973 - covering the years 1968 and 1972.^{*80} Where the figures disagree those presented by the Ministry of Agriculture are given in brackets.

In 1972 and 1973, the 'others' represent previous middle sized farms that were in a transitional stage from private ownership to some form of peasant associative enterprise. David Bayer points out further that while the amount of credit to farming enterprises appears to more or less double, the real value of soles dropped, partially from inflation and partially from a devaluation of the sol against the dollar. This meant that according to his figures (2,860,155 to 6,509,872) the real value of credit went up by 55%. Using the bank's figures, the real value of credit only went up by 46% from 1968 to 1972.

Table 10

AGRICULTURAL CREDIT

	1968		1972		1973	
	amount (soles)	%	amount (soles)	%	amount (soles)	%
Large Landowners	1,507,219	43.5 (52.7)	-	-	-	-
Peasant Associations (COOPS, CAPS, SAIS) (50,000 'socios')	291,000 (-)	8.4 (-)	3,170,514	48.7	5,488,000	62.4
Medium Landowners	650,659	18.5 (22.75)	270,000	4.2	264,000	3.0
Small Landowners	1,014,000(707,277)	29.3 (24.55)	1,445,339	22.2	1,758,000	20
Others	-	-	1,624,019	25	1,279,000	14.6
TOTAL	3,463,000 (2,860,155)	100	6,509,872	100	8,789,000	100

While all the other categories of ownership become interwoven statistically as they change their ownership characterisation, the small landowner remains isolate which allows for a clearer statistical analysis. From 1968 to 1972 the real value of agricultural credit to the small landowner rose by 48% using the figures used by David Bayer, or by 34% using the figures of the bank itself. More clearly the agricultural credit has dropped relatively from between 29.3% and 24.55% in 1968 to 20% in 1973.

George Turner^{*81} writes in 'Agricultural Credit in the Peruvian Agrarian Reform':-

'Inevitably the proportion of loans to small, individual producers has fallen..... An important factor in maintaining the volume of these loans has been the importance of small farmers in the supply of food crops. They also predominate in cattle and poultry production.'

Despite the fact that the cost of importing food in ever increasingly large amounts was continually rising, and by 1976 had become 30% of the total import costs,^{*82} the small landowner was getting less and less access to financial credit relative to the export orientated more wealthy estates, now cooperatives.

- 7) Education The Agrarian Reform law was not concerned with education. No analysis was made of the educational requirements for a successful agrarian reform. Rural education was considered within the context of the Education Reform, and education provided for the beneficiaries of the Agrarian Reform through the technical assistance projects.

In practice, the education took two forms.

First is the education provided for the rural community. The General Education Law emphasised the importance of free education for the marginal/rural population as part of a programme of

integrating the peasantry with the more mainstream and modern sector of Peru. Also recognised is the importance of developing a pedagogy that does not oppress the peasants. However, the approach adopted in lawwas to uphold and validate 'human values', indigenous languages and 'authentic' traditional culture. Education is seen to be a process of widening local awareness and avoiding cultural domination through literacy, and 'intellectual liberation'. This viewpoint fails to consider the technical validity of the agricultural knowledge and practice of the peasants. It fails to recognise the possibility of the peasants themselves disseminating information and successful techniques, of defining for themselves the assistance they require within the context of their own problematics.

Secondly, there is the form of technical assistance provided. In this context the nature of technical expertise is taken for granted. The peasants are seen as receptors of knowledge or expertise. Solutions to problems are given within the context of a taken-for-granted problematic that I shall examine in detail later. There is no analysis of the appropriateness of knowledge or techniques to the peasants' reality of small-scale integrated farming and the rural community.

The problems I have touched on here are elements of the central issues of the thesis. The reason I have outlined them here is that the lack of a coherent educational provision for the Agrarian Reform is a significant weakness or limitation of the Agrarian Reform itself.

The problem can be considered as follows:-

- i) The 'know-how' required is not being defined by those involved in agriculture, but by agronomists as qualified 'experts'.

- ii) The provision and dissemination of 'know-how' is limited to trained agronomists as qualified personnel
- iii) The 'know-how' provided has been defined as relevant by the agronomists rather than by the peasants who have to implement the 'know-how' and for whom it may not be appropriate.
- iv) The educational processes fail to draw on the skills and experiences of the rural workers themselves.

A Social Analysis of the Agrarian Reform

Before analysing social aspects of the Agrarian Reform in more detail, it is worth pointing out at this juncture some general points. While Belaude's administration had begun a program of agrarian reform in 1963, the Agrarian Reform under Velasco's military government was far more sweeping and rapid.

Table 11
Comparison of Agrarian Reforms^{*83}

Variables	Belaunde (6 years)	Military Government (first 15 months)
Beneficiaries	14,000	70,000
Adjudications } Expropriations } % of total } planned	40%	26%
Agricultural budget National budget	2.8%	6.6%

Edgardo Seoane,^{*84} Belaunde's Vice President, articulated the short comings of Belaude's agrarian reform in 'Ni Tiranos ni Caudillos' published in 1968.

These can be outlined as follows:-

- i) The Agrarian Reform Commission negated the original intentions of the reform law through changes enacted in the Chamber of Deputies.
- ii) Far reaching exceptions were granted to the industrialised estates on the coast.
- iii) The zones of agrarian reform turned out to be cumbersome and complicated and slowed down both the valuation of land and the administrative processes.
- iv) The selection of lands for adjudication did not correspond with technical criteria.
- v) Dispositions concerning water codes were anachronistic.
- vi) Serious problems were created for the small farmer renting land on large estates.
- vii) The National Council of Agrarian Reform was bureaucratic and easily dominated by the 'land-owning oligarchy'.

As Petras and La Porte point out:-^{*85}

'.....the law was never capable of providing even a modest change in Peru's land ownership patterns.... From hindsight, it is apparent that the reform effort was actually doomed before the law was enacted.'

By contrast the Agrarian Reform under Velasco was characterised by speed, the comparatively massive character of the expropriation, the impact on the agro-industrial units on the coast and the emphasis on the formation of peasant cooperatives.

Even though the military government commissioned an evaluation of the agrarian problem in Peru by the United Nations Food and Agriculture Organisation (FAO)^{*86}, the contrast of the two reforms ought not to be simply explained in terms of correcting the faults

of Belaunde's reform; for there are many economic, social and political factors involved which I shall begin to evaluate further on. What is, of course clear, is that the Agrarian Reform under the military was a political process in so far as it expropriated the powerful landowners on the coast, not as a result of inefficient production but in order to transform the traditional basis of economic and political power in Peru. As Carlos Malpica points out in his introduction to the fifth edition of 'Los Dueños del Peru', 1973; *87

'In particular I must note down that the condition of the landowners has changed to such a degree, that it is now difficult to be able to consider them as a power group.'

The Shift of Capital from Agriculture to Industry (and Services)

The administration of the 'agrarian debt' is, as I pointed out earlier, an explicit attempt to transfer capital from the agricultural sector to the urban-industrial sector. Before discussing the implications of this process it is worth examining to what degree this is a new process or to what degree the economic and political forces that constitute the Peruvian reality have effected this process. To do this, agriculture must be examined from a historical perspective.

Foreign capital has played a determining role in both agriculture and mining sectors. Anaya Franco *88 in 'Imperialismo, Industrialización y Transferencia de tecnología en el Peru', notes there is a definite shift of foreign capital from the agro-extractive industries towards the urban manufacturing industries from around 1950. Aníbal Quijano analyses this process in more depth in 'Nationalism and Capitalism in Peru', he describes the result of this shift in foreign investment strategy as follows:-

'Between 1950 and 1958 the composition of the countries Gross National Product was substantially altered, with manufacturing replacing agriculture and cattle raising in first place and growing at twice the rate of the latter.'^{*89}

From 1950 to 1967, agriculture and cattle raising fell from 22.5% to 15.5% of the Gross National Product.^{*90} This process is perhaps more clearly defined by agriculture's fall in its proportion of exports, since as Carlos Malpica emphasises in 'Los Dueños del Peru' both foreign and national capital was heavily concentrated in the export sector of agriculture.

Table 12

The Evolution of the Relative Value of Agricultural Exports^{*91}

(Thousands of dollars (\$USA))			
Year	Export Total	Agricultural Exports	Percentage of Total
1950	193.6	106.6	55.0
1955	270.9	119.0	43.9
1960	433.1	146.3	37.7
1965	667.3	162.3	24.3
1968	846.0	164.2	19.4

The movement of capital from agriculture to the more profitable urban-industrial sector was not limited to foreign capital.

Although accurate statistics are difficult to produce, Carlos Malpica^{*92} documented the investment infiltration of wealthy Peruvian Landlords into other areas which David Bayer^{*93} presented in the following table (13, see over)

The movement of capital from agriculture to the urban industrial sector was due solely to the greater possibilities of higher returns in this expanding sector. However, with capital flowing away from agriculture it became increasingly difficult to maintain profits in this traditional sector in the face of falling absolute prices on the world market. (See Tables 14 and 15).

Table 13

Investments of the Principal 44 Landowners

<u>Kind of Enterprise</u>	<u>No. of landlords out of the 44</u>
Bonds or securities	27
Banks - Financers	25
Commercial Companies	17
Energy	7
Heavy Industry	5
Mass Communications	5
Light Industry	26
Insurance Companies	21
Mining	7
Transport	5

Table 14

Fluctuations in the price of Agricultural Products in the International Market^{*94}

(Dollars per Metric Tonne)

<u>Year</u>	<u>Sugar</u>	<u>Cotton</u>	<u>Coffee</u>	<u>Wool</u>
1951	-	1,372.0	1,083.6	2,504.8
1954	-	768.9	1,504.7	1,623.9
1959	82.1	607.8	784.5	1,244.1
1964	149.4	792.3	875.1	1,598.4
1965	100.8	755.0	839.4	1,860.7
1967	116.2	783.9	698.9	1,552.9

By 1969, even some of the sugar estates were heavily in debt

(taking the production of sugar, as separate from the shareholding
in other manufacturing processes).^{*95}

Table 15
The Sugar Estates in Debt by 1969^{*96}

Estates	Size	Preportion of shares foreign owned	The Debt (Soles)
San Jacinto	3,000	74.4(Grace)	30,000,000
Laredo	2,600	78.0	115,000,000
Paramongo	7,000	99.85	68,000,000
Cayatti	7,785	100	220,000,000

Since both national and foreign capital was moving from agriculture to industry, the attempt by the military government to organise this same shift, represents the institutionalisation of market forces rather than a direct confrontation with the landowners as a class. The Cambridge economist E.V.K. Fitzgerald^{*97} after working for a short time with the military government in Peru presented the view in his paper; 'Some aspects of State Capitalism in Peru' that the military government had expected a 'national bourgeoisie' to take advantage of the state's emphasis on industrialisation based on the encouraging of capital into the industrial sector, increased tax relief on 'non-traditional exports' and through the Agrarian Reform, broadening the domestic market - and begin a more vigorous process of investment and entrepreneurial activity. However, this failed to take place, and he argued that it was due to this 'failure' of the Peruvian 'national bourgeoisie' to take advantage of the situation that forced the state to take on 'the role of the domestic elite in an attempt to obtain economic growth, (and) industrial development...' which meant that the state took on /^{the} major role of investing capital in the Peruvian economy.

Of course, my brief review here simplifies the process. There was considerable tension between various groups of the military crudely

represented by the radical socialist element on the one hand pressing for a state controlled socialist economy and by the more right wing on the other, crudely represented primarily by the navy with various family connections among the landowning and industrial elite in Peru (reported by Marka Magazine ^{*98}) pressing for a more liberal economy with emphasis on the importance of the private sector.

Both landowners and the international capitalists effected by the Agrarian Reform reacted in diverse and often confused ways. In the U.S.A. the 'Wall Street Journal' ^{*99} presented a series of editorials supporting the expropriations on the coast since it... '....permitted the politico social stabilisation of Peru and thus favoured future possibilities of American investmentsince politico-social instability was the principle obstacle to such investment.'

Here, the Wall Street Journal is evidently supporting American capital in industry at the expense of the agricultural interests. W.R. Grace reacted in a far more confusing way. Only a few days after the Agrarian Reform law was enacted the company expressed in the New York Times that they were 'satisfied' with the law. ^{*100} Yet Zalvidar reports that it was W.R. Grace that also applied pressure on the Government of the U.S.A. ^{*101} to apply sanctions on Peruvian sugar exports which resulted in reducing its quota of imports by 458,000 metric tons in 1971 and later, increasing its import duty by \$20 a ton.

The Peruvian landowners reacted to the military government with extreme suspicion. While the landowners were also investors in industry, they represented the most traditional sector of this industrial elite, disapproving of anything that smacked of state intervention in the private sector. Possibly the most coherent

activity of the wealthy Peruvians was their attempt to extract capital from Peru altogether. The amount of capital to have 'fled' Peru from October 1968 to 1971 was estimated by the Economic Commission for Latin America (ECLA) to be 180 million dollars.*102

The Agrarian Reform, specifically through its process of indemnification with bonds orientated towards industry both institutionalised the shift of capital from agriculture towards industry and gave the Peruvian state an unprecedented degree of control over investment. The state rapidly became the major investor in the Peruvian economy, investing 52% of the total capital invested over the year 1975/76.*103

Since the military government placed priority on securing the payment of the 'agrarian debt' by the peasant beneficiaries of the reform, the Agrarian Reform cannot be considered as a significant process of reallocation of wealth. It was primarily a process of land redistribution. In this respect, the Reform changed only the nature of power relations on the land, it did not significantly alter the power structure based on wealth and the control over production. It simply institutionalised a process of drift which was determined by a falling rate of profit and significance of agriculture in the export economy, and the rise in importance of industrial production. The Latin America Economic Report in June 1976, presents a review of industrial production based on official figures which was summed up as follows:-

'The composition of industrial production has remained unaltered throughout the period of 'structural changes' since 1968 Industry has continued to be capital intensive, import intensive and designed to satisfy the needs of the urban middle class.*104

The Idea of a National Bourgeoisie

The impact of the 'Peruvian Revolution' on the landlords and the 'industrial bourgeoisie' failed to encourage a rationalisation of investment and interests, or the conversion of the 'national bourgeoisie' to one which invested in the country, or remained in administration. The 'industrial bourgeoisie' were in practice often the same persons who as landlords had been expropriated. The wealthy were therefore alienated from the 'revolutionary process', either by experience, or in response to the radical rhetoric of the 'Revolutionary Government'.

Furthermore, the whole process of capital transference led to diverse conceptions of the interests of the wealthy in either maintaining or releasing control over the land which was both yielding less profit and subject to the peasant unrest of the 1960's and yet was the traditional basis of power in Peru. The role of the military as 'social engineers', an unprecedented move, added to the confusion.

Structural Differentiation in Agriculture

Prior to the Agrarian Reform, the agricultural sector could be characterised by a high concentration of land as the CIDA survey in 1961 demonstrated.^{*105} (Table 16 Property Structure in Agriculture - see over)

The Agrarian Reform's emphasis was on expropriating the large-scale export and cattle estates. Many were converted into cooperatives, excepting where they were formally livestock estates when they were converted into SAIS.

George Turner emphasised, in an interview with me, the importance of the success of the Agrarian Reform to the government in terms of the large number of beneficiaries and the maintenance of

Table 16 Property Structure in Agriculture (1961)

Type of Owner	Area Categorisation	No. of owners	%	Total areas (hectares)	%
Large Landowner (Latifundistas)	Greater than 500 hectares	3,789	0.4	16,039,000	77.7
Medium Landowner (Medianos agricultores)	between 100 to 500 hectares	8,186	1.0	1,614,000	7.8
Small Landowner (Pequenos agricultores)	between 5 to 100 hectares	133,642	15.7	1,914,000	9.3
Smallholders (Minifundistas)	less than 5 hectares	707,415	83.2	1,054,000	5.2

production, saying:-

'... the military government stands or falls on the success or failure of the Agrarian Reform.'

Marka magazine presented the following statistics based on information given to 'El Comercio' in March by the Minister of Agriculture, General Enrique Gallegos Venero.^{*106}

Table 17

The Adjudications up to 31st May 1975

<u>Mode of adjudication</u>	<u>No. of concerns</u>	<u>Area (hectares)</u>	<u>%</u>	<u>Family Beneficiaries</u>	<u>%</u>
CAPS and Coops	363	1,797,000	34	87,926	40
Peasant Groups	291	617,000	12	19,991	9
SAIS	50	2,250,000	43	55,058	25
'Comunidades'	137	476,000	9	40,011	18
Individuals	-	129,000	2	17,733	8
TOTALS	841	5,270,000	100	220,719	100

'CAPS' are 'Agricultural Production Cooperatives'. These statistics are similar to those presented by the Ministry of Agriculture in 1974 excepting that the 'Peasant Groups' are categorised under 'CAPS' since they are in fact cooperatives, but on a smaller scale.

By the end of the adjudications, the military government had always claimed that 11 million hectares would be redistributed among 48% of the peasants.^{*107} However the official figures cited by Latin America Newsletter in June 1976, was that just over 7 million hectares had been distributed to 286,000 peasant families, 93% cooperatively owned.

On the basis of the 1970 census, there are 1.16 million peasant families in Peru. Consequently the Agrarian Reform represents the redistribution of 28.5% of the land among 24% of the rural families. If on the basis of the 1975 figures, the ownership by virtue of the Agrarian Reform is further subdivided, then cooperatives (including CAPS and SAIS) represent

77% of the adjudicated land and 65% of the beneficiaries. Assuming the same preportional distribution of land among types of farming enterprise in 1976, this means that solely on the basis of the Agrarian Reform 15.5% own 22% of the land. This shows a slight structural differential in favour of the most 'modern' sector of the agricultural sector, that is the export sector, so that the agricultural workers in that sector (who were the wealthiest group of 'peasantry') benefitted most.

Even if all the expropriated land once belonged to the large landowners, 7 million hectares represents less than 44% of all of the large landowners retained ownership. If it is assumed that all of the large landowners retained ownership of some land (which is manifestly not the case) then 0.4% would still own 43% of the land. Therefore it is clear that the concentration of land in Peru is higher than 15.9 of the rural population owning 65% of the land.

Before further analysis of structural differentiation it is worth making two points clear. The Agrarian Reform severely reduced the high concentration of land in the hands of the wealthy landowners expropriated the largest and most powerful estates. Nevertheless there remains a concentration of land, most importantly, the most powerful estates in the export sector are owned by 15.5 of the rural population (22.5% of the total land).

To expand this analysis it is necessary to recognise the limitations of analysing the Agrarian Reform in terms of land concentration, since it cannot be considered of equal worth hectare for hectare. It is precisely that land used to produce export products, that can provide the highest incomes and within

this group the sugar estates are the most economically powerful.^{*108} The first level of structural differentiation is based on those who did and did not benefit from the reform. Those who did constitute at the most 24% of the rural population. Of those who did benefit, some benefitted more than others. Those who benefitted most were probably the sugar estate workers (limited as we have seen to the permanent workers). In SAIS, the permanent workers benefit at the expense of the incorporated 'comunidades'. Of those who did benefit, it is the peasant 'comunidades' who probably benefitted least, gaining only a legal ownership of land that in practice was already theirs and the possibility of credit and technical assistance.

The Agrarian Reform led to the technicians taking on the role of the management of the agricultural cooperatives. Previously they had been sandwiched between the landlord and the peasants and used their technical knowledge in the service of the landlord.

The Agrarian Reform altered the conditions of employment for all 'technical experts' radically. When managers of agricultural enterprises, they became cooperative members. They were in a position to define what knowledge was required by management and to supply it. As part of the 'new middle class' they were able to identify with the expanded role of the state and develop their careers within it.

The role of the 'technical expert' became far more powerful and far less accountable; particularly since the agronomists and technicians, on the basis of their 'expertise' and government backing controlled the cooperative committees. In this respect their role was one of domination and recognised by the peasants as being as though they were accountable to only the state, which in turn acted through these 'experts' as if the actual landlord.^{*109}

There were, however, important and indeed obvious differences between the role of the technical expert and the role of the landlord. The most obvious is that the landlord was the owner of the means of production and the technical expert, even while acting on his/her behalf, nevertheless, acted with increased relative autonomy after the "Peruvian Revolution". I have already begun to suggest that such agronomists could be identified as part of a social group within the middle class which acted as agents of modernisation in the process of "development". Hence they were not necessarily agents of the landlords nor acting in their interest. From their perspective, the new scientific management of agricultural production could be seen as a key element in a programme of modernisation and change from the "semi-feudal" agriculture found in the Sierra to one which more closely resembled the more highly developed agro-industrial complex of coastal Peru which was seen as the future. Unlike the typical landlord, agronomists considered that they had a vision which extended beyond the immediate landholding. That is, as we shall see later, they claimed to think in terms of the national good in keeping with the principles of the "Peruvian Revolution". For example, they stressed the need to diversify and intensify agricultural production to an extent that did not necessarily coincide with the interests of the landlords.

Another important difference was the nature of the relationships between peasants and landlords, and peasants and agronomists. Although the technical expert or agronomist as a manager may have appeared to assume the authority of the landlord, this was based on completely different premises ("expertise" rather than "birthright" manifesting itself in control rather than power) and characterised by a different form of social control which was more appropriate to the new model of "development" and through which it was envisaged that peasants would become willing participants in the process of development itself.

However, agronomists were normally dependent on landlords, and when employed by traditional landlords, ultimately subject to their authority. Less traditional landlords were more likely to recognise the value of agronomists and their role in redefining their relations to the peasantry. Many of these landlords were inextricably bound to the state through production and marketing agreements and therefore tended to accept the advice of agronomists and the changes in work relations they proposed.

Others, including some traditional landlords became interested in new production techniques and felt that the way the agronomists they employed to introduce these techniques redefined work relations was implicit in that technique. That is, if it meant a loosening of control, they, ultimately interested in profit, were

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willing to allow the modalities of control to be varied.

Prior to the "Peruvian Revolution", the peasantry were virtually landless and subject to a visible and clearly defined process of social control. The landlord may have employed agronomists to gain technical advice, but the peasants were simply told to do the required work in exchange for payment (which often included the right to farm "family" plots and so on). After the Agrarian Reform the peasants were officially referred to as "campesinos" (ie agricultural workers) which was intended to imply a greater degree of respect. Those who were cooperative members could no longer be simply told what to do, but were seen as in need of education to produce the "best" crops. (This concept will be examined in detail later).

The post revolutionary agronomists as teachers could be considered to be what Bernstein calls "reproducers" of symbolic control. Those working in the state or private sector could be considered to be both "reproducers" and "executors" of symbolic control. I shall argue later that the new middle class were also unusually involved in the military based "Peruvian Revolution" and so could be further considered as "regulators" of symbolic control. Essentially, I am arguing that the main characteristics of this social group were similar to those of Bernstein's new middle class, but that this has to be seen in the Peruvian context where they had gained an unusual degree of social influence.

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To anticipate the argument to some degree, we can identify the role of agronomists structurally as well as from the point of view of the new middle class ideology. This will also contribute to clarifying the nature of the changes experienced by the peasantry in the process of agricultural production.

As part of the "revolutionary" process, the form of social control changed from an explicit, to an implicit form. The structural reasons can be identified as-

- 1) the economic need to ensure the supply of appropriate produce to the profitable industrial plants and export markets which, as we have already seen, frequently remained under the control and/or ownership of the former coastal landlords.
- 2) the political need to gain the economic cooperation of the peasants.

We can therefore begin to see that the formation of this new middle class, of which agronomists were a part, was a social response to the changing needs of the mode of production.

From the point of view of the new middle class, the changes could be explained as the attempt to "modernise" Peru, and diversify

exports to promote a strong Peru. The changing attitude to the peasants was seen as part of an attempt to integrate not only the traditional economy of the Sierra with the modern economy of coastal Peru, but also to begin to integrate the Indian rural culture with the European urban culture. It was therefore considered to be patriotic, nationalist, humanist, and building towards a stronger, more harmonious, and modernised future.

Within these changes, a number of significant developments can be recognised beyond the change from explicit to implicit control, for example-

- 1) The function of land to provide capital to invest elsewhere (decapitalisation) was augmented by the use of the land to generate economic diversification (often seen as the attempt to promote greater national economic stability).
- 2) The attempt to replace semi-feudal relations of production in agriculture by forms of collective ownership. This was considered to be a political necessity in the face of the demands being made by peasants, and also a way in which smallholdings could be transformed into larger agricultural units where technological solutions to production could be employed.
- 3) Political domination and economic exploitation were replaced by attempts to politically integrate the peasantry and maintain economic control over agricultural production.

In 1971 President Velasco said....

'...the basis of revolutionary planning lies in our firm belief that the apparently irreducible antinomy 'capital versus labour' can and must be overcome.' *110

Naturally, President Velasco's statement is a general statement of the government's ideological position. It recognises the existence of a class struggle, but believes that it is not a necessary part of Peruvian reality. In terms of understanding the Agrarian Reform, this ideological position is important, since it underlies the actions of the military in Peru. The conflict between peasants and the landlords had been extremely severe during the 1960's, culminating in guerrilla warfare which the armed forces had fairly successfully crushed. The 'antinomy' between capital and labour had been extremely violent in this case. However as we have seen earlier, the agricultural sector was losing its economic significance and was decreasingly the basis of political power. Furthermore the expanding urban industrial sector would benefit from an expansion of the consumer market into the rural areas. It seems likely therefore, that the Agrarian Reform was an attempt to rationalise this process and so avoid the possibility of a total confrontation between capital and labour.

In terms of the organisation of structural differentiation in the agricultural sector, the ideological position of the military is made more clear. Generally speaking, the wealthiest peasants benefitted most from the reform, the poorest benefitted least. Furthermore, as Hugo Blanco pointed out, *111 once the peasantry gain ownership of the land they have usually achieved their sole objective and tend to assume the role of the small landowner ('petit bourgeois') losing their radical political consciousness.

General Montagne, Prime Minister and Minister of War said in a press on July 19th, 1969.....

'There is no more anti-communist law than the Law of Agrarian Reform, since it opposes the advance of communism and will serve to refute the statements of those who criticise the Revolutionary Government for being extremist.'^{*112}

In any case, one of the structural implications of the Agrarian Reform was to divide the peasantry on the basis of ownership and land, and on the basis of differential wealth. In terms of control over the economics of agriculture, the Agrarian Reform appeared to give more power to the peasants. However, as we have seen, by including technicians as 'socios' (members of the cooperatives) in practice, power was taken by the technicians on the basis of their 'expertise' and in the spirit of 'national development' - the new middle-class.

Within the rural communities, the middle sized farms became of greater social significance. This was partly due to the expropriation of the larger estates which eliminated or reduced the immediate influence of the rural families who had been the traditional 'patrons'. This left something of a 'social vacuum' which the owners of the middle sized farms were able to fill to some extent. Furthermore they were in an ideal position to exploit any anomalies created by the Agrarian Reform such as:-

- i) After redividing the land between family members, the owners of the middle sized farms became 'beneficiaries' and therefore entitled to further credit and technical assistance which, being a 'larger administrative unit' they were ideally placed to receive.
- ii) After the lands were 'redivided' the peasants became 'free labourers' and the owners had the advantage of choosing between them and redefining the terms of the 'free contract'.

The Role of the State

When analysing the role of the state it is important to recognise that although the military took power as a whole and not as a 'caudillo', (that is a sector of the military defending particular interests) the initial ability to present a cohesive image and ideology did not alter the fact that there were marked differences of opinion and economic interest amongst the military that were to play an increasingly important role in defining the political alliances and economic policies of the 'Peruvian Revolution'. More specifically these tensions led to the overthrow of President Velasco in a bloodless coup at the end of 1975. Nevertheless, it is possible in general terms to examine the role of the military which spawned the 'Peruvian Revolution' in terms of the social forces underlying their actions.

What, then was the social reality that gave rise to the innovation of the military as social engineers in 1968? Many social commentators, such as Frias,^{*113} Mejia^{*114} and Aguilar Derpich^{*115} offer explanations which can be generalised as follows. The political, economic and social crisis of 1967/8 (which can be schematised as:-

- a) the deficit of balance of payments
- b) democratic crisis
- c) social unrest among the peasantry and urban workers
- d) high inflation)

necessitated firm action by someone. The military had acted decisively against guerrilla activity but:-

- a) felt a sympathy for the plight of the peasants due to:-
 - i) a similarity of background, since many of the military came from rural areas
 - ii) an understanding of the socio-economic

reality that oppressed the peasantry. This understanding was supposedly based on the social science courses given at the military academy in Lima. In fact most of President Velasco's junior advisors and assistants came from this academy and usually represented the most radical sector of the military.*116

b) felt discontented to be having to fight a civil war against the peasants when they thought of their role as defending the nation. The anti-guerrilla war was frequently seen as a war to defend American business interests.

However, although these factors may be of some importance, they are attempts to explain the ideological position of the military alone, rather than examine the social forces that gave rise to the 'Peruvian Revolution'. Anibal Quijano attempts to explain the 'Peruvian Revolution' in terms of the dynamics of the socio-economic reality, rather than on the level of ideology.

Quijano conceptualises the military as an intermediate level of authority. He states that political power is normally held by those with economic power. In Peru, the economic elite can be analysed along two dimensions, internal and external. Due to the dependence of the Peruvian economy on foreign capital, it was the international capitalists who held, in the last analysis, political power, traditionally based on the economic control of the agro-extractive industries by the U.S.A., but increasingly determined by the control over the urban-industrial sector. Internally, it was the landowning elite who held political power, but who were gradually shifting their wealth from agriculture to industry as that sector became more profitable. However, by 1968, political control had become diffuse due to the diversifying nature of

economic dependence. In other words, other international capitalist interests, most particularly Japanese and German interests were competing with North America for economic control over Peruvian industry. Internally, the political control of the landowning elite was threatened by the wide spread discontent of the peasants expressed through land occupations and guerrilla warfare with considerable support from young intellectual radicals such as Hugo Blanco, on the one hand, and the threat of a vast unemployed mass of urban immigrants from the countryside who had flocked to the cities since the mid 1950's in ever increasing numbers on the other. Although he argues that the peasants and workers did not have the political consciousness necessary to succeed in winning this class conflict, the interests of the landowning class had become confused and had lost its homogeneity due to the uneven shift from an agricultural base to an industrial base, and the resulting contradictions in the different needs and interests paralysed the capacity of the Peruvian economic elite to control the situation. This was characterised by a weak agrarian reform on the one hand and severely repressive measures on the other.

This analysis of the socio-economic reality presents the view of a temporary stale-mate in a power struggle across both dimensions of political/economic control. Under these conditions alone, Quijano argues, can an intermediate level of authority take control of the situation, the military being the only authority with sufficient organisation and means to do so. In other words the social dynamic had created the preconditions for a relative autonomy.

While this analysis fails to examine the contradictions and tensions within the military, it places the military firmly within a structural analysis of Peru with respect to its economic dependence. By implication, therefore, it explains the role of the

military by virtue of its intermediate authority and its ideology of overcoming class conflict through a partial integration of both peasants (through cooperative ownership of land) and workers (through 'participation' and 'profit sharing') with the economic reality and the emphasis on the importance of 'expertise' seen as 'a-political'.^{*117}

In this respect Quijano goes some way to answering Dorothee Danset's question when she asks in her article 'L'Experience Peruvienne'^{*118} if the military were 'in search of a class'. The military Junta constitute a professional group who identify most closely with the educated elite. In other words the military government represented the emerging group within the 'middle class' whose view of the world is essentially managerial, but committed to the concept of 'national development' on the basis of the 'scientific' knowledge and expertise' that this professional group of the 'middle class' embody. In effect the military had become controlled by the 'new middle class'.

This produced a clear change in 'political style' noted in the Rand Corporation study 'Revolution from Within? Military Rule in Peru since 1968'. Einauda^{*119} observed a number of 'qualitative' changes. Previously any military participation in politics had tended to be cautious and as an arbitrator between different civilian groups, policies, or leaders. From 1968 the military took a dominant political role devising and implementing policy. Previously, military rule had tended to be conservative and caretaker in style, whereas from 1968 the military claimed to be revolutionary and introduced innovations in public policy that had been regularly rejected when considered in the past.

However this visible change of style was a product of the

changing concept of the role of the military which had its roots in the 1950's. Alisky argues in 'Peruvian Political Perspectives'^{*120} that military officers from the 1950's saw Peruvian society caught up in a fundamental, long term crisis which threatened them as members of the 'hard-pressed middle class'. He argues that the guerilla movements and land invasions in 1965 symbolised to the military leaders the beginning of far larger social pressures that would, in time, overwhelm Peruvian society.

Probably the greatest single influence on the emerging military ideology within this social context is the 'Centro de Altos Estudios Militares (Centre for Advanced Military Studies - CAEM) as an agency engendering an increasing sense of social awareness.

Alisky points out a number of key issues and events^{*121} -

- i) CAEM was organised in 1950
- ii) Both military and civilian 'professors' were employed
- iii) CAEM represented the 'apex' of military education
- iv) Military officers in Peru had more continuing educational opportunities than their counterparts elsewhere in Latin America.
- v) The 'National Defense' course (of one year) stressed social and economic reforms and the analysis of Peruvian national problems.
- vi) With CAEM groups, General Freyre^{*122} visited the U.S.A. in 1964, 1967, and 1971 to confer with specialists on rural agriculture, marketing, and consumer cooperatives.
- vii) Military leaders involved with CAEM were attempting to bring 'modernisation' to Peru.

- viii) The thinking of CAEM faculty members did not emphasise the radical redistribution of economic or social power, but rather to broaden the political base, by bringing the peasants into the 'economic national life', requiring the wealthy families to assume a realistic share of the tax burden.
- ix) CAEM goals embraced both 'welfare benefits' with foreign investment for economic growth with control by the national government.

Luigi R. Einaudi in 'Revolution from Within' states that the Peruvian generals have made educational activity 'the cornerstone of a rationalised bureaucratic structure without parallel even in the major military powers...!'^{*123} He further considers the military the most merit orientated sector of the government's bureaucracy, if not of Peruvian society as a whole. The influence of CAEM reached fruition under Velasco's government when as Marvin Alisky points out 'of the nineteen cabinet Ministers after the 1968 revolution, thirteen of them were CAEM graduates, including the Prime Minister (Executive Officer) of the Cabinet and the Chief of the Council of Presidential Advisers!'

CAEM, irrespective of its particular social, economic and political analyses and policies, emphasised the professionalisation of the military. Einaudi examined the self-image of the Peruvian military leaders and found that many considered themselves to be 'professionals' both in applied mathematics and in organisation, and therefore 'as technical innovators whose skills are sorely needed if Peru is to develop its full potential as a modern nation!'.^{*124}

Basil Bernstein analyses in some detail the relationship between class ideology and modes of social control both in 'Class, Codes and Control'^{*125} and 'Class and Pedagogies : Visible and Invisible'.^{*126} Bernstein emphasises the importance of recognising that the 'middle class' do not represent a 'class in itself' in the Marxist sense, but rather arise out of particular social conditions characterised by the social division of labour.

Although the middle class is generally loosely defined in terms of the social role of a specific form of worker engaged in middle levels of authority and so forms of social control (e.g. the teacher, administrator, etc.) it is also possible, or indeed necessary to analyse factions of the middle class in terms of their specific role within a specific historical and social context. Thus Bernstein identifies the emergence of a 'new middle class' in the advanced industrial societies characterised by a new mode of organic solidarity and a new form of social control.

Bernstein^{*127} argues that Durkheim's individualised organic solidarity developed out of the increased complexity of the economic division of labour. By contrast, 'personalised organic solidarity' develops out of the increased complexity of the social division of labour concerned with cultural or symbolic control which the 'new middle class' have appropriated. Consequently, Bernstein considers the 'new middle class' to be an 'interrupter system' not of class relationships, but of the form of their reproduction. In Bourdieu's terminology, there has been a change in 'habitus', but not in function.

The relevance of Bernstein's analysis here, is in terms of analysing the mode of social control implicitly employed by

the military government, where the military (identified as a faction of the middle class) along with other 'professional technical experts' have appropriated political control and so control over not only culture (symbolic control) but also economic and social control within a specific social context. In this context, the military's emphasis on 'cooperation' as opposed to 'class struggle', 'meritocracy' as opposed to 'patronage', and the value of 'education', represent the justification and ideological legitimation in practice of domination through technical expertise. The identification with the Incan 'benevolent autocracy' reflected by the naming of the state manifests as 'El Plan Inca' clearly symbolises the vertical nature of the authority structure implemented through the application of the 'Peruvian Revolution'.

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1. de Zutter, P., 'Campesinado y Revolución', ed. Instituto Nacional de cultura, Lima, 1975.
2. Leon de Pomzis an agronomist working with peasant communities producing alpaca wool. Interview 8th October, 1975.
3. Zúñiga, M. 'School versus community.' A description of the essentially critical relationships between the school and the community. Unpublished paper. June, 1976, London Univ. Institute of Education.
4. Marietigui, J.C., 'Regionalism and Centralism', in 'Seven Interpretive Essays on Peruvian Reality', Texas Pan American series, 1971, 1st published in 1926, pp 153-181.
5. Bourricaud, F., 'Power and Society in Contemporary Peru', 1970. Much of the background information of Peruvian Society was also taken from this work.
6. Carlos Malpica 'Los dueños del Peru', 1968 Ed. ensayos sociales (3rd ed.) Lima p. 4.
7. See the section under 'the cooperativization of the sugar estates' below.
8. See Bourricaud F., op.cit. for a detailed description of the class structure and differentials in Peruvian society.
9. Matos, J. in Bourricaud, ib-id., p 116
10. Ibid., p 116.
11. This difference in approach, documented by Zúñiga in her unpublished paper, 'The School World: Educational Knowledge Codes and Their Relation to the Community', June 1976, London Univ. Inst. of Education, is an important factor in the relationship between scientific expertise and rural know-how.
12. Turner, G., 'Agricultural Credit in the Peruvian Agrarian Reform'. FAO - CENCIRA, Nov. 1974. In this chapter The National Census statistics found in the Ministry of Labour, Lima, Peru, and the Ministry of Agriculture, 'Plan Nacional de Desarrollo Vol II,

Plan Agropecuario '71-'75' have provided a great deal of background information.

13. Llamojha, M., 'Las Luchas Campesinas', Campesino, 1972, pp 42-67.
Llamojha is the Secretary General of the Federation of Peruvian Peasants.
14. Blanco, H., 'Land or Death', Pathfinder Press, N.York, 1972.
15. Gerassi, J., 'Imperialism and Revolution in America' in Cooper, D.(ed) 'The Dialectics of Liberation', Pelican, P 92.
16. Bourdieu, P., 'Social Class and Intellectual Field', p 185.
17. UNA Memoria 1972-74, UNA, 1974 p 122.
18. from 'El Sector Agrícola - Planteamientos y Acciones del Gobierno Revolucionario de la Fuerza Armada', 1971. (Min de Trabajo).
19. International Centre for Rural Development (CIDA) 'Una Evaluación de la Reforma Agraria en el Perú', Washington D.C. : Pan American Union, December, 1966.
20. Belaunde came to power with the 'Accion Popular' party after elections held in 1963 after a year of military rule which had prevented APRA from taking power after claims that the 1962 elections had been rigged.

I do not attempt to analyse Belaunde's agrarian reform in this thesis, although I give it further consideration several times later in this chapter. For further details see either the CIDA report or Petras and Laporte 'Cultivating Revolution' Randomn House, N. York, 1971, Chapter 3 - 'Gradualism in Belaunde's Peru'.
21. Zalvidar, R., 'Algunos Conceptos Para El Enfoque de La Reforma Agraria', Materiales, 1975, p 19.
22. Banco Central de Reserva, 'Cuentas Nacionales del Perú', 1950-67.
23. Malpica op.cit. p 4. 'Como Consecuencia de la Ley de Reforma Agraria no. 17716...han sido expropiadas o estan en proceso de expropiación, todas las empresas agricolas con alguna significación económica. Las mas importantes: es decir, las productoras de azucar fueron las primeras en ser transformadas en cooperativas agroindustriales.'

24. Ibid. p 18. 'a) Grandes productores de artículos primarios de exportación (grandes firmas mineras - no mas de tres -, grandes firmas agrarias - no mas de dos).
25. Paige J.M., 'Agrarian Revolution' the Free Press, 1975. pp 141-144.
26. Perú Direccion de Difusión de la Reforma Agraria, 'Del Latifundio a la Cooperativa,' Lima: Industrialgrafica, S.A., 1970. p 15.
27. Malpica, op. cit., p 18.
28. Paige, J.M., 'Agrarian Revolution', Free Press, 1975 p 142.
The ownership of the land passed hands from the large companies and owners to the peasants, workers, and administrators working on the estate. The new collective owners were responsible for paying for the land ('agrarian debt'). However, industrial or processing plants did not change ownership and were still the property of the previous landlords.
29. Agrarian Reform Law no. 17716, Article 3(f).
30. This theme is developed further, later in this chapter.
31. Agrarian Reform Law, op.cit.
32. Manifiesto estatuto y Plan Inca, del Gobierno Revolucionario de la Fuerza Armada, Elaborado antes de 3 de Octubre de 1968, Ed. Inkari 1975 p 16 - 'Utilizar elsistema de expropiación, pagando parte al contado y el resto en bonos, y orientando el capital proveniente de dichos bonos hacía la industria.'
33. Quijano, 'Nationalism and capitalism in Peru, a study of Neo-Imperialism', Review, 1972.
34. CENIRA: Interview with George Turner, 22nd November, 1975, Quijano op.cit.
35. Zalvidar op.cit. p 23.
36. ONDE COOP, 'Regamento de cooperativas Agrarias,' Titulo III, 1969.
Was gleaned from interviews and talks with a wide range of officials in SINAMOS (National System of Support and Social Mobilization) and agronomists. It can also be found in Zalvidar op.cit. p 25.

37. Ibid., p. 24
38. Presumably because the tax declarations of value were grossly undervalued to avoid paying tax.
39. Chonchol, J. 'Eight Fundamental Conditions of Agrarian Reform in Latin America' in 'El Desarrollo de América Latina y la Reforma Agraria', Editorial del Pacifico, S.A., 1964.
40. Flores, E., 'Financing Land Reform : A Mexican Casebook', in Horowitz (ed.) 'Masses in Latin America', Oxford Univ. Press, 1970, p 334.
41. Zalvidar op.cit. p 28.
42. Boletín no 3 del Comité de Educación de la cooperativa Azucarera no 38, de Pomalca, March, 1971.
43. Conversations with officials in Sinamos, Zalradar & Nontes, 30th August, 1975.
44. P de Zutter, op.cit. p 46
 '...la experiencia de la participación campesina en los niveles directivos de sus empresas no es suficiente. Bien se sabe que, demasiadas veces todavía, la dirección de las empresas populares está separada de sus bases. En numerosos casos la dirección responde o bien a los intereses profesionales de los técnicos que se desempeñan como ejecutivos, o bien a los intereses personales o de prestigio de los directivos campesinos que tratan de imitar, consciente o inconscientemente, a los antiguos dueños prerrevolucionarios.'
45. Zalvidar op.cit. p 25.
46. Interview with George Turner, official at CENCIRA 22nd Nov. '75.
47. Lat. Am. Newsletter 9th April, 1976, Vol X no. 15.
48. Conversations with officials at the Instituto Nacional de Planificación, agronomists (particularly those active in the sector of 'Social Property' and officials in SINAMOS.)

49. CIDA (OEA) Report - 'Tenencia de la tierra y desarrollo socio-económico del sector Agrícola' 1961, notes that much of the land was already subdivided on paper in this way. For detailed examination of the failure of the Agrarian Reform under Belaunde's administration 1963-68 to overcome bureaucratic and other forms of avoidance by the landlords, see Petras & Laporte, op.cit: cf D&A Thorner, 'Land and Labour in India' 1965; Feder op cit.

50. Agrarian Reform Law, op cit. Articles 28 - 34.

Zones (a) Provinces of Islay, Camaná & Arequipa

(b) Provinces of Lima, Carabaya, Sandia, La Unión, Caravelí, Condesuyos, Castilla & Cailloma.

(c) Provinces of Canta, Chencay, Huarochirí, Yauyos, Cajatambo, Melgar, Azángaro, Huancané, Puno, San Ramón, Lampa, Chucuito, Coranga, Mariscal Luzuriaga, Mariscal Nieto, General Sánchez Cerro, Tarata, Tayacaja, Nazca, Ica, Palpa, Pisco, Pallasca & Cañete.

(d) Provinces of la Convención, Acobamba, Sante Sihuas, Oxapampa, Angaráes, Chincha, Pomabamba, Tacna, Huari, Raimondi, Huaylas, Bologriesi, Paruro, Vrubamba, Anta, Quispicanchis, Calca, Huancavelica, Tarma, Paucartambo, Pachiteo, Carhuaz, Casma, Yungay, Huaraz, Acomayo, Canchis, Canas, Cuzco, Huancayo, Concepción, Leoncio Prador, Iamas, Mariscal Cáceres, Moyobamba Rioja & San Martín.

(e) Provinces of Chumbivilcas, Castrovirreyna, Aija, Recuay, Junín, Pasco, la Mar, Huánuco, Trijillo, Juiya, Huante, Marañón, Chiclayo, Yauli, Daniel Alcides Carrion, Espinar & Huamalies.

(f) Provinces de Cutervo, Cajabamba, Contumazá, Andahuaylas, Abancay, Chachapayas, Lambayeque, Celendín, Cajamarca, Huamanga, Aymarées, Bongará, Luya, Pataz, Bolívar, Chota Jaén, Santa Cruz, Morropón, Huancabamba,

(f) cont'd

Ambo, Ferreñafe, Hualgayoc, San Miguel, Cangallo, Ayabaca, Bagua, Rodríguez de Mendoza, Huamachuco, Huallaga, Mariscal Cáceres, Grau, Antabamba, Dos de Mayo & San Ignacio.

(g) Provinces of Otuzco, Santiago de Chuco, Víctor Fajardo, Cotabambas, Lucanas & Parinocochas.

(From Agrarian Reform Law, Art. 30)

Category of exemption limits

- 1) Refers to irrigated land
- 2) Refers to unirrigated land
- 3) Refers to natural pasture for livestock. Art. 27, 32.

The higher level of exemption is secured if certain conditions are fulfilled which relate to the efficiency of production and modernisation of labour relations, e.g. -

- (i) that the credit to the workers is not less than 20% of the annual net rent.
- (ii) That tax, rent and Social Security payments are up to date.
- (iii) That the unirrigated land under cultivation in the last 3 years has been 75% of the total/^{arable}land.

etc., Agrarian reform law Arts. 28, 29, 31, 33, 34.

51. AS cited by the Ministry of Labour - 'El Sector Agrícola' op.cit. cf. 105

52. Zalvidar, op.cit., p.31; I am including SAIS in the category of 'cooperatives' here.

53. e.g. 2,000 workers in the Valley of Cañete were reported by Zalvidar (op.cit. p 34) to have lost their position as permanent workers. (This represented 40% of the total number of permanent workers in Cañete at that time.)

54. Zalvidar (Ibid) reports illegal strikes, such as one for 50 days at Santa Catalinas de Supe which was not reported by the news media. p 32.

55. IV Zona de Reforma Agraria, Lima Oficina de Administración de Aguas del Rio Cañete, 1969.
56. David Bayer 'Reforma Agraria Peruana : El problema de la descapitalización del minifundio y la formación de la Burguesia Rural', U.N.A. Sept 1975, p 76.
57. 'Adjudicación Gratuita de Tierras'. Decreto Ley no 19977 - '... lo que atenta contra la dignidad de la persona humana'
58. Agrarian Reform Law op.cit. August 1970.
59. Ibid. Art 1 (3rd April 1973)
60. Indemnification of expropriated land was limited to a maximum of S/100,000 in cash and the rest is paid in bonds. (Ley de Reforma Agraria, Art. 177). Consequently to expropriate the small to medium landowners on mass would have been beyond the financial means of the government.
61. Conversations with agronomists and rural sociologists at La Molina, U.N.A.
62. The case of the mobilization of peasants in La Convención Valley is an extremely interesting example. Here the peasants were led by Hugo Blanco. See W.W. Craig - 'Peru: the Peasant Movement of La Convencion' in Lansberger (ed) 'Latin American Peasant Movements', Cornell Univ. Press, 1969.
63. Van de Wetering - 'La situación Actual de la Reforma Agraria en el Perú' LTC Newsletter no. 91, July 1973.
64. Ministerio de Agricultura, 'Dirección General de Reforma Agraria y Asentamiento Rural, Dirección de Asentamiento Rural', '74.
65. Figures recorded in 'El sector Agrícola' Ibid 1971.
66. Bayer op.cit. p 22
67. Barroclough & Domike, 'La estructura Agraria en Siete países de América Latina Trimestre Economico, 130, 1966 (based on CIDA studies).
68. Conversation with agronomists - especially Juan Quito, 8th Dec. 1975.
69. George Turner op.cit. p. 11

70. Hector Flores Samanez, was reported by many to have acted this way with his estates in Andahuaylas. Interview and conversations with Government Officials, also Zalvidar, op.cit., p 38.
71. In this section I am indebted to many Ingenieros Agronomos for information given during interviews and conversations, in particular Ing. Leon de Ponce working with the Peruvian Alpaca breeding association.
72. M. Alier 'Los huacchilleros del Peru' (Ed. Ruedo Iberico, 1973) p 39 - '...los SAIS son administrados por profesionales bien capacitadas, agrónomos o veterinarias, contrados por las autoridades de reforma agraria, siendo en muchos casos los mismos antiguos administradores cambiados de hacienda.'
73. See Journal of Peasant Studies Vol 1 no 1 Oct '73 in 'Peasants Speak' - 'Peru : Letters from Shepherd's Union Bulletin'.
74. Estatuto de Comunidades Campesinas del Perú. Decreto Supremo No 37-70-A, 17/2/70
75. Barroclough, S. 'Agrarian Structure in Latin America', Lexington Books, 1973, pp 263 - 5.
76. Reported by Zalvidar op.cit. pp 44-5
77. Agrarian Reform Law, op.cit., the 2nd part of Art. 91 - 'El orden de prioridad sera el siguiente: Cooperativas, Comunidades Campesinas, Sociedades Agrícolas de Interes Social, pequeños y medianos adjudicatarios' p 70.
78. George Turner, op.cit. p 16
79. Banco de Fomento Agropecuario - 'Comparativo de los préstamos otorgados por la Banca Estatal (Fondos Propios y Fondos en Fideicomiso)' Peru, 1968, 1972, y 1973.
80. Bayer op.cit.p 16.
81. Turner op.cit. p 16.
82. The figure of 30%, is an interpretation of official figures by Latin American Economic Report Vol IV p 22. The official figure cited in April 1976 is \$343 million, that is 15% of the total. However, if unfinished food products such as flour

are included in the category of food, then the figure rises to 30%.

83. Based on FAO (Food & Agriculture Organisation) statistics, cited by David Bayer op.cit. p 25.
84. Edgardo Seoane, 'Ni Tiranos Ni Caudillos', Lima: Partido Accion Popular, 1968, p 16 cited by Petras & Laporte 'Cultivating Revolution' Random House, 1971 p 54. .
85. Ibid. p 56.
86. 'Informe de la Misión de la FAO (Food & Agriculture Organisation of the United Nations) para Evaluar los Requirimientos de Asistencia Técnica para la Reforma Agraria Peruana' mimeographed, Santiago de Chile, October, 1969.
87. Malpica op.cit. p 3.
 'En especial debo anotar que la condición de los propietarios de la tierra ha variado, en tal medida, que ahora dificilmente se les puede considerar como un grupo de poder.'
88. Anaya Franco E. 'Imperialismo Industrialización y tranferencia de tecnologia en el Perú' Ed. horizonte, 1974.
89. Quijano op cit p 9.
90. Information given by 'Banco Central de Reservas. Las Cuentas Nacionales del Peru, 1950-67.'
91. Ibid., cited in Zalvidar, op.cit., p 8.
92. Malpica, op. cit.
93. Bayer op.cit. p 18.
94. Banco Central de Reserva. Cuentas Nacionales del Peru, 1950-67
95. This became significant when the sugar estates were obtained without the manufacturing plants at the point of expropriation.
96. Information cited by Zalvidar op.cit. p 19, based on various official information, esp Samanez, Benjamin, 'Director de Reforma Agraria, 'deklarations in 'El Comercio', May 1970, and 27th March 1970.
97. E.V.K. Fitzgerald - 'Some aspects of State Capitalism in Peru'

97 cont'd..

paper given at SLAS conference, April, 1975, Swansea Univ.

98. Marka, January 1975, presents a detailed analysis of the tensions within the military in the article 'De la primera a la segunda Fase.' pp 18 - 21.
99. Cited by Quijano, op.cit. p 45.
100. Reported by Quijano, Ibid, and Zalvidar op. cit. p 22.
101. Ibid. p 22.
102. ECLA information reported in 'Marca' Dec. 1975.
103. Marka February, 1976 p 23.
104. The Latin America Economic Report, June, 1976.
105. CIDA - 'Inventory of Information Basic to the Planning of Agricultural Development in Latin America - Peru' 1961, p 64. cf ~~51~~ 51
106. MARKA magazine, 28th June, 1975.
107. George Turner - '...the targets set in the 1971 - 5 National Plan, to transfer 11,869,127 hectares, for the benefit of 341,409 families. These figures seem likely to be attained in the course of 1975-76.' p 12 op.cit. Although the official figure of 341,409 families only represents 28% of the rural families, this was officially considered to be 48% - Ministry of Labour.
108. The Ministry of Agriculture gave the average value per hectare for each area of Agrarian Reform which gives a clear, if too general, indication of differential value.

Type of Enterprise	Average value per hectare (Soles)
Cooperatives	5,274
Comunidades	939
SAIS	954
Individual	3,286

109. See Sean Conlin - 'Participation versus Expertise' in 'Class and Ethnicity in Peru' ed. by Van den Berghe P.L., pp 31-46. Leiden E.J. Brill 1974, An excellent first hand account of domination through expertise by an agronomist over peasants.
110. Cited by Quijano op.cit.
111. Cited in a personal interview (1965) by Craig, W.W. jr., 'Peru; the Peasant Movement of la Convención' in 'Latin American Peasant Movements', ed. Landsberger - Arequipa prison, May 8, 1965.
112. 'El Comercio' July, 20th, 1969.
113. Frias, 'La Revolucion Peruana y la via Socialista' ed. Horizonte, Lima, 1970.
114. Mejía, 'Teoría y Practica de la Revolución Peruana' Cooperativismo y Reforma Agraria Peruana, Folleto no 1. Ed. Envolturas Comerciales S.A. 1970
115. Aguilar, Dorpich, 'Peru ¿ Socialismo Militar?' ed. Fuentes, Caracas, 1972.
116. 'Marka' magazine. January, 1976., Also see Quijano, op cit 'Marka' op. cit. and D Danset. 'L'experience Peruvienne' in Collin Delavaud - 'Perou: le gouvernement revolutionnaire militaire en 1975'. La documentation Francaise, 5 March 1975 nos. 4 169-4 170 of Notes et Etudes Documentaires. p 83.
117. See Pierre de Zutter op.cit.
118. Danset, op.cit., p 85.
119. Einaudi, Luigi R, 'Revolution from Within? Military Rule in Peru since 1968', Santa Monica, California: Rand Corporation, P - 4676, July 1971, p 3.
120. Alisky, Marvin, 'Peruvian Political Perspective', Centre for Latin American Studies, Arizona State University, Tempe, 2nd edition, 1975, p 19.

121. Alisky, Op.cit. pp 17 - 19
122. General Freyre was Chief of Special Studies and Strategy at CAEM.
123. Einaudi and Alfred C. Stepan, Latin American Institutional Development: Changing Military Perspectives in Peru and Brazil., Santa Monica, California: Rand Corporation, R-586-DOS, April 1971, p 12.
124. Ibid., p 12.
125. Bernstein, B. 'Class, Codes and Control', London, Routledge and Kegan Paul , Vol III, 1975.
- 126 Bernstein, B. 'Class and Pedagogies: Visible and Invisible', London University, Educational Studies, Vol 1, no. 1, March 1975.
127. Ibid. p 26.
128. This is based on many discussions with agronomists both at U.N.A. and in the field.
129. Bernstein, B. 'Class, Codes and Control', London, Routledge and Kegan Paul, Vol.III, 1975, pp 127/8.

CHAPTER 3

THE CONCEPT OF 'PARTICIPATION' AND THE ROLE OF EDUCATION

INTRODUCTION:

So far I have focused on the Agrarian Reform in terms of

- i) the redistribution of land
- ii) the operating mode of control in the process of redistribution.

I have argued that although the redistribution of land was comparatively massive, it represented a change in the mode of control rather than a change in the axis of power. In other words the social changes can be considered to be a result of the rationalisation of the dominant mode of production.

I have identified the main beneficiaries of the Agrarian Reform as:-

- i) the wealthier permanent co-operative workers
- ii) the owners of the 'middle-sized' farms
- iii) the 'technical experts' who ~~effectively manage~~ the new mode of control and benefit directly from the process of Agrarian Reform.

The benefits gained by agronomists as 'technical experts' are both in terms of career within the reshaped agricultural economy, and also as teachers of their 'expertise'.

I have argued that the role of the 'new middle class' as ~~agents of social control in the process of transition~~ towards a technically, industrially and socially developed Peru have achieved social legitimacy as an intellectual elite. The contradiction that needs to be overcome is their belief on the one hand that the 'experts' should define what is required to achieve 'development', and on the other hand the recognition of the need to mobilise and

involve the majority of the population in this process.

This clearly is a problem of social control.

From the point of view of the 'new middle class', the key concept that was expected to resolve this problem is the concept of 'participation'. Generally 'participation' was considered to be 'revolutionary' or part of the process of integrating the marginal population within the Peruvian economy and social structure. However, this viewpoint fails to question the social legitimacy of the 'new middle class' who assumed control and authority on the basis of their educational achievement and without reference to those over whom they assumed control.

The concept of 'participation' forms a link between the social vision of the 'new middle class' and the role that education was expected to play; a link between the social vision of the Agrarian Reform and the changes in agricultural practices that the 'experts' saw as necessary to secure their aims.

In other words, the concept of 'participation' plays a key role in the process of social control, and is intimately related to the selection, dissemination and transmission of knowledge.

I intend to examine this concept in terms of:-

- i) its role in the mode of control
- ii) its relevance to (a) education in general
 - (b) universities in particular.

Theoretical Perspectives:

The theoretical background to this analysis is provided by Basil Bernstein's conception of an 'object code'. Bernstein argues that the 'coding of objects' (in this case 'social objects') represents 'modalities of control'.*1 Bernstein uses the concepts of

'classification' and 'framing' to analyse the 'object code'.

CLASSIFICATION refers to the degree of boundary maintenance between contents, and not what is classified. It is a relative term. When contents are well insulated from each other by strong boundaries, the classification is said to be 'strong'. When there is a reduced insulation between contents due to a weak or blurred boundary, the classification is said to be 'weak'.

In this context classification refers to the manner in which the social reality is defined into categories, and the underlying principle that governs the relationship between categories. In this context we can examine any categories such as 'education', 'production', 'social class' and 'politics' etc., in terms of the relationships between categories. What is of importance in defining the principle of classification is the degree to which a category is well defined and insulated, or the degree to which its 'boundaries' are weak/^{and} can merge with other categories. In other words, the relationship between different categories which form an overall picture of classification revealing its underlying principle.

FRAMING refers to the principles that underly the transmission of the content. It could be considered a barometer of Control. It refers to the controls on what content is made available, when it is made available, how it is made available, who makes it available, and the social relationships that result. If the pedagogic communication is closely controlled, then framing is said to be 'strong'. If the principles of control are less didactic, then the framing is said to be 'weak'. The form and content of the social relationships are considered to

depend on the principles of control. As the framing becomes stronger or weaker, the nature of the social relationships also change.

Framing refers to the underlying principles which determine the manner in which the definition of reality is communicated and controlled. In other words framing determines how reality is defined, by which groups, and how it is communicated also indicates who constitutes the dominant group or class and what role they have within the social formation.

Since the organisation of ideas, and the transmission of knowledge reflects the organisation of power and control I am using the concepts of classification and framing in a number of ways, so that fundamental issues can be considered within the microcosm of the organisation and transmission of knowledge. Fundamentally, the relationships and barriers between social classes can be represented by the concepts of classification and framing, where classification represents power, and framing represents control.

When I consider the dominant system of ideas, then classification and framing represents the power and control that underpin the organisation and transmission of the ideas. In this context the classification and framing can be collectively referred to as the 'object code'.

The theoretical distinction I am making here is between the classification and framing of social reality and the classification and framing of the dominant representation of reality. I am arguing that the object code represents and stems from the fundamental classification (power) and framing (control).

A General Analysis of the Concept of 'Participation' in Peru

There are two major components of the concept of 'participation' expressed through two separate objectives of the 'participation strategy'. The first is the attempt to integrate the peasantry into the social order of Peru. The second objective is the elimination of class conflict in the interest of a 'harmonious nation'. In many ways the first objective is a prerequisite of the second and consequently closely related.

A) The Integration of the Peasantry into the Peruvian Social Order

In the 'Plan Inca', *2 chapter 25 of the 'Plan of the Revolutionary Government of the Armed Forces' is titled 'Participation of the People' and deals specifically with this dimension of the 'participation' strategy:-

a) Situation

- 1) Almost the whole of the population is deliberately marginalised from the solution of the problems that effect them.
- 2) Decision-making power in all activities of the population is concentrated among privileged minorities which use it in their own interest or the interest of pressure groups.
- 3) The population has little interest in participation.

b) Objective

Free and active participation of all men and women in the activities required by the national development, without the influence of imported ideologies.

c) Actions

- 1) To promote the free association of the people, in order to attain their common objectives.

- 2) To prepare the people for effective participation in all their associative activities
- 3) To orientate the development of the associations, avoiding their management by minorities or groups with foreign interests.
- 4) To create the necessary institutions to facilitate the participation of the people'.(my translation)

The underlying principle of this strategy is the notion of national solidarity and cooperation, as is clearly defined by the 'objective' as it is presented - 'national development without the influence of imported ideologies' on the basis of 'participation' by 'all'. In this context, the Agrarian Reform can be seen as a vital part of this strategy since it incorporated a relatively large sector of the rural population into the national economy through the cooperative ownership of the land. However, as we have seen after eight years less than 16% of the rural population still owned more than 65% of the land. The social phenomenon of particular interest to this thesis is the emergence of the 'new middle class', who as 'technical experts' within the cooperatives gained considerable control over production. In this respect, the claim that participation strategy is concerned with 'avoiding...management by minorities' deserves further analysis. There are two possible explanations. Either this statement represents a distorted pronouncement of the objectives of the military government, since agriculture actually is controlled by the technocratic minority with active support from the state, or else the conception of a 'minority group' has quite another significance. The conception could be essentially defined in terms of political parameters which in turn are/ideologically defined.

In this case, 'minority groups' would mean groups with an overtly political ideology pressing for particular political aims. In other words groups representing 'foreign interests', land owner elite interests or else worker or peasant interests defined in class terms. Since the 'technical experts' tend to avoid explicit political ideologies and represent their activities not as political, but rather based on a 'scientific' and so 'objective' assessment of the 'needs' of the agricultural economy to 'develop', then the implicit ideology of this 'technocracy' is that while they may be a minority, their activities do not represent a minority, but rather the 'common good' on the basis of their 'scientific understanding' of the problems involved in 'development'. If this is the case, then the concept of 'participation' is clearly a relative one. Furthermore, the ideology of the 'Peruvian Revolution' is manifestly aligned with the primary interests of the professional groups defined as the technical experts. In this respect the fundamental ideology can be characterised in terms of strong framing leading to domination, since in these terms the 'general good' is defined from above, while the people are expected not to generate the direction of the 'Peruvian Revolution' in terms of their own interests, but to 'participate' in the 'development of the nation' as defined by the technical experts. Bourdieu argues that 'Pedagogic Actions' such as these effectively reproduce the power relations because the 'dominant cultural arbitrary' is misrepresented.

'....the system of PA's....tends to reproduce, both in the dominant and in the dominated classes, misrecognition of the truth of the legitimate culture as the dominant cultural arbitrary, whose reproduction contributes towards reproducing the power relations.'³

In this case we can argue that the interests of the dominant technocratic middle class are misrepresented as the interests of all on the basis of a 'scientific' evaluation.

The National Social Mobilisation Support System (SINAMOS) was established on June 24th, 1971, in order to deal with the problems presented by 'social mobilisation' in the context of a policy of 'participation'. The Decree-Law no. 18896 defined the structure and aims of SINAMOS, which was directed towards the:-

'...training, orientation, and organisation of the national population; the development of social interest entities; and the communication and particularly the dialogue between government and the national population.'^{*4}

Palmer and Middlebrook state that:-

'This highly centralised governmental agency is designed to ensure that 'outside interests' such as political parties, pressure groups and 'foreign ideologies' do not take advantage of citizen organisations for their 'private' benefit.'^{*5}

Nevertheless, since SINAMOS was dealing with the highly sensitive area of 'participation' without 'politics' it suffered from heavy criticism.

SINAMOS has been accused of being a hotbed of 'Trotskyite' and other political agitators on the one hand,^{*6} and as being an organ of state manipulation on the other.^{*7} However, as Lowenthal points out:-

'Discussion of SINAMOS is difficult because evidence of its programs and impact are inherently hard to obtain.'

Nevertheless Lowenthal argues that:-

'....one cannot dismiss the Peruvian military's talk of 'full participation' as mere rhetoric... At least a few of the top government leaders, especially in SINAMOS, and many

of its operating personnel, seem sincerely committed to helping peasants, shanty town dwellers, parents of school-children, and industrial workers organise to achieve effective power..... It would appear that the regime is taking at least some first steps to redeem its promise to provide for new forms of participation, even by those mostly unrepresented in Peru.*8

Framing can be characterised as strong since it was not those who were expected to 'participate' who defined what counted as 'participation'. Rather it was those who required their cooperation who defined what it meant to participate or for that matter to be 'subversives'. Hand in hand with the strong framing was the strong classification between 'participation' and 'politics'. In other words, 'participation' was defined as cooperation with activities required by state institutions or the 'technical experts'. 'Politics' on the other hand was defined as involvement in other alternative or opposing activities. Involvement in 'politics' implies involvement in the decision making process which would run counter to the strong framing. It could be argued that the strong framing existed to maintain the separation between 'participation' and 'politics' to ensure that decisions regarding the purpose and forms of participation were controlled by those who required cooperation rather than those who were led to 'participate'. In this sense the strong framing characterised the form of social control.

Cotler points out that the law imposed severe legal restrictions on rural organisations.*9 It required that they register with SINAMOS before they could be granted any basic legal rights. Involvement with party politics was restricted. The law also established the power of SINAMOS to dissolve any of the rural organisations which failed to conform to the law or to

their own stated goals.

This legal representation of the power structure defined the limits within which SINAMOS was to operate, regardless of the personal commitments of its personnelⁿ, which defined the social role of SINAMOS.

Cotler argues that the law contradicts the rhetoric of 'social democracy of full participation'. He states that the 'authoritarian' and 'technocratic' character of the 'regime' was made manifest in this law, and that only a pretence was made to promote 'social mobilisation' as a means to control 'mass political participation'.

It would appear that this concept of 'participation' actually represents only the partial integration of the previously excluded mass of indian population whose activities were quite carefully monitored. This can be represented by an apparent weakening of framing equivalent to Bernstein's notion of invisible pedagogy (implicit control). The contradictions of the 'Peruvian Revolution' led to contradictions in the form and practice of social control. Nevertheless, on the whole, 'participation' can be characterised by strong framing and a strong classification between 'technical experts', 'cooperative members', and 'other workers'.

This brings us to the second dimension of 'participation' - based on the attempt to overcome class antagonism in the interests of a single 'nation'.

B) The Integration of Class

This second dimension of 'participation' is outlined in the 'Plan Inca' in Chapter 6 - Company Reform:-

a) Situation

- 1) A company structure that gives capital the principal

role in the production process, underestimating the labour factor

- 2) The company system (regimen) is one of the principle causes of the unjust distribution of wealth
- 3) The worker is only a wage-labourer, without access to the profit, management and property of the company.

b) Objective

A company structure that grants to the worker participation in the profits, management and property of the company.

c) Actions

- 1) The creation of the 'labour community' (Comunidad Laboral) through which the worker will participate with the profit, management and property of the company. In the state (estatales) enterprises he will not participate in the property.
- 2) The creation of a mechanism of equilibrium between communities of different revenue.
- 3) The promotion and stimulation of companies of Social Property (Propiedad Social).^{*10} (my translation)

This is an outline of a strategy to integrate capital and labour.

Carlos Delgado wrote supporting this concept of 'participation'.

'The constant opposition between the bourgeoisie and the traditional proletariat would cease to exist not because the absolute polarisation between total property on one side and total lack of property on the other would have disappeared. In short, both proletariat and bourgeoisie would vanish as social classes....if workers owned 50% of the means of production, the proletariat - in Marxist terms - would no longer exist. Neither would the bourgeoisie.'^{*11}

In practice the strategy did not effect much in the way of structural changes. The Latin America Economic Report^{*12} disclosed that official figures showed that the 'Industrial Community' ('comunidad industrial') benefitted only 33% of the industrial labour by 1975, significantly only

1% of the G.N.P. 'Marka' reported that in the year 1975-6 that the Social Property Sector represented no more than 3% of the total investments.*13

In this sense, the attempt to weaken the classification between different social classes and emphasise national solidarity is fundamentally an ideological position or strategy, rather than a structural reality.

Julio Cotler wrote, again in 'The New Mode of Political Domination in Peru'

'The new political system is concerned with the conciliation and harmonisation of the various classes and various economic sectorsit attempts to integrate all classes in the name of a higher cause: national development'*14

The Latin American Newsletter documented the failure of this attempt to reconcile the classes. On the 31st March, 1976, President Morales televised speech in which he promised a 'clamp-down on labour indiscipline' announced a state of emergency in the mining industry which authorised companies to dismiss striking workers. By June, 1976, violent clashes between civil police and striking workers were reported. By July, 1976, all strikes were declared illegal. In August, 1976, 'workers participation' was to be 'reexamined'.*15

Here we can see that the concept of 'participation', originally expressed in the Plan Inca, 'frames' the reality created by the actual 'participation' policies. More specifically, the notion of 'participation' can be represented as a weakening of the classification of the categories of social class, and the weakening of the framing through 'active participation' of workers. By contrast, the actual 'participation policies' hardly changed the classification of social classes at all

since this classification is dependent on the relations of production (which was fundamentally unaltered) and so classification remained strong. Moreover, framing was weakened only slightly by the slight increase in democratisation of industry, and remained strong due to the degree of control over 'participation'. The official concept of 'participation' stands in relation to the actual changes (or lack of them) that the policies produced, but not simply in contrast. The 'object code' represented by the expressed concept of 'participation' can act to interpret the reality. In this way, the ideas 'frame' that reality, and act as a form of social control. Despite the fact that here the contradictions between the official concept of 'participation' and the actual reality led to confrontation.

Education and Participation

The reform of education was designed to play an integral and crucial role in the strategy of 'participation' reproducing the ideology of 'national harmony' in the interest of 'national development'. An analysis of the role of education must begin by recognising the relationship between education and political control. As Basil Bernstein reflects in 'On the classification and framing of educational knowledge',^{*16}

'How a society selects, classifies, distributes, transmits and evaluates the educational knowledge it considers to be public, reflects both the distribution of power and the principles of social control'

How far education can be considered a process of 'liberation' or 'domination' depends on the nature of the education system, which in turn depends on the power structure of the society.

The Plan Inca, Chapter 19, sets out the problems and strategies

of 'Education Reform' in the following way:-

'a) Situation

- 1) a system of education intentionally orientated towards maintaining the large majority in ignorance with the aim of exploitation.
- 2) Low returns in relation to the high investments made.
- 3) An inflexible system which takes little account of the national reality.
- 4) An economic and professional academic community (magisterio) in discord with its high mission.
- 5) Excessive bureaucracy and a political academic community.

b) Objective

An education system in the service of the people that guarantees the inte-grated formation of man required by the new Peruvian society.

c) Actions

- 1) To transform the education structure creating a fundamentally humanistic system which has the following characteristics;
 - (a) To exalt the dignity of man and recognise the right of education for all without any discrimination.
 - (b) To orientate education towards work considered as the means through which the full realisation of man is achieved.
 - (c) To attain the participation of all sectors of the national community.

- (d) To be adequately flexible so that the education fits the necessities of the diverse regions and zones of the country.
 - (e) To achieve progressively free education.
 - (f) To integrate the Universities into an independent system.
- 2) To restructure the sector so that it is appropriate to the Reform.
 - 3) To dignify the Management assuring its formation and the incessant perfection of professionalism and an economic situation in accordance with its high mission.
 - 4) To organise a Cultural Museum that contributes to the diverse cultural expressions of the nation within reach of the masses.^{*17} (my translation)

The underlying ideology of this analysis of education and its projected reform can be schematised in the following way:

- (i) Education is conceived of as an essential right because it is considered an essential process through which men and women realise their capabilities. In this sense education is seen as a prerequisite to overcoming 'ignorance' and 'exploitation' and leading to an active and intelligent 'participation' in the 'new Peruvian Society'. This is spelt out more clearly in the General Law of Education*¹⁸

'The modification of the property relations of the means of production generates fundamental social effects that make the renovation of education that contributes to the rising of a new man in a new society imperative. The traditional society could not be changed by simply educating men and leaving intact its basic socio-economic structure. But neither could it be changed if parallel to the reforms in the economic structure a transformation were not

effected to the education system that allowed the complete education of men, awakening a new attitude and preparing them to be real protagonists in the social changes in Peru.'

This ideological position is clearly and briefly expressed by the government posters proclaiming;

'Education is liberation.'^{*19}

In the General Law of Education it is also spelled out;

'....it is considered that education is fundamentally a process of liberation....'^{*20} (my translation)

- (ii) There is a keen emphasis on the importance of nationalism expressed through the apparent determination to include all the population in the education process and to make that process appropriate to the national needs, characterised by its diverse geographical and social nature, and the process of socio-economic reform.

'It is understood that in order that the reform be profoundly humanistic it has to be defined as a movement orientated towards development and to the structural change of the peruvian society and, in consequence, to affirm national liberation. Only in this way can it contribute to the achievement of the great national majority of overcoming their marginalisation and secular oppression and to direct them towards the collective creation of a just society with full participation and with an original and fertile culture, for the first time authentically national. The proper aim of the reformed Peruvian education : education for the work appropriate to integral development, for structural transformation, the perfecting of our society and for national self direction.....'^{*21} (my translation)

- (iii) The emphasis on a single and autonomous nation goes hand in hand with the emphasis on 'de-politicisation' of education. The 'cues' for this underlying ideology are the criticism of the previous 'political' management of education and the move towards an independent system.

Furthermore there is the emphasis on a national development based on the cooperation of all.

'But this process of development would be illusionary and imcomplete if it did not depend on all sectors of the national community.....*22 (my translation)

This echoes the attempts to overcome class conflicts through the ideology of a single nation. At another level, there is an emphasis on professional integrity based on a 'non-political' expertise, since the 'politics' will be removed from the education process 'in accordance with its high mission'.

The ideological content of education in respect to 'participation' accurately reflects the general ideology of 'participation'. We can recognise a weakening of classification between the categories of social classes, and the concomitant strengthening of the classification of the 'nation' with respect to foreign nations. The strong classification surrounding the category of 'politics' is represented by seperating it clearly from the categories of 'participation', 'education', and 'technical expertise'. The classification between the three latter categories, is, however, weak.

How far this ideology reflects the social reality, and its role in this context will be evaluated in more specific terms, in relation to the University Reform; where in particular I shall argue that the strengthening of the classification between 'education' and 'politics' on the one hand, and the ^{apparent}weakening of the classification between 'education' and 'production' (in terms of 'national development') on the other, led to the increased dependency of the Universities on sources of finance in the private sector.

The University Reform

As would be expected 'student participation' plays an important role in the University Reform Law.^{*23} Article 32 of the law states:

'Article 32:-

The quorum for the sessions of the University Assembly is more than half the number of its legal members, in which the proportion of students can not be greater than a third of the teachers who are members, including the university authorities.'^{*24} (my translation)

This degree of participation in the control of the university is presumably designed to conform to the ideological position of the military government presented by the following passage from the text of the General Law of Education:

'The law sanctions at all levels of education the participation of the educated,....^{*25} (my translation)

The degree to which participation is sanctioned only becomes clear when it is recognised that this represents a cutback on 'participation' since previously the students were allowed to constitute through their representatives a maximum of one third of the total number of members on the University Assembly.^{*26} The degree to which this cutback is critical from eliminating students power to control the universities is apparent. Furthermore it was frequently reported that the student representatives were usually conscientiously present at the sessions of the University Assembly due to a political commitment to their activities as student representatives while the University teachers were lax in these duties as they were seen as 'extra work'. Consequently the students frequently were in a majority on the actual University Assembly committees.^{* 27} The University Law was careful to avoid this as a possibility.

'Article 33:-

.....For the voting, the number of votes by the student representatives cannot exceed one third of the votes by the

teacher members present, including the university authorities.'*28
(my translation)

Consequently the University Law reduced the legal maximum student representation from one third to one quarter of the total number of members on the university assembly, further institutionalising this proportion of votes as fixed against the number of teachers and university officials present, limiting the role of the students absolutely in their capacity to participate.

The law established rigid controls over the students further strengthening the framing and so the authoritarian power structure of the universities.

'Article 101:-

Attendance in classes and practicals is obligatory,...

'Article 109:-

the status of university student is lost for the following reasons:-

- a) Immoral conduct
- b) Legal action that leads to imprisonment
- c) Grave acts of indiscipline
- d) To carry out any form or type of party political activity or proselytising within the university...'*29

(my translation)

The inclusion of clause 'd)' represents an explicit attempt to 'depoliticise' the students through an authoritarian structure.

Julio Cotler, in 'Crisis Política Y Populismo Militar' cites the Minister of Education as saying that the law 'would reestablish the principle of authority '*30 and through this would marginalise politics in the university. Alberto Escobar in 'El problema Universitario o El Vacío Ideológico' analyses in some depth the implications involved in attempting

to depoliticise the students and introduce a more authoritarian power structure, in terms of the university's role in a rapidly reforming social structure.^{*31} He argues against the law on the basis of it interfering with the Peruvian tradition of freedom of thought and the political naivety of eliminating party politics from the university, concluding that it actually represents only a 'pretence' of eliminating politics.^{*32} In other words, it is an attempt to make the universities appear 'a-political'. He further concludes that the law presents a contradiction between the depoliticisation and reduced participation of the students on the one hand and the 'endeavour' to 'modernise' and raise the levels of scientific teaching and research on the other.^{*33} His conception of a contradiction is based on the following assumption. He assumes that since the Reform program of the military government is overtly political, and the emphasis on 'modernisation' and 'scientific expertise' in the universities is tied in with the national plan of development, it is therefore paradoxical that a process of 'depoliticising' the universities should take place. It is paradoxical because the universities should assume their 'political responsibility in the transformation of economic structures'^{*34} and that furthermore:

'...the work undertaken by the national government requires the support of the young with clear political consciousness.'^{*35}
(my translation)

However, an important aspect of the military governments reform strategy is the resolving of class antagonisms (that are at least ideologically represented by political parties) in the 'national interest' or 'unity' and 'cooperation'. In this respect, social control in the process of production has been through the role of the technical expert. The production cooperatives in the

agricultural sector further ample evidence of the role of the 'technical expert' to assume the ^{authority} of the owner of the means of production and support this role and the benefits that are accrued within this role, not on the basis of a social class, but on the basis of 'objective knowledge', that is 'superior knowledge' or 'expertise'. While this obviously contains political implications in terms of an authoritarian power structure (strong framing) in order to legitimate the resulting social structure, it is necessary to eliminate as far as possible, the political connotations. 'Marka' magazine analysed the same process in the government sector of the economy.

'...one of the civilian groups with the most influence in the second phase: the technocrats within the Ministry of the Economy and Finance, COFIDE and the Central Reserve Bank, design the budgets that attack the ordinary family economy. Of course, the speeches insist on the contrary and the technocrats present their rule as 'technical solutions', that is to say 'neutral'.^{*36}

In this context the political strategy of the military government necessitates the 'depoliticisation' of knowledge and consequently viewed from this perspective there is no contradiction between political reforms of the socio-economic structure and the attempt to 'neutralise' the universities from overt political activity.

The political implications of 'depoliticised' knowledge becomes more clear in the area of university 'autonomy'. One of the actions under the Education Reform program outlined in 'Plan Inca'^{*37} was to integrate the universities into an 'independent system'. As Alberto Escobar points out from 1960 to 1969, the number of universities in Peru quadrupled.^{*38} Many were privately financed and organised, others by the church, or by the state. Consequently, the universities as a whole could.../con'd over

not be described as a system, but rather a totally disorganised mass of individual systems. The University Law attempted to integrate the Universities under 'The National Council of Peruvian Universities' (CONUP). CONUP acted to regulate the universities and their course systems so as to conform to the new law and began to accumulate data on a national basis on all aspects of the Peruvian Universities. CONUP was also empowered to act as the highest organ of resolution residing over the Universities and their internal and external problems. In this respect, the universities became less autonomous and more under the political control of the state, since they were answerable to CONUP.^{*39} However, the government's conception of 'autonomy' is more accurately reflected by their concern over funding in the University Law.

It was considered that funds for universities were from too few sources, which frequently represented the old Peruvian landed class or else foreign interests. Therefore the law emphasised self-finance and diversification of finance sources.

'Article 131:-

- (d) To realise financial operations, internally and externally orientated towards improving the functioning of the Universities,...
- (e) To promote the cooperation of the private economy in favour of the Peruvian Universities.
- (f) To prepare a financial plan and investments in order to increase the capital fund, with a view to ^{become} progressively self-financing.'^{*40} (my translation)

Due to the highly limited possibilities of self-financing by the universities^{*41} the most significant aspect of this section of the law is the involvement of the private sector of the economy. I shall examine this relationship in more detail in a later chapter, but it is worth suggesting at this

point that rather than the private sector being orientated towards the universities, perhaps the universities were being encouraged to orientate themselves towards the private economy. Some government and university officials^{*42} are certainly of the opinion that this aspect of the law was designed to integrate the university system with the national plan of development, and to make the education system 'relevant to the Peruvian reality'. To encourage this relationship, tax incentives were made:

'Article 130:-

The donations or legacies that are made in favour of university teaching or research, are subject to no tax. The amount will be considered as double its value in the tax declarations for expenses and profits and there are no restrictions on the total amount. CONUP is the only authority able to certify these contributions.'^{*43} (my translation)

In this respect the rhetoric of 'independence' actually signifies an increased dependence of the universities on the Peruvian private sector of the economy. This conception of 'independence' goes hand in hand with the ideological conception of the 'professionalisation' of the universities based on a 'scientifically orientated' process of knowledge organisation which is tied to the needs of the private sector of the economy in the 'development' of Peru, which can be characterised as 'industrialisation'.^{*44}

The effect of the law was to provoke widespread opposition from within the universities opposed to the authoritarian structure imposed and its violation of traditional principles of autonomy and participation. However as Drysdale and Myers point out in 'Continuity and change : Peruvian Education'

'Support for many parts of the law... surfaced within the University among those groups (scientists and engineers in the main) most appreciative of planning programming, coordination and efficiency'

Nevertheless, in the face of immense opposition to the law, the military government began to reassess some aspects of the law. 'During March, April, and May 1969, in accordance with the recommendations of CONUP, the government approved several minor modifications to the law favouring limited student participation and modifying CONUP's structure.'^{*45}

Further modifications were promised by December, 1971,^{*46}

However, this could not resolve the difficulties provoked by the University Law.

'Despite the willingness by the government to reformulate the university policy laid down in 1969 and the continuing dialogue between the government and the universities, no consensus was reached on basic reform issues. For example, attempts to legislate greater student participation failed to resolve student opposition but brought a strong reaction from university administrations.'^{*47}

Drysdale and Myers argue that this led to the attempt by the Government of removal from the controversy at minimum political cost.

'From a policy of decisive action...the government has moved in the mid-seventies to a policy of near abandonment, in which inaction may be preferred to action.'^{*48}

However to this date, 1977, the University Law remains in force almost intact. Reassessments have been promised. In particular the government promised to produce a paper which would describe in detail the manner in which the University Law was intended to be interpreted and implemented. However, by the beginning of 1976, this long overdue document had still not appeared, perhaps because it would make the underlying political ideology of the military government too transparent, or perhaps because contradictions within the military militated against conclusions.^{*49}

The problems of designing and implementing a university reform certainly exposed some of the ambivalence, or contradictions between different sections, of the military and its ideological position. A number of universities, in the perceived context of rapid socio-economic reforms seized the opportunity to attempt to alter the role and structure of the universities.*⁵⁰ The students together with many of the radical teachers and the university workers occupied the universities, demanding the resignation of the rector and the full cooperative participation of all to develop the university to take an active role in the national development of Peru on the basis of non-authoritarian educational organisation, that is weak framing. Cuzco University was the first to take this action (August 1971), and Drysdale and Myers note that after considerable violence between police and students temporary recesses followed these actions in Trujillo in October, 1971, Cajamarca in April, 1972 and in Arequipa in June, 1972.*⁵¹

Probably the best known case occurred at the National Agrarian University in La Molina, Lima ending in September, 1972. For some months the University had been occupied and the official rector operated from a different building in Lima, having been replaced by a 'popular' rector on the campus. The occupation was maintained by the solidarity of the students, workers and radical teachers (mainly from the Social Science Department of the University). For some time the military government attempted to avoid any involvement in the issues involved. The Minister of Education is quoted as saying:-

'We of the government respect university autonomy and for this reason we will not intervene. CONUP which/ⁱs called upon to resolve the problem, has already done so' *⁵²

However, the government was drawn into the dispute as it reached such a high pitch of public debate. For some time government officials entered into a dialogue with the occupation leaders, and University officials have stated that it did appear as though the government would meet the demands of the occupation, at least part of the way.^{*53} However, by the end of September, the negotiations broke down.^{*54} This led to the military occupation of the campus, and a significant degree of violence which led to arrests. The official rector was reinstated. All student participation was ended. Many of the students expelled, the Social Science course was closed down and almost all the staff dismissed. The Government, claiming that there were already a large number of social science degrees at other universities (and consequently only a few social science students at the National Agrarian University) incorporated the smaller social science faculty within the broader 'Humanities' faculty and reduced the social science department to only producing 'service' courses for other degrees, such as rural sociology for agronomists.^{*55}

The innovative role of the government reveals tensions within the military ideology that produces certain contradictions between its radical ideological platform (represented here by its attempts to enter into dialogue with radical opposition to its policies) and the underlying ideological principles revealed by its attempt to organise an authoritarian power structure on the basis of 'expertise' and its eventual action to impose if necessary by force, the 'principle of authority' that is 'strong framing'.^{*56}

Conclusion

Both 'classification' and 'framing' are determined by the Power structure inherent in the mode of production, both on the level of the social legitimacy to define reality, and on determining the underlying principle of the organisation of the 'object code'. The strong 'classification' between 'education' and 'political activity' is particularly significant in this context.

The strong classification represents education as independent from political ideology and political interests. This is further facilitated by a strong classification between politics and economic development. In this context education is represented as 'objective', 'value-free', and 'scientific'. By denying that what constitutes knowledge and how it is organised depends on human choice (which is mediated and controlled by the power relations in society), the relationship between Power and the organisation of knowledge cannot be recognised.

The military government discusses the relationship between education and politics in the Educational Reform Law and defines the Educational Reform Law as the process through which education and politics are separated into 'different categories'.^{*57} But they attempt to prevent the explicit discussion of a relationship between politics and education in the context of knowledge organisation and transmission in the universities, since this not only questions the validity of their strong 'classification' and 'framing', but also could potentially reveal the underlying power structure that determined this 'object code'.

We are beginning, in this context, to identify the organising principle involved in the social organisation of education, and more specifically recognise what is meant by strong classification. First, strong classification can be identified simply by the strength of insulation between categories. But this strength of insulation is directly related to, and dependent on, social power. Bernstein states that-

"...insulation presupposes relations of power for its creation, reproduction, and legitimation."*58

As the relations between social classes in the process of production are considered to be intrinsically related to social power, they represent a basic classification. Other classifications can be seen as dependent and given meaning by this basic classification. However, as we have seen, even though the insulation between categories requires power, it cannot be associated with that power to function as a legitimator of the power relations. Bernstein states that-

"...power relations can accomplish their reproduction by establishing a principle of classification that suppresses its own contradictions and dilemmas through the insulation it creates."*59

In this way insulation can have the apparent effect of transforming the ideological into the "natural" or the "necessary". Moreover we can begin to recognise this model as a dynamic model, involving agents of social control to maintain the boundaries and insulation between categories as the principle of classification is challenged by social events or movements (such as the demands

made by staff and students in the universities). Bernstein argues that any change in the insulation between categories-

"produces a change in the principle of classification, which in turn indexes a change in the social division of labour, which will then move its dominating categories (agents) to exert their power through the hierarchy(ies) they regulate to induce a return to the original...." *60

However, this requires some form of recognition by the agents of the social significance or meaning of events, so that the process of social control becomes less pre-determined than this model may at first appear. Nevertheless we can expect the process of social control to be highly effective in maintaining power relations, particularly as the agents of social control can be unaware of the significance of their social role, even if they can recognise the social cues for their action. This is because the accepted meaning of both the events and their actions are subject to the same classifications, framing, and legitimising interpretations.

Strong classification therefore, stems from a strong division of labour, where social classes are clearly separated in the relations of production and organised hierarchically. Strong classification is, in this way, established (by power) in the relations of production, and in the process of generalising further classifications between groups, concepts and things, able to legitimise power relations by separating the existence of the classifications from the existence of power. Such that even legitimate meanings are controlled through the process.

The intended role of education to act a -politically and in an objective manner to serve the needs of 'national development' finds expression within a specific social context. The context of an 'intermediate government' which through representing particular interests (characterised by the technocrats and their dependence on industrial development) represent their interests as either 'national interests' or else as 'technical solutions' to socio-economic problems. Consequently, the social relations, although based on the relations of production are mediated through the modality of control. The technical experts act as a powerful management class precisely because their power is legitimated not in terms of 'class', but in terms of 'expertise'. This mode of social control is characterised by strong framing abstracted from its socio-economic basis. In this context Julio Cotler analyses the similarity of the underlying modality of control contained within the Agrarian Reform Law and the University Reform Law in the following passage:-

'Effectively, the agrarian reform law, following the technocratic model, with a military and professional reformist face, considers that in order to achieve the transition from private estate to cooperative or peasant community, the state will assign to a comptroller and attached professionals - that will replace the owner and his administrators - the directive functions of the enterprise, and which the peasants must passively accept. That is to say, like the case of the University Reform, the active presence and autonomy of the effected population is refused in the proscribed modifications.'⁶¹
(my translation)

CHAPTER 3 - NOTES

THE CONCEPT OF 'PARTICIPATION' AND THE ROLE OF EDUCATION

- 1) Basil Bernstein explores 'Object Codes' in a number of contexts in several articles and papers. He first outlined this approach in a systematic attempt to relate the organisation of knowledge to systems of control in -'On the Classification and Framing of Educational Knowledge' in Young, M.(ed.) 'Knowledge and Control' Collin-MacMillan, 1970. Further analysis can be found in 'Class & Pedagogies: Visible & Invisible', Educational Studies, Vol 1 no.1, Inst. of Ed., March 1975 'Aspects of the relation between Education & Production', Unpublished paper, 1977.
- 2) Plan Inca, Chapter 25 'Participación de la población' p38
 - a) SITUACION
 - (1) La casi totalidad de la población está deliberadamente marginada de la solución de los problemas que le incumben.
 - (2) El poder de decisión en todas las actividades de la población está concentrado en minorías privilegiadas que lo usan en su propio beneficio o en el de grupos de presión
 - (3) Escaso interés de la población por la participación.
 - b) OBJETIVO

Participación activa y libre de todos los hombres y mujeres en las actividades que requiere el desarrollo nacional, sin la influencia de ideologías importadas.
 - c) ACCIONES
 - (1) Promover la libre asociación de las personas, para el logro de sus objectives comunales.

- (2) Preparar a la población para que participe eficazmente en todas las actividades de sus asociaciones,
- (3) Orientar la marcha de las asociaciones, evitando su manejo por minorías o grupos con intereses extraños a ellas
- (4) Crear los organismos necesarios para facilitar la participación del pueblo.
- 3) Bourdieu, P & Passeron, J-C, 'Reproduction in Education, Society & Culture', Sage, p.31.
- 4) Decree-Law No. 18896, June 22, 1971, article 2
- 5) Middlebrook, K.J., Palmer, D.S., 'Military Government & Political Development: Lessons from Peru', Sage Publications, 1975, p.18.
- 6) It is certainly true that a number of Marxists committed to socialist activities worked within Sinamos, which by the end of 1975 caused something of a scandal when the military government, just before the overthrow of Velasco, took steps to deport some prominent Marxists.
- 7) Marka magazine, 'Movilizacion o manipulacion' January 1976 p.24 for a general discussion.
- 8) Lowenthal 'Peru's Ambiguous Revolution' in 'The Peruvian Experiment' Princetown Univ. Press 197 p. 3-43.
- 9) Julio Cotler 'The New Mode of Political Domination in Peru' in 'The Peruvian Experiment' ed. Lowenthal, A.F., Princetown University Press, 1975 p71-2.
- 10) 'Plan Inca', op.cit. Chapter 6 'Reforma de la empresa', P17.

'a) SITUACION

- (1) Estructura empresarial que concede al capital el rol principal en el proceso productivo, subestimando al factor trabajo.
- (2) El régimen de la empresa es una de las causas principales de la injusta distribución de la riqueza.
- (3) El trabajador es un simple asalariado, sin acceso

a la utilidad, gestión ni propiedad de la empresa

b) OBJETIVO

(1) Una estructura empresarial que otorgue al trabajador participación en la gestión, utilidad y propiedad de la empresa

c) ACCIONES

(1) Creación de la Comunidad Laboral a través de la cual el trabajador participará en la gestión, utilidad y propiedad de la empresa. En las estatales no habrá participación en la propiedad.

(2) Creación de un mecanismo de equilibrio entre comunidades de diferente rentabilidad.

(3) Promoción y estímulo a las empresas de Propiedad Social.'

- 11) Carlos Delgado 'Oiga' magazine (nos 487 & 488) cited by Cotler op.cit.
- 12) Latin America Economic Report Vol IV no. 22 4th June 1976
- 13) 'Marka' Feb. 1976 P 22-3 'Propiedad Social : Mucho Ruido y Pocas Neces.'
- 14) Julio Cotler op.cit. 1975 p 72
- 15) Latin America Newsletters Vol X no. 15 9th April 1976
no. 28 16th July 1976
no. 31 6th August 1976
Latin America Economic Report op.cit.
- 16) Bernstein, op.cit., p 47
- 17) 'El Plan Inca' 'Reforma de la Educacion' Inkari, 1975 p31

a) SITUACION

(1) Sistema educativo orientado intencionalmente para mantener en la ignorancia a los grandes mayorías con finas de explotación.

(2) Bajo rendimiento en relación con las altas inversiones efectuadas

(3) Sistema poco flexible y que no tiene en cuenta la realidad nacional

- (4) Situación económica y profesional del magisterio en desacuerdo con su elevada misión
- (5) Excesiva burocracia y magisterio politizado.

b) **OBJECTIVO**

Un sistema educativo al servicio de toda la población que garantice la formación integral del hombre que requiere la nueva sociedad peruana

- (1) Transformar la estructura de la educación, creando un sistema fundamentalmente humanista que tenga la siguientes características;
 - a) Exaltar la dignidad del hombre y reconocer el derecho a la educación de todas las personas sin discriminación alguna.
 - b) Orientar la educación hacia el trabajo considerado como medio de lograr la plena realización del hombre.
 - c) Lograr la participación de todos los sectores de la comunidad nacional
 - d) Ser flexible para adecuarse a las necesidades de los educandos de las diversas regiones y zonas del país
 - e) Alcanzar progresivamente la gratuidad de la enseñanza
 - f) Integrar la Universidad en un sistema autónomo.
- (2) Reestructurar el sector para adecuarlo a la Reforma.
- (3) Dignificar el Magisterio asegurando su formación y continuo perfeccionamiento profesional y una situación económica acorde con su elevada misión.
- (4) Organizar un Museo de la Cultura que ponga las diversas expresiones de la cultura nacional al alcance de las mayorías.

- 18) Ley General de Educacion, Discreto Ley no. 19326, p 4&5

'La modificación de las relaciones de propiedad de los medios de producción genera fundamentales efectos sociales que tornan imperativa una renovación educacional que contribuya decisivamente al surgimiento de un nuevo hombre en una nueva sociedad. La sociedad tradicional no podría cambiar sólo educando a los hombres y dejando intacta su estructura socio-económica básica. Pero tampoco podría cambiar si paralelamente a las reformas económicas estructurales no se efectuara una transformación del sistema educativo que permita que la educación capacite a los hombres, los despierte a una nueva actitud y los prepare para ser verdaderos protagonistas del cambio social en el Perú.'

- 19) Posters seen in Lima Post Office 1975/6

- 20) Ley. General de Educacion, op.cit p 11

'...se considera que la educación es fundamentalmente un proceso de liberación...'

- 21) Ley Gen. de Educacion op.cit. p 8

'Se comprende que la Reforma, para ser profundamente humanista, tiene que definirse como un movimiento orientado al desarrollo y al cambio estructural de la sociedad peruana y, en consecuencia, a la liberación y afirmación de nuestro ser nacional. Solo así puede contribuir a la realización de las grandes mayorías nacionales a superar su marginación y su opresión seculares y a canalizarlas hacia la creación colectiva de una sociedad justa y de plena participación y de una cultura original y fecunda, por vez primera auténticamente nacional. Los fines propios de la educación peruana reformada: educación para el trabajo adecuado al

desarrollo integral, para la transformación estructural y el perfeccionamiento de nuestra sociedad y para la autoafirmación nacional,....'

22) Ibid. p 9 'Pero el proceso de desarrollo sería ilusorio e incompleto si no contara con el apoyo de todos los sectores de la comunidad nacional, ...'

23) Ley Organica de 'la Universitaria Peruana' Discreto Ley no 17437, February 1969.

24) 'Articulo 32

El quorum para las sesiones de la Asamblea Universitaria es la mitad mas uno del numero legal de sus miembros, en el que la proporción de estudiantes no debiera sobrepasar la tercera parte de los miembros profesores, incluyendo les autoridades universitarias.'

25) Ibid p 10

'La Ley sanciona en todas los niveles y ciclos de la educación la participación de los educandos,....'

26) On the basis of the Discreto Ley No 13417

27) Interviews and conversations with students & University Authority officials, primarily at la Universidad Nacional Agraria, Lima.

28) The University Law

op cit p 13 'Articula 33.....Para los efectos de la votación, el numero de votos de la representación estudiantil no podrá exceder de la tercera parte de los votos de los miembros profesores presentes, incluyendo las autoridades universitarias.'

29) Ibid p 22

'Art. 101 La asistencia a clases y prácticas es obligatoria...

Art. 109 Se pierde la condición de estudiante universitario por las siguientes causales: a) Conducta immoral

b) Por condena judicial que imponga pena privativa de la libertad.

- c) Acto grave de indisciplina
- d) Realizar cualquier tipo o forma de activismo o proselitismo político partidario dentro de la Universidad...'
- 30) Julio Cotler 'Crisis Política y Populismo Militar' in Fuerzalida Vollmar (ed.) 'Peru, hoy.' (Siglo Veintiuno Editores SA, 1971) p 139
- '..el Ministro de Educación del gobierno militar, en forma autoritaria y tecnocrática, refrendo una ley que 'restablecería el principio de autoridad' y marginaría la política de la universidad.'
- 31) Alberto Escobar, 'El problema Universitario o El Vacío Ideológico' in Fuerzalida Vollmer (ed.), op cit pp 299, 301
- 32) Ibid., p 301 '....esa ley pretende 'despotilizar' la Universidad,'
- 33) Ibid., p 301
- '...una ley que pretende 'modernizar' y elevar científicamente los niveles de enseñanza y de investigación.'
- 34) Ibid p 301
- '...la responsabilidad política de la Universidad en la transformación de las estructuras económicas.'
- 35) Ibid p 301
- 'Otra paradoja estriba en el hecho que esa ley pretende "despolitizar" la Universidad, pero la tarea emprendida por el gobierno nacional requiere del respaldo de una juventud con conciencia política.'
- 36) Marka op.cit. p 20
- '...uno de los grupos civiles mas influyentes en la segunda fase; los tecnocrats que desde el Ministerio de Economía y Finanzas, COFIDE y el Banco Central de Reserva, diseñan las propuestas que golpean la economía popular. Por cierto los discursos afirman lo contrario; y los tecnocratas presentan sus medidas como 'soluciones técnicas' es decir 'neutrales' '

- 37) El Plan Inco. op.cit., Action 20 c(1) f) 'Integrar la Universidad en un sistema autonomes.' p 32
- 38) Alberto Escobar op.cit. p 271
- 39) Ingeniero Mario Zapata (Academic Director of Agronomy and Director of the Academic Programme of Agronomy) informed me in an interview 8th October, 1975 that government officials meet with the University Officials through CONUP on a regular basis (every 2 - 5years) to regulate the general orientation of courses and their content.
- 40) Univ. Law, op.cit. p 23 'Article 131...
- d) Realizar operaciones financieras, externas e internas orientadas a facilitar medios para el mejor funcionamiento de las Universidades...
 - e) Promover la cooperacion de la economia privada en favor de la Universidades Peruanas.
 - f) Preparar un plan financiero y de inversiones para incrementar el capital del Fondo, con miras a una progresiva autofinanciacion de las Universidades.'
- 41) The National Agrarian University set up projects to sell potatoes and other crops produced on the University land. I shall examine the implications of this and other aspects of finance in more detail in a later chapter
- 42) Interviews and discussions with CONUP officials and officials of the National Agrarian University
- 43) Univ. Law op cit. p 27 'Articulo 130
- Las donaciones o legades que se hagan en favour de la enseñanza y de la investigación universitaria, no estan sujetos al pago de ningun impuesto. Su importe sera considerado como gasto por el doble de su valor, en las declaraciones destinados a la acotación de impuestos a la renta y a las utilidades, y no tienen restricciones en cuanto a su monto. El CONUP, es único autorizado para

otorgar certificadas por este concepto para fines tributarios.'

- 44) This and other aspects of the University Law will be dealt with in more detail when the analysis focuses on agronomy education at the National Agrarian University.
- 45) Robert S. Drysdale & Robert G. Myers 'Continuity and Change: Peruvian Education' in Lowenthal (ed.) 'The Peruvian Experiment (Princeton Univ. Press, 1975) p 287, 289 (see also Alberto Escobar op.cit. p 260 -304)
- 46) President Velasco's Independent Day address, July 28th 1971, cited by Drysdale & Myers Ibid p 289
- 47) Ibid., p 291
- 48) Ibid., p 291
- 49) Conversations & Interviews with University officials and teachers at the National Agrarian University, September to November, 1975.
- 50) Drysdale & Mayer op cit. put the number of universities to take this action as twelve p 291
- 51) Ibid. p 291
- 52) Internal unpublished circular by Ford Foundation, Lima, Peru
- 53) The information about the University occupation is based on diverse sources, including interviews and conversations with University officials and teachers, and the Ford Foundation who were involved in the dispute over the 'use and abuse' of foreign capital in education. The demands of the occupation can be summarized as the complete participation of all students workers and teachers in the running of the University. The rapid expansion of the University based on the principle of easier more open access and the political orientation of teaching and research towards a socialist restructuring of society.
- 54) An official in the Department of Teaching stated

(22nd November 1976) that the talks eventually broke down because the occupation leaders insisted on official recognition of their marxist political party which was totally refused.

- 55) I am indebted to Alfonso Chilinos, head of the Humanities faculty for much of this information.
- 56) Jaquette, Jane S. in 'Belaunde & Velasco: On the limits of Ideological Politics', pp 402-439, almost suggests that this is based on a form of paranoia peculiar to the military mind needing vertical power structures
p 437 - 'The military fears political mobilisation because it cannot control it.'
- 57) I am referring here to their analysis of the education system within its socio economic context outlined above.
- 58) Bernstein, B., 'Codes, modalities, and the process of cultural reproduction: a model', in 'Language and Society 10', P.335.
- 59) Ibid., P.336
- 60) Ibid., P.339
- 61) Julio Cotler op cit., p 144
'Efectivamente, la ley de Reforma agraria, siguiendo la version tecnocratica, cara a los militares y profesionales reformistas, considera que a fin de realizar la transición de hacienda en cooperativa o comunidad campesina, el Estado delegara en un interventor y profesionales adjuntos - que remplazaran la figura del patron y de sus administradores - las funciones directivas de la empresa, y a las que los campesinos deberan acatar pasivamente. Es decir, que, al igual que en el caso de la reforma universitaria, se rechaza la presencia activa y autónoma de la población afectada por dichas modificaciones.'

CHAPTER 4

EDUCATION AND ITS SOCIAL CONTEXT

In this chapter the main concern is to examine the relationship between the educational process and its social context. To do so I will develop the concepts of classification and framing that I introduced in the previous chapter.

So far I have used the concepts of classification and framing in two distinct ways. First of all the concepts can be used to consider social relations. Classification (C) refers to the barriers between social classes (power), and framing (F) refers to the social relationships between different social classes or groups in the social division of labour (control). Second, the concepts can be used to consider the dominant interpretation of this reality. Similarly, classification refers to the barriers between concepts and framing refers to the principles of controls over the concepts. The collective Cs. and Fs. are the 'object code'. The main purpose of using these concepts in this way is that the fundamental issues of power and control embodied in the mode of production can be recognised in the classification and framing of concepts and in the resulting relationships.

In order to consider the educational process in the same light, the concepts of classification and framing can be used with respect to educational 'subjects'. In fact Bernstein's main concern is to use these concepts in this context. The collective Cs. and Fs. are defined as the 'educational code'.

In the previous chapter I identified the role of education to support the practice of 'participation' which involved the strengthening of framing within educational institutions (legitimated by 'scientific' or 'professional expertise') in order to represent what amounts to political control as some kind of organisational efficiency in the 'common interest'. In this chapter I am more concerned with the role of education in the process of production which itself is a key issue in the theory and practice of 'developmentalism' developed by the 'new middle class'.

To do so, it is necessary to distinguish between the role of the state to directly influence the educational process, and the more general relationship between education and society, more specifically the effect of the mode of production on the educational process. This concerns the extent to which education can be considered as autonomous from its material basis - the mode of production.

Many sociologists have considered these relationships from a theoretical perspective. Gintis and Bowles^{*1} (and to some extent Ivan Illitch^{*2}) have considered the dependency of education on the mode of production regarding the educational system as a producer of types of personality relevant to production. Althusser^{*3} analyses more specifically the role of education as a crucial means of ideological control, transmission and reproduction. Bourdieu^{*4} working within this perspective emphasises the relative autonomy of education as a distributor and legitimator of 'cultural capital' and the appropriation of the means of social control

by a sector of the 'middle class', within a general theory of cultural reproduction. Bernstein^{*5} expounds a general theory based on an analysis of forms of social control and the relationship between education and production in order to place social control in the context of a power structure dependent on the mode of production. This analysis is then both capable of analysing the dependency and relative autonomy of education in terms of the particular social context, characterised by the changing nature of the division of labour which is dependent on the dynamics created by the mode of production.

This chapter is essentially an attempt to define the theoretical perspective used to analyse agronomy education in Peru.

Therefore, while presenting an interpretation of Bernstein's analysis of the relationship between education and production, this is not intended to represent a summary of Bernstein's theoretical work in this area, rather it is interpreting only those aspects of Bernstein's theoretical perspective which I feel are of value in an analysis of agronomy education in Peru.

Similarly, I shall refer to Bourdieu's concepts and theories without intending to represent them, or to give the impression that these are necessarily consistent with those of Bernstein. In general terms, it can be argued that Bernstein is mainly concerned with the process of transmission, while Bourdieu is concerned with the constitution of "habitus" and so the structure of reproduction and its various realizations. I consider that Bernstein's focus on transmission and his emphasis on the process of social control, and Bourdieu's emphasis on the effects of power, are sufficiently complementary to draw useful and theoretically consistent interpretations in my attempt to deal with a process of education that, in practice, falls across both their respective spheres of interest.

It is not my intention to examine in depth still less present an appreciation of their respective theories. My interest is to select and/or draw upon elements in their writings which can help me to understand and explain the problem I have presented. I am concerned with the effect of power and control on the university, and on agronomy education in particular, and Bourdieu and Bernstein both offer a range of complementary insights into the process. It is interesting that Bernstein frequently refers to

Bourdieu in support of his ideas, where their work apparently overlaps. However, they both develop and retain their own distinctive definitions, concepts, ideas, and theories as these reflect their own unique inferences, subtleties, and emphases, which hinge on their different problematics and theoretical viewpoints.

I have therefore taken elements from each to form my own interpretative framework for the research. It is by using this approach to consider agronomy education that I shall develop an appropriate and coherent analysis of the process.

In the context of considering the process of transmission,

Bernstein states that:

"We have argued that the principle of the power relationships are made manifest in the principle of the classification (the relationships between categories) and the form of control is realised in the principles which create the framing (pedagogic practice). As the acquirer tacitly acquires these principles he/she acquires the underlying code."*6

In this way the principle which creates and maintains legitimate meanings is made manifest by the "classification" and "framing" which in turn are dependent on power and control in society.

In other words the education process actually symbolises and reflects power and control. From this point of view Bernstein

states that:

'It becomes a further crucial question to enquire into the social origins and consequences of the form(s) of power and control, overt and covert in the school in different historical periods, and in different societies.' *7

Bernstein further argues that the dependency of education on production is based on its role to supply workers with differing levels of educational attainment and skill to the mode of production not only in terms of the knowledge content but also in terms of an 'object code' relevant to the role of the specific worker.

'Education is a class allocatory device, socially creating, maintaining and reproducing non-specialised skills, and specialised dispositions which have an approximate relevance to the mode of production...The class-based distribution of power and modalities of control are made substantive in the form of transmission/acquisition irrespective of variations in the systemic relationship between the modes of education and production.' *8

The 'systemic' relationship between the modes of education and production is the role of education to produce a work force with approximate (or relative) relevance to the mode of production. Bernstein is arguing here that the ability of the education system to maintain the 'dominating principle' of the social structure resides in its implicit transmission of the 'object code' which represents this 'dominating principle'. The systemic relationship has a different function, defining the nature of the relationship between education and the mode of production.

'It is clear that the systemic relationship between education and production create for education the form of its economic or material base. In this way, the mode of production is anterior to the mode of education.' *9

This relationship between education and production is of further importance because of the parallels in structures and contexts of production, and of acquisition in education.

'These parallels in structures and contexts indicate the approximate or relative correspondences between education and production, establish the causal direction and show the form of the material basis of education.'^{*10}

Bourdieu's analysis of the 'causal direction' is organised around the 'imposition of meaning'. In this analysis it is not so much the selection, structure, or organisation of knowledge that is of importance, but its imposition as 'symbolic violence'.

'All Pedagogic Action is, objectively, symbolic violence insofar as it is the imposition of a cultural arbitrary by an arbitrary power.'^{*11}

Bourdieu makes it clear that his analysis is not limited to the school situation but in fact refers generally to power relationships in society.

'...the range of these propositions is defined by the fact that they apply to any social formation understood as a system of power relations and sense relations between groups or classes.'^{*12}

I do not mean to imply that the systemic relationship is unimportant to Bourdieu, but that the power relations define for Bourdieu the relationship between education and production as they define the imposition of the 'cultural arbitrary'. Symbolic violence therefore reproduces and reinforces power relations.

'...every power which manages to impose meanings and to impose them as legitimate by concealing the power relations which are the basis of its force, adds its own specifically symbolic force to those power relations.'^{*13}

Bourdieu and Bernstein's theories are similar insofar as Bernstein's concepts of classification and framing can be considered as a more detailed break-down of the imposition of the cultural arbitrary. The primary significance, however, of Bernstein's work for this thesis is that through the use of his concepts of classification and framing the relationship between wider social power relations on the one hand and the more frequently inter-personal power relations involved in the education process on the other can be clearly defined. In other words, classification and framing are particularly useful tools in an examination of the nuts and bolts of reproduction of power relations through education and also of education's relative autonomy.

Before looking at more detail at Bernstein's concept of education's relative autonomy and its basis, I shall expand his theoretical analysis of the dependency of education in the social context of Peru, using the concepts of classification and framing.

In Peru, and perhaps other Third World countries, the role of the state is of more importance than Bernstein envisaged in his general theory. Bernstein recognises that generally the state has gained increasing control over the systemic relationships whilst maintaining the educational system in its essential role as a class distributor of the social relationships of production.

However, as we have seen earlier, the military in Peru have in their innovative capacity as a 'revolutionary government' also exercised considerable control over the mode of production and their authority over the universities, for

example, represents an attempt to integrate 'Advanced Education' with a national plan of economic and social 'development'. While the changes to the mode of production depended not so much on a political exuberance but rather on the material conditions being ripe for reforms, nevertheless the role of the state is certainly significant.

If we analyse the changes effected to the mode of production in terms of classification and framing a pattern emerges identifying the reforms as primarily a change in the form of social control. For the purposes of clarity I shall initially limit the analysis to the Reform of the large export agricultural estates. Prior to the Reform, the classification of worker (and non-worker) categories was strong. There existed the landlord who owned the estate but did not work on it, the managerial group who controlled the day to day running of the estate, and the peasant engaged in the labour.*14 Each of these groups, while including further differentiation within their membership, constitute clearly defined and separate social roles, status and realities. The framing of production was strong, since important decision making was centralised and controlled by the owner, although delegated to the managers. The Agrarian Reform altered both the classification of labour and the framing of production. The landlord was expropriated and many of the peasants and managers became part owners. This weakened the classification of owner/peasant/worker. The managerial group gained greater autonomy and freedom of action, the classification of the managers became strengthened. Framing was weakened, as decision making became relatively democratic.

What becomes clear from this analysis is that the concepts of classification and framing are insufficient in themselves to generate the social meanings related to them. In this context, the managerial authority was not only more pronounced, but legitimated by the appearance of democratic decision making. An explanation of this occurrence can be found outside the specific context of the agricultural estate (although it exists within it). That is that the status of the manager does not only depend on his or her role, but on the social status of his expertise objectified in both educational attainment, and also their cultural perspective. Bernstein uses the concept of 'positional structure' to characterise this social reflection of the power structure. Any aspect of the positional structure is defined by 'classification'.

In the context of Industry the process of a shift in the form of social control, rather than power structure is even clearer. Here, in practice, the classification between worker and owner remained strong. However, by introducing on a limited basis forms of profit sharing and worker 'participation' framing was weakened. As pointed out previously, claims were made that this, in practice, would weaken the classification. However, since the classification and the modality of social control (framing) are fundamentally dependent on the distribution of power, rather than the change of 'framing' effecting the strength of 'classification' (Bernstein states that 'class is conceived as the fundamental dominant cultural category'), the power structure (defined in terms of the classification) determined the limits of the new form of social control. 'Participation' and 'profit-sharing' were limited so as to be unable to fundamentally effect the class structure. It is in this sense, that the weakening

of the framing of production can be characterised as a change in the modality of social control, rather than effecting the distribution of power.

As we saw in the previous chapter on Education and Participation the form of social control in the universities was quite different. This meant a strengthening of framing by limiting student participation and power. To explain this form of discrepancy, Bernstein employs the concept of a 'Transmission Field'. The form of social control in any particular situation exists within this 'Transmission Field', and is defined in terms of its framing. Its meaning, or social role is explainable in terms of the 'transmission field'. In other words, the forms of social control (framing) may differ, but its significance or social role is coordinated in terms of the 'transmission field' which serves to act to reproduce the 'positional structure'.

Bourdieu makes a very similar argument when he states that Pedagogic Actions:-

'....can never be defined independently of their membership in a system of P.A.s subjected to the effect of domination by the dominant PA.,.....' *15

This is because they are not independent actions.

'In any given social formation the different PA.s... tend to reproduce the system of cultural arbitraries characteristic of that social formation, thereby contributing to the reproduction of the power relations which put that cultural arbitrary into the dominant position.' *16

This coordination of social control may become clearer in an examination of the relative autonomy of education, in this case agronomy education in Peru. Bernstein states that:

'We shall define the relative autonomy of education in terms of the strength of the classification between the category education and the category production.' *17

As we saw in an earlier chapter the classification between the category education and the category production was ^{apparently} weakened by

the state, in order to encourage a form of economic development. However, as we have seen, the autonomy of agronomy education, for example, was not reduced simply by changes in curricula, etc., but by institutionalising and encouraging its financial dependence on Peruvian industry. Bernstein argues that it is the relative autonomy of education which serves to legitimise the form of social control by reifying it from its material basis. It is this reification which constitutes the ideological basis of the professional ethic.

'The relative autonomy of education gives to its values an apparent autonomy; the appearance of objectivity, of neutrality and at the same time, of altruistic purpose and dedication. And these become the attributes of its superior agents (Bourdieu and Passeron). It is not difficult to see the role of education in creating, disseminating and legitimating the professional ethic.'^{*18}

In this sense, the relative autonomy of education from the mode of production acts, in Bernstein's model, as a powerful factor in the socialisation of the 'professional'.

'The relative autonomy of education is the basic means whereby the consciousness of the agents of symbolic control is legitimised, maintained and in cooperation with the family, reproduced. We consider this attenuation (the indirect relation of education to a material base) the crucial fundamental ideological message of the educational system. The expression of the message reflects the social group who have appropriated the forms of educational transmission.'^{*19}

In Bernstein's general theory, the relative autonomy of education represents an abstraction of education from its material base. In other words, the education process is represented as separate from production and teaching "objective knowledge" which bears relevance to the "outside world" precisely because it is "objective" rather than because it is related. It is this "reification" which acts to legitimise educational values as separate from production values. (For example, that educational discipline is objectively necessary and educational rather than being a parallel of disciplining the production work force).

In the case of Peru, the relevance of this general theory of social control needs to be re-evaluated because of a number of unusual social factors. Significantly, the social group who have appropriated the forms of educational transmission, that is the "technical experts", as a professional group have also appropriated an unusual degree of political control over the mode of production as well. Furthermore, the strong classification between education and production has apparently been weakened in that a change has been made in the relevance and role of educational knowledge and expertise, and technical experts are encouraged to relate more positively to required aspects of production in the interest of production efficiency.

In a situation where the universities were being encouraged to service the needs of production and industries were being encouraged to finance related work at the universities through tax incentives we need to consider if the knowledge can still be represented as "objective" and if the classification between education and production can still be considered to be strong. In other words, we need to consider what gives knowledge the appearance of "objectivity", and what is meant in practical terms by the strong classification between education and production.

At this point it becomes important to make a clear distinction between the systemic relationship and the classification between education and production. Classification refers to the underlying principle that governs the relationship, or social boundary, between education and production and makes manifest the principle of power relationships. The systemic relationship is defined by the way in which education produces a work force with approximate relevance to the mode of production. Given this distinction, the changes in the relationship between education and production are clearly changes in the systemic relationship and represent an attempt to focus on particular needs of agricultural production to provide more appropriate expertise, knowledge, and so promote efficiency.

A weakening of the classification between education and production would result in the greater integration of educational and production values and institutions. Bernstein argues that this cannot happen without a weakening of the "basic classification" between social classes (or a change in "class relations" in the mode of production). Although this in itself would not necessarily lead to a weakening of the classification between education and production. However, a weakening of this classification is a necessary condition for weakening the "second basic classification", that between mental and manual work.^{*19} By contrast, as we have already seen, in Peru, professional expertise, or mental work, gained in status and authority.

Nevertheless, the relationship between education and production was being represented by such technical experts as a closer, more productive relationship. In one sense then the ideological role of a separate and value-free education could be considered to be compromised by its apparent close liaison with production. However, as Bernstein states, "the expression of the ideological message reflects the social group who have appropriated the forms of educational transmission" and in this case the

required "educational autonomy" is preserved by what I have called the reification of scientific knowledge. In practice this depends on the strong classification between education and production which allows for this representation. It also emerges in the context of the social role of the scientific experts who, as we have seen, are working across the boundaries of institutions and across the boundaries between production and the state bureaucracy. From the point of view of these professionals it may have appeared that the boundaries between various social institutions were weakening, including those between education and production. However, at this point it becomes important to make a distinction between the agencies and the agents of social control (or production). I have already argued that the classification between education and production remained strong. The fact that the agents were working across the strong boundaries between agencies does not mean that the classification between the agencies was weaker. The apparent weakening is due merely to the fact that the strong political and economic role of the new middle class led to them working in combinations of political, bureaucratic, research and educational institutions as well as in production. But there has not been a weakening of a "basic classification" as this would mean movement across social (or class) categories, and not merely within the social group identified as the "new middle class".

However, because boundaries were being represented as weaker, strong framing was necessitated within education to maintain the strong basic classification between mental and manual labour, and between social groups and classes. It is understandable that the rhetoric of the "new middle class" was sometimes misinterpreted as leading to a weakening of basic classifications, and the attempts by some universities (including the U.N.A.) to integrate the educational system with the needs of the peasantry and the workers (as was pointed out in an earlier chapter), can be seen as an explicit attempt to break down barriers (classifications) between education and production, and between mental and manual labour. But the change in the systemic system represents a change towards increasing the efficiency of the mode of production and not an attempt to change the fundamental relations of production.

In this context, Bernstein's "crucial fundamental ideological message of the educational system" was to some degree represented as, or supported by, the "reification" of "scientific knowledge" from the mode of production, which maintained the view that educational knowledge is essentially separate from production, no matter how intimately it was seen to be connected with it.

There was a similar structural relationship (and ideological identification) between education (and "technical experts") and the attempt to "modernise" and "develop" Peru. As within education where "scientific knowledge" was abstracted from the mode of production, the attempt to socially engineer Peru towards "development" also involved a "reification" of "science".

Development was ideologically represented as stemming from an abstracted "scientific objectivity" which embraced the "national interest", rather than supporting class interests. This represented and reflected the ideology and interests of the "technical experts" as "technocrats".

Agronomy education in Peru stands in relation to a specific social structure. The classification of education in relation to the mode of production, and in terms of its internal categories, represents, symbolises, and reflects power. Bernstein states-

"Inherent in the classification is the distribution of power, inherent in the framing is the principle of control."*20

In this sense, framing represents the form of socialisation into, in this case of agronomy education, the "professional ethic" of the "agronomist" in the context of the "positional structure" in Peru (which is the social manifestation of the "power structure").

Bernstein clarifies this conception in the following manner:-

'Framing regulates the form of socialisation into the category system, that is, the positional structure, and into the form of the power relationships which constitute, maintain and reproduce the structure...'*21

Bourdieu similarly argues that the relationships involved in pedagogic communication underpin the social and personal consequences of the pedagogic activity and cannot be considered simply as an act of communication.

'Insofar as the relation of pedagogic communication within which PA is carried on presupposes PA.s (Pedagogic Authority) in order to be set up, it is not reducible to a pure and simple relation of communication.'*22

Bourdieu further qualifies this statement by adding that 'contrary to common-sense prejudice' and irregardless of any theoretical works that may claim that understanding is conditional on 'attention', in all real learning situations, including the aquisition of language:-

'.....recognition of the legitimacy of the act of transmission, i.e., of the PA.s of the transmitter, conditions the reception of the information and, even more the accomplishment of the transformative action capable of transforming that information into a mental formation (training) '*23

The unknowing absorption of ways of understanding, explaining and ultimately acting in the world (that is a world view that assumes, implies, and legitimates power relations as they exist) is described by Bernstein with respect to classification and framing.

'The pupil does not experience directly a positional structure

or a transmission field, the pupil experiences directly the classification and framing of local pedagogical relations. Our view is that in acquiring the C's and F's of these relationships, the pupil is also acquiring the macro representation of code, the positional structure and the transmission field, the relations between the structure of power and the structure of control.*²⁴

This theoretical perspective provides the analytical framework for the following detailed examination of agronomy education at the National Agrarian University in Lima. This will be structured in terms of its three major components. That is;

- (1) the power relationships involved in agronomy education defined in terms of the classification of agronomy education and the classification between the education and the mode of production in agriculture
- (2) the form of social control defined in terms of framing (pedagogical practice)
- (3) the reproduction of the positional structure, or social structure, through the 'professional practices' of agronomy, with particular references to the 'reification' of science.

Before I begin this analysis, I intend to examine the development of the U.N.A. with respect to the emergence of the 'new middle class' in Peru identified as a form of 'technocracy'. This examination will be conducted within the context of the power relations in Peruvian society. This will take the form of analysing the effect that financial control has had on the development of the University and the relationship between this and the developing dominance of the 'new middle class'.

CHAPTER 4NOTES

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2. Illitch, Ivan, 'Deschooling Society', Open Forum, 1971
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6. Ibid., P.4
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8. Ibid., P.16
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10. Ibid., P.17
11. Bourdieu, P., and Passeron, J.C., 'Reproduction in Society, Education and Culture', SAGE, 1977, P.5
12. Ibid., P.5
13. Ibid., P.4
14. I have simplified the categories not because including different categories of peasant (for example) would weaken the argu-ment, but because these categories represent the major definitions of reality and role within the estate, further differentiations would be of secondary importance in terms of this analysis.
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16. Ibid., P.10
17. Bernstein, op.cit., P.19
18. Ibid., P.21
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CHAPTER 5

THE ROLE OF 'FINANCING' IN SHAPING THE ORIENTATION AND CONTEXT

OF AGRONOMY EDUCATION AT THE U.N.A.

My main concern in this chapter is the extent to which 'financing' can shape the orientation and context of agronomy education. I will begin by looking at the historical emergence of the U.N.A. which developed not only with the financial backing of the Peruvian government, but also with the financial support of North American agencies and institutions, among others. This will provide a background examination of the ability of 'financing' to focus and fix the form and process of agronomy education considered to be relevant to the main agricultural university in Peru. By 'financing' I mean the social organisation of funding all aspects of agronomy education at the U.N.A.

I shall then identify and examine two key areas in this process as:-

- (i) 'financing' research,
- (ii) 'financing' 'technical assistance projects'.

Recent Historical Background to 'Financing' at the U.N.A.

In this section I am concerned with both the 'financing' of the institution of agronomy education and the 'taken for granted' nature of the U.N.A. The implementation of the concept of an educational unit which is relatively isolated from production (the 'University' or 'school'), as opposed from an educational form which is integrated with the process of production, depends on the allocation of funds for this purpose. This is not to argue that the conception of a 'University' is not taken for granted, but rather that, although it is taken for granted, this conception actually implies real choices about the

nature of social reality, even if they are not conscious choices.

The U.N.A. evolved from the School of Veterinary and Agricultural Science formed under the direction of the Belgian Technical Mission in 1902. It was not until 1960 that the law (Law 13417) redefined the school as a University.*1

This development emerged in the context of social changes related to the role of the agronomist, which CONUP examined in 'Historical Characterisation of Engineering Teaching in Peru: the National Agrarian University.*2 CONUP argues that it was the structural identification of the professional agronomist with the foreign controlled agriculture (particularly the sugar estates) which determined the agronomists' emphasis on increased productivity through technological innovation and industrialisation. This 'structural identification' is the dependency of the professional (or 'landless') agronomist on large-scale agriculture for a salary. CONUP states that this emphasis emerged in 1922 with the fall in sugar prices.

'with the coming of the lower sugar prices at the end of the first World War, as a solution to this impass, the School expressed its policy of increasing productivity. Without a doubt, the technicians thought that the introduction of a new technology would increase the quantity of production and in this way maintain the previous profit.*3 (my translation)

CONUP notes that along with the increasing 'professionalisation' of the role of the agronomists, there was an increasing identification between the agronomists and the technological aspects of North American production and culture. This identification grew into a process of copying U.S.A. models of agronomy, education and science, and eventually led to the adoption of the University of North Carolina as a sister University in the early 1960's.

However, the U.S.A. had begun to supply funds for the 'technological improvement' of the school even earlier than this.

In 1943 the School of San Marcos (which taught agronomy) was incorporated into the School of Veterinary and Agricultural Science. This later formed the U.N.A. CONUP identified the following developments by 1950:-

(i) the Rockefeller Foundation began to finance aspects of the agronomy education, including the installation of the Dairy & the Phytology Laboratories, and the allocation of five grants to graduate students in order to continue their studies in Mexico.

(ii) the following projects were set up:-

- a graduate College with aid from the Rockefeller Foundation
- the Dairy Department
- the Meat Laboratory
- the Laboratory for Food Preservation Techniques
- the Wine Vault
- the Experimental Market

(iii) in the Director's Report at the end of 1950 the philosophy of 'developmentalism' was more explicitly set out. United State's pragmatism was eulogised. Furthermore, the 'national tradition of critical idealism' was praised for its 'tendency of universalism' which was used as an argument for adopting the North American model for the School.*4

CONUP noted that the experimental market was based on 'techniques in force in the United States' and that the 'young professor trained in the U.S.A.' in charge of the experiment became an owner of 'a chain of supermarkets'. Further, an 'experimental geneticist in maize' became the owner of 'the most important distributor of seeds in Peru'. Also, the dairy department began the service of artificial insemination for 'Herdbock-Holstein' a company dealing in dairy control services.*5

CONUP argues that the increased reliance on highly qualified personnel and a more efficient administration led to a crisis of 'internal politics' in the school.

'The most significant consequence in internal politics appeared in 1956 with 'the coup of the young Turks' who dismissed the Director García Rada and demoted the old professors causing an extraordinary promotion of the young and most qualified to the positions of power.*6 (my translation)

The increased emphasis on high formal qualifications which CONUP argues is the main characteristic of 'professionalisation' was reflected by a more rigorous selection process at the initial stage of university entrance.

'.....from more than 30% admittance at the end of the previous decade (1940's), this changed to an average of 20%.*7

CONUP also argues that the urbanisation and growth of the middle class 'gave rise to an increased demand which in turn prompted a major rationalisation in selection procedure (which was increasingly less influenced by family connections ('vara').)

'The children of landowners displaced by the inflow of sectors eager for success (despite the privileged economic position that allowed the training for entrance to the academies) chose to pool capital to

'create' the Agronomy Faculty at the Catholic University (la Universidad Católica).' (my translation)*8

CONUP states that these changes were created in order to 'rationalise' and reorientate agronomy education towards the 'modern', 'scientific' and 'industrial' agricultural sector.

'In this way, the Agricultural School by bringing about changes was able to develop a close relationship with industrialisation. Not only to initiate the tendency labelled as the 'green revolution', but also to diversify its field of action, penetrating aspects of commercialisation and industrialisation in the area of substituting imports.' (my translation)*9

CONUP argues that this formed a prerequisite for the 'upgrading' of the school into a university with financial support from the U.S.A.

The enactment of the Law 13417 in 1960 converted the School into a University. CONUP considered this to represent the institutionalisation of :-

- (i) the diversification of the School's activities across its faculties.
- (ii) the more explicit adoption of the North American model of administration.

Moreover the character of the U.N.A. was strongly influenced by:-

- (i) the massive programme of postgraduate work 'principally in the U.S.A.' through contracts, grants and so on involving the 'most brilliant young graduates.'
- (ii) the greater composition of students from the 'urban middle class'
- (iii) the adoption of the 'ideology of productivity as a solution for the national agricultural situation.'

CONUP argues that these factors gave rise to a 'strengthened technocracy' within the U.N.A.*10

In 1962 U.S.A.I.D.*11 assessed the potential of the Agrarian University and developed a building program on the basis of its reports. An important factor in this assessment was the aid already received from the U.S.A. as part of the process of elevating 'academic standards'*12

The report states approvingly that the 'North Carolina Contract' had provided 10 experts to assist the University:-

'.....consultants on curriculum, budgeting, physical plant needs, economics and campus planning have provided assistance to the University.*13

The 'North Carolina Contract' consisted of aid in terms of consultants, technology and capital which is financed by U.S.A.I.D. For example U.S.A.I.D. was providing supplementary salaries to some University teachers through the University of North Carolina for research work.*14 It further notes that U.S.A.I.D. had supplied textbooks to the library.*15

The second aspect of importance in the University's favour in the report was the increasing professionalisation of the agronomist on one hand, and on the other, the report emphasises Peru's need for the professional agronomist and given the demand for places, a larger University.

'The University is an autonomous, independently directed institution..'*16

'...only one sixth of all applicants can be accepted.*17

'Peru is largely an agricultural country where most of the farming is still done by rudimentary means. Technology is, however, gradually reaching the haciendas and small farmer cultivators creating a growing interest among the people for the technical and social professions related to agriculture.*18

The U.S.A.I.D. report concludes with an agreement to lend \$7,627,880 to support a Building Program over 1962-64, with an interest rate over forty years of 1%^{*19}. This loan is in conjunction with 'providing top level architectural consultants and engineering consultants from the U.S.A.'^{*20} It also notes that 'the University plans to raise student fees to offset part of the expected increased costs.'^{*21}

In 1963, the World Bank published its report based on its own questionnaire. This report also assessed the potential of the University and on the basis of the building of a University City, projected the future potential and orientation of the University. It estimates that the cost of the Building Project would be \$8.7 million. It further defines the limits of the involvement by firms in the project.^{*22}

'Bidding will be limited to Peruvian and American firms if U.S.A.I.D. undertakes to finance the loan. If the InterAmerican Bank enters the loan picture, then bidding will be extended to include members of the bank. Similarly if the World Bank is involved then the bidding lists will be extended to include its members of the Bank.'^{*23}

In relation to furniture, it states that :- 'Where feasible commercial items available on the market in Peru or exportable from the United States will be used.'^{*24}

On the 3rd October, 1974, before the University city had been completed, an earthquake shattered the campus, resulting in the near total destruction of many of the major buildings. This led to the construction of 'temporary'^{ra} classrooms and accommodation. After a study by several 'international organisations', including the World Bank, the Peruvian Government applied for and received a 'soft loan',^{*25} from the Bank for International Development (BID) of up to \$15 million for a 'plan to construct a new University City'

on the old site.²⁶

CONUP documented the effect of U.S.A.I.D. involvement in the development of the university.^{*27} CONUP states that the plan of development was initiated by the Peruvian Government (Ministry of Agriculture) and North American Foundations, principally Ford and Rockefeller through North American Universities (North Carolina and Iowa (economics)).^{*28}

This plan of development included:-

- 'a. Construction of the University City, designed and its construction supervised by American technicians and largely furnished with utilities from North Carolina.
- b. Participation in the national agricultural development plan by research in economic compliance with private companies, of seed improvement (maize, potato, mechanics, etc.), of dairy production improvement, of commercialisation of food products, technical assistance projects in the area of food production, etc. In these projects both university professors and North Americans participated.'^{*29} (my translation)

CONUP states that there was a 'massive exodus' to the United States by young professors and students with agreements to return as professors at the University, but quotes no figures. CONUP's main emphasis seems to be on the effect of North American models and ideology on national interests, arguing that this 'exodus' signified:-

'....an increasingly sophisticated specialisation under the metropolitan hosts (U.S.A.) besides the ideological impregnation that presupposes a technocratic course in this country.

d. The adoption of the North American style of research and the construction of not only laboratories, libraries, etc., but also a subculture that can be characterised as 'spanglish' and an imitative style of living.'*30 (my translation)

CONUP concludes that this reorientation of agronomy education at U.N.A. towards increased professionalisation, more scientific methods, and an identification with North American models, ideology and industrial agriculture elevated the status of the University.

'In general academic level it is the highest of its kind in the country and the research acquired an international standard (publications). Evidently, the U.N.A. was transformed into a Peruvian elite University.'*31 (my translation)

Up until this point only a general consideration has been made of the ability of finance to effect the education process, examining the general relationship between the allocation of funds and the dynamics of social groups. More specifically, the appropriation over education and scientific activity by the professional groups of the middle class. I have argued previously that the military coup in 1968 represented the final stage of control by these professional groups and the development of a form of technocracy only possible within the specific social context of the social, political and economic crisis prevalent in the mid-sixties.

At this point, therefore, it becomes necessary to analyse in more detail the role of capital to determine the relationship between the education process and the mode of production, shifting the arena of analysis from a general historical examination, to a more concrete analysis of the 'Universidad Nacional Agraria' from 1972 to the beginning of 1976. Probably the most important

aspect of capital in determining the relationship between education and the mode of production is the area of research. As we have seen, it was in precisely this area that the attempt by the military government to weaken the classification between education and production was most concretely manifested by giving generous tax incentives to private companies to promote research.

The Financing of Research at U.N.A.

Research plays an extremely important role in the University, not only because it determines a structural relationship between education and production, but also because of its possible importance in determining the career structure of the agronomist. Since agronomy is a 'practical science' as opposed to a 'pure science', scientific research is an important factor, along with high qualifications, in determining the agronomist's status. Ingeniero Juan Brambilla was extremely clear about this situation when he stated in an interview:-

'We spend 40 or 50% of the time doing research. If you get good results your salary is increased. What we get in the field is very important. This is your work.'

When asked about the problem of financing research he said:-

'We try to get help from anybody. We don't have limits (as to who finances research), but it is very difficult.'^{*32}

Since the weakening of classification between education and production has emphasised the importance of research the extreme difficulty of obtaining financial assistance has led to the increased dependency of the agronomist on private companies. This results in greater control by the private companies over the content and direction of research as the following interview with Ingeniero Felix Caycho Munoz and Ingeniero Felipe Flores

Zapato (the Coordinator of Research) clearly demonstrates.

Ing. Munoz: I give technical assistance once or twice a week to a Japanese flower farm near to Lima.
question: How does that operate? Do you give this assistance for free?

Ing. Munoz: Yes for free, it's in my work time. Because they give us money for research, I help them. The money is usually a problem. This way we have to do specifically what they want us to do - like the effect of different temperatures on carnations - but it means we can do research.

Ing. Zapata: Yes, it's the only way you can do research.

Ing. Munoz: I was at the University of North Carolina and I saw this system working there, and so you could say I copied it.*33

While there exists a clear relationship between financial sources and the content (and use) of research, data elucidating this causal relationship in general was never made available to me despite frequent interviews with officials concerned with 'donations', 'financial statistics' and 'research coordination'. Nevertheless a general strong correlation can be demonstrated with the existing data. This is constituted by:-

- 1) Money and equipment 'donated' to the University, which also includes some of the capital received for the official contract work, but very obviously excluded others. Further there is no indication as to which research programme the 'donation' appertains.*34
- 2) Official contract work, which briefly describes the nature of the research and the source of capital (or 'contract source') but not amount.*35
- 3) Current research work, both of the University staff and the student graduation theses, briefly describing the content, but giving no indication as to the financial source supporting it.*36

- 4) Technical Assistance Projects in conjunction with the Ministry of Agriculture, but excluding all the technical assistance given by agronomists in exchange for 'financial assistance' for specific research.*37

This data will be examined on the basis of the correlations this data manifests and also in terms of the previous theoretical framework which suggests the direction of causation and the form of the relationship between research and the mode of production.

1) The Donations to the University

Since no indication is given as to the nature of the research the individual contributions finance, it is not possible to categorise the donations in terms of production categories. Nevertheless, the following table indicates the major sources of income for research in the University. Table 18

SOURCE	Donations to U.N.A. 1973-74*38	AMOUNT (Soles)*39
I.B.M. of Peru S.A.		2,882,918.00
The Bavarian State Zoological Collection of the Federal Republic of Germany		250,000.00
Enrique del Solar y Sra. Elena Miranda de del Solar		221,583.75
National Agrarian Society Committee of Maize Production		150,000.00
Hortus S.A.		87,865.00
Concentrados Marinos S.A.		86,000.00
Peruvian Credit Bank		75,000.00
Aji-no-moto of Peru S.A.		54,000.00
National Beer Company		53,425.92
Backus and Johnston Beers S.A.		50,000.00

Cont'd...../

...../cont'd Donations to U.N.A. 1973-74

SOURCE	AMOUNT (Soles)
Peruvian Food Company S.A. (PERULAC)	32,000.00
Mario del Pio S.A.	23,000.00
Liam Brewery S.A.	15,000.00
Southern Peru Beer Company	12,500.00
Huaron Mining Company	10,000.00
Merck Sharp & Dohme (Peru)S.A.	10,000.00
Bank of Lima	5,000.00
Commercial Guima S.A.	5,000.00
Fertilizers Conteticos S.A.	5,000.00
House of Savings "Peru" and home loans	5,000.00
Ladymed S.A.	5,000.00
Marco Peru S.A.	5,000.00
Molinos Takagaki S.A.	5,000.00
Monterrey S.A.	5,000.00
National Fisheries Society	5,000.00
Palacios Hnos Corporacion Maderera S.A.	5,000.00
Bayer United Chemicals S.A.	5,000.00
Envotluras Lima Co. S.A.	4,000.00
Albis Distributor S.A.	3,000.00
Peruvian Pharmaceutical Institute	3,000.00
Merck Peruana S.A.	3,000.00
Casa Matusita S.A.	2,000.00
Hoechst Peruana S.A.	2,000.00
Institute of Allergy Research, Luis E. Betteta	2,000.00
Ronsa S.A.	1,000.00
	TOTAL: S/. 4,088,292.67

Curiously, the University Budget published for the same period declares that only 847,000 Soles were transferred from the 'private sector'^{*40}. While this highlights the problem of inconsistent official statistics, it is probable that this sum of money represents, if not different sources of capital, then different objectives for it, since the budget excludes all research costs (excepting perhaps 'capital goods' expenditure).^{*41}

2) Research Contracts

The agronomists engaged in research programs have little control over the 'financing' of research contracts since funding sources are scarce and the agronomists must search for any available source and orientate research towards promising avenues of financial backing. Nevertheless, the University Rector's Report over the years from 1972 to 1974 lists forty-eight official contracts for research.^{*42} The contracts can be categorised in terms of their relationship to general academic categories in the following way.

Table 19

<u>Category</u>	<u>Number of contracts</u>
Agronomy ^{*43}	20
Animal Science ^{*44}	5
Fisheries	8
Forestry	9
Miscellaneous ^{*45}	6
<hr/>	
Total	48
<hr/>	

Of these forty-eight contracts, only twenty-nine are directly involved in either food production, or agricultural production. These twenty-nine contracts can be further subdivided into the following five categories designed to facilitate an analysis of the major beneficiaries of these contracts, in relation to the financial source.

- (i) 'popular foods', such as potatoes, cereals, vegetables etc.
- (ii) Cattle and dairy production.
- (iii) Industrial production, such as barley for brewing, fish, sausages, etc.
- (iv) Export production, primarily sugar and cotton.
- (v) General scientific research, research organisation contracts, such as national soil surveys and administrative cooperation between research centres and the University.

On the basis of this categorisation it is possible to analyse the beneficiaries of these contracts in terms of:— (A) producers, and (B) consumers. Firstly, in order to examine this information in relation to the financial sources, the following tables were compiled.

Table 20
Research Contracts in Food and Agricultural Production 1972-1974

Contract source	Type of Production										Totals	
	no.	(i) %	no.	(ii) %	no.	(iii) %	no.	(iv) %	no.	(v) %	no.	%
The State (a)	4	14	1	3.5	1	3.5	4	14	5	17	15	52
Public Companies (b)			1	3.5	1	3.5	1	3.5			2	7
Private Companies (c)			2	7	2	7	1	3.5			3	10
Agricultural Assoc. (d)	1	3.5	2	7							3	10
Industrial Society			1	3.5							1	3.5
International Organisations (e)	2	7	1	3.5	1	3.5					3	10
Foreign Governments (f)					1	3.5	1	3.5			1	3.5
Foreign Universities (g)					1	3.5	1	3.5			1	3.5
Totals	7	24	4	14	5	17	8	28	5	17	29	100

Table 21 Research Contracts in the General Area of Agronomy 1972-74

Contract source	Type of Production										Totals	
	(i) no	(i) %	(ii) no.	(ii) %	(iii) no.	(iii) %	(iv) no.	(iv) %	(v) no.	(v) %		
The State	3	18			4	24	4	24	4	24	11	65
Private Companies			1	6	1	6					2	12
Agricultural Assoc.	1	6									1	6
International Organisations.	2	12			1	6					3	18
Totals	6	35	-	-	2	12	5	29	4	24	17	100

- a) The State in this context includes contracts by the following groups:
- (i) The Ministry of Agriculture (7)
 - (ii) State research and administrative organisations (e.g. 'Regional Centres for Agricultural Research' (CRIA)), (3)
 - (iii) Ministry of Fisheries(4)
 - (iv) The University (1)
- b) The Public companies involved are:
- (i) The public company of Fishing Services (EPSEP)
 - (ii) The Commercialisation of Fishmeal and Fish Oil Public Co.(EPCHAP)
- c) The Private Companies involved are:
- (i) Purina Peru S.A.
 - (ii) Backus & Johnston Brewery, National Brewery, Lima Brewery and Southern Brewery all had a joint contract in relation to Barley
 - (iii) Mining Peru
- d) The agricultural associations involved are:
- (i) The National Agrarian Confederation (1)
 - (ii) The Association of Peruvian Cattle Owners (2)
- e) The International Organisations involved are:
- (i) The International Potato Centre (C.I.P.)
 - (ii) The Organisation of American Nations (O.E.A.)
- f) The foreign government is the Government of Japan through its 'Agency of Technical Cooperation for Sea Foods'.
- g) The foreign University involved is the University of Marseille, France.

Beneficiaries of the Contract Research

(a) The Producers

It would seem at first sight that 24% of the Research Contracts are involved in 'popular foods', and as I pointed out earlier, the small farmers produce most of the 'popular foods' on family farms. It seems logical to conclude, therefore, that the small farmers would, as producers, be the major beneficiaries of 24% of the research. However,

if we look more closely at the form and content of this research a different picture emerges. Due to the importance of this analysis it is worth examining ⁱⁿ each of these research projects in turn.

(i) 'Maize Research - the incorporation of Gene Opaco 2' *46

This research contract is from the Ministry of Agriculture.

The objective is 'to incorporate the gene opaco 2 into the mountain varieties of maize in order to improve the protein quality', and 'to increase productivity and production in the 'sierra'.'

One of the fundamental problems involved in trying to increase productivity through genetic breeding is that altering the growth patterns of the plant in order to produce more or better crops very frequently means that the plant loses some of its other abilities, such as resistance to disease and other properties necessary for survival. For this reason, these genetic 'super-plants' depend on supplies of pesticides and fertilizer, and irrigation for some crops. As Chaudri points out with respect to cereals:

'Without fertilizer or without controlled irrigation, the new varieties usually yield no more and sometimes less than traditional strains. With them they give substantially higher yields per acre.' *47

Similarly, the Committee of Maize Producers (COMAIZ) emphasizes the importance of fertilizers, pesticides and irrigation.

'The use of fertilizer is important, especially when hybrids are being grown and improved varieties, in order to achieve the maximum from their high yield capacity.' *48

An inevitable consequence of this technology is that the medium and most particularly, the large-scale producer benefits considerably more than the small family farm. *49 This is not just because the large-scale producer is in a better position to afford fertilizers, etc.,

but also because such producers are far more likely to have access to commercial channels through which they can purchase such commodities and services. In Peru, partially due to the difficult transport conditions over the Andes, commodity channels are highly inefficient, where they exist. For example, the Coffee cooperative in the jungle township of Satipo (Coffee-Peru Ltd. No.364) actually import their own fertilizer more regularly and at a lower price than could be expected through normal channels.*50

Due to these difficulties, the small scale producer benefits hardly at all from such genetic research. 'COMAIZ' at the University was by no means unaware that the new varieties were not being used by most farmers, but felt that it was essentially a problem of educating the farmers so that they realised what was being offered to them.

'The supplies of seeds is satisfactory, having exceeded the needs in the majority of areas. On the other hand, their distribution among the farmers has been inadequate owing to a lack of promotion work.*51

(ii) 'Meat Research - Ministry of Agriculture Loan'*52

The objective is 'to continue to investigate the use of agricultural sub-products, principally chemically processed cotton seeds'

As George Turner points out, the small scale farmer normally works an integrated farm and is not only the principle producer of 'food' crops but 'they also predominate in cattle and poultry production.*53

However, the small-scale farmer depends on natural grazing and free range poultry. Consequently, the emphasis on chemically processed fodder can only benefit the large-scale producer who orientates meat production towards mass production.

The second, and possibly the greatest beneficiary of this research is the cotton producer (cotton is produced on large estates principally for export).^{*54}

(iii) 'Multinational Project of Agricultural Science (Soils) - OEA'

This contract is from the Organisation of American States (OEA) and follows several objectives.

'By means of the present project the following objectives will be pursued:

- (a) To evaluate the fertility of the soils in an agricultural zone representative of the Andean Region.
- (b) To establish rational systems of soil fertility conservation for the region.
- (c) To assist the increasing of food production in the Region.'^{*55} (my translation)

It is quite difficult to assess who the major beneficiary of this project would be because, like all projects that appear to benefit the small producer, a crucial factor is the application of the project. That is, frequently the agronomist prefers not to deal with a multitude of small-scale farmers if a few large-scale producers can be found to deal with instead. Moreover, the relationship generated between the agronomists and the peasantry can often jeopardise the project.^{*56} However, I shall deal with these problems of pedagogy in a later chapter, at this point it is useful to point out that this research project certainly has the potential of benefitting the small-scale farmer as well as others dealing with food production in the 'sierra'.

(iv) 'The Study of Production Improvement with reference to the Development of Popular Foods'

This research contract is financed by the University itself, in order to follow the following objectives.

- 'To develop the use of wheat germ in baking.
- To develop the production of cotton seed flour for human consumption.

The protein enrichment of conventional foods.

Research into the production of quinoa flour.^{*57} (my translation)

With the exception of 'quinoa' which is a traditional high protein cereal, both wheat and cotton are produced by middle to large-scale producers. Cotton is produced on a large-scale while wheat production is almost entirely centred around Huancayo in the 'Sierra'.^{*58}

(v) 'Contract for Maize Research with the National Agrarian Society (COMAIZ).'

This contract was initially made between the University and the National Agrarian Society (S.N.A.). The S.N.A. was the political vehicle of the coastal landlords and subject to considerable attack by the Military Government.^{*59} In 1972 SINAMOS dissolved the S.N.A. and subsequently the National Agrarian Confederation maintained support for the contract.

'Participating Entities:-

The National Agrarian University - ex-National Agrarian Society, substituted by The Liquidator Commission of SINAMOS and today by the National Agrarian Confederation.

objectives:-

Genetic improvement for the incorporation of gene 'braquitico 2' to obtain smaller plants.

The continuation of the project presented to COMAIZ by the Cooperative Program of Maize Research'.^{*60}

As in the previous case of genetic research around maize the principle beneficiary would be the large-scale producer for the same basic reasons. This is further emphasized by the original involvement of the National Agrarian Society on the one hand, and the attempt to produce smaller plants. This practice was, as Ingeniero Cesar Medina Závala told me, pioneered in England with

trees and plants in order to facilitate the mechanisation of harvesting the produce.^{*61}

(vi) 'Contract to Improve the Frost Resistance of Cereals'.

This contract is in direct association with the Agrarian Reform since its source is the Regional Organism for the Development of the Affected Zone (ORDEZA). The objectives are:

'To study the genetic development of various cereals, especially wheat, barley and quinoa, their resistance or tolerance to frost, and therefore to characteristic diseases, and also their yield capacity.'^{*62} (my translation)

Since this project is in relationship with the Agrarian Reform, the major beneficiaries will be the beneficiaries of the Agrarian Reform, primarily cooperatives of various kinds. Furthermore, the genetic orientation probably necessitates the conditions examined above (fertilizer, irrigation and pesticides etc.,) but in any event, wheat and barley are primarily used for industrial production into bread and beer, and geared for large-scale production.^{*63}

vii) 'Resolution of Cooperation with the International Potato Centre' (CIP)

This contract is essentially on two levels. Firstly, it is designed to coordinate the work of the two centres, and secondly, it is a contract of financial aid to the University. The objectives are stated in the following way:

'The UNA must provide training, at an advanced level, for professionals; to provide space for CIP at the National Agricultural Library (the University Library) and other facilities. CIP will cover the cost of purses to students and others.'^{*64} (my translation)

Ingeniero Pedro Lopez Camarena stated that there were at present (1974) 13 students from U.N.A. engaged in post graduate research at the international potato centre.^{*65} However the Annual Report of CIP, 1974

states that there are 19 students from the U.N.A. engaged in post graduate research at the Masters level alone.*66

In fact the Centre organises 'formal training at the Masters, Ph.D and Post doctoral level' in association with 'cooperating universities'.

'Training leading to the Masters degree

This is in conjunction with the National Agrarian University adjacent to CIP's facilities in La Molina. There were 19 scientists entered in Master degree training courses by CIP in 1974.*67

The Annual Report also documents a contract that cannot be found in the Rector's Memoria, 1972-1974;

'Universidad Nacional Agraria, Lima, Peru - 'Environmental Physiology of the Potato - An Approach' U.Moreno.

Objectives

- a) To study the effects of adaphic and climatic factors on growth, development and metabolism of the potato plant.
- b) To study the range of adaptability of the potato to different environment including certain aspects of physiological degeneration due to unfavourable environmental factors.*68

Dr. Ulises Moreno Moscoso is also the 'Director of Teaching' at U.N.A. These formal relationships between the U.N.A. and CIP represent only part of the actual relationship and associations between the two Institutions. As Richard L. Sawyer, the Director General of CIP stated:

'There are few formal links between CIP and La Molina (U.N.A.) but

...../cont'd

informally there is a very strong link because of all the Peruvian scientists and economists here graduated from La Molina (U.N.A.). So there is this mafia; a good Marxist analysis could be done, but we wouldn't pay them for it.*69

The Head of the Potato Research Program (P.I.P) at U.N.A, Ingeniero Carlos Ochoa Nieves, is also the Head of Department of Taxonomy at CIP.*70

Interestingly Ingeniero Pedro Lopez Camarena stated that P.I.P no longer receives donations from 'Imperialist sources and Foundations' by choice,*71 while links between P.I.P and CIP have been strengthened. CIP is one of seven worldwide agricultural centres organised by the World Bank to promote the 'Green Revolution' which is an attempt to solve the world food crisis and related agrarian problems through technological means, focusing in particular on developing higher yeild food crops.

CIP has an annual budget of just over 3 million U.S. dollars. The Director explained that it was relatively low compared to the other 'Green Revolution' Centres because it preferred to 'contract out' work and so saved on capital expenditure. The funds the Centre received can be divided into two categories:

- (i) unrestricted grants, with no defined purpose
- (ii) restricted grants for specific projects.

Table 22

Grants Received by CIP (1974), US \$

*72

Source (i)	US \$	% of group	% of total
a) International Development Agency-USAID	550,000	25	18.2
b) International Development Agency (Canada) CIDA	331,360	15	11
c) Denmark - DANIDA	256,711	12	8.5
d) InterAmerican Development Bank (IDB)	250,000	11	8.3
e) International Development Agency (Sweden) SIDA	206,185	9.5	6.8
f) Netherlands Government	203,200	9	6.7
g) Rockefeller Foundation	152,175	7	5
h) International Development Administration (UK) UKODA	116,958	5.5	3.9
i) Government of Switzerland	70,000	3	2.3
j) World Bank / Int. Dev. Assoc.	65,000	3	2.2
Source (i) Total	<u>2,201,589</u>	<u>100</u>	<u>72.9</u>
Source (ii)			
a) International Development Bank (IDB)	577,000	71	19.2
b) Ford Foundation	120,000	14.5	4
c) West German Government	102,041	12.5	3.4
d) International Mineral Corp. (IMC)	15,000	2	0.5
Source (ii) Total	<u>814,041</u>	<u>100</u>	<u>27.1</u>
TOTAL	<u><u>3,015,630</u></u>		<u>100</u>

CIP holds a potato seed bank, known as the 'Germ Plasma Collection', of between 11,000 - 12,000 varieties, the majority of which were developed by the Peruvian peasantry in the diverse climatic and geographical conditions found in the Peruvian Andes. CIP is also probably the world centre of potato research having developed a revolutionary form of potato tissue culture, the induction of somatic embryogenesis in suspension cultures of tuber tissue and etiolated shoot tissue explants, which is capable of producing hundreds of embryos per flask.*73

However, the 'Green Revolution' has been heavily criticised for its emphasis on technological and scientific solutions to production problems without relating its work to specific social situations.*74 D.P. Chaudhri states in 'New Technologies and Income Distribution in Agriculture', that 'Even if access to information and capital market is equally distributed, the large farmers are likely to gain more absolutely from the new technologies than the small farms.... Since we know that large farmers have better access to information and capital markets, the benefits of the 'Green Revolution' would be greater for them.*75

Srivastva, Crown and Heady argue similarly that:

'...the income disparity, even among adopters, will grow over time... The gap will grow because the initial pretechnological change in income distribution means an unequal opportunity for farmers to attempt to adopt the technology.*76

Further, by assuming large ^{capital-intensive} scale/models of agriculture (which is the dominant mode of agriculture in the industrially developed nations of both the West and the East) plants are developed which are inappropriate for conditions in the developing countries.*77 For example, CIP has developed a '60 day potato'*78 which would allow six yields under tropical climate conditions, but which, because of its tremendous productivity, is extremely vulnerable to pests and disease. As the ecologists Goodland and Irwin point out in 'Amazon Jungle : Green Hell to Red Desert?':-

'In temperate regions, agriculture succeeds largely because it is helped by the winter. Pests, particularly insects, are reduced to a minute number of inactive individuals, which delays population expansion in the spring' *79'

Tropical conditions are fundamentally different due to continual hot and humid conditions:

'In Amazonia, year round conditions are so favourable for pests that they attack the instant a crop is planted and persist as long as any part of the crop remains' *80

Goodland and Irwin conclude their analysis with the following far reaching statement for tropical agriculture and the role of the agricultural sciences:

'Green Revolution' seeds should be avoided in preference for varieties with high pest resistance and tolerance for infertile soil, even at the expense of lower yeild' *81

Due to the general technological orientation of the 'Green Revolution' we can say that the main beneficiaries of its research would be the large-scale producer. At CIP there is the feeling among the scientists that a large-scale distribution of their knowledge is not a problem that should concern CIP, but should be the main concern of some other government agency. *82 Nevertheless, CIP does employ two social scientists - Douglas Horton and Robert Werge (an anthropologist).

During a discussion with Robert Werge of the problems of working within a 'scientific community' he said:

R.W.: 'You have to be hard-nosed here.'

Author : 'Hard-nosed?'

R.W.: 'Yes, like no tears for the small farmers kind of thing - hard-nosed!' *83

Consideration must also be given to the role of the agronomist in this context, not only in terms of the model provided by CIP, but also in terms of the agronomist as a producer of knowledge being a considerable

beneficiary of this contract in particular and of the others in general. The status of the agronomist is dependent on research results, and so consequently, the agronomist is structurally orientated towards identifying with the problems for which he or she can be funded.

(b) The Consumers

The consumer beneficiaries are on the one hand more clear cut (being dependant on the nature of the food crop), but often more 'potential' than real beneficiaries. Nevertheless, for all the research programs dealing with maize, potatoes, and cereals, the consumer beneficiaries can be characterised as the popular masses.

However, meat research can be generally categorised as benefitting the urban consumer in general. May and McLellan in 'The Ecology of Malnutrition in Western South America', write with reference to Peru that:

'In the cities, foods of animal origin are commonly consumed, but in the rural areas the diet is mainly cereal and tuber orientated.'^{*84}

One of the reasons for this is that meat production is usually aimed at the urban middle class who can afford higher prices. Beef and dairy production in particular require swift commercial channels and the domestic fridges that urban markets can provide.^{*85}

Similarly 'industrial foods', such as canned fruit etc., are almost entirely consumed by the urban middle class, due to the high cost of such products. However, of the seven research projects, only one can be categorised as for urban consumption (the research into industrial fodder). All the others potentially at least, benefit the popular masses.

Table 23 Beneficiaries of Research Projects into Popular Foods *86

<u>Consumers</u>	<u>Producers</u>		TOTAL
	Small-scale farmers	Medium & large-scale farmers & exporters	
Popular masses	1	5	6
Urban Population	-	1	1
<u>Total</u>	<u>1</u>	<u>6</u>	<u>7</u>

If we extend this same analysis to the whole range of research contracts, breaking down and extending the 'Beneficiary' categories further, the following results occur.

Table 24 Beneficiaries of All Research Contracts into Food & Agricultural Produce

<u>Consumers</u>	<u>Producers</u>		Med. & large-scale farmers	Exporters	Misc.	TOTAL		
	Small-scale farmers	Med. & large-scale farmers						
	no.	%	no.	%	no.	%		
Popular masses	1	3	5	17	-	6	21	
Urban population	-	-	4	14	2	7	21	
Urban middle class	-	-	4	14	-	-	4	14
Foreign consumption	-	-	-	-	9	31	9	31
Miscellaneous	-	-	-	-	4	14	4	14
<u>Total</u>	<u>1</u>	<u>3</u>	<u>13</u>	<u>45</u>	<u>11</u>	<u>38</u>	<u>29</u>	<u>100</u>

There is a heavy concentration on the medium to large-scale farmers and exporters which reflects the source of the research contracts. If we limit the analysis to the contracts in the general area of Agronomy the picture alters slightly.

Table 25
Beneficiaries of Research Contracts in the General Area of Agronomy

	<u>Consumers</u>		<u>Producers</u>		Med. & large-scale farmers	Exporters	Misc.	TOTAL	
	no.	%	no.	%					no.
Popular masses	1	6	5	29	-	-	-	6	35
Urban population	-	-	2	12	-	-	-	2	12
Urban Middle class	-	-	1	6	-	-	-	1	6
Foreign consumption	-	-	-	-	4	24	-	4	24
Miscellaneous	-	-	-	-	-	-	4	4	24
Total	1	6	8	47	4	24	4	17	100

\$

The tables are designed to emphasise general tendencies. In practice there may be a wide range of beneficiaries from any particular project or the beneficiaries may be a very small group. I am concerned with the tendency to benefit areas of agronomy, and the producers (and consumers). The identification of the theoretical 'main beneficiary' does not mean that other groups cannot benefit.

For example, the 'Multinational Project of Agricultural Science' has been characterised here as principally benefitting the small-scale farmer and to be potentially productive in popular foods, because it was designed to increase food production in the Sierra and conserve soil, none of which intrinsically could benefit the medium and large scale landowner more than the small. Without further details it is not possible to ascertain the practical results of the project.

Therefore, the principle beneficiary has been characterised as the small scale farmer because the small-scale farmer produces most of the food. However, if any farmer produced food in the Sierra on a large scale, they would be considered to be a clear potential beneficiary. In fact it would be possible for them to be the sole beneficiary if, for example, the project was exclusively directed at this particular, conjectured producer. I have not attempted an examination of such detail, since the tendency to focus on particular crops and producers can be demonstrated in general terms.

In terms of consumers, the same is true. Food categories labelled as 'popular foods' are consumed by the urban population and middle class as well. These categories are also, therefore, not mutually exclusive, but represent tendencies. For example, the urban middle class may eat potatoes as well as the rural population, but they almost exclusively eat canned fruit.

Therefore, while the tables represent only general tendencies in the beneficiaries of research projects, these can be clearly correlated with the distribution of power and social position.

If we compare the two tables contrasting agronomy with the whole field of food and agricultural produce, agronomy constitutes two important areas of interest. The first is agronomy is extremely important in the area of 'popular foods' and is fundamentally involved in benefitting the medium to large-scale farmers and exporters even in this context when most popular food is actually produced by the small-scale farmer. Secondly, the category of 'miscellaneous' represents 'administrative', and 'pure research' contracts such as National soil surveys and administrative and research cooperation between different institutions where neither the producer nor consumer beneficiaries can be clearly categorised. In a general way, the producer beneficiaries of 'pure research' are more likely to be the large-scale farmer, in terms of access to information, but it is not possible to categorise all such research with any accuracy. However, all of these research contracts clearly benefit the scientist. Since all of the 'miscellaneous' contracts are in the general area of agronomy, the clearest beneficiary of such contracts can be categorised as the agronomist.

The correlations this analysis demonstrates are:-

- (i) The close relationship between the sources of finance and the beneficiaries of the research. In this context, the state has a greater tendency to finance research into 'popular foods' than private sources of finance. It is clearly more in the interest of the state than private business to develop some kind of cheap food policy for the cities, perhaps in the interest of social control of the growing urban marginal communities. However, the orientation in terms of producers

is towards aiding the large-scale farmers and the cooperatives rather than the small-scale producers.

- (ii) The ideological identification between large-scale production and the interests of the agronomist, in terms of the 'scientific/technological' approach to agricultural production. This relationship will be analysed in depth in a later chapter, when I examine the content of the 'coding'.

3 Current Research Work

If the same analysis of the beneficiaries of the research work is utilised, the tables overleaf can be constructed for the staff research in the general area of Agronomy Sciences, and for the Graduate Theses of the agronomy students.

The overriding feature of the two tables overleaf is their striking similarity. The emphasis on popular foods is high, while the emphasis on the medium and large-scale farmer is even higher. The importance of this finding is difficult to overemphasise when the food economy is fundamentally based on the production by the small-scale farmer. The slightly higher emphasis by the student theses on popular foods and the small-scale farmer can perhaps be explained by the lesser degree of financial dependence of the students, whose research tends to be on a smaller financial scale.^{*89} Nevertheless the general correlation remains very strong. A comparison between these research projects and the research projects that are constituted by official contracts reveal interesting results. The contracted research reveals the same tendency of emphasising the medium and large-scale farmer when dealing with 'popular foods' but the overall emphasis on popular foods is severely reduced in favour of export production (sugar, cotton, canned and other processed foods). I have argued that this is due to the

Table 26 Principle Beneficiaries of the Staff Research at U.N.A. in the general area of Agronomy, 1972-74 *87

	<u>Producers</u>		Med. & large-scale farmers		Exporters		Misc.		Total	
	Consumers	Small-scale farmers	no.	%	no.	%	no.	%	no.	%
Popular masses	21	4.7	249	55	3	0.6	4	0.9	277	61
Urban Population			40	8.9			1	0.2	41	9.1
Urban Middle class			20	4.4					20	4.4
Foreign consumption					22	4.9			22	4.9
Miscellaneous			17	3.8			74	16.5	91	20.3
Total	21	4.7	326	72	25	5.5	79	17.5	451	100

Producers

	<u>Consumers</u>		Small-scale farmers		Med. & Large-scale farmers		Exporters		Misc.		Total	
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
Popular masses	7	7	57	58					5	5	69	70
Urban Population			3	3							3	3
Urban Middle class			3	3							3	3
Foreign							7	7			7	7
Miscellaneous			10	10					6	6	16	16
Total	7	7	73	74			7	7	11	11	98	100

emphasis by the sources of capital on agricultural exports and the technological orientation of research. The general agronomy research at the University is more concerned with popular food production. This correlates with its source of funds in general research where the University Law encouraged self-finance.^{*90} This takes on two forms. The development of seed banks for sale^{*91} which primarily benefits the medium and large-scale farmer who can afford and transport the seeds and have access to, and afford the fertilizers, or other necessities for new genetic varieties. Secondly, the agronomist can develop research projects for which the farmer beneficiary can finance the costs, in the context of mutual help. In some situations it is possible to develop projects at very low cost which the small farmer can sometimes afford,^{*92} but the general tendency is that it is the medium to large-scale farmer who benefits. In general, it can be argued that the agronomist benefits by orientating research towards the wealthier farmers who can afford to finance research. Certainly, the general difference between the 'research contracts' and the general research projects is that the main source of finance shifts from the state, the private sector, and development agencies, towards the farmer.

The emphasis therefore leans away from the export production towards internal food production. However, this character of the table is partly formed by the categorisation of the 'general area of agronomy'. Within U.N.A. there are various courses such as animal sciences or agricultural engineering which exist in their own right, but can also be subsumed within agronomy. For example, it is not unusual to find agronomy students writing theses on dairy production, or irrigation.

This is because agronomy is essentially a multidisciplinary knowledge. But this leads to difficulties in clearly defining which research projects are 'agronomy', rather than 'agricultural engineering', or 'animal sciences'. The tendency is to exclude animal science and engineering research which then emphasises the 'popular food' content of agronomy. Within this context, the technological orientation and financial needs of the agronomist result in the medium to large-scale farmers benefitting.

4 Technical assistance projects

The technical assistance projects listed in the U.N.A. Memoria, 1972-74, are solely those supported by the Ministry of Agriculture, which were explicitly designed to support the Agrarian Reform. 'Technical assistance to associative farms' - these include the Cooperatives, C.A.P.S and S.A.I.S., and also the registered 'Peasant Communities'. The technical assistance takes two forms which shall be considered separately. The first is practical assistance, in the form of work on the farm. The second is theoretical or educational assistance which involves seminars and courses. The Ministry of Agriculture provided money towards the cost of travel for the agronomists and students involved, and 'pocket money' for the students while working on the project. The beneficiaries of the project were expected to provide adequate housing and food at its own expense,^{*93} which makes it more of a financial burden for the smaller concerns ('Peasant Communities'). In this context the 'Peasant Communities' will be considered as 'small-scale farmers'. The cooperatives will be considered as medium to large-scale farmers (and exporters where applicable). In this context all forms of agricultural production will be included since this will not only demonstrate the orientation of agronomy, but also the orientational emphasis of the Ministry of Agriculture.

These tables have been produced separately for two reasons. Firstly, the practical projects are far more likely to produce real benefits than the courses represented by the second table as they deal with specific locations, problems and projects. Secondly, the beneficiaries of the courses etc., are far more difficult in their nature to categorise in terms of beneficiaries, which explains the high percentage categorised under 'miscellaneous' particularly in terms of consumers (32%). Nevertheless, both tables reveal significant differences to the previous tables of beneficiaries of research. That is, a far higher percentage of beneficiaries being the urban population, and urban middle class as a group. This is partially explained by the inclusion of the animal sciences in the categorisation of 'agricultural production', but clearly demonstrates the Ministry of Agriculture's emphasis on meat and dairy production which primarily benefits the urban population and middle class. In fact there are 64 technical assistance projects and courses in beef and dairy production alone.

As in the other tables of beneficiaries, the small-scale farmer has been largely excluded. In this context, this results from the emphasis placed by the Ministry of Agriculture on the beneficiaries of the Agrarian Reform who are nearly all owners of the large agricultural estates, and also because of the scientific/technical orientation of the agronomists which excludes the small-scale farmer by implication, since the scientific/technological orientation tends to have a greater relevance for industrialised or semi-industrialised agricultural production.

Producers

<u>Consumers</u>	Small-scale farmers		Med & large-scale farmers		Exporters		Misc.		Total	
	no.	%	no.	%	no.	%	no.	%	no.	%
Popular masses	3	4.5	13	19					16	24
Urban population	1	1.5							1	1.5
Urban middle class	1	1.5	33	50					34	51
Foreign consumption							5	7.5	5	7.5
Miscellaneous	1	1.5	8	12			2	3	11	16.5
Total	6	9	54	80	5	7.5	2	3	67	100

provided as Technical Assistance in the Area of Agricultural Production *95

Producers

<u>Consumers</u>	Small-scale farmers		Med. & large-scale farmers		Exporters		Misc.		Total	
	no.	%	no.	%	no.	%	no.	%	no.	%
Popular masses	4	2.5	25	15			4	2.5	33	19.5
Urban population			26	15					26	15
Urban middle class	1	0.5	42	25					43	25
Foreign									13	7.5
Miscellaneous	4	2.5	38	22					55	32
Total	9	5	131	77	13	7.5	17	10	170	100

Conclusions

In this chapter I have analysed the role of 'financing' in shaping the orientation, context and as I will demonstrate later, the content and pedagogy of agronomy education in the U.N.A.. I have argued that it is principally through the influence over research that this occurs. The effect has been one of orientating agronomy towards the medium to large-scale farmer, despite the fact that the majority of agronomy research is concerned with 'popular foods' which are produced mainly by the small-scale farmer. It is here that an analysis of agronomy, as opposed to other agricultural sciences, is of importance because of agronomy's close involvement with this paradox. However, this analysis is by no means exhaustive because it represents only one important element which shapes the education process.

It is of particular importance in Peru for the following reasons. In an earlier chapter I argued that the systemic relationship (between education and production) has been changed. In practice, the importance of practical research in the career of the agronomist at U.N.A. has been strongly emphasised. Thus the distinction between the producer of knowledge (the research scientist) and the reproducer of knowledge (the teacher) has been reduced. This has had two direct practical consequences.

- (i) It has increased the power of teachers (and professional agronomists) as social controllers.
- (ii) It has allowed a more intimate relationship between the knowledge taught to agronomy students and the process of 'financing', which has effectively shaped the orientation and context of agronomy education at the U.N.A.

This analysis of the relationship between research and education will be greatly extended later when I consider the definition and content of the 'object code'. At this point it is perhaps useful to clarify the distinctions I am making between the different categories that I am using in my social analysis.

I have argued that the weakening of the classification between the producer and reproducer of knowledge is an important element in the change in the systemic relationship between education and production. However, the classification between production and knowledge remains strong. As I pointed out earlier, Bernstein has argued that the separation between education and production plays an important ideological role in the process of social control. However, in Peru, the separation between production and knowledge is also important.

This is due to the ^{social} character of the new middle class in Peru who believe that knowledge can provide practical solutions to the problems posed by 'underdevelopment'. But who do not consider knowledge to be a social product. Therefore the attempt has been made to make education more socially useful, without considering the possibility that knowledge has been developed to serve particular interests or viewpoints on 'problems'.

In practice the strong classification of knowledge is maintained by:-

- (i) The strong framing which emphasises the 'objectivity' of knowledge.
- (ii) The institutional separation at the U.N.A. between the 'Academic Programme' which selects knowledge available from the 'Academic Departments', which further represents knowledge as 'objective' (and discrete building blocks) even though the same personnel are involved. *96

- (iii) The ideological representation of the mode of production as being dependent on 'objective knowledge' (at least in its guise of 'development') rather than knowledge being dependent on the mode of production.

The influence of the process of 'financing' agronomy education at the U.N.A. takes effect in conjunction with other factors. I will also argue that there is a close ideological identification between many agronomists and the sources of the 'financing'. I will consider the nature of this relationship in the later chapter 'Social Reproduction through Agronomy'. We have already seen that it was the technological/scientific orientation (in CONUP's terms 'technocratic') of the agronomists that encouraged or led to the international funding of the U.N.A. Similarly I will argue that the structural (or economic) interdependence of the large-scale farmer on the agronomist and the agronomist on the large-scale farmer is paralleled by an ideological identification that can be characterised as 'developmentalism'.

Chapter 5

Notes

1. U.N.A. 'Informe Institucional', U.N.A. 1973, p 7
2. Consejo Nacional de la Universidad Peruana, (CONUP)
 Caracterización Historia de la Enseñanza De la Ingeniería
 en el Perú: La Universidad Nacional Agraria, Compensino
 No. 5, 1972, Publicaciones Universidad Ricardo Palma pp24-41.
 In Peru an agronomist is considered to be an Engineer, bearing
 the title of 'Ingeniero Agrónomo'.
3. Ibid. p33
 '.....al devenir una baja en el precio del azúcar a raíz
 de la Primera Guerra Mundial, la política en un da por la
 Escuela es la de aumentar la productividad como solución a
 este impase. Sin duda, los técnicos pensaban que la
 introducción de nueva tecnología podía aumentar el quantum
 de la producción y de ese modo mantener las tasas de utilidad
 anteriores.'
4. Ibid. p37
 - a) La Fundación Rockefeller financia la instalación de
 los laboratorios de Fitopatología y Lechería.
 - b) La misma Fundación dona 5 becas a los egresados para
 continuar estudios en México.
 - c) En el discurso - informe del Director de la Escuela
 a fin de año (1950) se plantea más explícitamente
 la tendencia de desarrollo. Además del elogio al
 pragmatismo de los Estados Unidos y la crítica a la
 tradición nacional idealista ('nuestra razón tiene la
 tendencia a la universalización') se postula en tal
 ocasión el modelo de la Universidad norteamericana
 para la Escuela.

- d) En el mismo discurso se enuncia el desarrollo de los siguientes proyectos:
- Colegio de Graduados con apoyo de la Fundación Rockefeller.
 - Departamento de Lechería.
 - Laboratorio de carnes
 - Laboratorio tecnológico de conservas de alimentos
 - Bodega de vinos
 - Mercado experimental.†

5. Ibid. p.38

† En 1952 entrará en funcionamiento el programa de maíz financiado por la Fundación Rockefeller que tendrá a su cargo uno de los más jóvenes y calificados ingenieros agrónomos. En el mismo año, en base a la técnica vigente en Estados Unidos se organizó el mercado experimental. Años más tarde, el joven profesor formado en U.S.A. y que tuvo a su cargo este experimento, sería dueño de una cadena de Supermercados y el genetista experimentador en maíz, sería dueño de la mas importante distribuidora de semillas en el Perú.

Además de estos programas se inició el servicio de inseminación artificial, en Herd-brook-Holstein, el servicio de control lechero.†

6. Ibid. p 38

†La consecuencia política interna más significativa aparecerá en 1956 con el 'golpe de los jóvenes turcos' que destituyen al director Garcia Rada y posponen a los viejos profesores provocando una promoción extraordinaria de los jóvenes y más calificados a las posiciones de poder.†

7. Ibid. p 38

'...de más del 30% de admitidos en las finales de la década anterior se pasó a un promedio de 20%.'
8. Ibid. p 38

'El aumento de la demanda ocasionada por la urbanización y crecimiento de las capas medias lleva a una mayor racionalidad en la selección (cada vez menos influencia de la 'vara'). Los hijos de terratenientes desplazados por el rendimiento de los sectores con afán de logro alto (a pesar de la posición económica privilegiada que permite el entrenamiento para el ingreso en las academias) optarán entonces por reunir un fondo común y 'crearán' la Facultad de Agronomía en la Universidad Católica.'
9. Ibid. p 38

'De este modo, la Escuela de Agricultura se pone a tono con los cambios ocasionados por el desarrollo de la industrialización sustitutoria. No solo se inicia la tendencia denominada 'revolucion verde', sino diversifican su campo de acción penetrando en los aspectos de comercialización e industrialización en el marco de la sustitución de importaciones.'
10. Ibid. p 39

'A partir de la ley 13417 de 1960, la Escuela que se convierte en Universidad, institucionalizará esta diversificación de sus campos de acción a través de las facultades y su administración adoptará más explícitamente el modelo norteamericano. La ideología de la productividad como solución para la situación agropecuaria nacional, la tecnocracia robustecida por el masivo programa

de postgrado principalmente en los Estados Unidos (convenios, becas, etc.) para los jóvenes egresados más brillantes y la composición majormente urbana y de capas medias de sus estudiantes, darán en adelante el carácter especial (alta calidad) a influencia a la Universidad Agropecuaria.'

11. United States Agency for International Development, Building Program 1962-64, Universidad Agraria, La Molina, Lima, Peru, Vol 1 AID.
12. This includes references to the Rockefeller Foundation's donations with respect to postgraduate grants, the Maize Program and the Dairy and other laboratories. Also the AID Report in 1962, p. 16 stated that the Rockefeller Foundation donated \$300,000 in 1960 to finance postgraduate training and research in Agronomy and Animal Industries.
13. USAID, op. cit p 6
14. Ford Foundation Internal paper. During the crisis in 1972 some of the radical leaders (eg. Chavez) of the occupation were discredited when it was discovered that they received such supplements (they claimed to be 'manipulating the system').
15. U.S.A.I.D. op.cit. p 16
16. Ibid. p 2
17. Ibid. p 16
18. Ibid. p 159
19. Ibid. p 3. The report also takes pains to note that the current 'economic' rate of interest in Peru is at 15%.
20. Ibid. p 52
21. Ibid. p 39

22. World Bank, Universidad Agraria Building Project, 1962-67, World Bank 1963.
23. Ibid. p 10.
24. Ibid. p 12.
25. A 'soft' loan is a loan with low interest rate.
26. U.N.A., Memoria del Rector 1972, 1974. U.N.A. pp31,32.
27. Conup. op. cit. p 40.
28. Ibid. p 40.
29. Ibid. p 40.

'Las fundaciones norteamericanas, principalmente Ford y Rockefeller Agencia de Desarrollo Internacional (AID) y el Gobierno Peruana (Ministerio de Agricultura) a traves de universidades norteamericanas - coma la de Carolina del Norte Iowa (economía) inician un plan de desarrollo que incluye:

- a) Construcción de la ciudad universitaria, diseñada y supervigilada su construcción por técnicos americanos y en gran parte amoblada con útiles importados de Carolina del Norte.
 - b) Participación en el plan de desarrollo agrícola nacional en funciones de investigación de factibilidad económica de empresas privadas, de mejoramiento de semillas (maíz, papa, menestras, etc.), de mejoramiento de la producción lechera, de comercialización de productos agropecuarios, de extensión agropecuaria, etc. En estos proyectos participan los profesores como **contra parte** de los norteamericanos.'
30. CONUP op.cit. p 40
- c) Masiva salida de Estados Unidos de los profesores

jóvenes, o estudiantes con compromiso a volver de profesores a la Universidad, para optar grados de master o Ph.D., lo que significa especialización cada vez más sofisticada bajo los patrones metropolitanos (U.S.A.) además de la impregnación idealógica que supone la carrera tecnocrática en ese país.

- d. La adopción de los estilos de investigación norteamericana y la construcción no solo de laboratorios, bibliotecas, etc., sino de una subcultura que puede llamarse 'spanglish' y en estilo de vida de imitación.

31. CONUP, op.cit. p 40

8. En nivel académico general es el más alto en su género en el país y las investigaciones adquieren nivel internacional (publicaciones). Evidentemente, la U.N.A. se transforma en Universidad élite peruana.'

32. 22nd October, 1975. Ingeniero Juan Brambilla teaches the course 'Tubers and Root Crops' on the agronomy course, specialising in sweet potato and casava.

33. 29th October, 1975. Ingeniero Felix Caycho Munoz teaches a course on Soils and Fertilizers and is the 'Coordinator of Research Programs'

34. U.N.A. Memoria, 72-74, pp 311-318.

35. Ibid. pp 97-112.

36. Ibid. pp 173-224, 241-280.

37. Ibid. pp 339-362.

38. Ibid. pp311-318.

39. Although subject to fluctuations, over the period 1972-4, £1 = S/100 approx.

40. U.N.A. op.cit. p 307.

41. It is probably safe to assume that the 'capital expenditure' recorded here is actually different from the research expenditure. The Head of 'Presupuestos' was unable to meet me despite several interviews prearranged with his secretary in order to clarify the issue and although a number of his staff were helpful, they could not discuss any figures.
42. U.N.A. op. cit. pp 97-109
43. 'Agronomy' in this table includes 'Agricultural Engineering' and 'Industrial Foods'.
44. Animal Science represents 'Zootecnia'.
45. 'Miscellaneous' includes Physics and Meteorology (1), Social Science (1), Teaching Methods (1), Administration(2), and Cultural (1) contracts.
46. U.N.A. op. cit. p 97
 'Investigaciones en Maíz - incorporación gene opaco 2'
 - objetivos:
 Incorporar el gene opaco 2 a las variedades serranas de maíz con el propósito de mejorar de maíz con el propósito de mejorar su calidad proteíca.
 Aumentar la producción y productividad en la Sierra.
47. Chaudri D.P., 'New Technologies & Income Distribution in Agriculture', p 157 in Lehman (ed.), 'Agrarian Reform and Agrarian Reformism', Faber: Lond., 1974.
48. Cooperative Research Program in Maize (COMAIZ)
 'The Maize Manual' U.N.A., March 1974, Lima, Peru, p 36.
 'La fertilización es importante, especialmente, cuando se emplean híbridos y variedades mejoradas para aprovechar al máximo su alta capacidad de rendimiento.'

49. Susan George, in 'How the Other Half Dies', (Pelican, 1976) provides an excellent account of the dire consequences of the 'Green Revolution' for peasantry throughout the Western and Third World; including increased malnutrition and concentration of land due to increased debt and food and land speculation by large landowners and 'Agribusinesses'.
50. This information was given by Ing. Hugo Juarez Torres, president of the Administración Council for Agrarian Service Cooperative, SATIPO LTD no 183, while I was accompanying a Technical Assistance project, 6th November, 1975.
51. COMAIZ, op.cit. p 20.
 'El abastecimiento de semillas es satisfactorio llegándose a tener excedentes en la mayoría de las campañas. En cambio, su distribución entre los agricultores ha sido deficiente debide a una escasa labor de promoción.'
 I shall return later to the commonly held view by agronomists that 'education' is a panacea for 'development'.
52. U.N.A. Memoria 1972-74 p 98
 'Investigaciones en Carne - Prestamo Ministerio de Agricultura...
 objetivos:
 Continuar con las investigaciones para el uso de sub-productos agricolas, principalmente el de la brosa de algodón procesados químicamente.'
53. G. Turner, 'Agricultural Credit in the Peruvian Agrarian Reform' FAO seminar, November 1974 p 16.
54. The Peruvian Ministry of Agriculture, 'Plan Nacional de Desarrollo, Vol II Plan Agropecuario 1971-1975.'

55. U.N.A. Memoria 1972-1974 - p 104
- 'Proyecto Multinacional de ciencias Agropecuarias
(Suelos) - OEA'
- '-Objetivos:
- Mediante el presente proyecto se persiguen los siguientes objetivos:
- a) Evaluar la fertilidad de los suelos en una zona agrícola representativa de la Región Andina.
 - b) Establecer sistemas racionales de manejo de la fertilidad de suelos de la Región.
 - c) Coadyuvar al aumento de la producción de alimentos en la Region.'
56. There are countless individual examples of non-productive agricultural extension projects due either to the break down of constructive communication between agronomist and peasants, or else the manipulation of the one by the other. I shall deal with this problem of pedagogy later. Also see Sean Conlin, 'Participation versus Expertize', in Pierre Van Den Berghe, 'Class and Ethnicity in Peru', Leiden E.J. Brill, 1974 pp31-47.
57. U.N.A. Memoria 1972-1974 p 98.
- 'Estudios para el mejoramiento de la Producción referente al Desarrollo de Alimentos Populares...'
- '-Objetivos
- Desarrollar el uso de sucedáneos del trigo en la panificación.
- Desarrolla de la producción de harina de semilla de algodón para consumo humano.
- Enriquecimiento proteico de alimentos convencionales.
- Investigaciones sobre la producción de harina de quinua.'

58. Min of Agri. 'Plan Nacional....', 1971-75
59. Conversation with D. Bayer 5th November, 1975, see also Petras & Laporte jr., 'Cultivating Revolution', Random House, N. York, 1971, p 47.
'...the National Agrarian Society (an association of Peru's 7,000 largest landowners..).'
60. U.N.A. Memoria, 1972-74 p 100
'Convenio de Investigaciones en Maíz con la Sociedad Nacional Agraria (COMAIZ)
- Entidades Participantes:
Universidad Nacional Agraria - ex-Sociedad Nacional Agraria, sustituida por la Comisión Liquidadora de SINAMOS y hoy por la Confederación Nacional Agraria
- Objetivos:
Mejoramiento genético para la incorporación del gene braquítico 2.obtención de maíces de planta baja.
Continuación del proyecto presentado a COMAIZ por el Programa Cooperativo de Investigaciones en Maíz.'
61. Conversation before an Agricultural Extension trip, January , 1976.
62. U.N.A. op. cit., p 101
'Convenio para el mejoramiento de cereales por resistencia a las heladas.'
'Estudiar el desarrollo genético de variedades de cereales, especialmente trigo, cebada y quinua, resistentes o tolerantes a las heladas, así como a enfermedades propias: que tambien sean de suficiente capacidad de rendimiento.'
63. Information from 'Programa de Cereales.' January 1977.
64. U.N.A. op.cit. p 101.
'Acuerdo cooperativo con el Centro International de la Papa'....
'-objetivos

- 'Consiste en que la U.N.A. debe proveer adiestramiento, en grado avanzado, para profesionales; proveer espacios al CIP en la Biblioteca Agrícola Nacional y otras facilidades. El CIP cubrirá bolsas a estudiantes y otros.'
65. In an ^{interview}, 3rd December, 1974. Ingeniero Lopez works at the Potato Program Centre at U.N.A.
 66. CIP Annual Report, 1974 p 69.
 67. Ibid., p 69
 68. Ibid., p 76
 69. In a personal interview, 10th December, 1975
 70. U.N.A. op. cit. and CIP Annual Report , 1974 p 5
 71. Interview, 3rd December, 1975
 72. CIP Annual Report, 1974 p 12
 73. Ibid., and interview with the Director of CIP, 10th Dec. '75.
 74. e.g. Cleaver, H.M. Jr., 'The Contradictions of the Green Revolution', Monthly Review, May 1972.
 75. D.P. Chaudhin, op.cit. p 157.
 76. Srivastva, U.K., Crown, R.H., & Earl O. Heady, 'Green Revolution and Farm Income Distribution', Economic & Political Weekly, 25th December, 1971 p 171.
 77. Charles Posner, 'Agronomy to the Rescue', original mimeograph, Inst. of Ed., 1971, later abridged and appeared in 'New Scientist'.
 78. Interview with the Director of CIP, 10th December, 1975.
 79. Goodland, R.J.A., & Irvin, H.S., 'Amazon Jungle: Green Hell to Red Desert?', Elsevier Scientific Publishing Co., 1975, p 34.
 80. Ibid., p 34
 81. Ibid., p 46
 82. Interview with the Director, 10th December, 1975.
 83. Robert Werge, 13th December, 1975.

84. Jacques M. May & Donna L. McLellan, 'The Ecology of Malnutrition in Western South America', Collier MacMillan, 1974, p 180.
85. Conversations with Ingeniero León de Ponce, September, 1975.
86. Based on U.N.A. Memoria, 1972 - 74, pp 97 - 113.
87. Ibid., pp 241 - 281.
88. Ibid., pp 173 - 225.
89. This is based on the necessity of a completed thesis by the student, in a situation of financial scarcity; and research projects must therefore be found which involve as little financing as possible.
90. University Law, op. cit.
91. For example, the maize, potato, and cereal research centres at U.N.A. hold extensive seed banks for sale.
92. For example, experiments in closer sapling spacing for fruit trees, for which the farmer must buy the saplings at cost (Ingeniero César Medina).
93. This information was provided by many administrative staff including Ingeniero Aliaga, David Bayer, Mario Zapata, Villagarcía & Morin, and students. The amount of money provided by the government was cited as \$/10,000 every two years.
94. Based on U.N.A., Memoria, 1972-74 pp 341 -349.
95. Ibid. pp 349 - 384.
96. For example the Director of Agronomy Academic Program is also Head of the Department of 'Sanidad Vegetal'.

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SOCIAL CLASS AND SOCIAL REPRODUCTION

My argument so far has been concerned with the emergence of a new style middle class which has become a dominant group within the Peruvian social formation. This section of the middle class combines what are regarded as relevant vocations with the more traditional role of social control. The traditional middle class can be characterised by their social roles as defined by their professions - e.g. lawyers, doctors, representatives of international organisations, architects and so on - and by the fact that to achieve these professions they would have had to experience a traditional university education based on European models. By contrast, the 'new middle class' can be characterised as a 'technocracy' with a distinct world view tied to the philosophy and practice of 'developmentalism'.

My first step was to examine the recent evolution of Peruvian society in order to understand the emergence of such a group. The rise of the new middle class can be understood in terms of -

1. structural needs
2. the social demands of the new middle class and their ability to put into effect their belief in their own social usefulness
3. relations between social groups.

My second step was to show how the University was affected by these demands and perceived needs and evolved in response to them. Although I have used Bernstein's concept of an 'object code' as the main analytical tool, my argument is

in fact similar to that of Bourdieu concerning 'habitas'.

I then went on to begin to examine the changes in the National Agrarian University (U.N.A.), the principal agricultural university in this light.

I have not as yet begun to look at the curriculum and course content (classification and its relation to power) that demonstrate these changes. Nor have I yet looked at framing, that is, how the systems of classification are communicated. I intend to examine the agronomy course and how it is presented at U.N.A., and its social implications with reference to the theories of Basil Bernstein and Pierre Bourdieu. I intend to demonstrate that the practice of the University constitutes a change that is not a change in the locus of power, but only in the forms and modulations of control. This will be done by looking at the development of the teaching of agronomy.

In considering these issues, it is important to discuss my role as a researcher in the university to place the analysis in the context of the process of research. I have already stated in the introduction that I was enrolled as a postgraduate research student in the Humanities department. This legitimated my research within the university and gave me formal access to staff and students. (I had also been given some informal contacts among the staff by a Peruvian student I had met previously at London university).

Generally, the staff at the university went out of their way to help and support my research, and seemed intrigued that I should come all the way from England. I also found that agronomists at the university appeared to take the legitimacy of my presence for granted and rarely questioned my research aims once I had introduced myself as a postgraduate student working for a Ph.D at London University. It was therefore unnecessary to present my research aims in any detail. This meant that I could avoid discussing areas of the research considered to be sensitive before I knew the viewpoint of the lecturers. Initially I had been concerned that I may antagonise members of staff should they view my research with any suspicion. However, although many agronomists said that I was looking at very sensitive issues, very few of them talked as if this was actually the case.

In practice, staff appeared to be very keen to talk to me about the role of the university and agronomists, agrarian reform, the military government, and most frequently, a wide range of issues and problems concerned with the agronomy students.

Another initial cause for concern was that on arriving in Peru, my grasp of Spanish was far from fluent. In practice this was much less of a problem than I had initially feared. First, most of the agronomists spoke good English and were glad of the opportunity to practice "conversation". Second, those agronomists who spoke Spanish took a great deal of trouble to make sure that I understood them and were forced to clarify issues. I also got the impression that speaking simple language made them less cautious about what they were saying to me but this is clearly conjecture.

On introducing myself to agronomists I outlined only that I was engaged in sociological research examining agronomy education at the university, and most agronomists seemed to welcome the opportunity to discuss this being proud of their work, their research, the course, and the university.

My first concern was to establish my role of researcher among the staff with as much support and as few constraints as possible. In practice this happened fairly naturally possibly due to the following factors-

- 1) My thesis was to be presented in London University and so it was technically an external matter and the eventual content was going to be no-one's responsibility at the U.N.A.
- 2) Although some members of staff, particularly in the Humanities department, took a personal interest in my well-being, staff were generally so busy that they seemed to appreciate an independent approach to my research.
- 3) The agronomists gave the impression of being confident that their teaching methods and the courses were beyond approach. Rather than there being any evidence of fear of criticism or of defensiveness, the staff were open and relaxed and eager to answer any questions about their work.

My second concern, having established a good working role in the university, was to develop a working relationship with the students studying agronomy. I had expected this to be the easier of the two concerns. However many of the students were very suspicious at first meeting. This was often due to them believing me to be from the U.S.A. Many students questioned me closely about my research aims and political perspective. In this context I presented my research aims as sociological rather than political, but expressed the view that an analysis of agronomy education had to consider not only the issues of "underdevelopment" but also the relationships between power and control and education. I also discussed the importance I attached

to the agrarian reform for the teaching of agronomy. In practice, I found that most of the students' suspicions were grounded in the apparent concern that I could be some kind of agent employed to investigate individuals. It therefore took longer to win the confidence of the students than I had expected, and despite developing friendships with many of them and helping a number with their English, any new contact had first to dispell fears and suspicion noticably absent from my interaction with the staff. This later contributed to the difficulties encountered when trying to organise my student questionnaire.

Initially, I intend to demonstrate that the students themselves come from or become part of the middle class, and in their post university lives begin to occupy roles typical of the new middle class group in their society. This is a difficult task because it is not enough to simply accept all the considerable data available, since this also involves accepting the criteria used in the collection, organisation, and analysis of the statistical surveys. I shall therefore re-evaluate the available statistics in the attempt to arrive at as accurate a picture as possible of the social groups represented among the students.

Within this picture I will begin to address the problem of "cultural bias" with respect to (i)selection (ii)specific

discrimination against social groups or classes, (iii) desired and expected employment.

The U.N.A. regularly publishes considerable data concerning the social background of its students in its 'U.N.A. Memoria' usually published every two years.^{*1} These statistics are actually based on the work of a sociologist, Baldimero Cáceres^{*2}, who teaches at La Molina. His research is entirely dependent on a questionnaire given to all the prospective students immediately prior to their sitting the actual entrance exam. So at the point of source, and irrespective of any other methodological problems concerning the validity of data collection and the questionnaire design, serious doubts must arise for two main reasons.

1. We can only be extremely uncertain as to how seriously and/or accurately the prospective students answer the questions in an emotional state of probable high stress.
2. Since, as I will examine later, many of the students will be hoping for grant support, it is very likely that their estimates of family income will be lower than is probably the case.

All official statistics are based on this source. Furthermore,

all official statistics have the tendency to be over simplified for my specific purposes, so that for example, 'employment' is categorised as 'manual' or 'non-manual'. However, what makes the statistics most inappropriate is the fact that they treat all the students, no matter what courses they may study, as one single group.

In order to maximise the chances of accurate and appropriate data I referred to Cáceres' source material, the actual questionnaires and limit my analysis to only those who were intending to study agronomy. Unfortunately this inevitably ignores another source of error; the fact that it is unnecessary to make any real final choice of degree subject until the common foundation courses have been completed. Nevertheless, this is the closest that the official statistics come to having data relevant to the agronomy students as a group. Unfortunately again, source material was only available for a single year's entrance, 1973.

The second step towards minimising error was to produce a complementary verbal questionnaire.

The sample of students was intended to be a random sample. I therefore avoided drawing my sample from personal contacts. I used three methods of finding agronomy students. Two of these relied on going to the two main gathering places of the students - the canteen and the grassed seating area in the centre of the campus- and asking groups of students at random if they studied agronomy and if so whether they would be willing to answer some questions. Although I felt that a number of students may well have denied their chosen studies to avoid possible problems, only 2 students refused to take part. The third method I used was to ask students after lectures. This was only possible when I did not have to talk to the lecturer immediately afterwards and where the students were not going on directly to another class or activity, normally this was at lunch time. Originally I intended to ask every fifth student leaving the classroom for their help but this so often proved to be a student studying some other main subject that I decided to try and secure the first student agronomist that I could. These students represented about 25% of my sample.

I felt that since most of the students initially appeared to be apprehensive it was very important to maintain a relaxed atmosphere. Consequently, I would normally conduct the

"interview" where the student could feel at ease which was usually in the canteen over lunch or sitting on the grass. The session would always begin with me outlining the reasons for my research and answering questions about the use of my data and giving assurances of complete confidentiality. This always helped to reduce anxiety and the students appeared to feel reasonably happy to cooperate. It also led to some interesting discussions after the "interviews".

The questionnaire was being used in a number of ways.

- 1)As an indication of the socio-economic background of the students (as a check on the available statistics).
- 2)As an attempt to gain a comparison between expectations and aspirations.
- 3)To obtain some information that I felt may prove to be factors I could need in later analysis, not all of which have been used directly. Such as gender, date of arriving at the university, and geographical location of the family home.
- 4)To consider the relationship between the ability to read English and socio-economic background.

Initially, I did not intend to attain a sample of any particular size, but worked on the premise that I would need at least 10% of the students. In fact I expected to attain a sample of about 30%.

However it proved far more difficult and time consuming than I had at first envisaged and I found that the 15% sample was all that was practical in the time I had allowed.

Later, I began to become interested in the relationships between expectations, aspirations, and socio-economic background.

Unfortunately, this would require repeated subdivisions of the sample which the number of students interviewed cannot support.

The questions ran as follows-

1) When did you come to La Molina University?

- primarily to help the student to relax. However at the time of the interviews I was investigating the impact of the Agrarian Reform on the agronomy course and felt that this information could be relevant to later analysis.

2) Where is your home?

- another relaxing question. However it was also intended to help to indicate the area of the city and so their socio-economic background.

3) Why are you studying agronomy?

- designed to allow the students to talk about themselves and agronomy, this was intended to throw light on aspirations and expectations through a discussion of the students' motivations.

4) What work do you expect to do when you have finished the course?

- where possible, I was looking for a concrete expectation and would pursue vague answers if I felt that the student could be more concrete.

5) What work would you ideally like to do?

- I quickly had to change this question to "what work as an agronomist...." This is the question students found most difficulty with. Some found it difficult to imagine anything different from their expectations. Some (before I qualified the question) indulged in exotic flights of fancy. As in question 4), I was looking where possible for some fairly concrete work as an agronomist that the student would have liked to do if only they were free to do so outside any external pressures.

6) What work does your father do?

- an indication of socio-economic background.

7) What work does your mother do?

- an indication of socio-economic background.

8) How much would you say your "family income" is?

- an indication of socio-economic background.

9) Are you able to read the English text books in the library?

- this seemed to me to be an important advantage and I felt that there would be a strong correlation between this skill and coming from, or aspiring to a professional, or middle-class background.

For the initial purpose of defining the socio-economic profile of the agronomy students at U.N.A. the degree of agreement between the two questionnaires would be an indication of validity. Of primary importance to defining broad social background is the fathers' employment. In my questionnaire I have categorised the answers I received as follows:-

- a) Professionals
- b) Higher administrative
- c) Lower administrative
- d) Agricultural
 - (i) Large farms
 - (ii) Medium farms
 - (iii) Small farms
- e) Workers
- f) Others.

The classification distinction between 'higher' and 'lower' administrative is on the basis of the type of job and also the amount being paid, working on the basis that all else being equal then a salary of 20,000 Soles a month was a reasonable indication of the job being 'higher' rather than 'lower' administrative. The breakdown of agricultural work into large, medium and small is based (where there is no other clear evidence) on income. More than 20,000 Soles a month means large, between 5,000 and 20,000 Soles means medium and less than 5,000 Soles a month means small.

'Others' refers to those who have deceased or retired without data and so on. These categories were composed knowing what I wanted them for with reference to agronomy career prospects and not to tie in neatly with Caceres' own categories.

Using Caceres' categories and data from 114 prospective agronomy students in 1973 we find the following profile:-

Table 30 Fathers' Employment among Agronomy Students

1.	Worker	14%
2.	Peasant Worker ('campesino')	13%
3.	Artisan	2.5%
4.	Lower Grades in the Armed Forces	6%
5.	Public Employee (regardless of grade or position)	21%
6.	Private Employee (regardless of grade or position)	4.5%
7.	Agriculturalist (landlord; professional or not)	12%
8.	Merchant or trader (regardless of level)	17%
9.	Industrial (regardless of level)	1%
10.	Officer in the Armed Forces	1%
11.	Independent Professional	2%
12.	Others	6%

I have reclassified Caceres' data using income and level of education as general indications of the kind of employment that the fathers actually have, in terms of my categories. This gives the following comparative table:-

(cont'd over..../)

Table 31 Fathers' Employment among Agronomy Students(Data compared)

Fathers' Employment	Verbal questionnaire data - based on 15% sample of agronomy students (1975/6)	Caceres' reclassified data - based on 1973 intake of students intending to specialise in agronomy
Professional	38%	34%
Higher Administrative	4%	3%
Lower Administrative	13%	20%
Agriculturalist:-		
Large	9%	3%
Medium	7%	9%
Small	18%	16%
Worker	11%	15%

The degree of similarity between the two profiles, despite all the possible error, is reasonably high. Furthermore, much of the dissimilarity can be explained. A careful comparison of the two tables indicates that there is a general tendency for Caceres' data to 'downgrade' the fathers' employment as compared to the verbal questionnaire. This tendency would be expected if my earlier hypothesis was correct, and it were the case that students tended to err on the low side when estimating their family income in the hope of obtaining financial assistance.

An important factor that discriminates against students from poorer backgrounds is the cost of a university education.

Although the Government alleviated a substantial burden by making education free, (since the Educational Reform Law No.

17437 in 1970, there are no longer registration nor tuition fees) the real and relative costs are still socially discriminating. The poorer family is more dependent on all its members working. Thus a poorer student is far more likely to be working in support of the family income than a richer student were he or she not studying. Consequently the poorer family suffers a greater relative 'loss' of family income.

The burden of the student's living expenses is also relatively far heavier on the poorer family, as are the studying costs of text books, etc. The University has set up a system of grants to aid the poorer students but the demand, or need for grants, is higher than the capital allocated.*3 Only 34 students received the maximum grant, and only 165 received a grant at all. Over the same period, there were 205 students who entered with fathers in manual employment. If we consider that the average length of study at the University is approximately four to five years, we can consider that there are approximately 900 students from poorer families at the University. Although these figures are very approximate, it is clear that 165 grants could not satisfy the demand. Furthermore, the maximum grant of S/700 a month, cannot be considered as capable of supporting a student despite the subsidised food service in the University, and the free buses from Lima to the campus.*4

Table 32

Allocation of student grants from 1st January, '73 to March, '74, U.N.A. *5

Grant 'A' - S/700.00 X 9 months :	S/6,300.00 X 34 Students =	
		S/214,200.00
Grant 'B' - S/350.00 X 9 months :	S/3,150.00 X 128 Students =	
		S/403,200.00
Grant 'C' - S/150.00 X 9 months :	S/1,350.00 X 3 Students =	
		S/4,050.00
<u>Totals : 165 Students :</u>		<u>S/621,450.00</u>

It could be argued that in the face of such fierce competition for grants it would be extremely surprising to find anything other than a comparatively low estimate of family income.

In fact the figures run as follows:-

Table 33 Reported Family Income Among Agronomy Students

Income (1,000 Soles per month)	my data	Caceres' data
greater than 40	9%	-
between 35-40	-	-
between 30-35	2%	-
between 25-30	4%	-
between 20-25	11%	5%
between 15-20	15%	4%
between 10-15	13%	18%
between 5-15	23%	34%
less than 5	23%	39%

It would therefore seem likely than Caceres' figures have been slightly distorted which effectively downgrades their fathers' employment and would explain most of the differences between the two sets of data. There is a slight possibility of an anomaly with respect to the number of 'small agriculturalists'; where against the general tendency of the comparative figures, Caceres' shows a smaller number than the verbal questionnaire. There are a number of possible explanations for this. For example, there may have been a tendency for farm workers and peasants to have been categorised as 'workers' rather than 'agriculturists' or even 'campesinos'. In fact this is a possible reason

among others for the category of 'worker' in Caceres' data to be significantly higher than in mine. Another possible source of general error in Caceres' figures is the fact that I am using them to profile all the agronomy students, when in point of fact, the figures only come from the single year and therefore quite inevitably can take no account of any changes that may have occurred over the several years in which agronomy students enter and leave the University.

This general problem actually highlights a more specific temporal problem which is the most likely explanation of the apparent anomaly. I am referring here to the fact that Caceres' figures could not have possibly taken into account the 'Peasant Entrance Project' which was intended to increase the peasant participation in higher education in the area of agricultural production. This project was set up in response to CONUP, on the 21st February, 1974 as Resolution No. 23604/UNA -SG.*⁶ This project received considerable publicity and was presented as an attempt to overcome class-based selection at the University. For this reason, it is necessary to examine it in some detail. The application of the resolution (peasant entrance without examination) is defined as follows:

'Article 2. To be admitted as a beneficiary of this system of entrance it is required:

- a) To be a peasant (campesino) or child of a peasant integrated with an Associative Enterprise in the country's sector of agricultural production.
- b) To be presented as a candidate for entrance to the National Agrarian University by the Associative Enterprise to which the peasant belongs.
- c) To have completed his/her secondary studies in the previous two years before presentation to the

University.

- d) To have carried through his/her secondary studies at a college, national agricultural institute closest to the associative enterprise, or the commercial or industrial agricultural institute belonging to it.
- e) To have obtained the highest average marks of the secondary student body, of those with a vocation in agricultural production.
- f) To have a certificate of good health from the appropriate health office.
- g) To have economic help from the Associative Enterprise to which he/she belongs, to finance the cost of lodgings, food, and study utilities, during the period of his/her professional formation. The Management of Student Affairs and Well Being annually fixes the minimum sum that covers the expenses referred to.
- h) To establish a formal obligation that the beneficiary will work for the Associative Enterprise that sponsored him/her for a period of no less than the duration of his/her studies.^{1*7} (my translation)

This system of selection is orientated towards the 'Associative Enterprises' which are constituted by the beneficiaries of the Agrarian Reform. In other words it is from the relatively small sector of the wealthiest peasantry who alone can benefit from this project. In this respect, it is the cooperatives in general which benefit. Furthermore, by limiting access to those peasant students who have already succeeded in the education process, it can be argued that those peasants allowed to enter the University have already internalised the 'educational code'. Consequently, the 'Peasant Entrance Project' cannot be considered as an important attack on the class based selection at the University.

In the first year of the project, however, this aspect of selection was waived in order to assist a cooperative in Ancash which had been devastated by an earthquake. Therefore in 1974, 30 peasants entered the University without taking the

entrance examination, which partially explains the higher percentage of students with fathers with manual employment in that year. Since 1974, the number of peasants entering the University under this scheme has not exceeded four a year.

There remain two further discrepancies which require comment or explanation. My data indicates that 9% of the agronomy students have fathers who are 'large agriculturalists' as opposed to 3% in Caceres data. This can be explained to some degree by the general downgrading of Caceres' figures examined earlier. Another possible explanation is that my data is taken from a sample of all the students who have actually chosen to study agronomy. Whereas Caceres' data is taken from a single year's intake and represents those students who intend to study agronomy when they are required to specialise after the first general year at U.N.A. I will be considering the tendency of students from a rural background to seek rural employment later in this chapter. At this point I would like to indicate that it may well be that once the students actually choose their specialisation, children of agriculturalists (perhaps particularly children of large agriculturalists who may have the most to gain by training as agronomists) may constitute a larger proportion of the agronomy student body. It is also possible that over time the proportion of children of large agriculturalists has changed in response to the Agrarian Reform.

The second remaining discrepancy is that my data indicates that 13% of the agronomy students have fathers with employment in lower levels of administration as opposed to 20% in Caceres data. This could be explained with the same arguments. That students from an urban background may, in the end, tend to specialise in

more obviously urban professions, and that Caceres' data tends to downgrade employment.

Therefore we can see that the social class profile of the agronomy students is by no means constant, but is in a state of flux. Within this state of flux specific factors can effect the profile significantly from year to year (such as the waiving of the selection procedure on the 'Peasant Entrance Project' in 1974, mentioned above). However, despite such specific influxes of students I would argue that the social class profile of the students develops and changes in response to changes and developments in the balance of social power rather than simply reflecting a stream of social co-incidences. This form of structural analysis informs and underpins both the collection of relevant data, and its assessment.

Using Caceres' data as a guide, the social profile of the agronomy students at U.N.A. can be represented as follows:-

Table 34 Social Profile of Agronomy Students

Social Class or Group	% of agronomy student body
Landlord	16%
Professional or Middle Class	49%
Working Class	17%
'Campesino' or Peasant	18%

This data was collected in 1976 when the working rural population was officially estimated at approximately 40%^{*8}. Consequently, the professional or middle class category is clearly disproportionately represented. Of this 49%, 36% have fathers employed in a 'professional' capacity. This constitutes easily

the largest of the employment category groups. By contrast the Statistical Abstract for Latin America estimates that Professional, Technical and Related Workers constitute only 7.6% of the working population in 1972.*9

Analysis of the Data

In order to begin to assess the significance of the data a theoretical perspective is needed that can examine the relationship between social class and education in general, and can be applied to the more specific relationships found in this context.

There has been a considerable amount of largely theoretical research into the area of social reproduction through education, which can be loosely defined as the ability to legitimate particular ways of understanding and explaining social reality and discounting others. For example, Bourdieu's analysis of social reproduction in 'Cultural Reproduction and Social Reproduction' is particularly concerned with forms of social control and the power that 'educational success' invests in students, as 'cultural capital'.*10

In the introduction to the chapter on the Agrarian Reform, Bourdieu's theoretical contention that education systems reproduce within individuals, patterns of thought, language and action, was discussed with reference to^{the} emergence of a 'new middle class'. Bourdieu argues that education includes the terms of reference that form the parameters of a world view, and does so without reference to 'critical awareness'. He argues that this not only reproduces what he terms 'cultural habitus' but also serves as the ideological consensus of^{the} social group that controls the education process.

It was this concept that was used to clarify the emerging social roles and social rationale of the 'new middle class', identified in this context by ^{the} increasing power and management over agriculture by the agronomists as 'experts'.

The relationship between the education system and social groups is interactive. While, it is argued, the education system reproduces 'habitus' on the one hand, 'habitus' reproduces education systems on the other. Any analysis is therefore a complex business and must finally resolve the 'social tautology' by determining the basis and directions of social power.

Bernstein also provides a theoretical perspective that closely converges on Bourdieu's from his initial concern with language codes within the family and educational systems with direct reference to social class.

Bernstein's analysis of 'codes' is primarily concerned with the nature, genesis, transmission and implications of 'cultural meanings' and their organisation with reference to social groups or 'classes' as defined by the relations of production. In this context a 'code' represents both a 'world view' in the sense of basic meaning structures and a related 'language code'. Bernstein argues that within social classes are produced 'initial codes' that bear a direct relationship to the social role of that class in the mode of production. Bernstein further argues that if a social class controls the educational system it controls the 'codes of transmission'. Therefore members of this social class can identify with this dominant 'educational code' while other classes are likely to come into confrontation with it.*11

These general theories provide a framework for my analysis. In a general way, both theorists indicate and expect an identification between the social class or group that controls

the education system and those students who come from that social background. The social profile of the agronomy students conforms to this expectation in that a very large proportion come from a 'professional background'. The role played by the University itself in this process, will be examined later in this chapter. Before doing so, I intend to examineⁱⁿ a little more detail the relationships between the social 'background' of the students and the spectrums of social mobility, aspiration and expectation.

The data that is to be presented is necessarily drawn from a very small sample. However, I felt that despite the inevitable restrictions on the size of the sample, the data might reveal certain trends. I would like to emphasise that this analysis of the students is the first of its kind in Peru. As a consequence, with all its limitations, I consider that the data is worth presenting as a form of analysis rather than any specific content that may be worth developing in a larger sample.

In the questionnaire, the students were asked what employment they would ideally like, and what employment they realistically expect. Their answers have been categorised as follows:-

1. Public Institutions.
 - a) University and Higher Education
 - b) Agricultural Cooperatives
 - c) Other State Bodies.
2. Private Institutions.
 - a) Large Farms
 - b) Small Farms
3. Don't know including unspecified work abroad.

The category of 'other state bodies' includes government research institutions and any governmental administrative position, but usually refers to employment with the Ministry of Agriculture.

I have, in this context divided private agriculture into only two categories. This is because the distinction I am making is between the nature of the employment rather than between the wealth or specific nature of the farming. In this context 'large farms' refers to any agriculture that can be considered to earn a surplus and therefore be in a position to employ an agronomist. The category is a general category and

includes a wide range of farms that would normally be further divided into 'large' and 'medium-sized' farms for other purposes.

I can now begin to analyse the students' aspirations and expectations with respect to their social background which I have already outlined based on the same questionnaire.

The main problem with the data is that the end result of repeated subdividing of the sample is that very small numbers of individuals in effect represent social classes and groups. To indicate and clarify the exact nature of the statistical problem I have avoided showing the students as percentage figures on these tables, which would have the effect of disguising the statistical limitations, and I have given the precise number of individuals involved in each category.

Expected and desired employment can be represented against father's employment (which is used as the main indication of social class or group background) and against urban and rural background. These are treated separately in the tables being considered different dimensions of social background.

(see tables over)

Table 35

EXPECTED EMPLOYMENT AGAINST FATHER'S EMPLOYMENT

Father's Employment	PUBLIC INSTITUTIONS			PRIVATE AGRICULTURE			Total
	University & Higher Education	Agricultural Cooperatives	Other State Bodies	Large Farms	Small Farms	Don't Knows & Work Abroad	
Professional	2	3	9	-	1	2	17
Higher Admin.	-	-	2	-	-	-	2
Lower Admin.	1	2	-	1	-	2	6
Large-Scale Agriculture	-	2	1	1	-	-	4
Medium-Scale Agriculture	-	-	1	1	-	1	3
Small-Scale Agriculture	-	1	4	1	1	1	8
Workers	1	1	3	-	-	-	5
Other	-	-	1	1	-	-	2
Totals	4	9	21	5	2	6	47

Table 36 DESIRED EMPLOYMENT AGAINST FATHER'S EMPLOYMENT

Father's Employment	Public Institutions			Private Agriculture			Total
	University & Higher Education	Agricultural Cooperatives	Other State Bodies	Large Farms	Small Farms	Don't Knows & Work 'abroad'	
Professional	3	1	6	2	2	3	17
Higher Admin.	-	-	1	-	-	1	2
Lower Admin.	1	2	2	-	-	1	6
Large-Scale Agriculture	-	-	-	2	1	1	4
Medium-Scale Agriculture	-	-	2	-	1	-	3
Small-Scale Agriculture	-	2	2	-	4	-	8
Workers	1	1	2	-	1	-	5
Others	1	-	-	-	1	-	2
Totals	6	6	15	4	10	6	47

EXPECTED EMPLOYMENT AGAINST URBAN/RURAL BACKGROUND

Urban/rural Background	<u>Public Institutions</u>		<u>Private Agriculture</u>			Total
	University & Higher Education	Agricultural Cooperatives	Other State Bodies	Large Farms	Small Farms	
Urban	4	5	15	1	1	31
Rural	-	4	6	4	1	16

Table 38

DESIRED EMPLOYMENT AGAINST URBAN/RURAL BACKGROUND

Urban/rural Background	<u>Public Institutions</u>		<u>Private Agriculture</u>			Total
	University & Higher Education	Agricultural Cooperatives	Other State Bodies	Large Farms	Small Farms	
Urban	6	4	10	2	4	31
Rural	-	2	5	2	6	16

As I have already indicated, my original intentions did not include any detailed analysis of the relationships between social classes or groups and their expectations and aspirations. A consequence of this is that the data collected was not designed to be, and cannot support a detailed comparative analysis no matter how desirable this may be. It is nevertheless possible to consider broader categories comparatively. For example, it is possible to examine the differences between students from a "professional" background and the rest of the sample, particularly if the future employment is considered in broader categories. We can therefore, in this context, group "University & Higher Education" and "Other State Bodies" as "Administrative/Academic". And "Agricultural Cooperatives", "Large Farms", and "Small Farms" as "Agricultural/Management". I have given both the percentage of students as well as the raw figures (in brackets).

Table 39. Expected & Desired Employment Among Agronomy Students from a "Professional" Background.

	<u>Administrative/Academic</u>	<u>Agricultural/Management</u>
Expected	73% (11)	27% (4)
Desired	64% (9)	36% (5)

Table 40. Expected & Desired Employment Among Other Agronomy Students.

	<u>Administrative/Academic</u>	<u>Agricultural/Management</u>
Expected	54% (13)	46% (11)
Desired	44% (11)	56% (14)

This comparison, as it stands does not reveal any major differences. However, the division itself may well be promising and perhaps borne in mind were a larger sample available which permitted more detailed analysis.

Table 41 Expected and Desired Employment

Among Agronomy Students from an Urban Environment.

	<u>Administrative/Academic</u>	<u>Agricultural/Managerial</u>
Expected	73% (19)	27% (7)
Desired	62% (16)	38% (10)

Table 42 Expected and Desired Employment

Among Agronomy Students from a Rural Environment.

	<u>Administrative/Academic</u>	<u>Agricultural/Managerial</u>
Expected	40% (6)	60% (9)
Desired	33% (5)	67% (10)

These comparisons, although in no sense significant, perhaps suggests (asin the previous table) that the relationship may well be worth pursuing with a sample larger than this researcher was able to collect.

However, if we consider these two tables together, we can see that despite the small sample, it appears as if students from an urban environment are more likely to expect and desire administrative or academic employment. Whereas students from a rural environment are more likely to expect and desire agricultural or managerial employment.

The individuals who form the body of students on the agronomy courses at U.N.A. are not a random group from the Peruvian society as a whole. There are a disproportionate group from the professional and middle class and also, not surprisingly, a disproportionate group from an urban background. There is also a disproportionate group from Lima-Callao itself. It is evident from the simple comparative analysis of the expectations and aspirations of the different social groups represented in the student population that social forces are operating in at least two dimensions. The first is that however socially mobile or otherwise the groups of students may be, there is a strong tendency to reproduce at least the urban or rural aspect of their social background.

The second is that career prospects determine careers. Consequently students may expect to find employment in, for example, a sugar co-operative, when they would have actually

liked to have worked on a large privately owned estate, or with a small peasant community. In this way the future of each agronomist is formed by the professional role expected of him or her in the different areas of employment. Objectively, as I indicated earlier, employment is determined by the deployment of resources in the mode of production. However, accurate information of the employment that will be available to the students is not known. Consequently it is the individual student's perception of career prospects that actually informs their choices.

The evidence that I have been examining suggests that the social background of the students is a significant factor informing their individual perceptions. In this way, individual choices actually reflect social groups. The expectations of individuals are thus shaped by social expectations, and social awareness. Similarly, the aspirations of each social group for social mobility and the form this takes, can be considered to be socially dependent. Although these relationships can be indicated, the actual mechanics of social differentiation have hardly been touched upon. The purpose of outlining these relationships in the context of this thesis is firstly to indicate the validity of certain assumptions made or implied about the student population, and secondly to indicate that the

social process of agronomy education at the U.N.A. takes place within a stream of inter-related social processes not the least of which provides the university with a sample of students which quite predictably do not represent a cross-section of the Peruvian population.

It is at this point that it becomes both relevant and necessary to ask what role does the university itself play in the nuts and bolts of social reproduction and in so far as this process exists, how it is legitimated? In this context, and looking at the agronomy student population as a whole, it will again become relevant to compare aspirations and expectations with respect to curriculum. However, any analysis of social discrimination and reproduction with respect to education must initially address the question of success and failure; since this is a clear function of most educational institutions and a clear indication of the relationship between social class or groups and legitimate knowledge or intellectual ability.

From a theoretical standpoint we can argue that the professional/managerial class that has gained and is exercising power over education also define the 'transmission codes'. If this is the case, we could expect a higher success rate among the children of the professional groups and middle class in general than from the children of workers in industry or the peasantry.

The process of selection and assesment at U.N.A. is such that a high degree of selection takes place on entry.^{*12} Once on the course, the student is assessed on individual courses, and must earn a set total of 'credits' before earning a qualification. Based on the North American system, this means that there is little or no failure as such, but the length of the course depends entirely on the rapidity of the credit

collecting*¹³ Therefore, to assess relative success in relation to class, the initial entrance examination is the crucial point of focus.

Baldomero Cáceres, (the sociologist at U.N.A.), analysed the socio-economic factors in the entrance examination results for the years, 1967 and 1968.*¹⁴ This analysis is based on figures provided by the department of admissions at U.N.A. Much of their information is based on questionnaires designed by Cáceres and given to all the students attempting the examination. Cáceres examined three entrance examinations in terms of the relative success of different social groups in relation to the form of occupation of the father (manual or non-manual employment) and in terms of the education level of the parents (primary, secondary and superior education), which revealed the following results:- (see over)

Taking the form of occupation and educational attainment of parents as primary indicators of the social class background of the students, a clear indication that middle-class students are relatively more successful is given by these tables.

Postulants and successful applicants in relation to Fathers Occupation *15

Fathers Occupation	August 1967		March 1968		August 1968	
	Postulants	Successful %	Postulants	Successful %	Postulants	Successful %
Manual *16	96	8	143	15	87	18
Non-manual *17	526	112	679	144	585	122
		8.33		10.49		20.69
		21.29		21.21		20.85

Postulants and successful applicants in relation to Fathers Education *18

Fathers Education	August 1967		March 1968		August 1968	
	Postulants	Successful %	Postulants	Successful %	Postulants	Successful %
Primary	194	24	272	37	238	45
Secondary	263	47	290	58	271	48
Superior	218	49	243	61	214	55
		12.4		13.6		18.9
		17.9		20.0		17.7
		22.5		25.1		25.7

Table 45
Postulants and successful applicants in relation to Mothers Education^{*19}

Mothers Education	August 1967			March 1968			August 1968		
	Postulants	Successful	%	Postulants	Successful	%	Postulants	Successful	%
Primary	283	38	13.4	384	51	13.3	325	61	18.8
Secondary	307	64	20.8	320	75	23.4	298	61	20.5
Superior	90	18	20.0	114	31	27.2	100	26	26.0

Caceres thesis depends on two arguments. The first is that a disproportionately small group of students who come from what we can classify as a 'working class' background get to take the entrance exam for the university. The second is that of those who do take the entrance exam, a disproportionately large amount of them fail to be successful.

If we consider the evidence more closely in tables 43 to 45, we can see that the success rate of 'working class' students rose sharply over the period of one year, although they remained a minority among the students. In August 1968 (2 months before the 'Peruvian Revolution'), although the number of students with fathers who have manual employment dropped, their success rate more or less equalled all the other students. It is difficult to discover why or how this occurred. Caceres did not appear to consider this discrepancy as significant in the general sweep of his figures and goes on to attempt to explain the general discrepancy in success rate by turning his attention to the actual entrance exam.

In his analysis, Caceres examined the different "subject" papers in the entrance examination. He considered the success rate in each paper using the same three indicators of social class; that is- father's occupation, father's level of education, and mother's level of education. He found that all three indicators gave very similar results, and as an example I have reproduced the following tables, relating the students' success to their Fathers' form of employment. For each examination I have represented the average marks by the students who have fathers with manual employment as a percentage of the other students (under the column- relative per cent). In each case the average marks of the students who have fathers with non-manual employment is considered to be 100%, in order that relative success can be compared across different examinations.

Table 46

Relative Success in each examination in relation to Fathers' Occupation, *20
August, 1967

Examination	Fathers' Occupation	Average Marks	Relative %
'academic aptitude'	Manual	100.44	80
	Non manual	124.78	100
Mathematics	Manual	51.44	85
	Non manual	60.43	100
Biological Sciences	Manual	92.20	99
	Non manual	93.04	100
Physics-Chemistry	Manual	33.79	93
	Non manual	35.17	100
Social Sciences	Manual	54.60	100.5
	Non manual	54.47	100

Table 47

Relative Success in each examination in relation to Fathers' Occupation,^{*21}
March, 1968

Examination	Fathers' Occupation	Average Marks	Relative %
'Academic Aptitude'	Manual	34.32	71
	Non manual	48.06	100
Mathematics	Manual	43.92	83
	Non manual	52.88	100
Biological Sciences	Manual	64.34	93
	Non manual	69.15	100
Physics-Chemistry	Manual	71.04	97
	Non manual	72.85	100
Social Sciences	Manual	84.69	92
	Non manual	91.65	100

Table 48

Relative Success in each examination in relation to Fathers' Occupation 22
August, 1968

Examination	Fathers' Occupation	Average Marks	Relative %
'Academic Aptitude'	Manual	466.05	92
	Non manual	507.25	100
Mathematics	Manual	488.15	96
	Non manual	501.22	100
Biological Sciences	Manual	488.67	97
	Non manual	500.40	100
Physics-Chemistry	Manual	496.08	99
	Non manual	500.54	100
Social Sciences	Manual	500.84	100
	Non manual	501.48	100

Caceres argues that these figures indicate a general discrimination against students whose fathers hold manual employment. As Caceres shows similar patterns of relative achievement against parents educational achievement he argues that this indicates a general discrimination against students with a working class or peasant social background. However if we consider the evidence, the differences are actually slight in general, and nonexistent in some cases. The results fluctuate across the period, and in August, 1968, the differences (where they exist) are negligible.

Caceres also points out that the largest discrepancy in each case is in 'Academic Aptitude' followed consistently by 'Mathematics', (whereas the least discrepancy is in 'Social Science'). He argues that this is a result of the greater 'taken-for-granted' content of the 'Academic Aptitude' examination which assumes and reflects middle class background.^{*23} While a conclusion which can be interpreted in terms of the students' identification with the dominant 'educational code' would be logical and convenient for this thesis, it cannot be maintained on the existing evidence alone, which actually indicates a changing pattern of recruitment rather than a consistent one. Without further evidence, this will remain puzzling. For example, why is it that 2 months prior to the 'Peruvian Revolution' fewer 'working class' students enter the

entrance exam, score higher 'Academic Aptitude' results than previously (equalling the other students), and a higher number and proportion enter the university? It may be that factors such as variations in the reliability or style of marking are playing a significant role, and a longer series of results would be needed to detect discrimination. Nevertheless, the fact that the weightings for the different subject results were altered by CONUP in January, 1974 stressing 'Academic Aptitude' and 'Mathematics' in particular (see table 51) should alert further reseachers to the possible implications.

Where the evidence is much stronger is in the small proportion of 'working class' students who enter the university. It is also interesting to note a rapid rise in the proportion of 'working class' students entering the university between 1967 and 1974. *24

The proportion has risen from 6.7% to 21.6%. While they are still significantly under-represented in the university, this has been a steady and consistent rise in numbers. There is little direct evidence to explain this. Possible factors are free education, the perceived changes in the social opportunities, openings and needs following the 'Peruvian Revolution'. The increase of over 3% from 1973 to 1974 can be explained by the 'Peasant Entrance' scheme discussed earlier in this chapter.

Table 49
Number and Preportion of Students Entered in Relation to the Fathers'
Occupation, 1967-68

Fathers' Occupation	August, 1967		March 1968		August, 1968	
	No.	%	No.	%	No.	%
Manual	8	6.7	15	9.4	18	12.9
Non manual	112	93.3	144	90.6	122	87.1
Total	120	100	159	100	140	100

Table 50
Number and Preportion of Students entered in Relation to Fathers'
Occupation, 1973-74 *25

Fathers' Occupation	March, 1973		August, 1973		1974	
	No.	%	No.	%	No.	%
Manual	59	17.20	33	18.03	113	21.6
Non manual	284	82.79	150	81.97	410	78.4
Total	343	100	183	100	523	100

Entrance Examination Weighting in Relation to the Students Specialisation. 1974.^{*20}

Weighting in number or marks in each examination

Specialisation	Academic Aptitude	Mathematics	Biology Sciences	Physics	Chemistry	Social Science	Spanish	Total
1) Agronomy	60	50	40	30	30	30	10	250
2) Animal Science								
3) Biology	60	40	45	30	15	30	10	230
4) Forestry								
5) Fisheries								
6) Economics								
7) Statistics								
8) Agricultural-Engineering	60	60	30	30	30	30	10	250
9) Meteorology								
10) Industrial Foods								
11) Fish Production(food)	60	50	20	35	35	30	10	240

So far we have seen that there is inconclusive evidence of discrimination against 'working class' students in the entrance examination. More significantly, we have also seen that only a small proportion of 'working class' students reach the point of taking the entrance exam. However this selected group has been growing significantly in number to reach one fifth of the entrants in 1974.

Language Distribution among the Library Textbooks.

Another possible factor that discriminates against these students from lower income families at U.N.A. is determined by the manner through which text books are acquired by the University. As I stated previously, a source of text books for the library at U.N.A. has been various North American Foundations and Agencies, and International Organisations. The policy of the Library staff is to accept donations of books from wherever the source, be it North American, European, Russian or private. The argument being that

text books from any source are welcome and having no restrictions on sources should mean a random selection of books can be received.^{*27} In practice this is simply not the case. The United States Agency for International Development (USAID) in particular, has a relatively vast source of funds orientated towards producing and distributing text books on agriculture. Obviously the organisation with the most capital has the advantage in monopolising the donations in a 'free-market' system.^{*28} In the context of social discrimination, an important factor is the language of the book. Apart from the source of the donation usually determining the language of the text books, a second factor is production cost. As Ingeniero Charles Morin stated, the unit cost of producing Spanish text books is far higher than the unit cost of producing text books in English which has a far larger market in North America and Britain.^{*29} These two socio-economic factors, which reflect the distribution of power in society, result in a high percentage of text books in languages other than Spanish. Based on a random selection of 4.7% of the filing cards in the University Library, the following distribution of languages was found.^{*30}

Table 52
Distribution of Languages among the Library Books at U.N.A.

Language	No.	%	Language	No.	%	Estimated total of Books
Spanish	547	58.3	Spanish	547	58.3	
English	288	30.7	English & Others	391	41.7	20,000
French & Others	103	11				
<u>Total</u>	<u>938</u>	<u>100</u>				

On the basis of the questionnaire, it is estimated that only about 10% of the students were able to read English sufficiently well to use the books. Again, the sample was too small to give significant evidence of the relationship between this ability and social background. What is clear, is that this would cause significant difficulties for almost all the students, particularly as the Spanish books were heavily oversubscribed. Furthermore, as Ingeniero Charles Morin pointed out, it is necessary to learn English if a career in Agronomy is going to be pursued, since much of the important knowledge (and particularly new developments in the area) is only available in English. It is, however, likely that middle class students could well gain access to, and could afford to pay for private tuition to alleviate this difficulty.

Since the 1960's there has been a decreased emphasis at U.N.A. on agronomy. This is directly due to less students choosing agronomy as an option, and was blamed by the Director of Agronomy on the 'uncertainty after the Agrarian Reform.'

Table 53
Preportion of Agronomy Students at U.N.A. *34

Time of Entry	% of Agronomy Students in relation to total students admitted
August '68 (pre-reform)	35.6%

 AGRARIAN REFORM

(post reform)

April '69	25
April '70	38
January '71	31
August '71	25.8
March '72	17.9
January '73	14.9
August '73	13.4
March '74	21.2

Due to the decreased number of agronomy students at the University, a number of courses that once ran were forced to close due to a lack of demand. These courses are in the area of 'specialisation' and are characterised by their optional nature. A total of sixty-seven courses closed out of one hundred and forty-one in this way over the academic year 1975/6, although many of them were more related to 'animal sciences' and 'agricultural engineering'. *35 For any course to run, at least six students must choose to study it. In order to briefly demonstrate the tendency of the student to orientate his/her studies away from popular foods and towards large-scale production, in particular the export crops, the following points are worth making.

- (i) There are no courses with a direct relationship with export crops among the courses that have closed.
- (ii) Among the least popular courses (two or less students) are:-
 - a) Improvement of Horticultural Cultivation
 - b) Rice
 - c) Physiology of Horticultural Cultivation
 - d) Special Problems in Nutrition
 - e) Agricultural Production I
- (iii) Courses dealing with export crops are usually relatively popular, for example:-
 - a) Tropical Cultivation (2 courses with 14 & 17 students)
 - b) Cotton and other Vegetable Fibres (13 students)
 - c) Sugar Cane (8 students)

Many agronomists envisage a glowing future career in the colonisation of the jungle and the emphasis on industrialisation of the tropical crops. This will be examined in more detail later, but serves here to explain the popularity of these particular courses.

I indicated earlier that expectations and aspirations (and the relation between the two) varied among the agronomy students according to their social backgrounds. These comparisons were made with

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respect to the differentiation among the students. At this point it becomes relevant to consider the agronomy students as a whole to consider what they have in common as expectations and aspirations.

We have already seen that the students tend to choose to study courses concerned with export crops and industrial crops at the expense of courses concerned with food crops grown for and by the indigenous population, and courses concerned with the related area of nutrition. By comparing expectations with aspirations we can begin to recognise the mechanics of social control within the development and demise of curriculum, which is apparently the result of 'free choice'.

Table 54
Employment Expectations and Aspirations Among Agronomy Students

	Expectations (% of students)	Aspirations
<u>Public Institutions:-</u>		
Other State Bodies	45	32
Universities	8.5	13
Co.-ops	19	13
<u>Agriculturalists:-</u>		
Small Farmer	4	21
Large Farmer	11	8.5
Don't know and Abroad	13	13

Taking the agronomy students as a whole tends to 'average out' many of the comparative differences identified by social background, and the more general tendencies that the students have in common begin to emerge. It is generally true to say that aspirations are not frequently very different from expectations. There is, nevertheless, a consistency about the differences. We can identify

three main areas of expected employment. 'Other State Bodies', 'Co-operatives' (which are primarily concerned with sugar production), and the 'Large Farmer'. 75% of the students expect employment in these areas. Clearly, a large number of students also aspire to employment in these three main areas (53.5%). However, of most significance is that in all of these main areas of employment more students expect to be employed than actually want to be.

Conversely in the remaining two areas of employment - 'University' and the 'Small Farmer' - while only 12.5% of the students expect such employment, they are the only two areas where more students would like to find employment than expect it. The most significant difference between expectation and aspiration in any area of employment is found in the area of the 'Small Farmer'. In this case very nearly one quarter of the agronomy students claim that they would choose to work with the peasant communities or else subsistence farmers in preference to any other employment, while only 4% of the students expect to do so. This is extremely significant because it demonstrates two important aspects of social reproduction. On the one hand it indicates that a reasonable proportion of future agronomists are interested and concerned with the peasants in Peruvian agriculture. On the other hand it indicates that this interest and concern is less significant than the students' perception of career prospects. We can see that this is the case because, as I have already outlined, the students have chosen courses on the basis of their expectations rather than their aspirations. Export crops and tropical crops (the latter being perceived as the 'new growth area' for agronomy) are popular while 'popular foods' and related subjects are forced to close due to lack of demand. This approach to the course may be considered pragmatic, but it also has the effect of ensuring that most of

the students' expectations are realised at the expense of their aspirations, and very possibly at the expense of the peasants as well. It certainly ensures that few of these future agronomists could hope to be equipped to work effectively with peasant crops, while ensuring that they will be equipped to work effectively with the more industrialised export crops. In this way despite the students' personal preferences, agronomists become trained for employment in the wealthiest and most powerful sections of agriculture.

Conclusions

In this chapter I have begun to examine the process of social reproduction with respect to the social background of the agronomy students at the university. We have seen that the student population has a large proportion of students with a middle class and 'professional' and urban background. We can recognise that this results not so much from the selection procedure of the university, but from the prior selection process which determines which students are able to enter the university entrance exam. It would also appear likely that the 'Academic Aptitude' and 'Mathematics' tests do discriminate to some extent against the 'working class' students as a whole and can be seen as a final element of the wider selection process which regulates which 'working class' students go to the university. In other words a particular group (or elite) are selected out from the 'working class'.

In considering career expectations and aspirations we have seen that there is good reason to believe that region determines occupation and this is a matter of some importance. Firstly because academic and administrative posts which are predominantly urban are likely to be of higher status than rural agricultural and management posts. Secondly, if students from rural backgrounds don't become administrators, then rural problems and problematics are being interpreted by agronomists from urban backgrounds which may directly effect the nature of the solutions and strategies that are used. This may, for example, predispose agronomists to provide technical rather than social solutions, or fail to fully recognise the social implications of their decisions.

As 40% of the text books in the library are in English or languages other than Spanish, it is clear that middle class students would be able to obtain private tuition whereas this would be much less likely for students from 'working class' or peasant backgrounds.

The education process itself has ^{thus} institutionalised forms of social discrimination. Further to the selection procedure analysed earlier and more mechanically than the forms of classification and framing that will be analysed later, are the forms of discrimination identified as the need to be able to read the English language and the relative cost to the poorer family of maintaining a child at the university.

More significantly for the wider implications of social reproduction is that, through its perceived systemic relationship to agricultural production, the university curriculum is shaped by the students' choices of course options in a way that directly conflicts with many of their own aspirations, and in the interests of the industrialised export sector of the agricultural economy by effectively channelling agronomists away from peasants and food production and towards the more wealthy and powerful section of agriculture.

Notes

1. e.g. U.N.A. Memoria, 1972-74, U.N.A.
2. Cáceres, B., 'Factores Socio-económicos y Rendimiento de los Postulantes en los Exámenes de Admisión a la Universidad Agraria (La Molina) en 1967 y 1968' mimeograph, U.N.A., 1975.
3. This was further substantiated by conversations with students.
4. Until November 1975, the student restaurant was inoperative due to its structural collapse after the earthquake in October, 1974. From November 1975, three course meals were provided for the cost of 4-6 soles. The free bus service operates from two points in Lima, and involves ill-regulated queues. Since the majority of students live in middle class suburbs, the two pick up points are also so situated, which involves the poorer students in a longer time consuming journey to these points, or else a standard bus journey at normal cost.
5. U.N.A. Memoria op, cit., p 302. Figures are also given for work grants for various projects.
6. Information based on the Archives of the Department of Admissions, U.N.A., 1975.
7. Resolución No. 23604/U.N.A. - S.G.
 'Artículo 2. Para acogerse al beneficio de este sistema de ingresos se requiere:
 - a) Ser campensino o hijo de campensino integrante de Empresas Asociativas del sector agropecuario de país.
 - b) Ser presentado como candidato a ingresar a la Universidad Nacional Agraria por la Empresa Asociativa a la cual pertenece.
 - c) Haber concluido sus estudios secundaria dentro de los dos últimos años previous a su presentación a la Universidad.

..../cont'd

- d) Haber realizado integralmente sus estudios secundarios en un colegio, Instituto Agropecuario, Comercial o Industrial, perteneciente a la Empresa Asociativa correspondiente, o nacional más próxima a ella.
- e) Haber obtenido los más altos promedios a lo largo de sus estudios secundarios, a la par que tener vocación agropecuario.
- f) Acreditar buena salud mediante certificado del área de salud respectiva.
- g) Contar con el apoyo económico de la Empresa Asociativa a la cual pertenece, para financiar los gastos de alojamiento, alimentación y útiles de estudio, durante el periodo que dure su formación profesional.
- h) Acreditar compromiso formal de que el beneficiario trabajara en la Empresa Asociativa que lo presenta por un período no menor al de la duración de sus estudios.
8. Statistical Abstract of Latin America, J. Wilkie (ed) A. Perkal (co-ed), Vol 23, 1984. p 262.
- Economically Active Population By Major Occupations. (1972)
- | | |
|---|-------|
| - Professional, Technical & Related Workers | 7.6% |
| - Administrative & Managerial Workers | 0.4% |
| - Clerical & Related Workers | 5.9% |
| - Sales Workers | 8.5% |
| - Service Workers | 8.3% |
| - Agriculture, Animal Husbandry, Forestry Workers, Fishermen & Hunters | 40.2% |
| - Production & Related Workers, Transport Equipment Operators & Labourers | 23.1% |
| - Workers not Classifiable by occupation | 4.2% |
| - Persons seeking first job | 1.8% |

9. Ibid.p.262
10. Bourdieu, P. 'Cultural Reproduction & Social Reproduction,' 1973.
11. See Basil Bernstein, 'Aspects of the Relation between Education & Production', note (a) Class & the Acquisition of Educational Codes, pp 27-31.
12. Approx 20% are accepted. U.N.A. Memoria op.cit. pp 121-138.
13. U.N.A. Informe Institucional U.N.A., 1973, p 9.
14. Cáceres, B., op.cit.
15. Ibid., p 9.
16. Manual work is represented by : industrial worker, peasant and artisan.
17. Non manual work is represented by : ordinary ranks in the armed forces, public employees, farmers, merchants (comerciantes), industrial employees, Officers in the Armed forces, independent professionals, and other categories.
18. Cáceres, B., p 10.
19. Ibid, p 11.
20. Ibid, p 12.
21. Ibid, p 12.
22. Ibid, p 13.
23. Ibid, pp22-26.
24. U.N.A., Memoria op.cit., p 124.
25. Based on U.N.A. Memoria, 72-74, pp 124-132.
26. Based on the 'Admissions' Archives, U.N.A., 1975.
27. Based on interviews with Library officials - January, 1976.
28. It is estimated, on the basis of the number of library filing cards, that USAID alone supplies 40% of the 'donations'.
29. Ingeniero Charles Morin is Head of the department of Horticulture and author of several books on Fruit.

30. This sample was based on the 'randomn' selection of 2 filing card drawers from a total of 43.
31. Cited above.
32. Based on personal experience and conversations with students over the period August 1975 - February 1976.
33. Interview 11th September, 1975. Accordingly, the majority of the agronomy lecturers were capable of english conversation.
34. Based on the statistics Archives in the Department of Admissions, U.N.A., 1975.
35. Ibid.

PEDAGOGY

I use pedagogy, as does Bernstein, as a descriptive term for the teaching/learning process, which represents the form of transmission and acquisition. For an analysis of pedagogy we must ask, what are the principles of control over what is made available, how it is made available, when it is made available, and the social relationships involved in this process? It is the principles of control underlying pedagogic communication which Bernstein conceptualises as 'framing'. On the basis of an analysis of pedagogy in terms of 'framing', it is possible to begin to outline the social relationship between pedagogy and the mode of production. Since framing refers to the principles of control which reflect the principles of control in the wider society. In other words:-

'Framing regulates the form of socialisation into the category system, that is, the positional structure, and into the form of the power relationships which constitute, maintain and reproduce the structure.'^{*1}

This forms the analytical framework for the examination of the pedagogy in the field of agronomy at U.N.A. which, in empirical terms is based on conversations with many agronomy teachers, information held by the Department of Pedagogy, conversations with students, and first hand participation of over forty hours of 'class room' experience on agronomy courses.

Originally, I decided that I should observe an arbitrary and random selection of lectures from the "Agronomy Academic Programme" which I have already described in the introduction. (A schematic diagram can be found in the appendix). This consists of prerequisite courses, sequences of courses, and includes both specialised and general courses. I had assumed that it would be a simple matter to study a timetable and choose a variety of lectures from both general courses and specialised courses. However, in practice, it was not so simple for a number of reasons. First, many of the time-tabled courses had been closed. Second, many of the time-tabled courses had had their times or locations changed and this information was only disclosed to the relevant students by word of mouth. Third, even if the information was correct it was not uncommon to find the lecturer failed to appear, and without any prior warning, the agronomy students and I would eventually give up on the lecture. These factors made it difficult to observe as many lectures as I would ideally have liked, or to ensure that I observed a representative sample. However, there did appear to be a high degree of consistency in approach, style and pedagogic method, such that I became increasingly less concerned about observing a "range" of lectures. At this point I had observed prerequisite and general courses as well as specialised courses. Although lecturers varied in how friendly or cold they were towards the students, there was

a consistency in their assumption of "scientific authority". The only exception was in the rural sociology lectures which encouraged slightly more discussion and seemed particularly popular. As I was finding unexpected difficulty in getting to observe the specialist lectures, I decided to concentrate my available time on these. In practice, I could only attend lectures in between all my other research work and appointments, and time was severely limited. As I was particularly concerned with the experience of agronomy students I was determined to get to their specialist lectures, and lectures in these subjects (such as lettuce production, horticulture for parks, fruit production, legumes, tropical cultivation, and so on) account for 22 of the observed hours. Rural sociology lectures, which were a part of preliminary courses for a wide range of "programmes" account for a further 4 hours. The remaining 15 hours were made up of a wide range of general subjects such as soil science, entomology, and irrigation, which were common to many agricultural "programmes".

Framing characterises the nature of the relationship between the teacher and the student. We can say that the framing is strong if the knowledge taught is strongly controlled by the teacher, and weak if it is weakly controlled.

The categorisation between teacher and students is controlled by the framing. At U.N.A. the teacher formulates the knowledge content without reference to the students on the course.

Moreover the agronomist has total personal control over the way in which he or she teaches. As Ingeniero Mario Zapata stated:

'There is absolute control for each Ingeniero to decide his pedagogy.'^{*2}

Furthermore the formulation of knowledge content on the agronomy courses depends very largely on the individual agronomist. Ingeniero Mario Zapata stated that the course content was determined by the 'Academic Programme' which selects courses from those made available by the various Academic Departments, and, if it is felt necessary, requests that new courses be developed by the appropriate Academic Department.^{*3} In discussing this process with the Heads of the Academic Departments concerned with teaching courses for the Academic Programme of Agronomy it became clear that defining the content of the course actually involved 'taken-for-granted' classification of categories.^{*4} For example, the Academic Programme may feel the need for a course about 'tropical cultivation'. The appropriate Academic Department would then select from its personnel the agronomist most capable who would not only design the course and teach it (e.g. tobacco and coffee production) but also examine it. Consequently the individual's research programme bears a direct relationship to the nature of the course taught, and the 'taken-for-granted' categories are protected by the form of pedagogy. Here the pedagogy bears a relationship with the 'professional' role of the agronomist, whose status and apparent integrity allow for complete control over the pedagogy as an expression of his 'professional competence'.

In a structural sense, this framing of the 'taken-for-granted' categories (classification) acts as the means of control over their validity. In order that this control be maintained, the framing must be strong and itself legitimised by considering it not as a process of control, but as a product of the agronomist's 'professional integrity' which has been abstracted from the agronomist's function as a management authority in the process of production. In this way, to question the validity of the categories (C) would appear to question the professional integrity and competence of the agronomist, rather than question the relationship between the classification of the knowledge and the mode of production.

Bourdieu argues that power relations determine not only the nature of the symbolic violence involved in any pedagogic action (PA) but also the ability to legitimate such action.

'Power relations are the basis not only of PA but also of the misrecognition of the truth about PA, a misrecognition which amounts to recognition of the legitimacy of PA and, as such, is the condition for the exercise of PA.'⁵

In practice, the exercise of pedagogic action requires pedagogic authority and the related relative autonomy of, in this case, the University.

'PA necessarily implies, as a social condition of its exercise, pedagogic authority (PAu) and the relative autonomy of the agency commissioned to exercise it.'⁶

Within this frame of reference the agronomist as a teacher effectively legitimates whatever is taught on the sole grounds of teaching it. In other words, for Bourdieu, the authority of the teacher with respect to the taught itself:-

/.....

'tends to produce the legitimacy of what it transmits, by designating what it transmits - by the mere fact of transmitting it legitimately - as worthy of transmission, as opposed to what it does not transmit.'^{*7}

We can say that a strong division of labour exists between the teacher as a 'holder of knowledge' and the student as a 'learner of knowledge'. A number of agronomists seemed keen to emphasise that the teaching process was based not so much on 'handing down' knowledge but through the active involvement of the students in discussions.^{*8} There was, in practice, very little evidence of this conception of 'weaker framing'.

FORMAL EDUCATION:

a) Teaching Styles

There exists a common structure of teaching which is based on lectures, during which the student is ostensibly free to question the teacher and become involved in discussions. However, in practice, it is the teacher who usually speaks for well over ninety per cent of the time. It is very obviously the teacher who controls the situation, defining not only what counts as 'knowledge' and what doesn't, but also what counts as appropriate social behaviour in the 'classroom'. Questions are frequently directed at the students, but they are closed questions in that they assume a 'correct' answer which the student(s) is/are expected to supply. This form of 'closed' question acts as a means of social control, since it emphasises the difference between the teacher who holds 'legitimate knowledge' and the student who is there to learn it. It is not unusual for 'closed' questions to be directed, almost at regular intervals, to the 'class' as a whole which the majority of students answer almost like a chant. 'Correct' answers are usually greeted with 'claro!'

(right!) or 'si' (yes). 'Wrong' answers are rarely given, but are frequently greeted with humiliating anger, or else a patronising patience. Frequently asking a barrage of elemental questions which emphasise the underlying scientific principles, which are taken to be obvious and 'known', which further demonstrates the apparent 'ignorance' of the student and therefore the division between teacher and students.

Questions from the students are frequently invited by the teacher, but infrequently asked. On one occasion a student asked a question which was considered by the teacher to be outside the categorisation of his knowledge content on the particular course. The teacher responded by exclaiming that this was a lesson in fruit cultivation and said 'don't come with a teachers mentality here!' *9

The relationship between the teachers and students is one of unequal power, the teachers have the tendency to dominate the students explicitly, 'for their own good'.

'The students must take notes. We must make them take notes.' *10

'Now the students here play politics and we have to try to make them study.' *11

On a structural level, a teacher has power over the student since the teacher not only formulates the course content, but also assesses the student. The students' success or failure (which would lead to having to repeat the course) is entirely in the hands of the teacher. The process of assessment usually takes the form of written examinations. In the vast majority of cases the examination takes the form of 'closed' questions.

For example:-

'(i) What difference is there between 'glycolysis' and alcoholic fermentation?

(ii) In what stage of the respiration process is 'cytochrome c' involved?...? *12

Questions assuming 'correct' answers emphasise the authority of the teacher, the validity of his/her knowledge and necessitates rote learning of 'facts'. To illustrate this, the above examination example will be examined in more detail, showing the context of the pedagogy.

The examination in question was designed to test their knowledge of the lessons covered up to that point. The teacher arrived ten minutes late and began lecturing as he entered the room. In this case there were no greetings or explanations given as to why the teacher was late. After the examination questions had been dictated, the students began to write their answers in silence. The test was soon completed and the answers were collected. The first one was read and the student told publicly that it was 'bad'. After reading several more the teacher declared angrily that either the students had not understood, or else they had not studied. He decided to revise the course and taught directly from the text book as if to emphasise that it was there in black and white. The experience can be described as if he didn't want the 'knowledge' to be understood so much as the 'Truth' accepted. A student asked a question, and the teacher answered, exasperated, 'No, that's impossible!' Since the form of pedagogy relies in part on the structural position of the teacher (as assessor) and partly on his/her symbolic position (status and authority.) It is difficult to distinguish between the means of social control in operation in the classroom and the symbols of social control. In this context, symbols, by defining in an ongoing manner the distribution of power in the social relationships, can act as a means of social control. There are countless such symbols.

The teacher is always referred to as 'Ingeniero', the teacher refers to the students either anonymously, or else by surname, or frequently if the teacher wishes to isolate a student from the group, first asks him/her his/her name. The teachers are frequently late for lectures (usually 15 to 30 minutes), and often fail to appear at all. While this casual regard for punctuality must be clearly located in the social milieu of Peru and Latin America in general, nevertheless the fact that at no time did I hear any form of explanation given reflects the nature of the power structure in the social relationship between teacher and student. Similarly introductory social greetings are often conspicuously absent from the lessons.

(b) Theory and Practice

There is a general policy of dividing the subjects into 'theoretical' lessons and 'practical' lessons. Since the pedagogy is 'autonomously' controlled by the teacher involved, a degree of differentiation on different courses would be expected as to the nature of this division between theory and practice, and in emphasis on their relative importance. In fact, very little differentiation was found, which illustrates the homogeneity of the agronomists' perspectives with regard to the principles of teaching and scientific knowledge.*13 There is a keen emphasis on the principles of scientific knowledge throughout the courses.

Question: 'Is there a greater emphasis on practical work in the University since the 'Peruvian Revolution?'

Ing. Morin: 'The opposite. I try to teach the principles, then practical knowledge comes more quickly once you understand the principles.*14

In this respect, the 'practical' lessons are not so much about practice, but about the 'theoretical principles' of 'practice'. 'Here we teach theory. The practice is not really practical, it's lab. work.*15

An example of a 'practical' in irrigation demonstrates the emphasis on theoretical principles.^{*16} This lesson was on the need and manner of measuring the volume of water flowing down an irrigation channel. An instrument for measuring the velocity of water was produced (a new and rather stiff instrument 'from France') and its use explained. Since the flow of water is faster in the middle of the channel, and slower at the sides and bottom of the channel, measuring the volume of water is complex. It necessarily involves measuring the volume flowing at different points across the channel, and at different depths. This results in a graph of velocities at different points. Using calculus, a mathematical model of flow can be calculated, and finally produce a close estimate of the actual volume of water flow. This lesson took almost two hours. Less than 50 yards from the classroom was an actual irrigation channel in use for crops grown on the university 'model farm'. No attempt was made to utilise it for teaching purposes, despite the fact that it could have shortened the length of the class and demonstrated more clearly than a purely theoretical lecture, the use of the instrument concerned. After the lesson, I talked with a number of students asking them why they thought this 'practical' had been so abstracted from real practical work. One of these students, summing up for the others, said:-

'Those kind of practicals are for agricultural engineers. Our practicals are more about laboratory equipment.'^{*17}

In other words the higher status of the agronomist with respect to the agricultural engineer ('Ingeniero Agricola') is given the appearance of being based on the abstraction of knowledge from the practical reality, rather than being determined by the social role of the agronomist in the relations

of production.

Discussing the nature of the classification of knowledge (into subjects areas and into 'theory' and 'practice') and strong framing of knowledge with students, it rapidly became clear that very little of the classification and framing was questioned. Indeed it was taken-for-granted, so that a 'good teacher' was one who 'knows his subject' and, to a lesser degree, was able to communicate his 'knowledge' clearly. This implicit acceptance of the validity of the 'educational code' is reflected by the 'Teaching Questionnaire'.

(c) The Teaching Questionnaire

*18

Each teacher is 'obliged' to hand out a questionnaire to the students on his/her course, which is produced by the Directorate of Teaching. The Directorate of Teaching tabulate the results of the Questionnaires. Every few years there is a committee of the Heads of the Academic Programmes who, on the basis of these results assess the teacher, and which has some bearing on promotion. This represents the only check on teaching competence and it is theoretically possible to dismiss a teacher on the basis of the questionnaire results. However, to Ingeniero Mario Zapata's knowledge this has not actually ever happened. The formulation of the questionnaire, however, is interesting in itself. The following translation is based on the questionnaires for the academic year 1974/75; the same questionnaire was in use in 1976.

The questionnaire is based on a system of closed questions.* 19

The first five questions are concerned with teaching methodology and the student must tick one of the following answers for each question:-

Excellent, very good, good, average, poor, inadequate, very poor.

a) About the teacher

- 1) The teacher's control over the course.
- 2) The methods of teaching have been?
- 3) Punctuality and efficiency.
- 4) The maintenance of discipline in the classes was...?
- 5) By comparison with other teachers that you have known at U.N.A., how would you judge the teacher of this course?
- 6) In his relationships with the students the teacher has been - very courteous, cordial, variable, indifferent, hostile.

b) About the course

- 1) The relation of the course to the pre-requisites: had -
adequate basis
inadequate basis
- 2) The course programme in relation to parallel courses:
no duplication
much duplication
- 3) The course practical classes in relation to and in synchronization with the theory has been: good, average, poor
- 4) The level and utility of the course for the profession has been: appropriate, very theoretical, very superficial
- 5) The course programme was completed?; yes, no, no opinion because did not know course programme
- 6) The value of the course; excellent, very good, good, average, poor
- 7) The course has been shared with another teacher: yes, no.'

The results of the questionnaire for each course were made available to me by the Directorate of Personnel. No set of results could be found that were likely to be damaging to the

career of the teacher. In fact, for the first five questions, it was rare to find any replies below "good". In general, the results supported the teachers and any differentiation was extremely slight. Consequently these results can be considered to be a measure of the high esteem in which the students held the teaching and the teachers at the U.N.A.

We can also consider the messages that the questionnaire was implicitly communicating to the students as they were filling in the form and recognise the nature of the implied relationships and underlying principles. For example, we can recognise the implicit acceptance of the authority of the teacher and strong framing in questions (a,4) and (b,5). In (a,4) the "maintenance of discipline" can range from "excellent" to "very poor". So that the teacher authority was taken-for-granted as desirable. In (b,5) the questionnaire included the reply- "no opinion because did not know course programme". I examined the results for 50 courses (there were approx. 350 undergraduate courses), and found that between 8 to 43% of the students taught claimed to not know whether or not the course had been completed. Including this choice of replies in the questionnaire was a tacit recognition that the intended course content was not always divulged by the teachers except in the process of teaching. We already know that this was taking place, in most cases, in the context of specific courses which were organised, taught. and examined by a single

teacher. In itself, the questionnaire communicates very little about the principles of control regulating the teaching-learning process. However, seen in its wider context, it reflects, and to some degree supports the teachers' control over the selection, pacing, and organisation of the knowledge content, as well as the relationships between the teachers and the students characterised by the accepted authority of the teachers.

The strong classification between subjects or courses is to some degree reflected and supported by question (b,2) concerned with "duplication" between "parallel courses". This takes-for-granted that courses should have clear and strong boundaries, and that crossing these boundaries would be a failing on the part of the teacher. In the context of the modular system at the U.N.A., where the isolation of courses was not merely a separation of knowledge contents, but also structured by the relative isolation of the staff from each other, this expression of the strong classification takes on greater significance in lending further weight or value to an existing, coherent system of classifications, (which, in turn, must also be considered in the wider social context). So that, although the implicit messages transmitted by the questionnaire are in themselves weak, they nevertheless are consistent with, and reflect and support the existing pedagogic system organised around the principles of strong classification and framing.

d) Classroom Structure

The taken-for-granted principles of the educational code are expressed in diverse ways, including not only educational planning, course organisation and teaching, but also in the architecture of the University. This is clearly illustrated with respect to the 'temporary classrooms'.

The earthquake in 1974 destroyed the vast majority of the newly built classrooms and until they could be repaired or rebuilt, temporary alternatives needed to be found quickly.

Building plans and quotes were invited and finally plans submitted by Ingeniero Fijimori, principle professor in the Academic Department of Mathematics at U.N.A. were accepted, as they planned 'better and cheaper' classrooms and could be erected in three months. The design of the classrooms, although inexpensive (S/ 3,800,000 for 24 classrooms and 4 conveniences) was sophisticated. However, while considerable thought went into problems of heating, wind turbulence and other construction problems, the nature of use was taken for granted.

Ingeniero Alberto Fujimori said:-

'I think they are good classrooms. They don't get too hot in hot weather, nor too cold in cold weather, and they will stand a long time.'^{*20}

Although he works in the department of Mathematics he is a trained agronomist and designed the classrooms with his wife, a civil engineer. By designing rectangular classrooms with a movable platform at one end in front of a blackboard, the design assumes and implies that the lessons will focus on the teacher who lectures, rather than on less didactic pedagogy (weak framing) involving discussion. To pose an alternative,

the extremely cheap and stable geodesic structures assume and imply weaker framing, since the circular base of construction does not impose a structural point of focus, but emphasises the equal distribution of 'knowledge flow', that is dialogue and discussion. In any event, the choice of construction for the temporary classrooms takes-for-granted the principles of strong classification and framing.

INFORMAL EDUCATION:

Up to this point I have considered only the pedagogical practices involved at the university itself. While this pedagogy is of fundamental importance when considering the 'framing' of knowledge; that is the principles of control that actually underly the pedagogic communication of knowledge, this teacher-student pedagogy represents only one aspect of the form of transmission and acquisition. Although this aspect is of prime importance another aspect of the process is also of some importance in both illucidating the pedagogical role of agronomists in the wider social context and acting as a model of behaviour for the student agronomists. That is the nature of the social relationships that agronomists produce while engaged on extension work with the peasantry not only reflects individual attitudes and the social status of their role as 'professional scientists', but also expresses the strength of framing that underpin these professional relationships and demonstrate the inherent principles of control.

In so far as any pedagogic communication transmits not only the knowledge content, but also the principles of control that produce the nature of the social relationships involved in the pedagogic process, then in the University the students are in effect informed that their 'inferior' social status

reflected in the uneven relationship with the teaching agronomists is a result of the uneven distribution of knowledge in the didactic relationship. This message, of course, is far from being necessarily 'true', but represents an element in the means of control which in turn reflect the principles of control (framing). In the wider social context of the 'extension project' any generalisation of uneven relationships between the agronomists and the peasants would represent a generalisation of the principles of social control and would presumably not only communicate to the peasantry, but would also inform the students of their expected role in society, while supplying them with the socially accepted rationale of scientific expertise.

Bourdieu states that in any given social formation 'pedagogic activity' tends to produce 'ethnocentrism' since it leads those who undergo it to 'misrecognise' the imposed cultural arbitrary as objective truth. This effect, however, is not limited to the dominant group or class. Bourdieu states that 'Pedagogic Action:-

'.....tends to reproduce, both in the dominant and in the dominated classes, misrecognition of the truth of the legitimate culture as the dominant cultural arbitrary, whose reproduction contributes towards reproducing the power relations.'*21

Clearly pedagogic action defined as symbolic violence is a form of cultural domination. Bourdieu states that since pedagogic action tends to impose legitimacy of the dominant cultural arbitrary on the dominated groups or classes :-

'.....it tends at the same time to impose on them, by inculcation or exclusion, recognition of the illegitimacy of their own cultural arbitrary.'*22

In practice, 'extension projects', or 'technical assistance' cover a wide variety of activities. The main beneficiaries

of both the practical and educational / conference activities were analysed and even though the analysis was limited to serve that purpose alone, the diversity of action and personnel involved emerged in that context. In this chapter dealing with the implicit principles of pedagogic communication, there remains the problem of generalising principles from a wealth of individual instances dealing with a variety of social groups. Furthermore the personal involvement of agronomists in each activity results from various personal and professional commitments.

Given the fact that many extension projects (and particularly those concerned with peasant groups, rather than farmers or management of the larger cooperative enterprises in their various forms) tend to involve lengthy field trips, a systematic study was neither undertaken, nor intended. However, the experience of extension projects was gained and can therefore provide individual examples from different situations of particular pedagogical practices of agronomists and the responses to them. Although no claim can be made that these experiences are representative of all extension projects, there is a surprising consistency about the relationships observed both by myself and those observed by Conlin as reported in 'Participation versus Expertise' in 'Class and Ethnicity in Peru'.^{1*23}

To illustrate the consistency of underlying principle, I will examine three individual cases and then return to examine their theoretical properties. Each of these involved different agronomists and different crops in different geographical and climatic localities.

(a) Apple Production

The first example involves an agronomist from U.N.A. engaged on an extension project close to the university. Ing. Medina is evidently enthusiastic about his work. He stressed to me how important it was that the same person (agronomist) is involved in 'experimental social projects, and teaching ' and in this way 'unify theory and practice'.

Ing. Medina had made personal contact with a number of small peasant family groups who worked smallholdings between Lima and the sierra. Although these smallholdings were within easy travelling distance from each other by car (depending, of course, on the road maintenance) they represented quite different climatic conditions, such as considerable differences in altitude, degree of slope, amount of direct sunshine and rain (depending on position on mountain and valley), moisture (depending on drainage and mists), temperatures (depending on altitude, position) and so on. These diverse conditions within such close proximity of the university provide Ing. Medina with a living laboratory which he uses in such extension projects to further his own research into the practice of growing apples. The peasant families in this case provide the labour needed, and the land. Ing. Medina provides the appropriate saplings at cost price to the peasant family, the technical advice necessary to maintain the health and productivity of the apple trees, and any technical equipment necessary (on loan) for the research project, which the peasant families are taught to use. Finally, the peasant families can hope to gain greater knowledge and expertise in apple production and probably more importantly, a more lucrative crop. Ing. Medina obtains very cheap research. In this case it concerned

the viability, in various weather conditions, of artificially produced miniature trees. This idea was based on successful experiments in England where genetically produced miniature apple trees were shown to be more profitable, because, although each tree produced less fruit than its larger counterpart, many more trees could be grown per acre. Furthermore, because the trees were smaller and shorter, they could be mechanically harvested with greater ease. Ing. Medina considered that the basic ideas, even without mechanical harvesting could be applied profitably to coastal Peru. Rather than have to develop the dwarf variety of apple tree, or even more expensively have to import the variety from England, Ing. Medina innovated and proposed artificially to stunt the growth of normal apple trees by digging down about half a metre to the depth of the soil, plant the trees at this level, inverting the extracted soil so that the humus content that had been on the surface would nourish the roots, while the rocky bottom would limit their growth and in this way the size of the tree above the surface would be similarly limited. Ing. Medina argued that this would result in more apples per acre, and easier and quicker harvesting by hand.

In one day we visited four separate smallholdings who were all at different stages in the experiment. Ing. Medina was evidently concerned about the plight of the smallholding peasant in general and stated that the main problem facing both agronomists and the country at large was the problem of increasing production, and maintained that strikes and 'self advancement' got in the way.

During the field trip Ing. Medina pointed out several reasons for his particular lack of faith in the universal validity of

text books in the face of Peruvian reality. He indicated that on one site an apple orchard ought not to be possible because of the high rainfall. However this site was at a high altitude, almost at the crest of a ridge between two valleys, and the steep slope meant that much of the rain ran down the gradient before it could penetrate the soil sufficiently to become a danger to the crop. This, he said, was an example of the text books failing to take account of all the pertinent conditions in Peru. At another site he showed me an apple tree in fruit, with one of its thicker branches pruned back. Ing. Medina said that 'according to the book', apples could only be produced where leaves were growing higher up towards the end of the same branch and which could feed the fruit lower down that branch. However, almost from the squared off rim of this particular pruned branch were growing no less than three apples that were virtually ripe enough for harvesting, and without a single leaf on the branch. Ing. Medina said that this was a case of the text books 'getting it wrong'.

At each of the sites there was always one man in particular with whom Ing. Medina carried out all of the important discussions. On one site we had to wait for half an hour until the particular individual returned from working elsewhere. At the first site Ing. Medina and I arrived with the saplings and three 'campesinos' were waiting to plant them under Ing. Medina's direction. Before doing so they all sat down and chewed large handfuls of coca leaves. Ing. Medina's response to the use of coca by peasants demonstrates his patronising attitude. He considered the use as a parent may consider the use of a dummy by a growing toddler. Possibly unfortunate, but useful to achieve the necessary results of hard work, particularly in rarified atmospheres and cold conditions. He seemed content to humour

their 'indulgence', rather than consider it to reflect their harsh lifestyle and exploitation.

The 'Ingeniero' explained how the trees were to be planted in great detail, including an explanation of how the 'goodness' could be recognised in the soil by its darker colour. All such communication with the peasants was done in an extremely slow, precise and louder voice than is usual, almost as if they were all slightly deaf children. This patronising practice was the hallmark of all such communication at all the sites. Here, as at all sites, the 'campesinos' were extremely respectful of the 'Ingeniero'. This generally took the form of apparent intense concentration while the Ingeniero spoke, apparently accepting everything he said without asking any questions, and at other times lowering their gaze to avoid unnecessary eye contact. However, this evident deference took slightly different forms with different individuals and occasionally verged on characature. A revealing example of this was on a site mid way through the experiment. Here the 'campesino' in question was particularly talkative, and appeared to be fawning in the extreme. After some general conversation about how the apples were developing and during which the 'campesino' managed to be highly flattering to the 'Ingeniero' both personally and professionally, Medina brought the 'discussion' around to the main point of his concern. Ing. Medina had supplied the 'campesino' with a maximum/minimum thermometer in order for them to record the daily maximum and minimum temperatures. Unfortunately for Ing. Medina's experiment, this had failed to be done. The 'campesino' suggested that the thermometer may be broken. Ing. Medina said that it did not appear to be broken to him but replaced it anyway with another one he had in his car, and which he

assured the 'campensino' was in working order. The 'campensino' said that when he came back to look at it, the temperatures had not changed. In reply to this, the 'Ingeniero' asked the 'campensino' when the coldest and hottest times of the day were. He then very slowly and carefully explained the function of the thermometer several times and emphasised the need to record the two temperatures on a daily basis. During this the 'campensino', with his hat in his hand, and a broad smile on his face, eulogized the 'Ingeniero' and the wonders of education, as compared with the general ignorance and worthlessness of the rural worker. All of which the 'Ingeniero' did his best to ignore. After this and presumably because he had not actually listened to what the 'Ingeniero' had been saying either, he said how difficult it was to return to the thermometer at these particular times of the day. Consequently the 'Ingeniero' went through the entire explanation again, with particular reference to why this was unnecessary, apart from one regular daily visit. The 'campensino' apologised profusely and without once losing his smile, said how he would make every effort to ensure that it happened from now on. The 'Ingeniero' then turned to me, and while the 'campensino' stood there said (still in Spanish) that they are 'very willing' but that 'they can only change their practices slowly.'

In contrast to this explanation, given by the 'Ingeniero' was my impression that the problem that he was encountering here was not 'slowness', on the 'campensino's' part, but rather an astute recognition by the 'campensino' of a clash of interest between himself and the 'Ingeniero', which he disguised by a mixture of feigned stupidity and calculated flattery. After all, it effectively made no direct difference to the crop whether he

recorded the temperatures or not. The only purpose served by doing so, were the purposes of the 'Ingeniero' and his research project. Although this was the only evidence of any unwillingness to cooperate fully with Ing. Medina on this project it serves to illustrate two aspects of the relationship between the 'campesinos' and the 'Ingeniero'. The first aspect is that it lacks a degree of human equality, and is thus not a relationship of trust. The individual responses of the 'campesinos' although more or less uniformly deferential on the surface, are informed by mistrust. This takes the form of limiting inter-personal contact during conversations at one extreme, and with flattery and fawning behaviour at the other. While 'campesinos' appear to accept the 'Ingeniero's' advice and judgements, their own concept of their self interest also has a role to play in shaping their action. A confrontation over this difference of interests is avoided by the 'campesinos'. These inter-personal tactics have developed within the context of uneven personal power, in that at no point in the relationship is the 'campesino's' knowledge, experience or opinion considered relevant by the 'Ingeniero'. All that is considered relevant is the 'campesino's' work and memory.

This brings us to the second aspect of the relationship. Although the relationships are formed to serve an 'extension project' they do not have the character of mutual help - even though both parties are expecting to gain from the social contract. The relationship is virtually indistinguishable in character from those typical of employer - employee. The flow of 'knowledge', 'design' and decision-making is all (on the surface at least) from the 'Ingeniero' to the 'campesino', who is expected to act as a tool of the 'Ingeniero' by providing nothing but his labour. It is this unevenness which provides the conditions for deviousness and dishonesty in the relationship.

Trying to further their interests under the guise of stupidity, is not an uncommon ploy by peasants in Peru. Ing. Leode Ponce stated in an interview, that peasants coming to sell their alpaca wool did not clean it properly. However this proved not to be a case of re-education as first thought. The peasants included sticks and so on to increase the weight. It could therefore only be overcome by having a sliding price against quality. It/^{is} therefore not surprising in itself to come across this strategy.

Ing. Medina was evidently concerned about the 'campesinos', well intentioned, unusual in his 'non-bookishness', and yet the quality of his relationship with them can be characterised by paternal domination through 'educational capital', deviousness in response to the didacticism, or in short 'strong framing' leading to mistrust. A relationship which closely parallels those produced by capital and labour, or landlord and peasant.

(b) Cooperative 'San Martin' : Wheat Production

The second example is taken from Sean Conlin's paper referred to earlier - 'Participation versus Expertise'. Conlin's paper is mainly concerned with an examination of 'participation' by peasantry in Peru in the new cooperatives after the Agrarian Reform. He concludes his paper by arguing that 'domination' of the peasants has merely changed its form -

'Domination has changed its face It is the subjection of the peasant to the bureaucratic machine accomplished under the guise of participation. The aims to which the machine is directed are progress and economic development.'^{*24}

Of relevance in this context is his assertion that to achieve these aims involves not only 'scientific expertise' but also the exercise of 'control' by the 'experts'.

'These latter (aims) require the use of science which necessitates that control be exercised by the experts, i.e. those who have been taught to work on scientifically rational principles.'^{*25}

It is of little consequence here whether Conlin's apparent contention that the use of science really necessitates that control falls into the hands of the scientific experts or not. What is of importance and direct relevance to this examination of pedagogy is that Conlin's particular conclusions are drawn from one specific observation of an agronomist working in an 'advisory' capacity with a group of peasants in the 'sierra', near Cuzco.

The agronomist concerned was working for the Ministry of Agriculture and had come to the Cooperative 'San Martin' to advise the cooperative members on the agricultural development of the land, most of which was formerly the 'hacienda Huayno Grande'.

The agronomist's advice seems to have been that the cooperative ought to turn over all of their land to wheat production. The observation centered around a number of co-op members' meetings where the agronomist (along with the 'technician' members of the co-op) put his advice and the idea was 'discussed'. No scientific support for the agronomist's advice was reported by Conlin. In fact the agronomist is reported to have argued that if all the land is used for the same purpose, then everyone would be 'like one man' or in 'harmony'. Presumably, the agronomist based his advice on what he considered to be sound principles. While it is not

possible to know what these were, 'extensive' wheat farming is standard practice in both the U.S.A. and Russia. Whether these served as models or not, the reason given to the co-op members is extremely unlikely to be his real reason, and indicates a patronising attitude towards them. We can conjecture that the agronomist believed that the peasants would be unable to understand or relate to his reasons, or that this given reason would be more likely to persuade them, perhaps in their 'own interests', to accept his advice. Whatever the reasons were, the implications are the same. That is, that the agronomist controlled the nature of the communication between himself and the peasants so as to control the outcome of their meeting. This is not a relationship of mutual respect and trust, but of manipulation, and unequal authority and status.

The heirarchical nature of the relationships involved in this example was noted by Conlin, where the peasants, from their position at the bottom of the social structure were able to question neither the technicians nor the agronomist critically. Whereas the technicians appeared to feel free to reprimand, the peasants on the one hand, and could also question the agronomist (but only in the areas of their own relative expertise) on the other. The agronomist, from his relatively lofty social position, was nearly unassailable, and often used the technicians to mediate his communication. Conlin sums up these social relationships in this way:-

'Because he has status he had expertise. Because he has expertise he deserves status. The two ideas interact in perfect circularly to maintain the status quo.'^{*26}

Probably of most significance to the question of pedagogy is that what serves to control the nature of the relationships in this encounter, is control over the knowledge being communicated. What counts as knowledge is determined by one's 'educational capital', reflected in the social status invested in the educated. On this basis knowledge can be communicated, withheld, or distorted. This is organised on the basis of the underlying principles of control. That is the 'framing' of the knowledge produces the form of the social relationships in the pedagogical process. The fact that information is carefully controlled, distorted and withheld, rather than freely disseminated by all involved and discussed, indicates the strength of 'framing' and which represents the form of social control in this example.

The suggestion to transform the co-op into an 'extensive' wheat farm was, despite the lack of overt criticism by the peasants, evidently not very popular among the working co-op members. This was presumably because it would prevent the peasants from continuing to produce their own food and market garden produce in the interest of increasing wheat production and co-op profits. Traditionally this is not favoured by many peasants who tend to prefer to trust in their own industry rather than the vagaries of agricultural market forces. In any case, little opposition was put up by the peasants, who tended to couch criticisms in unsupported, tentative, alternative suggestions. For example, in opposition to the 'extensive' wheat idea, a suggestion was made that in one particular field perhaps potatoes could be grown again rather than wheat. Conlin reports:-

'One of the technicians retorted that they had to forget their old fashioned ways of planting potatoes year after year in the same field until there was hardly any yield.'^{*27}

Whether or not this was indeed a common practice of these peasants, and whether or not this suggestion was made because it was based on the relatively safe area of personal experience, the fact remains that this, as a method, is precisely what the agronomist himself was suggesting with respect to wheat. The fact that this supposed method is considered to be 'old-fashioned' when it is suggested by peasants, and scientifically sound when suggested by the agronomist, represents the social effect in these inter-personal relationships of the 'strong framing'. (Considered by Freire to be the 'Pedagogy of Oppression.'^{*28})

(c) Co-operative in Satipo : Coffee Rust

The third example is an interesting variation in the form of relationships that we have seen so far. This project concerned a coffee growing co-operative - CO-OPERATIVA AGRARIA DE SERVICIOS SATIPO LTDA no. 183 - situated around the small town of Satipo on the edge of the Amazon basin. Known as the 'high jungle' (Selva Alto) this area provides a tropical rain forest climate mediated by the eastern slopes of the Andes. The project was organised by Ing. Aliaga from U.N.A. The 'Ingeniero' himself took no direct part in the intended work in Satipo, but arranged for three fully briefed students to go and carry out the intended survey. It was also agreed that David Bayer, a sociologist working at the university, and myself should accompany the students. The purpose of the project was to conduct a detailed survey of coffee plantations in order to assess whether a virulent form of disease, coffee rust (roya amarilla), reported to be active east of Peru, had crossed into Peru itself.

David Bayer and I set out on Tuesday, 4th November, 1975. It took us two days crossing the Andes by several means of transport - train, public bus, and in the back of truck along with several other more local passengers. We arrived on Thursday, 5th November. Although the students had set out before us, they did not arrive until the following day. On the Friday, the co-op staged an official welcome for us in the Satipo town hall. The co-op itself seemed to be highly organised, established in 1965. The co-op had promoted a policy of diversification and by this time had developed a dairy, 'industrialised' sweet corn production, as well as animal and poultry foodstuffs. The co-op imported its own fertilizer and ran its own 'supermarket'. The President of the co-op was Ing. Hugo Juarez, an agronomist local to Satipo who was unusual in that he had been trained at U.N.A. When the co-op began, it had seventy-five members and a total capital of about £115. Ing. Juarez reported in the magazine 'Kafecito' produced by the 'Central De Cooperativas Agrarias Cafe - Peru Ltda. No. 364,' in March 1975, that the co-op had grown to include 2,032 members and its capital exceeded £200,000.

We were promised that transport to the plantations would be made available early on the Saturday morning. No transport, however, materialised. After waiting for over an hour we were informed that the transport was unavailable after all and we were taken instead to the agricultural fair which had started that morning. We were told that transport would now be unavailable until the following Monday.

On the Monday we again waited, but no transport was provided. We were again promised transport the following morning. This pattern of events was repeated every day. It began to appear that transport was being withheld for reasons best known to the co-op administration. The problem was discussed with them repeatedly, but it was not possible to draw these supposed reasons from them. They continued to maintain that they had every intention of supplying transport despite the fact that for unspecified reasons it continually failed to arrive as arranged.

It appears that the project had been organised and agreed upon by Ing. Aliaga of the U.N.A., the Ministry of Agriculture, and the Co-op itself. However, it transpired that no date had been fixed or agreed upon. Consequently, the students arrived without any real warning. This in itself, although possibly a little tactless, was not the real problem. The real problem seems to have been that the students had arrived unannounced right at the start of the annual agricultural fair which that year happened to mark the tenth anniversary of the co-op, and so was considered to be of particular importance; and in fact developed into a small rural fiesta. This certainly meant that transport was generally more busy than usual. With little concrete evidence, other than general attitudes and the series of events, it would seem that the situation was a little more complicated than this.

The co-op administration were certainly not pleased that 'the boys' had arrived at that time despite the 'official welcome'. Although they said that 'it had happened' and we 'had to make the best of it' they responded with remarkable calmness to the non-arrival of their promised transport as if it merely served to prove their point. When Ing. Juarez was asked about this, he replied:-

'Aliaga told us nothing, he didn't phone,
the boys just arrived.'

When asked why, if they knew it was going to be difficult to provide the necessary transport, they hadn't cancelled the project, Ing. Juarez replied that he couldn't.

Initially, the students' attitude was that it was up to the co-op to provide them with transport and if they failed to do so, they themselves couldn't be held responsible for the project not starting. The students were being housed for the length of the project at Satipo's one hotel at the expense of the co-op, and so had little to lose. However, as the days went by, they began to worry that the project wouldn't start at all. So far the only contact with the co-op had been with the members of its administration council, primarily Ing. Juarez. This project is unusual then in that the relative status of those involved is the reverse of what is more normally the case between Ingeniero and peasant.

During his initial briefing, Ing. Aliaga had instructed the students to behave like 'Ingenieros'. However, their most significant relationship with a member of the co-op was with a real 'Ingeniero', who consistently referred to them as 'the boys' both in and out of their presence. This emphasised the difference in their relative status and probably increased the students' unwillingness to consider the chain of events critically.

By the Thursday when transport failed to arrive yet again, the students finally decided to deliver an ultimatum. They informed the President of the co-op (Ing. Juarez) that if there was no available transport they would return to Lima, as they were becoming short of time. In response to this they were promised transport for that afternoon. We waited again without any transport arriving. It was at this point that I

returned to the university (U.N.A). The students decided to wait another day to discover that yet another promise of transport for the following morning failed to produce any results, and they began to return to Lima on that Friday.

In this example the relationships were more complex than normal. The student agronomists came to the co-op with a unique expertise - that is the ability to recognize a new specific form of disease. Were an 'Ingeniero Agronomo' to work with peasants in this role the resultant relationships would be likely to follow a familiar pattern. In this context, however, this unique knowledge in itself can be seen to be insufficient to raise their social status above that of the resident agronomist. In fact it is the agronomist who controls the situation by his control (or otherwise) of the transport, and perhaps more important his control over the information concerning the situation.

It seems clear that it is highly unlikely that the co-op council could have been actively in support of the project (as they in fact made claim to be) and able to daily promise transport without being able to supply it. It remains unclear how much they may have been withholding the transport in response to what they considered to be an insulting lack of consultation, or how much their promises reflected the need to be seen as co-operating with the project and so with the Ministry of Agriculture, when they knew that the transport would remain unavailable. In either case, while it is the 'educational capital' which elevates Ing. Juarez above the students in both their eyes in their inter-personal relationships, it is his position as co-op President that gives him the information and authority to control the social situation. It is from this vantage point that he is able to withhold both vehicles and information, or at least give misleading

information. As in the other examples, it is the form of the relationships themselves which express the underlying principles of control. Here we see further evidence of strong 'framing' of knowledge - the information necessary to undertake the project or abandon it - in this curiously inverted relationship between the project workers and its intended beneficiaries. In other words, while the agronomists' educational standing provide him with the social status and personal credibility, it is his management role which gives him access to the social power to control both the social relationships and the social consequences of the social exchange .

A feature of these events was the extreme difficulty in discovering, on a day to day basis, what was actually going on, and why. Information given in reply to direct questions was frequently extremely non-committal. On the surface everyone was usually friendly, or at least courteous. Certainly Aliaga and Juarez claimed to be friends since studying at U.N.A. together. This is likely to have been the case, particularly if the students' claim was true, that Ing. Aliaga himself owned coffee plantations in the vicinity (which they also claimed provided Ing. Aliaga with a further motive for organising this particular project). On return to the university I questioned Ing. Aliaga on the failure of the project. He appeared to be angry about it, and, curiously, blamed the students for being 'a bad lot' and 'lazy'. This was despite my evidence to the contrary, and is an interesting case of the two agronomists avoiding any antagonism at the expense here of the rather unfortunate students.

In all three of these examples, the relationships formed by the agronomists do have several things in common despite their

personal differences. The relationships represent, in each case, a taken for granted social hierarchy, composed of various social strata each with its relative status, or lack of it. In the first example, this took the form of patronising the peasants, in the other two, of manipulating events or discussions on the basis of social legitimacy. In each case, the relationships are a product of uneven authority or social power, so that the relationships of Landlord and Peasant, Employer and Employee, and Management and Worker are reproduced.

They may be reproduced almost by tacit agreement as mutually expected, and perhaps therefore understandable, as in the first example. Or they may be reproduced by the way in which information or knowledge is controlled by the agronomist. In either case, these examples indicate that the underlying principles of control are at least to this extent generalised into the professional conduct of agronomists and indicate further that the power exerted in these relationships is represented by their educational credibility, but produced through their 'managerial role' in Peruvian society.

Conclusions

Pedagogy refers to both the principles of control (framing) and the content of the process of teaching/learning. I have argued that through pedagogical practice the student or 'participant' tacitly acquires the underlying principles of control and hence social positioning (which I discussed in the previous chapter).

The form of pedagogical practice depends on the classification between specific social groups. Firstly between the agronomist (as 'expert') and rural workers (as 'non-experts'). Second, between agronomist (as 'expert') and students (as 'non-experts'). Consequently, the student or 'participant' tacitly acquires not only the underlying principles of control (framing) but also the underlying principles of power (classification). I have defined classification and framing collectively in the wider social context as the 'object code'. Within a purely educational context, they can be defined as the 'educational code'.

I have argued that the 'educational code' is not a random phenomenon since, in educational terms, it is broadly dependent on classification which in turn is dependent on the social distribution of power. Therefore pedagogy plays a role in maintaining, symbolising, and consequently reproducing the power structure through the micro-level of the social relationships involved in any educational process.

As Bernstein argues :-

'The pedagogic practice makes the power-relations which constitute, maintain and reproduce the relationships between categories substantive at the level of everyday interactions between teachers and pupils.'^{*29}

Therefore, what I have sought to suggest through my extended examples of pedagogical practices in formal (classroom) educational situations and informal (extension work) educational situations is that an analysis of pedagogy is fundamentally concerned with both 'framing' and the relationship between 'framing' and 'classification'.

This relationship represents the socialisation process of the agronomy student into the 'educational code' and social position, and further, into the implicit values that reflect the distribution of power and the resulting relationships in society. In terms of social reproduction, the operation of this pedagogy as a means of control is based on abstracting the teacher - learner relationship from its social basis. In other words the pedagogic relationship is represented as stemming from the agronomists certified grasp of 'objective knowledge' and the students' lack of it, whereas the relationship clearly reflects the role of the agronomist as an expert in managerial positions exerting authority over the less educated rural worker. These processes will be placed in context in the following chapter where I begin to examine the underlying nature of the agronomy knowledge content taught at the U.N.A.

However it is also important to consider pedagogic practice in general in the university. So far I have identified, as my main research interest, the agronomy department as being hierarchical, highly specialised, and closely regulating its students. However, it is also the case, as I implied earlier when giving an account of how I came to be observing particular classes, that classes are by no means restricted to particular departments. In other words, not only would students from other departments (that is other courses) attend classes that are predominantly attended by agronomy students, but many of the classes I attended were predominantly attended by students from other departments.

Although I have made it clear that I was not able to observe as wide a cross-section of classes and courses as I would have liked, this does, nevertheless, appear to indicate that these are distinguishing features of the university teaching and organisation rather than merely a feature of the agronomy department. If this is the case, it would be consistent with the theoretical argument that classification and framing reflect, symbolise, and transmit the principles of social power and control. Furthermore, it would indicate that the possibilities for change are more restricted and would involve greater social inertia (or resilience) than if this was merely a unique characteristic of agronomy education in its social context.

- 1) Basil Bernstein, 'Aspects of the relations between Education and the Mode of Production', mimeograph, Inst. Of Ed., 1977 p 7
- 2) Stated during personal interview, 10th January, 1976
- 3) Ibid interview, 10th January, 1976. Academic Programmes and Departments are discussed in the Introduction
- 4) Ibid, interview, 10th January, 1976. When asked why the Agronomy department was comprised of the four departments of horticulture, plant health, soils, and phytology the Head of Department replied that 'these departments' work is agronomy'.
- 5) Bourdieu, P. and Passeron, J-C., 'Reproduction In Education, Society and Culture', Sage, 1977, p.15.
- 6) Ibid., pp. 11, 12.
- 7) Ibid., p.22.
- 8) e.g. Ing. Charles Morin, 23rd September, 1975
- 9) Ing. Charles Morin, 10.00 a.m., 26th September, 1975.
- 10) Ing. Charles Morin, 23rd September, 1975.
- 11) Ingeniero Sven Villagarcia, 24th September, 1975, Head of Soils and Geology.
- 12) Examination presented by Ingeniero Solomon Helfgolt, 14th January, 1976, 11.15 a.m.
- 13) This point will be taken up later in the discussion of the process of social control.
- 14) Interview with Ing. Charles Morin, 23rd September, 1975.
- 15) Ingeniero Sven Villagarcia, 24th September, 1975.
- 16) 'Practical' lesson given by Ing. Lorenzo Chang, 30th

- 18) Ingeniero Mario Zapata. Head of the Agronomy Academic Programme, Head of the Department of Agronomy, and Head of the Department of Vegetable Health ('Sanidad Vegetal').
January 15th, 1976.
- 19) Questionnaire - Directorate of Teaching and Personnel, 1975.
- a) Sobre el Professor
- 1) Dominio del professor sobre el curso; excelente, muy bueno, bueno, regular, deficiente, sin respuesta, promedio ponder.
 - 2) Los metodos de enseñanza han sido; excelente,(etc.,)
 - 3) Puntualidad y cumplimiento; excelente,(etc.,)
 - 4) El mantenimiento de la disciplina en classes fue; excelente,(etc.,)
 - 5) En relación con otros profesores que Usted ha tenido en la U.N.A., como juzgaría al profesor de este curso; excelente,(etc.,)
 - 6) En su relacion con los estudiantes el profesor ha sido; muy comedido, cordial, variable, indiferente. hostil, sin respuesta, promedio ponder.
- b) Sobre el curso
- 1) En la programación del curso en relación con los pre-requisitos; hubo: adecuado base, falta base.
 - 2) En la programación del curso en relación con los cursos colaterales; no hubo duplicidad, hubo alguno duplicidad, hubo marcada duplicidad.
 - 3) Si el curso ha tenido horas de practicas la relación y la sincronización con la teoria ha sido: buena, regular, deficiente.
 - 4) El nivel y utilidad del curso para su formación profesional ha sido: apropiado, muy teorico, muy superficial.

- 5) Se cumple con el programa del curso; di, no, no puede opinar por no conocer el programa del curso.
- 6) Prescindiendo de la importancia de la materia del curso como lo clasificaria; excelente, muy bueno, regular, deficiente.
- 7) El curso ha sido compartido con otro profesor: si, no.
- 20) Ingeniero Alberto Fujimori Fujimori, interviewed 22nd January, 1976.
- 21) Bourdieu and Passeron, op.cit., p 31
- 22) Ibid., p 41.
- 23) Conlin, S., 'Participation versus Expertise', in Van de Berghe,(ed.) 'Class and Ethnicity in Peru', Leiden E.J. Brill, 1974.
- 24) Ibid., p 45
- 25) Ibid., p 45
- 26) Ibid., p 39
- 27) Ibid., p 34
- 28) Freire, P., 'Pedagogia del Oprimido', Tierra Nueva, 1968
- 29) Bernstein, op.cit., p 7.

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CHAPTER 8

THE ROLE OF SCIENCE IN THE PROCESS OF SOCIAL REPRODUCTION IN THE TRANSMISSION OF AGRICULTURAL KNOWLEDGE

Introduction:

Having so far examined the shaping of agricultural education through the conjuncture of social and political events that gave form to the practices and beliefs of the Peruvian Revolution, the specific practices of education and the shaping of education through its own institutions (curriculum, pedagogy and evaluation) my purpose in this section is to speak more specifically about the use of agricultural science itself.

I will argue that the essence of agronomy is that it is by nature an integrated code combining subjects and if it is to be effective linking education to production. Such pedagogues as Rene Dumont^{*1} and Jacques Chonchol^{*2} argue that agronomy is a peculiar science because its knowledge structures must be dialectically related to agricultural practices. My point in this section is to argue that despite these necessities agronomy practices a collection code and because of its practices is socially divisive. I will argue that agronomists, as seen through their practices and the production of their texts, treat their subject as a science in the positivistic tradition and seek to apply to it a version of scientific method which only increases its isolation from its very necessities.

I will further argue that behind these principles lies a particularly strong causal factor composed of in part an economistically oriented notion of profit and secondly agricultural practices suitable only to large-scale cultivation - which only exacerbate the social problems of Peru and finally, that the assumptions are being transmitted

through the very organisation of knowledge practised in the courses at the University.

I will start with a discussion of the subject of agronomy itself.

Underlying Principles of Agronomy Taught at U.N.A.

I shall identify five principles that underwrite agronomy at U.N.A. Each of these principles represents a component part of the taken-for-granted ideological element of the agronomy course with specific reference to science. The five principles are:-

- 1) 'Scientific methodology' produces 'objectively true' agricultural knowledge.
- 2) Scientific agricultural knowledge is universal in its application.
- 3) The World consists of a dynamic equilibrium of discrete forces and objects.
- 4) The advance of agricultural knowledge is entirely based on the discovery and application of natural laws by the scientist.
- 5) Agriculture should be squarely based on 'scientific principles'.

Throughout this chapter dealing with the underlying principles transmitted in the teaching of agronomy at U.N.A. I shall give examples from a number of text books on aspects of agronomy. This does not represent a random selection of relevant texts. Neither does this represent any attempt to analyse a 'metaphysical content' of agronomy texts in general. The purpose in this and the following chapter is to assess precisely that is being transmitted on the agronomy course at U.N.A., beyond a simple evaluation of 'agronomy'.

There are a number of ways through which ideas, belief systems, and power relations are expressed. Knowledge content expressed in textbooks is one of these (as is, for example, the quality of pedagogic relationships, selection procedure, the structure of the

course, and so on). In order to support my argument that specific underlying principles, or an 'ideology of scientific assumption', is being transmitted on the agronomy course it becomes necessary to limit the supporting text to those textbooks that are not only central to the course as it exists, but can also be shown to be those texts actually used by the students.

In practice, this is quite simple. The most commonly used books are those most in demand at the University library. Those books most in demand are held in reserve for reference only, in an attempt to ensure availability. Consequently, they are relatively easy to identify. Initially thirty textbooks were identified as those most commonly used in the areas of 'agronomy' and 'animal sciences'. By cross reference to recommended texts for the courses that form the agronomy course, twenty-three textbooks were finally identified as central to the agronomy course for the purpose stated.

These are:--

- 1) de Alba, J., 'Alimentación del Ganado en America Latina'.^{*3}
- 2) Baver, D.L., 'Soil Physics'.^{*4}
- 3) Bazan, C de S., 'Enfermedades de Cultivos Tropicales y Subtropicales'.^{*5}
- 4) Bear, F., transl. J. de la Rubi, 'Química del Suelo'.^{*6}
- 5) Bear, F., transl. J. Boza, 'Suelos y Fertilizantes'.^{*7}
- 6) Becerra, J.A., 'Horticultura I'.^{*8}
- 7) Boza, T.B., 'Curso de Fitotecnia Libro III'.^{*9}
- 8) Desrosier, N.W., transl. A.H. Esquivel, 'Conservación de Alimentos'.^{*10}
- 9) Fennema, O., & Powrie, W.D., transl. C. Lescano & Ing. F. Martinez, 'Fundamentos de la Preservación de Alimentos a Bajos Temperaturas'.^{*11}

- 10) Foster, A.B., transl. A.O. Valades, 'Metodos Aprobades en Conservación de Suelos.'*12,
- 11) Lerner, M., 'La Base Genetica de la Selección'.*13
- 12) Low, F., 'Conservación de Suelos.'*14
- 13) Millar, C.E., & Turk, L.M., & Foth, A.D. 'Edafologia : Fundamentos de la Ciencia del Suelo'.*15
- 14) Morin, C., 'Frutales Tropicales Y Menores'.*16
- 15) Mortensen, E., & Bullard, E.T., 'Horticulture Tropical y Subtropical.'*17
- 16) Poehlman, J.M. transl. N. Sanchez Duron, 'Mejoramiento Genetico de las Cosechas.'*18
- 17) Rada, G., 'Fitopatología Agrícola del Perú.'*19
- 18) Rice, Andrews, Warwick & Legates, transl. J.D. de la Loma 'Cria y Mejora del Ganado.'*20
- 19) Russel, Sir, E.J., & Russel E., transl. Gonza les & Gonzales, 'Las Condiciones del Suelo y el Desarrollo de las Plantas.'*21
- 20) Thompson, L.M., transl. Clamprubi & Roquerode, 'El Suelo y su Fertilidad.'*22
- 21) U.N.A. & Ministerio de Agricultura, 'II Convención Nacional de Trigo y Sucendaneos.'*23
- 22) U.S. Department of Agriculture, (ed.) Richards, L.A. transl. N. Sanchez, 'Suelos, Salinos, y Sodicicos.'*24
- 23) Willie, J.E., 'Entomologia Agrícola del Perú.'*25

Eight of the twenty-three books were written and published in Peru.

Of these, five were written by agronomists working at the U.N.A.

Fifteen of the books were written and published abroad. Of these twelve were originally written and published in the U.S.A. (although many of the translations were published elsewhere, such as Spain or Mexico).

It is possible to classify the books by 'subjects' as follows:

Soil - 9 books

Biochemistry (such as control of disease, insects, etc.) - 6 books

Crops - 5 books

Cattle - 3 books

Clearly, all but one of the books had been translated into Spanish which itself may well be a contributing factor in the demand for these particular books.

In the context of the transmission of underlying principles the most important aspect of these textbooks is the extent to which they conform to the identified scientific belief system. Since students read a large number of books over their course of study, it is the underlying principles the text books have in common which become an important reinforced message, even if the students themselves are unaware of the actual process.

- (1) The First Principle: 'Scientific methodology' produces 'objectively true' agricultural knowledge. This principle is actually dependent on two interrelated beliefs. The first is that it is possible to have objectively true knowledge in the sense that such knowledge is absolutely true, or factual, and there can be no alternative interpretation or conclusion. The second is that scientific methodology reveals the absolute and objective truth. How then is this first principle transmitted at U.N.A.?
- Firstly, merely taking for granted that the knowledge taught on the agronomy course is 'true', transmits the implicit message that it is unquestionable because it is true. A logical tautology, but a powerful message. To quote Bourdieu, this is an example of the tendency to present - '...the fait accompli of the legitimacy of the dominant culture.'*26

In this way the 'truth' of modern 'scientific agricultural knowledge' is expressed through the presentation of knowledge into categories that take-for-granted the objective validity of scientific knowledge. In other words, the course content is presented as a series of 'facts' rather than models.

Occasionally a 'hypothesis', 'theory' or 'uncertainty' is included, but this effectively lends greater weight to the belief that the bulk of the knowledge content is 'True'.

This is further reinforced by the nature of the course examinations, where questions are invariably posed which assume a specific 'correct' answer. I have already given some examples of this in the chapter on Pedagogy. In fact

the actual entrance examination, which as we have seen is the main procedure of exclusion and failure, emphasises this fact. For example, the examination set in 'Mathematics and Biology' for those who intend to 'specialise in agronomy' states:-

'Instructions - There are 90 questions which require only mathematical and biological information in order to select the correct answer.....

DON'T FORGET : THERE IS ONLY ONE CORRECT ANSWER TO EACH QUESTION.*27

In this example, strong classification of knowledge is taken for granted and presented alongside this transmission of the first principle. To state that only mathematical and biological information is required implies that they are discrete areas of knowledge, that is, strongly classified. I shall examine this notion more fully through this chapter, but this example serves to indicate in this context that the strong

classification of knowledge (which as Bernstein argues represents power) exists in relationship to a monolithic concept of knowledge (which Bourdieu argues is a cultural arbitrary imposed by power relations).

In this example, I am not arguing that the examination statements are necessarily false, in that they may well describe exactly what exists. To give an example of an actual question:-

'No. 43. The germination of maize is different from that of fruit because at first:

- A.
- B.
- C.
- D. ' *28

It may well be that in the form the question has been presented there would be no one in the world with experience with maize and fruit who would disagree with what has been defined as the correct answer. It is also likely, given the way that 'mathematics' and 'biology' have been classified in schools, that the 'correct' answer could be found using only the information given in those classes (excluding, of course, such things as language, reading and writing etc.). The point I am making is not that this information is false (although it may be on occasion) but that the manner in which the examination has been organised transmits its own information. It transmits that in all cases there is only one correct solution to a given problem and that anything else is false, and that (in this particular example) the correct solution has been provided by academic courses.

The pedagogy (which we have seen is characterised by a strong classification between teacher and taught, and strong framing) which effectively represents the 'Ingeniero Agronomo' as a living embodiment of 'correct' scientific practice, further transmits this message.

The agronomist appears to have achieved a position of power or authority by virtue of his apparent 'absolute scientific knowledge' (particularly in his sphere of specialisation). The authority position of the agronomist in the University as has been previously suggested, is more related to the management role of the agronomist in society (and to the traditional role of the teacher to control the students). But since the validity of 'scientific knowledge' is taken-for-granted and 'taught', the agronomist's 'power' appears to rest on his 'objective knowledge' (since without it, he or she could not attain this level of authority). In the classroom situation, the structuring of the teaching process around 'correct' and taken-for-granted truths thus supports the authority of the teacher while transmitting this first principle.

Mathematical models are frequently given, to support 'Facts' enhancing the appearance of objective validity.

'...the theory (of genetic inheritance) has now been tested by means of thousands of planned breeding experiments, and has been corroborated by numerical data, as indicated in the definitive numerical ratios for the mono-, di, tri, and polyhybrids. In other words, the theory is no longer a theory, it is an established fact.'^{*29}

In this example it can be seen that the argument in the text is that the knowledge can be believed as 'factual', because it has been 'proved' by scientific methodology. In other words, the knowledge is 'True', because of scientific methodology. In this way, scientific methodology is represented as continually broadening the frontiers of knowledge. This represents the world as a series of discreet packages of knowledge which scientific methodology opens one at a time.

'Research into the function of cobalt in nutrition is very recent, and explains in an exact form and extraordinarily accurately a series of physiological phenomenon so that there is little now unexplained by science.'^{*30} (my translation)

The belief that agricultural knowledge is 'factual' because of scientific methodology, frequently becomes a belief that without scientific methodology there cannot be 'factual knowledge', but only primitive mythology.

'It is not surprising that, in view of the lack of knowledge of the physical and biological sciences, many of their 'answers' seen to us naive, if not ludicrous.'^{*31}

There are many well-intentioned agronomists at U.N.A., concerned about the welfare of the Peruvian peasants who consider that their primary goal must be the dissemination of scientific knowledge.

'It is absolutely vital that the peasants are taught agricultural science.'^{*32}

'Luckily the peasants are quick to learn and we must teach them everything. It is not just technology, but more importantly, knowledge.'^{*33}

The first principle depends on a belief in an 'Absolute Truth' derived from the validity of 'scientific proof'. However, it is not possible to prove 'Truth', as the famous empiricist Hume pointed out, since all scientific 'proofs' depend on the belief in 'causation' which cannot be observed.^{*34} All that can be observed is the correlation between observable data, but this does not imply causation. For example, night follows day, regularly, and yet few would argue that night causes day, or vice-versa.

In his critique of 'scientific methodology', Alan Watts likens the tendency of scientists to 'discover' cause and effects to looking through a hole in a fence and seeing, for example a cat's head followed always by a cat's tail as it walks by, and so 'proving' that a cat's head causes the cat's tail. He argues that we should be more prepared to accept the totality of existence rather than break it down into 'cause and effects' which represent only fractured models of existence. In other words 'scientific methodology' and 'scientific knowledge' actually represents a model of the universe, and not the universe itself. Its relevance to the real world is its power to explain and predict, but it cannot be proved to be 'true'.

In practice it is relatively easy to reveal contradictions in the apparently homogenous body of scientific knowledge. For example the mechanical ploughing of land is almost universally accepted as a part of good, scientific agricultural practice in almost all the text books used by the University. And yet in D.L. Bavers' text book, Soil Physics *35, designed 'primarily for the advanced undergraduates of fairly good calibre and for graduates' *36 are a series of experiments designed to demonstrate that mechanical ploughing damages the soil structure and that better crops are produced by 'unturned soil with organic matter (humus) on the surface.' *37 Despite the fact that this text book was originally published in 1940, mechanical ploughing is still regarded as necessary.

Ironically Baver states that:

'It is interesting to note the replacement of the rule-of-thumb techniques with scientific devices as our knowledge of soil-moisture relationships has increased through basic research.' *38

If we accept the view that knowledge cannot be known as absolutely true, then knowledge represents models of reality, and not reality itself. The transmission on the agronomy course, that the knowledge content is unquestionably true, represents a 'scientific mythology'. If this is the case why is it tacitly accepted by agronomists? There are probably complex and perhaps individual reasons for this, but what is clear from a social analysis, is that it is in the interest of the agronomist to accept this mythology. This is the point where the mode of production throws light on ideology. Within the mode of production in Peru, the agronomist plays the role of agricultural expert in the capacity of adviser or manager. Clearly, to believe that trained agronomists hold a monopoly over valid knowledge strengthens the agronomist's economic position as an 'expert'. The income and social status of agronomists is entirely dependent on their 'expertise' and therefore a recognition of the relativity of their knowledge would weaken their professional standing by making them seem less necessary. The further social implication of the mythology of the first principle, is that it invalidates knowledge based solely on practical experience. To deny the validity of alternative knowledge derived within the social context of different cultures leads to not only denying the intellectual capacity of different cultures, but further, to invalidating the different cultures themselves. This is because they are seen as being incapable of discovering 'Reality'.

(2) The Second Principle : Scientific, Agricultural Knowledge is Universal in its Application. Clearly this is dependent on the belief that basic scientific knowledge is absolutely true, and therefore true everywhere at any time. Although the second Principle is a logical extension of the first, there is a certain contained ideological conflict among the agronomists at U.N.A. about the validity of this premise. This is due to the practical aspects of agronomy which frequently conflict with the concept of universality in the specific context of Peru. E.C. Slakman in a preface to a book by German García Rada, who was Head of the Phytopathology Department in the Government Experimental Station in Peru demonstrates the tendency to resolve this paradox by referring to the ongoing expansion of science which will eventually resolve the problems, in the following passage:

'General principles apply widely, but specific information pertinent to the solution of regional problems must be made within certain localities or regions, for the problems. Surely what had been learned elsewhere about stem rust of wheat was not adequate as a basis for a breeding programme in Peru. A rust of maize new to science is mentioned in this book.'^{*39}

Later, he states:

'Many new facts will come to light after the book is published, some statements will require revision or amplification in time. It is a pioneer book for the region; science will sweep on.'^{*40}

However, while in general many of the agronomists teaching at the University are themselves aware of the necessity of knowledge appropriate to the diverse conditions of Peru, the fundamental message transmitted is that the basic knowledge is Universal. As Charles Morin states in his book, 'Frutales Tropicales y Menores':-

'A large part of these concepts have been taken from work realised by specialists in various countries and belong to the category of universal knowledge which can be applied equally well - save some exceptions - to any region suitable for the cultivation of these fruits.'*41 (my translation)

The message that agronomy knowledge is 'universal' is clearly transmitted by the high proportion of books produced by foreign authors used at the university. Of the thirty most commonly used text books in the general area of agronomy and animal sciences, twenty-one were written and produced by foreign countries, principally the U.S.A., which implies that the knowledge content is universal. Most, if not all the text books in use on the Agronomy course refer to research or experiments conducted in U.S.A. or Europe. All the 'historical introductions' also make international references, or refer to 'founding fathers' of a particular category of science (most of whom are European). This assumes a universality, since no limitations to relevance are made - except that it be 'scientific'.

If we examine what is meant by a 'universal' truth in this context, we can recognise that a number of assumptions are made. First that science, by imposing the conceptual grid of cause and effect etc., on the real world, actually discovers its underlying reality, and can generalise these into 'basic principles'.

Secondly, by assuming that the real world has a form of constancy governing its changes ('natural laws') it is argued that this knowledge is 'universal'. In practice then, the concept of universal knowledge is little different from the abstraction of the real world into general principles. In other words the emphasis on basic principles is the attempt to teach a 'universal understanding'. What is being transmitted by the

emphasis on 'principles' is that science is the search for the universal. The division of agricultural knowledge into two separate courses - agronomy, which is concerned with theoretical principles, and agricultural engineering which is more concerned with the practical and technical aspects of farming - emphasises the different status allocated to practical knowledge and abstracted 'universal' knowledge.

In its social context it is 'self evident' that 'universal knowledge' is 'superior' to 'practical knowledge' since the agronomist in society holds career positions 'above' the agricultural engineer in the authority structure and is likely, generally speaking, to be better paid. In this way the division of labour controls the social meanings relating to the classification between forms of knowledge.

The fact that the agronomy course at U.N.A. was explicitly modelled on North American courses (particularly the University of North Carolina) further transmits the message that agronomy knowledge can be applied universally. In particular the same categories and classification between categories is taken for granted. This is clearly evident in the text book content and presentation, since all the books deal with the same 'subject areas' in very similar ways. While this transmits the message that the knowledge is universal, a possible explanation for the apparent universality of agronomy courses could well be the 'universal agreement' or belief amongst agronomists of the universality of their knowledge. Alternatively it could be argued, with respect to the mode of production, that the similarities between the forms of knowledge and its transmission

merely reflects the similarities between the forms of agriculture that the agronomist is expected to serve in his role as scientific expert.

However, the second principal, further legitimates the agronomist in any activity which contradicts the reality of the 'non-expert'. It legitimates the role of the agronomist to alter and control the agricultural activities of the peasantry ('in their own interest!'). In this way it strengthens the social role of the agronomist to claim a monopoly of knowledge even in areas where he/she had no practical experience. With respect to the colonisation of the jungle, the agronomists can claim expertise solely based on this principle

- (3) The Third Principle : The World Consists of a Dynamic Equilibrium of Discrete Forces and Objects. This principle is concerned with the relationship between scientific theory and the real world. Since the model that science builds up of agriculture is not considered to be a model, but the systematic presentation of the underlying laws of nature, the agronomist's view of the world is governed by the scientific model. The world is considered to consist of a dynamic equilibrium of forces and objects. Each object and force can be examined in isolation as a discrete entity. The whole is the sum of its parts. This world view is powerfully expressed in the way in which the agronomy course is organised. The strong classification between 'subject' areas represents the world as definable in terms of separate bodies of knowledge. This is emphasised by the 'flexible' nature of the general agronomy course. Given 'success' in pre-requisite courses!, a

Table 60 / ^{in the Appendix} shows the pre-requisite courses and the possible directions of study. By the eighth stage there are four options for the agronomy student, at least one of which must be chosen. These are - 'Horticulture', 'Agricultural Production', 'Vegetable Health' and 'Soil Science'. Within each option there are obligatory courses and optional choices. The student must choose options to total at least twenty credits. For example in 'Soil Science' the obligatory courses are: analysis of soils and plants (three credits), mapping soils (three credits), soil-water-plant relationships. The optional courses are: geology (3), arid zone soils (3), soil and the mineral nutrition of plants (3) microbiology of soils (3), photo analysis of soil (3), irrigation and the reclamation of land I (3), irrigation and the reclamation of land II (3), special topics on soils (1).

There are also complementary courses with their own obligatory and optional courses. These are - 'Economics and Administration', 'Rural Extension', 'Forestry', 'Agricultural Engineering' and 'Zoology'.

Given the strong classification between separate subjects, this implies that agronomy is divisible into discrete categories, and that its knowledge is realised by adding up the parts.

Bernstein states that:-

'The relationship between categories is itself a crucial message, perhaps the most crucial if these come to be considered inevitable and legitimate.'^{*42}

The strong classification of knowledge into separate discrete compartments represents an important part of a world view. It represents a world in harmonious conflict. This is not to be

confused with the view of conflict leading to change, but here 'the world' exists as a resolution of conflict.

The message is further symbolised by stressing the competitive nature of the world, and institutionalised by the highly competitive process of selection at entrance to the University (with a 80% failure rate). Reality is conceived as a struggle that results in a dynamic equilibrium through the confrontation of forces. This emphasises the role of the individual and parallels the ideology of classical liberalism, that the whole society consists of the sum of self-satisfying individuals.

For example, within the context of 'free market' conditions, Adam Smith^{*43} (amongst others) considers that if all individuals involved in business attempt to maximise their own profits, this will lead to the best possible product at the cheapest possible price. Similarly, agronomists dealing with the loss of produce through insects, consider that an all out attack and attempt to eradicate all such insects will lead to the best of possible worlds. Looking at the world from such a narrow viewpoint fails to recognise the repercussions of eradicating a part of a complete life cycle of which man is a part. Typically this scientific approach takes the problem as given (how to reduce loss) and views it in isolation. This world view is symbolised by images of conflict, domination and aggression in the course content.

The introduction in J.E. Wille, 'Entomologia Agrícola del Perú' acts as a clear example of most of the imagery and symbols used that transmit this metaphysical content, and it has therefore

been quoted at some length.

' "The struggle between man and insects began long before the dawn of civilization, has continued without cessation to the present time and will continue, no doubt, as long as the human race endures. It is due to the fact that both men and certain insect species constantly want the same things at the same time. Its intensity is owing to the vital importance to both of the things they struggle for, and its long continuance is due to the fact that the contestants are so equally matched. We commonly think of ourselves as the lords and conquerors of nature, but insects had thoroughly mastered the world and taken possession of it long before man began the attempt."

Forbes, S.A., *The insect, the farmer, the teacher, the citizen and the State.* 1928.

These lines from the entomologist Forbes explain clearly the situation which the human race encounters in relation to insects in the whole world. It is a struggle and war without rest.*44 (my translation)

Competition between men and one force or another is frequently emphasised by the texts to encourage active 'resistance' or 'attack'.

'Animal fibre and dead animals are consumed by one form of biological force or another. Now, since this is a competition between Man, animals and micro organisms in order to see which consume the nutrients first, Man must enter into competition with these other forms of life in order to survive and actually live.*45 (my translation)

Most commonly, the imagery is of war:-

'No other enemy (Mosaico) of sugar cane has had such an influence on the sugar industry over the world....'*46

¹It is necessary to act at the very beginning of the attack, with the first manifestations of the disease or insect.^{1*47}

¹The fight against plant disease...^{1*48}

Both this imagery and the structure of the course content transmit the notion that both the real world and our knowledge of it are 'naturally' divided into separate discrete parts, frequently in confrontation with each other. Rather than our knowledge of the world being in terms of categories (and their classification) being imposed on the world; the world itself is conceived of as being the sum of its separate parts.

- (4) The Fourth Principle : The advance of agricultural knowledge is entirely based on the discovery and application of natural laws by the scientist. This is tacitly dealing with criteria of inclusion/exclusion of knowledge. The third principle conceives of knowledge as pieces of a jig-saw puzzle which dedicated scientists reveal and put into place. In this conception, what counts as knowledge, is those peices that have been 'discovered'.

This belief is transmitted by emphasising the importance and stature of individual scientists who are believed to be 'geniuses' and who are believed to have almost single-handedly made startling break-throughs in the general expansion of knowledge. This conception of scientific genius is not only implicit to most texts, but also embellished in the prefaces. For example, in E.W. Russell, 'The Conditions of Soil and Development', on the inside sleeve there is a faded old photo. Beneath it there is the Caption: 'Jean B.D. Boussingault - The Father of Modern

Agricultural chemistry'.^{*49}

Knowledge is thought to be defined quite simply, by what science discovers. It fails to ask why and how it was discovered. A sociology of knowledge is more concerned about the relationships between the genesis of knowledge and the social context within which it was generated.

What counts as legitimate knowledge at U.N.A. is taken-for-granted. It is inconceivable among many agronomists to ask 'why this knowledge'.

When the 'Head' of the 'Academic Programme of Agronomy' was asked why certain departments were included in agronomy (such as 'Soil', 'Horticulture', 'Vegetable Health' etc.) and others were not (such as 'Animal Science', 'Agricultural Engineering' etc.), he replied that 'these departments' work is agronomy.'^{*50}

How the general knowledge area of agronomy is subdivided and the relationship between these 'subjects' is also more or less taken-for-granted. In agronomy, economic and social aspects of agricultural production are included on the course as a whole.

In practice 'economics' and 'sociology' are isolated into separate subjects from the agricultural subjects and there is very little communication across subject areas in practice.

We can say there exists a strong classification between subject categories. This is largely controlled by the framing of the knowledge, because it is the individual teacher who produces, teaches and assesses each course along taken-for-granted lines, which provides little access for the students or others to critically assess the underlying value position that

is being taken-for-granted. As we have seen in Chapter 7 on pedagogy, the students themselves also seem to take the same categories for granted. In these terms, in a context of unequal power, tacit understandings, or belief systems are difficult to see explicitly and the apparent homogeneity of belief acts as a powerful form of socialisation into those beliefs. As Bernstein points out:-

'Power is never more eloquent and penetrating than in the insulation it produces between categories.'^{*51}

In this context the existence of a legitimate and unquestioned structure of knowledge (into certain categories and classifications), socialises the student into tacitly accepting the unquestioned, and simultaneously represents knowledge as 'absolute' and 'a-social' because there is no apparent need to discuss what counts as 'knowledge', nor in what context it was formed as 'knowledge'. Moreover, if the classification between categories is examined, we find an implicit message system operating to depoliticise the knowledge. In general terms we can say that the principle of classification in this context is of a strong classification between 'education' and 'politics' which 'automatically' operates to present knowledge without its political components.

For example, a lecture on marketing lettuces was primarily concerned with the number of lettuces to arrive on the market. That is, the commercialisation of lettuce.^{*52} The classification of knowledge is such that all explicit reference to any factors other than agricultural were excluded. So that the percentage of lettuces that would perish, by disease, eaten by pests or be used for seeds etc., were all considered. This left the percentage of lettuce that would arrive on the market. Since

all economic and social factors were excluded from the 'subject', it was unnecessary to discuss the relations of production, or any related (or unrelated) intervening social problems, or the effect of reducing production in order to maximise net profits.*53 Nor was it necessary to discuss forms of agriculture and the quality and quantity of production. Of course, it is necessary to restrict the information taught, given only a relatively short time. What is of interest here is the criteria of exclusion and inclusion. That is, on an explicit level, all 'economic' and social factors were excluded which also gave the knowledge content a greater appearance of 'objectivity'. However, on an implicit level, a great deal of economic and social assumptions were made. Most particularly, profit was assumed to be the result of successful farming, rather than 'successful farming' being simply defined in terms of profit, which is a very different political perspective.*54 In general terms, we can argue that the strong classification between agriculture and social and political elements and events, removes them only on an explicit level. Since they are then assumed to be, and represented as, isolated subjects, the implicit social and political factors remain unquestioned. It is this process which is crucial in the process of social reproduction.

There are many and varied examples of this process operating on the agronomy Course. For example, it is frequently emphasised that beef production is maximised if the best pastures are used.

'It is essential to realise that the quality of beef depends on the quality and fertility of the pasture.'^{*55}

The scientific basis is that the growth and quality of cattle depends on the nutrition of the fodder. However, to encourage beef production on the most fertile land is socially dangerous. This is because meat production is a relatively inefficient means of producing food, yielding only 10% of the value of the plant food eaten by the cattle.^{*56} On a macro scale, therefore, it is rational to grow plant foods on the most fertile land and rear livestock in areas where plant production is more difficult.

However, since both textbooks and teaching about livestock are strongly classified, no general social or economic considerations are made. The entire emphasis is on the role the agronomist would play in managing livestock production, how (s)he can develop production in the best interests of the farm, rather than to produce more and better food as a whole. Here we can see that the relations of production form the basis of the classification of knowledge. The subject is defined in terms of what the agronomist would need to know in order to maximise the profits of a beef producing concern. The socio-economic implications in Peru are particularly pronounced since to produce more and better quality meat at the high expense of other plant foods is to severely discriminate against the peasantry for, in Peru, meat production is geared to the urban middle-class.

Here the criteria of exclusion/inclusion are determined by the relations of production and the role of the agronomist within a specific agricultural concern. This provides the

'political' framework of the knowledge organisation. Within these terms of reference, the scientific validity of the knowledge is unquestioned. This classification has two interrelated effects. Firstly by defining the knowledge content in terms of the existing mode of production it implicitly transmits the message that maximising profitable production is correct and 'good' agriculture and so legitimating the underproduction of food (the implicit political content). Second, since this classification of knowledge 'isolates' cattle production it appears to be composed almost entirely of scientific means of improving production. Therefore, the argument that cattle should be produced on the most fertile land is seen, within these taken-for-granted limits as 'scientifically rational'. In this way the classification and framing of knowledge both imply social, economic and political values, while legitimating them in terms of scientific principles.

In this context the strong classification represents 'scientific knowledge' as 'a-social'. If this is accepted, then the knowledge content is seen to be 'objectively true', which allows a great deal of its implicit political, social and economic assumptions to be taken for granted. I shall examine this process and these assumptions in more depth in the following chapter.

- (5) The Fifth Principle : Agriculture Should be Squarely Based on 'Scientific Principles'. In other words practice should be entirely dependent on scientific theory. In many ways this is a logical extension of the abstraction and reification of science. Since to believe that science is independent from both social conditions and agricultural practice, will logically lead to the belief that good practice can only follow

from good theory.

This is implied by the structure of the agronomy course since it begins with obligatory 'first principle' science course (and some general 'first principle' social science courses). After achieving pass grades on these courses, the student is allowed to choose more specific and 'discrete' subjects to study. It is only in the final stages of the course that practical research is required.

In chapter 7 on pedagogy I have already examined the relationship between theory and practice on the agronomy course and the explicit emphasis on theory and theoretical principles. There I suggested that the emphasis on theory supported the social role of the agronomist as an expert, by invalidating criticism based on 'mere' practical experience. The development of the knowledge content is to begin with scientific principles and then discuss their relevance to agricultural practice.

Similarly the most common structure for the text books is to begin with an introduction to the first principles before moving into areas of 'discussion' and the observable reality. In some cases it is stated which 'courses' ought to be prerequisite, such as

L.M. Thompson:-

'A prerequisite for this course would normally be the study of inorganic chemistry.'^{*57} (my translation)

The implicit reasoning behind the belief that scientific practice must be in terms of its basic principles is an affirmation of faith in the power of science. Since basic principles are thought to be the essence of reality, they must be universal. Since they are universal, scientific action can and must always be based on

them. As the U.S. Department of Agriculture states in 'Soils, Salts and Sodas':-

'Basic Principles

Even though the agricultural work varies from one irrigated zone to another, the general principles mentioned with respect to salinity or excessive soda, have a universal application.^{*58}
(my translation)

This belief in the necessity of learning the 'basic principles' before doing practical work assumes first that reality is already well understood, and secondly by beginning with basic scientific principles and then discussing their relevance to agricultural practice, the problem of the objectives of agriculture are subsumed beneath the scientific process of maximising what counts as success. It was noted earlier in this section that this fifth principle is dependent on the belief that good practice develops out of good theory. An alternative model is that good theory develops out of practice as a means of explaining the practical successes and failures, and leading to being able to predict successful and unsuccessful practice. If this alternative view is accepted, then what becomes of paramount importance is what counts as successful and unsuccessful agriculture. It is this social basis of agricultural science (the social objectives that science is to serve) that is examined in the following chapter. The point here is that this fifth principle leads to the belief that 'good' agriculture is an 'objective' result of science, rather than science being a social tool for agricultural practice. In other words, the belief that agriculture should be squarely based on 'scientific principles' implies a number of ideological elements and social consequences.

- (i) It is an article of faith in the power and application of the scientific method.
- (ii) It fails to take account of the fact that the problematics of agriculture are socially defined. So that even though they may be scientifically analysed, this is done within taken-for-granted parameters.
- (iii) It tends to misrepresent agriculture as a scientific process, when it is essentially a social process and determined by the distribution of power and the mode of social control.
- (iv) It tends to legitimate the social necessity of agronomists and invalidate alternative forms of knowledge and agriculture.

This belief is therefore both an element in the process of social control, and also implies a particular model of agricultural production. The simplistic notion of economic profit derives from the model of industrial production and is assumed by many texts to be a product of 'good agriculture'. Similarly other notions of 'productivity' and 'industrialisation' have become taken-for-granted elements of 'good agricultural practice'.

However, the style of the 'new middle-class' in Peru, actively involved in the social engineering of development ('developmentalism') has overlaid the 'universal model' with notions of co-operative agriculture (as the Agrarian Reform demonstrates).

However, this was never in conflict with the scientific model of agriculture, since cooperatives (in their various forms) facilitated both the practice of large-scale industrialisation of agriculture and also the increased control over the peasant

agricultural practices by agronomists and the government bureaucracy.

This aspect of the application of the scientific belief system is just one of the elements of the reproduction of power relations that I will consider in the following chapter.

Conclusions

Let me return to the five underlying principles that constitute the framework of an underlying and taken-for-granted system of ideas.

The five principles are:-

- 1) 'Scientific Methodology' produces 'objectively true' agricultural knowledge.
- 2) Scientific agricultural knowledge is universal in its application.
- 3) The world consists of a dynamic equilibrium of discrete forces and objects.
- 4) The advance of agricultural knowledge is entirely based on the discovery and application of natural laws by the scientist.
- 5) Agriculture should be squarely based on 'scientific principles'.

I have argued that this system of ideas is tacitly transmitted through the organisation and teaching of agronomy at U.N.A. I have also argued that although science is represented as 'a-social' at U.N.A., it can be considered to be a social product. The social roots and effects can both be analysed. The classification and framing represent the relationship between this system of ideas and the social structure and begin to indicate the role that this system of ideas plays in the process of social control.

Clearly the linchpin of this process is the belief in the underlying principles of science being a-social, a-political and immaculate in conception. This is an ideological representation of strong classification, where 'science' is considered to be separate from all other social categories. I have argued that classification represents power and reflects the classification between social classes or groups. In this context, the classification between the agronomists in their general technocratic role of the 'new middle-class' and other agricultural workers is strong. This has led to strong framing, where the agronomists' maintain control over what counts as legitimate knowledge and practice. Socially, this legitimacy is an expression of power relations. The reasons given are provided by this system of underlying scientific principles: the agronomist has authority because he holds a monopoly of valid knowledge.

It therefore appears that the framing (which represents social relationships and the process of social control) results in the classification between social groups. In effect, this is the social function of the process of social control - to legitimate social positioning and power structure.

Given this social appearance, the abstracted science can appear to provide 'objective' reasons for 'good agricultural practices' and invalidate other models of agriculture or agricultural practices by considering them to be 'unscientific' and therefore, by definition, 'incorrect'.

In this chapter this process has been examined in terms of the abstracted knowledge, and the process of legitimation has been examined only as a process. In the following chapter, I shall look at what agricultural practices are being legitimated in the name of science, and the relationships between these practices and the socio-economic structure.

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'Estas lineas de la pluma del entomolcgo Forbes explican claramente le situación en la que la raza humana en

todo el mundo se encuentra en relación con los insectos.

Es una lucha y una guerra sin descanso.'

- 45) Desrosier, N.W., op. cit. p. 38.

'Los tejidos vegetales y animales muertos, son consumidos en una forma o en otra por fuerzas biológicas. Y que este es un concurso entre el Hombre, los animales y los micro-organismos para ver quien consume los nutrientes primero, el Hombre debe entrar en competencia con esas otras formas de vida para sobre vivir y vivir efectivamente.'

- 46) Ing. Genman Garcia Rada, op cit p.36

'Ningun otro enemigo de la cana de azucar, ha tenido tanta influencia en la industria azucarera en el Mundo.'

- 47) Becerra, J., op cit p. 137

'Se debe ejecutar al momento de la uniciación del ataque en sus primeras manifestaciones, de la enfermedad o del insecto.'

- 48) Bazan C. de op cit p. 13. Chapter heading:

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'Principios basicos - Aun cuando las labores agricolas varian de una zona bajo riego a otra, los principios generales que se mencionan an continuación relativos a salinidad o exceso de sodio, son de aplicación universal.'

CHAPTER 9

SOCIAL REPRODUCTION THROUGH AGRONOMY : THE SOCIAL, ECONOMIC AND POLITICAL IMPLICATIONS OF 'SCIENTIFIC AGRICULTURE'.

Introduction

In this chapter I am concerned with the nature of the model of agriculture as it is developed and presented to students during their study of agronomy. My purpose is to look more closely at the social, economic and political assumptions and implications which are conveyed through the underlying principles governing such an agriculture. I am also concerned with the process of legitimating one form of agricultural science as opposed to another and the way in which the chosen form is converted into 'scientific necessity'. In other words I will be discussing not only the what of the classification but also the how.

Hence in the first part of this chapter I will examine the model/^{of} agricultural production which has been chosen and is regarded as good commonsense and scientifically legitimated. I will then look at this model in the context of application ('development') and the role that agronomy and agronomists are expected to play.

The Tacit Model of Agricultural Production

The taken-for-granted model of agricultural production is implied by both the orientation of the course and its embodiment or scientification; the textbook. The audience is assumed to be the agronomist in a management position. The primary objective is to make the concern an 'economic success'. This means that the policies adopted must take full account of the

prevailing economic and market conditions. That is, the cost of labour, market prices and so on. This is the case even though the Agrarian Reform resulted in large areas of cooperatively owned land. This remains the case because the model of agricultural practice within the cooperatives is expected to follow the model of large-scale private agriculture. As I argued earlier, the key distinction between before and after the Agrarian Reform is not so much the nature of the agricultural production, but the mode of social control. An important aspect of the mode of social control is the role of the agronomists who increased their control over private and peasant agriculture tying the various forms of cooperatives in particular to the government bureaucracy.

In this context the principles of agricultural practice developed for private large-scale agriculture (and which I have argued, are considered to be 'scientifically correct') are taken-for-granted by agronomists at U.N.A. Hence the social implications of ^{the} agricultural model are rarely considered.

This is perhaps most clearly seen with respect to labour. Despite the fact that the official slogan of the Agrarian Reform was that 'the land belongs to those who work it', labour is considered to be a market variable.

For example, Javier Becerra, an Agronomist at U.N.A. wrote:-

'The cost of vegetable production fundamentally depends on three factors:

- a) efficient labourers
- b) high mechanisation
- c) good administration^{*1} (my translation)

Clearly the passage is orientated towards the landowner attempting to maximise profit, and not at the 'labourer' who is liable to be out of a job. Mortensen and Bullard, by contrast,

suggest employing labourers in favour of other means. However this is not for the labourer's sake, but simply because it could be more profitable.

'Chemical methods of combating weeds save on labouring costs and its use can be effective if used with care. It ought to be said that labourers are cheaper in the tropics than in the temperate zones, and it is better to consider the economic aspect of combating weeds before starting to look into the available chemical products towards this end.'^{*2}(my translation)

In this context labourers represent social objects to be employed or unemployed according to the dictates of the market conditions. Jevier Becerra, an agronomist at U.N.A. writes of large-scale industrialised farms as follows:-

'As vegetables are attempted to be produced at lower cost, in general these farms are situated far from the market, in zones where the low cost of land and labour allows for the economic production of vegetables of good quality.'^{*3}
(my translation)

Here, being able to pay labourers less, is considered to be of economic value (to the landlord, of course, and not the worker). Here the primary object of farming is taken-for-granted as profit which involves the production of cash crops. Within this tacit framework, the function of agronomy is presented as scientifically achieving this end. The content represents the attempt to explain how this is achieved rather than why. Since to examine 'why profit' or the implications of a 'cash-crop' rural economy are considered not to be agronomy, but a political or economic or social problem. As the agronomist in charge of horticulture, Ing. Charles Morin said to me:-

'Many of these students are impractical dreamers, but agronomists must deal with the real world.'^{*4}

Similarly Dr Solomen Helfgott who worked as an agronomist on a sugar cooperative for some years before coming to U.N.A. said:-

'When people talk about idealistic alternatives, I say, 'Show me a country where it's happened!''*5

The political persuasions of individual agronomists inevitably vary considerably. Generally I have not been concerned with personal political attitudes, but with the process of social control. I have argued that the role of the agronomists in Peru involves a general alignment with the policies and practices of 'developmentalism' and I have argued further that the social position of the 'technical expert' in Peru not only creates the conditions and climate of identification with this ideology, but also leads to the legitimisation of this ideology as 'scientifically correct'. In this way viewpoints that reflect this ideology are expressed, internalised and transmitted irregardless of an individual's political beliefs. Since the process operates beyond the agronomist's critical awareness and expressly in a 'non-political' category, individual agronomist's differences matter very little in effect. The style or model of agricultural practice that is taken-for-granted as the correct model for national development includes an assumption that agriculture should be geared to making money. Money and profit therefore come to symbolise good agricultural practice.

For example, it is the transformation of agricultural objects into money (capital and profit) which gives those objects meaning for the agronomist.

'Soil erosion is money being washed away.'*6

'Fruit orchards represent a capitalisation of the land...'^{*7}
(my translation)

The importance of agriculture is seen in terms of money,
rather than nutritional value.

'Many farmers don't seem to realise that with the amount
of fruit that can be grown on a tree, and with each
piece fetching about 10 soles, fruit production can be
very profitable.'^{*8} (my translation)

Similarly, the loss of produce is considered to be a loss of
money:

'Assessing the numerous plagues with all caution, we believe
that the National agriculture suffers on average a direct
and indirect loss to insects of 25 million Soles (approximately
£250,000) per year.'^{*9} (my translation, his emphasis)

When advising ~~the~~ farmer to save the urine as well as manure
for nutritional reasons, the writer seems to consider it
necessary to emphasise the economic implications:

'The loss of urine from manure is extremely serious, from the
point of view of the vegetable nutrient content... From the basis
of total vegetable food content of manure, more or less 50% of its
value is in the urine.... It is probably correct to surmise that
more than half of the liquid is lost on many farms. In terms of
'pesos' and 'centavos', this represents a highly significant loss
for the agriculturer.'^{*10}

Thinking of agriculture in terms of capital, costs and profits is
only applicable to agriculture involved in the market
economy, where the object of agriculture is profit. This
excludes the peasant farmers who are growing food largely for
consumption. The exclusion of alternative models of farming
from 'scientifically based' agriculture, implies that they are
worse forms of farming. It certainly leads to a criteria of
'importance' being based on profitability.

In this way, the 'most important crops' are not those that are the most widely grown, eaten, nor the most nutritious.

'...the successive order of produce with each chapter, is in relation to the economic importance, that each one of them has in the country.'^{*11} (my translation)

Similarly,

'The classification of the most important fruit grown is as follows:-

- | | |
|-----------|--|
| Class I | - of high commercial importance |
| Class II | - of limited commercial importance |
| Class III | - Produced generally for local markets only |
| Class IV | - Produce of less importance that, frequently cannot be commercialised ^{*12} (my translation) |

Up to this point, I have examined the taken-for-granted elements of agriculture as being:-

- a) private ownership of land
- b) The attempt to maximise profits
- c) The relations of production being wage-labour (where those who work the land do not own it).

These assumptions are rarely made explicit. In general the exceptions are found in USAID text books which explicitly promote a capitalist way of life. For example in a book about Soil Sciences, Miller et al writes:-

'...the possibility to own land and for it to be inherited by one's successors, has promoted industry and initiative, quite apart from self-confidence, independence and civic pride among our people. The right to own land is an important part of our democratic freedoms!^{*13} (my translation)

Normally, these are tacitly accepted elements of agriculture. Within this framework, agronomists attempt to improve the means of achieving the tacit objectives of agriculture, using scientific methodology. By ignoring the social interests and objectives that underpin agriculture, 'good' farming appears to be a result of scientific method. It is a small logical jump to begin to view the organisation of labour as being dependent on scientific method as well. After all, the agronomist is involved in all manner of decisions about whether or not to displace labour by machinery and so on. Most importantly, the underlying principles of agronomy science, like the social structure within which they developed, can be categorised by strong classification and framing. In other words, legitimate agricultural knowledge and expertise is considered to be monopolised by the qualified agronomist. This presents a concept of rigid hierarchy based on the 'intellectual capacity' of the individual to attain qualifications. This image of the world then represents the social order as a natural order. From this perspective the worker is in his 'natural place' in a 'natural' social hierarchy.

One facet of this notion is presented through the patronisation of the work force:

'Fortunately we must admit that we have in the country an excellent labourer, indeed the natives, that constitute the large majority of agricultural workers, have an innate manual ability and can be rapidly converted into excellent horticulturalists'.^{*14}

Apart from the form of patronisation which implies that the 'natives' are incapable of more intellectually demanding work, this passage also demonstrates the emphasis on the role of 'education' conceived of as the instruction of the 'ignorant' by the 'expert'.

The view that Peruvian Indians are 'natural' and 'excellent' workers is a common view held by many well-intentioned agronomists at U.N.A. and is tacitly seen as being more in tune with the Peruvian Revolution than the previous dismissal of Peruvian Indians as ignorant apathetic problems for the economy. There is, however, little discussion about the use of coca leaves as a stimulant to enable the peasants to work as they do.

'The campesinos are very willing.'^{*15}

'They (campesinos) have the capacity to work very hard, but they're not stupid, they'll hire others to do the work if they can.'^{*16}

Since agriculture is seen to derive from 'objective scientific knowledge', it is considered to be as good as science can make it, given its present capacity and dissemination. Therefore the social organisation of agriculture is depicted as essentially harmonious. This view is frequently expressed and given the veneer of objective validity. For example, the best interests of the producer are considered to be in the best interests of the consumer as well. Rice & Andrews state:-

'From the standpoint of the individual commercial livestock producer, profit depends upon two things;
(1) Cost of Production & (2) quality of product reflected as price. Thus his interests in efficiency are identical with those of the population at large so far as the kind of animals needed is concerned.'^{*17}

This statement assumes a 'perfect market economy' where production is entirely dependent on demand. In practice there are a number of factors which disrupt this logic:

First, even if production were simply dependent on demand in this form of market economy, demand can only be expressed through money, and not hunger. The wealthy therefore have a larger demand than the hungry. For example it is more profitable to grow sugar in Peru for export to the U.S.A., than to grow food for Peru's poor. Secondly, the quality of produce is only marginally reflected by the price. In this respect the visual indicators of apparent quality have a greater influence than nutritional content, and for this reason visual indicators are emphasised while nutritional content is virtually ignored. Thirdly, the price a producer can demand is more dependent on advertising and scarcity. It is this which can be categorised as the fundamental contradiction between the food producer and the consumer. It is in some circumstances more profitable to underproduce food, than produce as much as possible, since scarcity keeps the price people are willing to pay higher and the capital expenditure is also reduced, increasing net profit.*¹⁸ From this cursory analysis it is clear that the interests of the producer are not identical with the population at large. Nevertheless, the authors, assuming this identification of interests go on to say:

'Stress on 'maximum development in the regions of the high-priced cuts' has long been a part of livestock judging especially in beef cattle.*¹⁹

Clearly the reason for this is that it is more profitable for the producer. However, agricultural 'standards' are presented as being dependent on scientific principles, rather than economic interests.

Some agronomists take it upon themselves to instruct the peasants in this 'scientific logic'.

As a spokesman from the National Association of Alpaca

Producers said:-

'When we first started buying alpaca wool from the peasant communities it was sometimes damp and included sticks. We had to show them that price depended on quality by refusing to buy substandard wool. And in this way educated them to produce the best quality wool.'^{*20}

In practice, however, 'best quality wool' is defined by profit. For example, were it only possible to produce the very best quality wool by having many less alpacas, the 'best alpacas' would be those that by combining quality and numbers produced the best profit. It is within the framework of profit that 'best quality wool' is defined. That is, the best quality that will maximise profit.

This can be seen clearly with respect to mechanisation and extensive farming. This is characterised by the growing of a single crop and the displacement of labour by machinery in order to produce more specialised crops at a cheaper rate. Since little or no crop rotation is practiced, this form of agriculture depends on large quantities of fertilizers, herbicides and pesticides, to maintain production. This is due to the fact that single crops exhaust specific nutrients which need to be replaced. However, using chemical fertilisers, the trace elements existing in the humus content of the soil are burnt out. Furthermore, mechanical ploughing of the soil breaks down its structure leading to a more rapid leeching, the disturbance of dormant seeds leading to rapid weed growth, and the breakdown of the micro-ecology of the soil. With the loss of humus content, the worm population is seriously depleted leading to an acceleration of soil

fertility depletion. This leads to cheap produce, which with the help of herbicides and pesticides can look fine, but which is often of poorer nutritional quality. The high profit gives it the appearance of good quality.*21

It is precisely this form of agriculture which is considered to be the mainspring of Peruvian development in the agricultural sector, and it will be discussed in more detail in that context.

Development

There is a strong emphasis on the course, both at an explicit and an implicit level, on the industrialisation of agriculture as the means through which Peru can 'develop'.

'Cooperativisation' is only considered in context on the scientific/technical elements of the course. In general it is recognised as a practical reality to be taken into consideration, and most importantly it is seen as a means through which large-scale industrialised agriculture can be extended. The notion expressed by the Peruvian Military government, that the Agrarian Reform is an expression of social justice is only considered on the social science elements of the agronomy course.

Earlier I argued that cooperatisation and the Agrarian Reform represented a change in the mode of social control. The owners of the large-scale farms were effectively displaced by the technical experts who gained control over the process of agricultural production.

The concept of 'development' transmitted at the U.N.A. includes all the main themes discussed up to this point - private property (including cooperative ownership), wage labour, cash

crops, profit and the role of science and technology as the inherent road to progress.

Throughout the course and the textbooks in particular, expensive advanced technology is nearly always assumed to be preferable whenever it can be used, and the text books are full of photographs of advanced technology, usually taken in the U.S.A. *22

The introduction to and discussion of technology, is limited to its operation, *23 which emphasises its productivity (with respect to labour, not land), and more often than not, it is simply assumed to be preferable to labour, the implication being that it is cheaper.

'In all cases cultivation operations can be mechanised' *24 (my translation)

In 1970 the first National Wheat Conference was organised jointly by the Ministry of Agriculture and U.N.A. and held at the University from 16th to 19th February. Many aspects of wheat production were discussed (research, production, commercialisation, industrialisation and substitute products) and recommendations made. The conference was produced into a book used as a textbook at U.N.A. Among the recommendations on 'the production of wheat' is the following:-

'In order to ensure the increased production of wheat in Peru it is recommended

7. To organise central machinery depots ('centrales') in the most important wheat zones in the country, with the objective of mechanising the cultivation where ever possible! *25 (my translation)

Carlos Bohl Pastorelli from the Ministry of Agriculture, goes so far as to say that 'the principal structural problem'

is the 'disequal' distribution of land where 95% of the landowners own only 25% of the land. He argues that this means mechanisation is impossible due to the small plots being worked. He states that:-

'This phenomenon has been, without doubt, the principle restriction on development in the agricultural sector of the country.'^{*26} (my translation)

Ing. Bohl, is, furthermore extremely critical of 'intensive labour' farming methods and the 'use of beasts of burden'.

'...necessarily associated with the use of primitive technology, low returns on land and labour, low levels of income for the rural family, under subsistence conditions, and their large number (700,000 family units in the 1961 census) has been a serious obstruction of the official services.'^{*27} (my translation)

No evidence whatsoever is cited in support of Bohl's claim that intensive family farming produces low returns on land. This appears to be taken for granted by agronomists.

Similarly Ing. Enrique García Pittman:-

'For this mode ('small farmers practicing traditional methods of farming') to become a commercial producer of wheat, it must be converted from an obstacle to the production of wheat.'^{*28} (my translation)

This view of peasant farming methods is supported by the ideological principles of science, where 'development', 'growth' or 'civilization' is thought to be entirely based on the expansion of scientific knowledge. There is a more or less unqualified belief in its power to promote development on an 'objective', 'value-free' basis. Mortesen & Bullard's view expressed here is almost universally believed by agronomists at U.N.A.:

'The extensive use of modern scientific methods could triple or quadruple the agricultural production in the larger part of tropical and less developed countries.'^{*29}

(my translation)

Part and parcel of 'modern scientific methods' is the adoption of agricultural models from the 'developed world'. In some cases, particularly USAID sponsored textbooks, this involves 'technical aid'. As Mortesen and Bullard go on to state:-

'The applied scientific methods in the more advanced countries can be adapted for use in other countries... Technical aid is necessary in order to accelerate the change and increase productivity, for which it is necessary to promote the introduction and adaption of modern scientific methods in agricultural production.'^{*30}

(my translation, the authors' emphasis)

Charles Morin attempts to legitimate this adoption of political models in terms of their 'scientific basis':

'In many ways our fruit production is still little developed and we must take example from what is being done in other countries more evolved in the way to take advantage of the accumulated experience of those with many years of constant work.'^{*31} (my translation)

Alternatively, small-scale farming, such as small peasant farms based on recycling waste materials such as organic fertilizer and crop rotation are criticised as being inefficient. This is despite the fact that the vast majority of food producers in Peru are small peasant farms^{*32} and even in the U.S.A. Javier Becerra reports, for example that 37% of fruit is produced on small farms.^{*33} However Becerra also states with reference to small family farms in Peru that:

'Special care has to be taken in planning the rotation of crops, since a small area of land is exploited highly intensively and for this reason necessitates special care.

cont'd...

'For the same reason it should be said that the control of pests and disease on these orchards is made very dangerous because adequate means are not available for efficient control.'*34 (my translation)

These criticisms of small-scale productive units are cast solely in terms of the logic of large-scale agriculture (which is generally more specialised and more market orientated), and in that respect represent a comparison to an 'ideal-type'. No account is taken of the possibility of producing more food per area of land under intensive-agriculture, nor of the maintenance of the soil and the ecological balance that has been extensively commented on by many agronomists, rural sociologists, and economists since the early 1970's.

When considering the concept of 'development' a key issue is the notion of productivity. In economic terms productivity can be defined as the ratio between total input (in terms of capital and labour) and total output. However, in practice, it is far more difficult to measure capital investments and the services deriving from them than it is to consider the ratio between labour input and production. So that although total factor productivity is defined by both capital productivity and labour productivity, the measurement of labour productivity is frequently used to represent total productivity. This is particularly true in agricultural production as capital investment includes not only machinery, but also the land itself.

In other words the notion of 'productivity' in common usage among agronomists is derived from a measurement of the amount produced per worker. Therefore by definition this can imply that capital intensive agriculture can be considered to have a higher productivity, lead to greater profits, and to produce more agricultural produce. But this internal logic breaks down when it is realised that producing more per worker does not necessarily mean that more is produced per area of land. This is merely taken for granted by agronomists and is rarely tested.

However, as long ago as 1958 Louis Malassis' doctoral thesis documented the statistical tendency for farms across Europe to produce a lower income per hectare the larger the size of the farm.^{*35} Since the late 1970's, many agronomists and social scientists have begun to consider these issues in Latin America. In his review of the development of adult education programmes in Peru, César Picón Espinoza is critical of the fact that for the period I am discussing there was very little empirical work done in Peru itself that could lead to an analysis of the nature and potential of small-scale peasant production even though, in his view, this should have been a necessary precondition for designing and launching appropriate forms of education for that sector. His view is widely echoed throughout the Latin American region by, for example, the work of Barraclough and Goethals,^{*36} Bosco Pinto, and CINEFOR.

Lack of work in Peru, in Picón Espinoza's view, does not mean that work done on the small-scale peasantry in other areas of Latin America is not applicable to small-scale peasant production which is, typically, orientated as much as possible towards self-sufficiency. Like the writers cited above, Picón Espinoza was impressed by this sector's high degree of efficiency and its potential for growth. A view evidently shared by De Schutter, Huizer and Saleski.^{*37}

The theoretical elements of this work has been largely inspired from three principal sources:

- (i) the work of Chayanov on the economy of small-scale peasant production;
- (ii) the sociological writings of Teodor Shanin and Henry Landesberger amongst others;
- and (iii) the work of the INRA team in France- Claude Servolin, Michel Gervais, and Henri Nallet.

Fieldwork has been undertaken not only by the practitioners above but by major agronomists and theorists of the peasant economy and household such as Rodolfo Stavenhagen, Gustavo Esteva, Ernest Feder, Arturo Warman, Hector Díaz Polanco, João Bosco Pinto, Solon Barraclough, René Dumont and Andrew Pearse whose studies all identify or support the following characteristics.^{*38}

It is by no means unusual for it to be simply assumed that small farms are less productive than large specialised farms. Yet there is much research to suggest that while large-scale farms may tend to be more profitable, they produce less food per area of land.

This has begun to be recognised by many social scientists such as Ingrid Palmer and Susan George. The evidence is even more striking than that documented by Malassis in Europe where he found that in any given geographical location, statistically, small-scale farms produced roughly four times the volume of produce per hectare than the large farms produced. For example, Susan George cites figures developed by the UN stating that small farms in Colombia produce up to fourteen times as much per hectare than the large farms.^{*39}

The assumption that large mechanised farms are more profitable has also been increasingly questioned since the rapid fluctuations in the cost of fuels and the serious questions raised over the ecological stability of the land given the industrial agricultural practices of using artificial fertilisers, herbicides, and pesticides. However, if we assume that large-scale farms are still more profitable, then it remains the case that the relative worth of the different farms, however this is evaluated, must be set within the the social conditions

and context that gives rise to and supports the different farms. Clearly, the farms are organised quite differently. Large-scale farms are characterised by the use of labour displacing technology and the growing of a specialised crop over large areas of land year after year with the support of chemical fertilisers, herbicides, pesticides, and irrigation. Small-scale farms are labour intensive, rotate crops, recycle waste materials, and depend on family co-operation.

A common social problem in Latin American countries is the high number of displaced agricultural workers now unemployed in the cities (in Peru's case particularly Lima) where industry is 'capital-intensive' and so cannot offer employment. In this context, given both the lack of employment and the necessity to import food, it can be argued that peasant agriculture by providing solutions to these problems could play an important role in a socially balanced form of development. Yet, as we have seen, the majority of the research, extension projects, and course content at U.N.A. is geared towards supporting the large-scale mechanised and industrial farms. So it can be argued further that if technology, research, agronomists and capital investments were focused in an appropriate way on small-scale peasant agriculture, it would be likely to improve production levels, productivity and profits.

An enormous literature has developed not only on the socio-economic potential of the peasantry in Latin America and elsewhere, but also on its agricultural potential and its practices which are, as these writers argue, more productive and economical in their use and application of resources than large-scale agricultural production. Yet despite the evidence to suggest that this is an area that could merit greater attention, it is frequently ignored, or dismissed.

It is perhaps useful to ask why large-scale specialised and mechanised agriculture is so heavily encouraged by agronomists in Peru at the expense of peasant intensive agriculture? One explanation can be found in the organisation of agronomy knowledge. As we saw earlier, knowledge is dependent at U.N.A. on scientific research which is financed, and its objectives structured, by private capital; the primary aim being the increase of profit. Therefore research by agronomists about peasant agriculture would not normally be financed. Furthermore, the development of knowledge is dependent on isolated research into different aspects of agricultural theory and practice. For example, more profitable use of machinery such as mechanical ploughs. Given the 'ideological principles' of agricultural science which invalidate alternative theories and practices, it is only industrialised agriculture which appears to be legitimate,

good agricultural practice. It therefore becomes taken-for-granted that good agricultural practice is determined by the 'economic rationality' of production at the 'lowest cost per unit' and highest profit, and extravagant claims are made for these specialised farms. For example Javier Becerra writes of Peruvian middle-sized, specialised fruit producing farms in the following way:

'The returns that are obtained are very high and the quality of the produce is unsurpassed.'^{*40} (my translation)

No evidence is produced to support this statement. It is simply assumed to be the case, since the farms conform to the agronomists' view of an ideal 'scientifically-based' farm. This notion of an 'ideal farm' forms the backbone of the agronomists' view of a correct path to 'development' and is explicitly taught on the courses at U.N.A. For example, the elimination of small holdings in favour of large farms is considered to be the inevitable course of progress and necessary if Peru is to develop. This notion is implicit to the Agrarian Reform where small holdings have been merged with or into cooperatives in SAIS. It is also seen to have been the course of progress in the U.S.A. For example Lerner writes with respect to poultry:-

'In the United States, 1950 was characterised by the virtual elimination of small breeding establishments and the concentration of control over poultry production by a small number of organisations....These new societies, created in order to survive the increasingly greater and more severe competition, were capable, thanks to their size, to mechanise and rationalise the breeding systems.....to organise standard verification tests....at diverse levels of selection and pairing.'^{*41}

What this notion fails to recognise, on an explicit level, is that this form of development is a direct result of the attempt to maximise profit in a privately owned agricultural economy. However, on an implicit level it transmits the view that the maximisation of profit is the necessary mode of 'developing' agriculture. In this way, the apparently objective values of science legitimate the development of privately owned large-scale industrialised agriculture. On this basis private ownership is sometimes explicitly encouraged on the agronomy courses. This is particularly the case in the textbooks written by North Americans.

For example, Millar emphasises the importance of the 'democratic right' to own land arguing that the policy of promoting private ownership in the U.S.A. has:-

- i) given individual benefits to 'many people'
- ii) caused a rapid production of wealth
- iii) promoted industry, initiative, self-confidence, independence and civic pride.

In particular, the opportunity to acquire land for colonisation or to buy at a low price has 'accelerated development!'⁴²

This transmission of the necessity of 'private ownership', delivered from the apparent context of 'scientific objectivity', plays an important role in structuring the agronomy students' perception of possible means of 'development' and even the meaning of 'development' itself.

A significant benefit to large-scale extensive agriculture is the possibility of reducing costs by labour displacing technology which further assumes the private ownership of agricultural production. A second but no less significant factor is the ability to finance scientific research and employ scientific experts to develop 'better' agricultural

methods. It is precisely this factor which leads to the second reason why agronomists fail to consider the possibilities of small-scale intensive agriculture as a means of 'development'. While there is no reason why the state could not finance both research and expertise appropriate to small-scale intensive agriculture, this has not happened in Peru.

In fact, while the military control of the state could have facilitated this possibility, as we saw, agricultural research was closely tied, by virtue of tax incentives, to private capital. Therefore agronomists are correct in believing that their career prospects depend on large-scale, extensive agriculture. We can argue that the identification of interests between this mode of development and agronomists has been institutionalised by the Peruvian military government.

Becerra wrote with respect to fruit production that:

'The agronomist can and must play a very important role. In other countries, where the canning industries are more developed, the agronomist constitutes an indispensable link in the production of primary materials, between the factory and the farmers.'^{*43} (my translation)

It is this structural role in the economy which forms the basis of the apparent need for agronomists to be leaders. Since they must not only guide their employers but attempt to control the methods of farming so that the appropriate quality and quantity of 'raw materials' can be supplied to the food industry.

There is a definite emphasis on the importance of 'leadership' in the socialisation process of the agronomy student.

Qualities of 'leadership' are explicitly encouraged. For example, after a lesson where three students had been invited to talk at length about particular experiments in the area of bean cultivation (which experiments had been previously undertaken by U.N.A. students for their final theses and

chosen by the three students concerned), the agronomist stated in a discussion with me afterwards:

'Did you see the difference between the students? The first two were really bad weren't they? But the third one? He was really good, wasn't he? He's the sort who'll make the leaders we need.'^{*44}

Before leaving the University on 'extension projects', final year agronomy students are usually cautioned about their behaviour. For example, students leaving for a project among coffee producers in Satipo were told:-

'Remember, you are students here, but there you will be Ingeniero Agronomists, and must act with the dignity of the profession.'^{*45}

In this context it is quite logical for agronomists to see themselves as 'development crusaders', working for the expansion of science into agriculture for the benefit of all. However, once the view of development based on profit has become internalised as the result of an 'objective science' the development of 'profitable agriculture' automatically becomes an 'export-economy agriculture', since the most profitable agriculture (e.g. sugar, cotton and coffee) are almost entirely orientated to the more lucrative foreign markets. This view that development depends on exporting agricultural produce (despite the increasingly massive need to import food) is frequently emphasised by Peruvian Agronomists. For example, Charles Morin, discussing large scale industrialised fruit production argues that:-

- i) Due to the ecological conditions of Peru, the country could be converted from an importer of fruit to an exporter.

- ii) To achieve this, large-scale industrial fruit production is required.
- iii) The new fruit farms correspond to this model.
- iv) If fruit plantations (such as the existing pineapple plantations) grow in number Peru will rapidly become an exporter of processed fruit.
- v) This will lead to large profits.*46

Similarly Becerra emphasises the necessity to orientate towards the export market in order for industrial agriculture to become more profitable.

'The vegetable industry in the country, in general terms, can be considered as an incipient industry, but developing in a notable manner and with extremely good prospects.'*47

Becerra points out the principle causes of the lack of development up to this point as:-

'....a lack of capital in the established industries and the limiting of production solely to satisfy internal consumption.'*48
(my translation)

Conclusions

In this chapter my primary objective was to demonstrate that social economic and political choices are made by agronomists without them necessarily being aware that a choice was made.

We can say that the choices are made for them by two factors:-

- i) By the needs and interests of production geared for profit using the large-scale industrialised model of agriculture.
- ii) By the internal logic of the social role of agronomists in the process of social control, which validates the technocratic model of agriculture and agricultural management and invalidates other models.

The agronomists would consider that their choices result from scientific analysis. In other words, the underlying principles of science outlined in the previous chapter select a world view incapable of self analysis since it assumes and believes in its own immaculate conception - its 'a-social' validity. This leads to the implicit acceptance in 'basic principles' of agricultural practice which include - private property ownership (including cooperative ownership), wage-labour, and the growing of cash crops to maximise profit. In effect this is an underlying model of agriculture. The process of social control has lent its own style to the model, so that industrialisation on a large scale, exporting agricultural produce, and management by scientific experts are viewed as 'scientific necessity' for development.

This conception of agriculture and development is similarly incapable of realistically assessing alternatives such as peasant-economy intensive agriculture as discussed by Malassis and Servolin.⁴⁹ Such alternatives are assumed to be deficient since they have not developed from a legitimate theoretical base (that is 'agronomy'). In practice such models are alien to the industrially inspired scientific models, like the application of Taylorism to agriculture, since they are not cost-efficient, but land efficient. They are then considered to be scientifically, economically, and therefore socially archaic and inefficient.

I have tried to illustrate the form of social control over what counts as good agriculture, and 'development' and how that model is legitimated by science. I have also tried to indicate what the social implications of this process are for Peruvian society. In Bourdieu's terms I have examined the content and process of social reproduction through the legitimacy of a cultural arbitrary, in this case, the kind of agronomy taught at the U.N.A.

Notes

1. Javier Becarra, 'Horticultura I', Faculty of Agronomy, seventh edition, 1971, p 23
 'El costo de producción de las hortalizas depende fundamentalmente de tres factores:
 a) Eficiente mano de obra
 b) Alta mecanización
 c) Buena administración.'
2. Mortensen, E. & Bullard E.T., 'Horticultura Tropical y Subtropical', Regional Centre of Technical Aid (USAID-Mexico), first Spanish edition 1967, translated by Ing. Carlos Rico Rodriguez p 208
 'Los metodos de combate químicos contra las malas hierbas ahorran mano de obra y su uso puede ser efectivos si se usan con cuidado. Debido a que la mano de obra es más barata en los trópicos que en las regiones templadas, lo mejor es considerar el aspecto económico del combate de las malas hierbas antes de iniciar una investigación sobre los productos químicos aplicables a este fin.'
3. Becerra, op cit. p 8
 'Como se trata de producir hortalizas al más bajo costo por lo general son huertos situados lejos de los mercados, en zonas donde el bajo costo de la tierra y de la mano de obra permite una producción económica de hortalizas de buena calidad.'
4. In conversation, 4th September, 1975
5. Interview - 23rd October, 1975
6. Ing. Zapata, an agronomist at U.N.A., 24th October, 1975

7. Morin C., 'Frutales Tropicales y Menores', U.N.A.
Faculty of Agronomy, la Molina, 1963, p. 3.
8. In conversation, Ing. Morin, 16th December, 1975
9. Willie, J.E., 'Entomologia Agricola del Perú',
Ministry of Agriculture, Lima, Peru, second edition,
1975, p 12.
'Apreciando con toda cautela las numerosas plagas,
creemos que la agricultura Nacional en Promedio
y por año en todas sus cultivas sufre un daño directo
e indirecto debido a los insectos de 25 millones de
Soles oro.'
10. Ibid., p 15
11. Consuelo Bazan de Segura, 'Enfermedades de Cultivos
Tropicales Y subtropicales', Universidad Católica,
editor, Jose D. Segura Montoya, Lima, Peru, 1965,
p (vii)
'... el orden sucesivo de cultivos dentro de cada
capítulo, está relacionado con da importancia
económica, que cada uno de ellos tiene dentro del
País.'
12. Mortesen & Bullard, op. cit. p 5.
'La clasificación de los cultivos de frutales mas
importantes es la siguiente:
Clase I De amplia importancia comercial
Clase II De limitada importancia comercial
Clase III Se producen generalmente solo para el
Mercado local
Clase IV Cultivos de menor importancia que, a menudo,
no son objeto de comercialización.'

13. Millar, C.E., Turk, L.M., & Foth, A.D., 'Edafologia: Fundamentos de la Ciencia del Suelo,' Continental S.A., Translated from the third edition by Angel Reinoso Fuller, Mexico, 1958, p 597.
- 'La política de fomentar la propiedad de la tierra en el sector privado ha dado beneficios individuales a muchos gentes, y ha motivado una rapida producción de riqueza. La oportunidad de adquirir tierras para colonizar o por comprar a precio bajo, ha acelerado el desarrollo de nuestro país. Ademas la posibilidad de hacerse propietario de tierras, y de heredarlos a los sucesores, ha fomentado la industria y la iniciativa, aparte de la confianza en si mismo, la independecia y orgullo ciudadano de nuestra gentes. El derecho de ser propietario es una parte importante de nuestra libertades democráticas.'
14. Becerra, J. op cit. p 24
- 'Felizmente debemos reconocer que tenemos en el país una excelente mano de obra, pues ~~los~~ indigenas, que constituyen la gran mayoría de los obreros de campo, tiennen una innata habilidad manual y rapidamente se convierten en excelantes horticultores.'
15. Conversation - Ing. Montes, 23rd November, 1975
16. Interview, Ing. Salames, 23rd October, 1975
17. Rice & Andrews, 'Breeding & Improvement of Farm Animals', McGraw-Hill, 1957 p 442
18. See Rene Dumont, 'Lands Alive!' Merlin Press, 1965, for his discussion of 'Malthusian economics' in agriculture.
19. Rice & Andrews, op cit., p 442

20. Interview, Ing. León de Ponce. 3rd September, 1975.
21. Numerous sources support these statements including Charles Posner 'Agronomy to the Rescue?', first unpublished draft for the New Scientist; Goodland & Irwin, 'Amazon Jungle : green hell to red desert?' Elsevier Scientific Publishing company, 1975; Susan George, 'How the Other Half Die' Penguin, 1976; and Dr. Shewell-Cooper 'A.B.C. of Soils, Humus & Health', Hodder & Stoughton, 1974, (Dr. Shewell-Cooper was in charge of intensive Horticulture in Britain during the 2nd World War, and was responsible for many land reclamation projects in Europe and North Africa following the war).
22. In particular - L.M. Thompson, 'El Suelo y Su Fertilidad', Reverte, S.A., Barcelona, 3rd edition, 1965, translated by Ricardo Clara Camprubi, and - Millar, Turk, & Foth, op cit.
23. See, for example, Teodoro Boza B., 'Curso de Fitotecnia, Libro III', U.N.A., 1965, p 4, 'Maquira cortadora de sem-illa'
24. Becerra, J., op cit., p 24 'Casi todos las operaciones cult rales pueden mecanizarse.'
25. 'Convención National de Trigo', 1970, U.N.A. p 92.
26. Ibid. p. 78
'Este fenómeno que ha sido indudablemente el principal freno del desarrollo del sector agropecuario del país...'
27. p 78.
'....necesariamente asociado al uso de técnicas rudimentarias de explotación, a bajos rendimientos por hectarea y hombre ocupado, a bajos niveles de ingreso por familia rural, en condiciones de economía de autoconsumo y a su gran número (700 unidades segun el censo agropecuario de 1961), ha sido un sevio

impedimento para que los servicios oficiales...'

28) Ibid p 90

'De este modo es que la comercialización del trigo se ha convertido en un factor que ha limitado la producción triguera.'

29) Mortensen & Bullard, op cit. p 2

'El uso extensivo de metodos científicos modernos podrá triplicar o cuadruplicar la producción agricola en la mayor parte de los países tropicales menos desarrolladas.'

30) Ibid., p 2

31) Morin, op. cit., p 2

'En muchos aspectos la fruticultura tropical entre nosotros se encuentra todavía poco desarrollada y debemos tomar ejemplos de lo que realizan otros países mas evolucionados de manera de aprovechar la experiencia acumulada por ellos a través de muchos años de trabajo constante.'

32) See chapter on Agrarian Reform, particularly George Turner on Credit and the Agrarian Reform.

33) Becerra, op cit. p 6.

34) Ibid., p 6

'Tiene también que tenerse especial cuidado en planear la rotación de cultivos, puesto que se explota muy intensamente una pequeña área de terreno y necesita pos eso especial cuidado. Lo mismo se podría decir del control de plagas y enfermedades que en esos huertos a veces se hacen muy graves por no disponerse de medios adecuados para un eficiente control.'

35) Louis Malassis - 'Economie des Exploitations Agricoles, Essai sur les structures et les résultats des exploitations agricoles de grande et de petit superficie,' Ph. D., Univ. of Paris, 1954. Imprimerie Nationale, 1958, p 278

- 36) Picon Espinoza, C., 'Administracion de la Educacion de Adulto', Cuatro Experiencias, CREFAL, Patzcuaro, Mexico, 1982.
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- 37) De Schutter, A., 'La Investigacion Participativa de la Educacion de Adultos y Capacitacion Rural', CREFAL, Mexico, 1982.
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- 38) Chayanov, A.V., 'The Theory of Peasant Economy', (ed.) Thorner, Kerblay & Smith, Irwin, 1966.
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 1985.
- 39) Palmer, I., 'La Alimentacion y la Nueva Tecnologia Agricola',
 SEPSETENTAS, Mexico, 1976, and...

Susan George op cit. cites figures showing that small farms produce up to fourteen times as much per hectare than the large farms (Colombia) p 35

- 40) Becerra, op cit p 7

'Los rendimientos que se obtienen son muy altos y la calidad de los productos obtenidos es inmejorable.'

- 41) Lerner, I.M., La Base Genetica de la selección, translated by José Soler Coll, Barcelone, 1964, p 360

'En los Estados Unidos, el año 1950 se caracterizó por la eliminación virtual de los pequeños establecimientos de cría y por la concentración del control de la producción de polluelos en un reducido número de organizaciones que abastecen al país. Estas nuevas sociedades se han creado para resistir la competencia cada vez mayor y más severa, y están capacitadas, gracias a su tamaño, para mecanizar y racionalizar los esquemas de cría, para organizar ensayos abiertos de ganado, y para inaugurar concursos (quizás menos abiertos) comprobatorios de los valores de los diversos planes de selección y de apareamiento. Debido a este desarrollo, la búsqueda tecnológica en la mejora se ha ido alejando gradualmente del cometido de las Universidades y de las Estaciones Experimentales. Inicialmente, estas instituciones se dedicaron a estudios de tal tipo a modo de servicio público a los criadores, los cuales, por falta de entrenamiento y por la pequeñez de su escala operativa, eran incapaces de encontrar soluciones a sus problemas.'

- 42) Miller et al. op cit p 597

43. Becerra, J., op. cit. p 172
 'El ingeniero agrónomo puede y debe representar un papel muy importante. En otros países, donde la industria de conservas se encuentra mas desarrollada, el ingeniero agrónomo constituye un elemento de enlace indispensable en la producción de materia prima, entre la fabrica y los agricultores.'
44. Conversation - Ing. Bramilla, 29th Oct. 1975.
45. Observation : Ing. Aliaga, 4th November, 1975.
46. Morin, C., op.cit., pp 5,6.
 'Es este tipo de huerte el que se va imponiendo en todo el país y felizmente casi todo los nuevos huertos de frutales responden más or menos a estas características.... Mientras el país, por sus condiciones ecológicas, podra ser perfectamente un exportador de frutas, nos encontramos con el caso contrario, es decir, que todavía somos país importador Si las plantaciones de frutales del tipo de la piña progressen en forma rápida y significativa, el país podría convertirse, a corto plazo, en exportador de frutas procesadas con las ventajas consiguientes.'
47. Becerra, op. cit., p 169.
 'La industria de hortalizas en el país, en terminos generales, se puede considerar como una industria incipiente, pero desarrollándose en forma notable y con perspectivas muy halagadoras.'
48. Ibid., p 169, '....falta de capitales de las industrias establecidas y limitación de la producción sólo a satisfacer el consumo interno.'
49. Servolin, C., 'L'absortion des Paysans Dans le Mode de Production Capitaliste', INRA, Paris, 1977.

Conclusions

Agronomy education at U.N.A. has been examined as a social process. The theories of both Basil Bernstein, and Bourdieu have been used to throw light on this social process. Both these sociologists are concerned with the reproduction of power relations through education. Both consider the process in terms of the cultural domination by a particular social class or group who reproduce power relations normally inadvertently, believing in the objective legitimacy of their knowledge, and the education process in general. However, it is considered that neither the knowledge content, nor the pedagogy are arbitrary, but are socially, economically, and culturally dependent. In other words, they reflect the existing dynamics of power.

Both theorists argue that to reproduce power relations an element of social deception is required. This deception is often particularly powerful because it is not recognised by any of the participants as such. Bourdieu argues that reproduction is dependent on the 'cultural arbitrary' of the dominant group or class to be made socially legitimate. This represents 'symbolic violence' since the process simultaneously invalidates all other 'cultural arbitraries' of other social classes or groups, representing the 'cultural arbitrary' that most closely identifies with and supports the interests of the dominant class or social group as 'True'.

Bernstein argues that power relations are reproduced by the educational process through the 'classification' and 'framing' of knowledge which embody, reflect, and can reproduce power relations without the teachers or the students necessarily being aware that this 'coding' is being transmitted. He argues that for this to be successful it is necessary to represent the educational system as being autonomous from the interests of power groups, and independent from the social relations that the power relations produce.

In other words, an examination of agronomy education at U.N.A. must not only be concerned with the educational process at the University itself, but must consider this in terms of social and cultural reproduction. In order to do this, the 'class or social group' controlling education must be identified in its wider social context. In Peru this concerns the development of the educated middle class in the context of the 'Peruvian Revolution' and its agrarian and educational reforms. The mechanics of power and control must be identified and related to the social conditions of Peru. It is important to demonstrate the relationships between the day to day process of agronomy education at the U.N.A. and the dynamics of power and control in Peruvian society.

I have argued that social conditions in Peru require an appropriate theory, and that modifications to existing theories were necessary. This has meant that the theoretical framework for the thesis is dependent on Bourdieu and Bernstein in particular, but does not represent a simple application of their theories. In their research these theorists are particularly concerned with social positioning and the way in which social

structures and the distribution of material and symbolic values are reproduced. In examining agronomy education at U.N.A. I have been further concerned not only with these systemic relationships, but also with the economic relationships.

In principle, the complex relationship between power and (the mode of) control underpins my analysis. In general terms I use power to mean the ownership and organisation of the means of production, which in Peru is characterised by the concentration of wealth and its creation in the hands of a minority. Despite apparent changes, the basic structural relationships (as I have pointed out) remain the same. By control I mean the transmission of the fundamental material and symbolic values which arise from and effectively legitimise power. In particular I have been concerned with the nature and specific interests of the social class or group who have achieved a position as cultural transmitters. Clearly, in many societies the agents of social control (teachers, social workers, managers, etc.) are not themselves members of the dominant socio-economic class or group. Nevertheless, I have argued that power relations are reproduced through them. In Peru I have argued they constitute a new form of the middle class and they have not only gained cultural dominance, but have also gained control over state institutions during the 'Peruvian Revolution', and over the means of production due to specific conditions prevailing in Peru. I have argued that it would appear that the owners of the means of production were paralysed by four factors:-

- 1) The severe class conflict in the traditional sector of production and power (agriculture).

- 2) The rapid diversification of the number of foreign interests in agricultural and industrial production.
- 3) An apparent inability to recognise or identify with the actual shift in the power base from agriculture to industry, and the changes in the modalities of control appropriate to the changes.

Finally, :-

- 4) An apparent inability to recognise that the 'Peruvian Revolution' was actually institutionalising the structural changes that had already occurred, and forming a modality of control more appropriate to prevailing conditions.

Under these conditions the emerging sector of the middle class characterised by high academic qualifications, usually of a scientific nature, and committed to the concept of the scientific development of Peru gained an unusual measure of control within Peruvian society to the point where they could be described as a 'technocracy'. The modality of social control became characterised by the character, interests, and world view of this particular social group. I am not arguing that they became the dominant social group economically, or socially. But that their cultural and political domination resulted in an unusual degree of influence over the economy and Peruvian society as a whole. The fact that the main result of this control was to 'rationalise' the existing dynamics of power in practice, supports the view that this group held not power as such, but acted as agents of control.

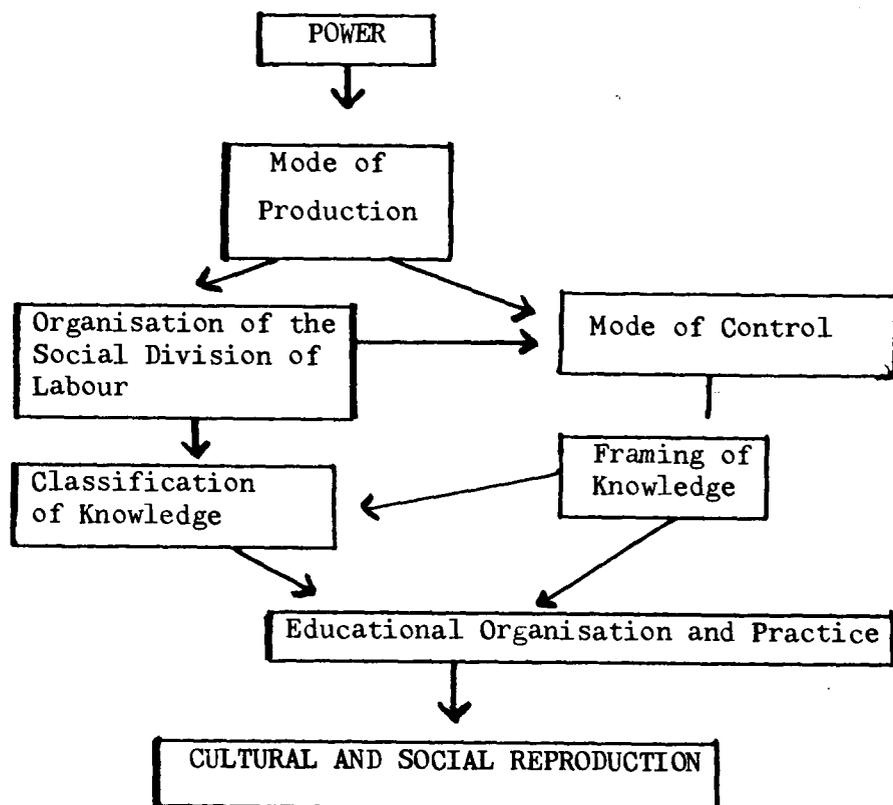
To further the argument it is necessary to consider both power and control in the educational process. Since I have argued

that power is dependent on economic ownership, and control is dependent on cultural domination, it is possible to argue that economic influence and control over agronomy education represents power, and the inculcation of a 'cultural arbitrary' represents the modality of control. However, it is important to recognise that cultural reproduction involves both the penetration of power and the operation of the mode of control. In this context one of the main values of Bernstein's work is that power and control are each identified. Power is considered to be symbolised by, embodied in, and reflected by 'classification'. Control is considered to be symbolised by, embodied in, and reflected by 'framing'. This is particularly useful since micro and macro levels of power and control can be considered in parallel and in relation to each other.

In conclusion we can argue that power, as I have used the term, determines several aspects of education, which have the effect of reproducing the conditions of production. Control in education reproduces and legitimates power relations.

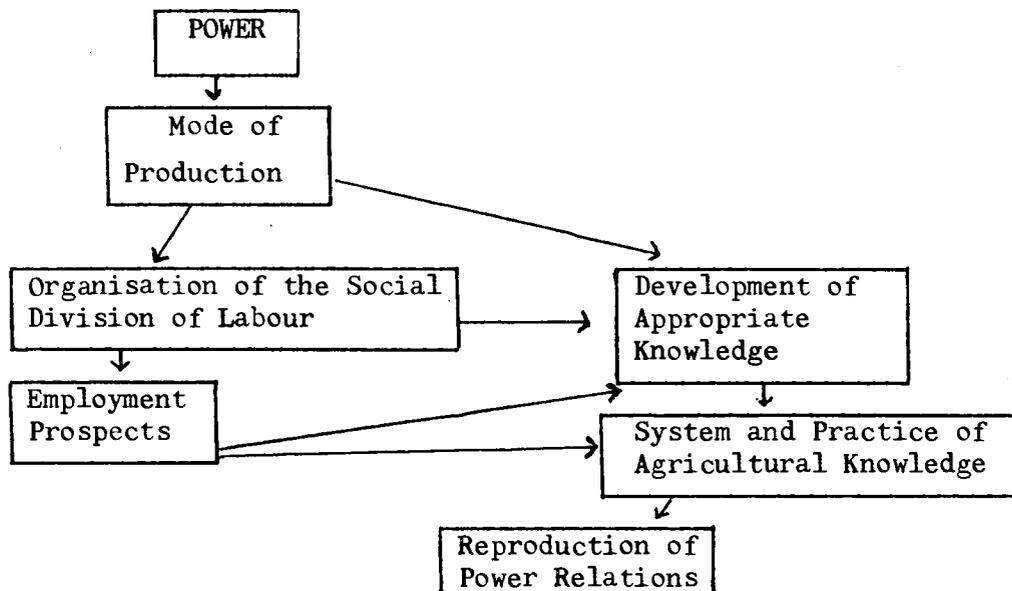
While examining the relationships involved in the educational process with respect to power and control, two implicit inter-related analytical models emerged. These can be represented as follows:- (see over).

Table 55

Model 1 : THE PROCESS OF CONTROL - Cultural and Social Reproduction

This model outlines the process of control at U.N.A. The classification of knowledge is represented as stemming from Power through the organisation (and classification) of the social division of labour. The framing of knowledge is represented as stemming from the mode of control which is itself ultimately dependent on power. This model is mainly concerned with the coding of knowledge, and the social consequences of the coding. Cultural and social reproduction is achieved through the transmission of the coding of knowledge because the code symbolises, embodies and reflects the social organisation of power and control.

Table 56

Model 2 : THE ROLE OF AGRONOMY IN THE PROCESS OF CONTROL -The Reproduction of Power Relations through the teaching of Agronomy

This model outlines the specific role of agronomy education in the process of control. It is concerned mainly with the content and practice of agronomy. It indicates how the system and practice of agricultural knowledge reproduces power relations, because the content and organisation of agronomy at U.N.A. is ultimately dependent on the social organisation of power.

The two models are inevitably inter-related in that they represent facets of a single social reality. As sociological analytical models, the second model is dependent on the first. This is because the first model deals more with symbolic reproduction and the second deals more with material reproduction (by comparison). For agricultural knowledge to become a means of reproducing power relations relies, in

this case at least, on the social deception of representing legitimate agricultural knowledge and expertise as socially isolated categories. Therefore, the transmission of the classification and framing of agronomy knowledge is the social prerequisite for the reproduction of power relations through the teaching of agronomy at U.N.A.

The two models are not intended as exhaustive models of social 'reality'. They take the shape that they do in order to throw light on particular and specific aspects of the relations of power and the mode of control with respect of agronomy education at U.N.A. Before I translate the models into the particular relationships they imply, some general principles particular to these models require some explanation.

In Model (1), the 'Mode of Control' is represented as dependent on both the 'Mode of Production' and also the 'Organisation of the Division of Labour'. This is because the specific character of the 'Mode of Control' is dependent on the character of the social class or group which manages the agencies of control (and on the nature of the classification of the different social classes or groups at the different levels in the hierarchies of employment), but the principles of control are implied by the 'Mode of Production' (which includes both the means of production and the relations of production).

In Model (2), the 'Development of Appropriate Knowledge' is similarly dependent on both the 'Mode of Production' and the 'Classification of the Division of Labour'. This is because the 'Mode of Production' determines what knowledge is appropriate, but the 'Classification of the Division of Labour' determines the classification and framing of that knowledge. Furthermore, employment prospects influence the selection of knowledge.

These relationships, among others, may become clearer as I translate the models into real terms. I am of course, limiting the models to the relationships that produce the nature of the agronomy education and the reproduction of the conditions and relations of power in Peru.

I will now demonstrate the process that begins with power and ends in social reproduction and the reproduction and legitimisation of power relations, taking the route outlined in the models.

Model 1 : THE PROCESS OF CONTROL - (A) Power, and the Mode of Production (refer to p.387)

In Peru, the private ownership of agriculture was effected considerably by the Agrarian Reform. Before the Reform it was characterised by the concentration of productive land in the hands of the traditional rulers of Peru, labelled in Peru as the 'oligarchy', or alternatively owned by multinational corporations, particularly the sugar estates. Agriculture on these estates and farms was becoming increasingly industrialised and export orientated. This was in the explicit attempt to maximise profit in an increasingly less profitable sector of the economy, which was undergoing a process of decapitalisation; since capital invested in the urban industrial sector had begun to yield higher profits.

The Agrarian Reform rationalised this shift in the economic balance from agriculture to industry, by allowing permanent workers to co-operatively own the estates, paying the previous owners in bonds which were more immediately redeemable if invested in the industrial sector. Furthermore, all the industrial processing plants were retained by the original

owners. Thus the 'peasants' (or at least a small proportion of them) gained ownership of some of the land on which it was increasingly difficult to make a profit, and the original owners retained ownership over the most profitable aspects of agriculture - its industrialisation and distribution. In this way, the original owners held power over the market and profit in agriculture as well as increasing their diversification in the urban industrial sector.

Although the most economically significant farms and estates became co-operatively owned by the permanent workers it remained the case that less than 15% of the rural population (or less than 8% of the total population) owned over 65% of the land.

The relations of production were still characterised by their historic nature. On the various forms of co-operative, the ownership of the land remained unequal and depended to some extent on the relative ability to 'buy' shares in the co-op. In practice, because the control of the co-operatives was effectively gained by the agronomists and technicians it was usually considered by the 'peasants' that they were actually working for the state and not for themselves at all.

The rest of the agricultural sector can be roughly divided into two groups. First was the subsistence 'peasant small-holding' which produced most of the food and was characterised by family relations of production. Second was the medium to large farm, privately owned and increasingly geared to the industrialisation of crops and the urban and/or export market. On these farms the relations of production often remained as a mixture of wage labour and peonage.

The relations of production within the 'Mode of Production' were

..../cont'd over

characterised by maximising profit, labour displacement, industrialisation and the export market. Labour was merely a market commodity.

Under these conditions the classification of the division of labour remained strong but was not as simple as owners of the land and workers of the land. We have already seen that the most powerful aspects of the mode of production (the profitable processing plants) remained in the hands of the original owners of the land. The hived off agricultural sector was still determined by this ownership and forms of control. Therefore, the primary classification is between 'intellectual labour' and 'manual labour' where the first is in clear authority over the second. This classification is very strong. There were further classifications based on forms of ownership. Private landowners, co-operative owners ('socios'), wage labourers, seasonal workers, and peasants. Within the intellectual labour category, there were 'Ingenieros Agronomos' at the higher level of authority dealing with the more theoretical aspects of agriculture and the more general decisions which determine the nature of the agriculture. Lower in the authority hierarchy were the 'Ingenieros Agrícolas' (the 'technicians') who dealt with the more practical aspects of agriculture and the day to day decision making. In general, the more theoretical the expertise, the higher its status.

(B) Mode of Control

Referring back to the model, it is clear that for this mode of production to persist, the new owners of the land must continue to produce the agricultural products required by the owners of the processing plants. Previously this was achieved by the

owners of the land producing what they required themselves. In order to ensure that it remained produced in sufficient quantity and in a form appropriate to the existing industrial plants and distribution networks it became more important that this was effectively controlled by the 'experts'.

In this way the mode of control became characterised by the new 'technocracy'. In practice the resulting agriculture merely conformed to the needs of those who owned and controlled the more profitable aspects of agriculture, that is the industrial processing plants, distribution and exportation of agricultural commodities. However, the rationale given for the nature of the agricultural practice is not this underlying function, but dependent on the scientific expertise alone. The resulting character of control is the status given to theoretical knowledge at the expense of practical experience. Without this domination through academic qualification, the underlying function of the resulting agriculture would become transparent. Within this framework, 'scientific agriculture' is considered to be for the 'good of all'.

This 'cultural violence' which is merely a form of social deception was dependent on the classification of knowledge. From the model we can see that the classification of knowledge is dependent on the classification of the division of labour. Scientific knowledge is given the highest status which is necessary for the agronomists to be in authority over the agricultural workers ('campesinos'). Furthermore, scientific knowledge is classified as independent of all other categories. This strong classification is also necessary for the social deception to take place. Once it has become accepted, 'socially

legitimate', that agronomists are in authority because they are 'experts', and that this expertise is based on a form of knowledge which is independent from everything else (including 'politics', 'economic interests', etc.), then it becomes impossible to recognise the underlying social function of the agronomist, which is to reproduce forms of agriculture in the interest of the most wealthy and powerful, and to legitimate the practice of this agriculture in the name of scientific excellence and the 'good of all'. This formed the social basis of the strong classification of knowledge found in the education at U.N.A.

We have seen that the principles of control are determined by the power relations, in terms of need and the purposes of control. The character or mode of control is determined under these conditions by the social role, character, and world view of the 'technocracy'. As we have already seen, this world view is not developed in isolation, but is also a social product ('cultural arbitrary'). Within this world view, the framing of knowledge is necessarily strong, since it is only 'scientific expertise' that can be considered able to legitimately define what counts as knowledge, what needs to be learned and in what sequence, and what status each 'area' and category of knowledge is given. In this way, the strong framing of knowledge maintained the social legitimacy of the classification of knowledge. The strong framing is a product of the classification of the division of labour and the authority invested in the agronomist within the mode of production, but is represented as the product of 'scientific expertise' alone. This forms the social basis of the pedagogy at U.N.A.

(C) Cultural and Social Reproduction

In this way, the classification and framing of knowledge which underpins the educational process is a product of power relations, but also takes on the character of the 'technocracy'.

Consequently it is also an important factor in all processes of selection and evaluation. The social nature of selection is demonstrated by the fact that 49% of the agronomy students were indeed from a professional and/or 'middle class' background.

The other categories of landlord, working class and peasant, are only 16%, 17%, and 18% respectively. Similarly, choices made by the students themselves with respect to aspirations and expectations for future employment, and optional courses, demonstrated social factors. I shall expand on this when considering the second model concerned with economic aspects of reproduction.

In this context, these relationships serve to indicate that the education of agronomists was actually a part of the process of social reproduction, and that while this is dependent on power relations, cultural reproduction (identified by the classification and framing of knowledge) represents the legitimisation of power relations. In this context, cultural reproduction serves not only the interests of the powerful, but also the agents of social control identified as the 'technocracy'. This is the social basis of the identification of the agronomists with their 'cultural arbitrary' - it is socially, economically and philosophically in their interest to do so.

Model 2 : THE ROLE OF AGRONOMY IN THE PROCESS OF CONTROL (refer to p.388)

This model, representing the same social conditions and relationships as Model 1, necessarily has the same power base, mode of production and organisation of the division of labour in common. I can therefore take these for granted at this stage and begin to develop the dependent relationships.

Intellectual and manual labour are required by the mode of production. Employment prospects can be defined by the labour required, and the forms that this takes. This is defined by the organisation of the division of labour.

According to the model, the 'Development of Appropriate Knowledge' is dependent on;

- 1) the mode of production,
- 2) the organisation of the division of labour,
- and 3) employment prospects.

It is this relationship between knowledge and its social origins which is effectively hidden by the strong classification of knowledge re-inforced by the underlying scientific principles indentified as a 'cultural arbitrary' (and which while reproducing power relations, is produced as a 'cultural arbitrary' by the social conditions experienced by the 'technocracy').

Within this world view, rather than knowledge being dependent on other social factors, agriculture is considered to be a product of an independent scientific knowledge. Attempts to link the agronomy course more closely with production are seen as the attempt to increase the efficiency of the application of scientific knowledge, rather than compromising the taken-for-granted idealised basis of science. (As this is considered to

be dependent on methodology, and not its 'application'.)

However, the effect of the mode of production can not only be analysed from a theoretical basis, but can also be demonstrated to exist at the U.N.A. itself. To define terms more clearly, in the model, 'development' means three things:-

- 1) The development of original knowledge, or research.
- 2) The selection from available knowledge.
- 3) The development and transmission of knowledge on the course.

At the U.N.A. research was dependent on funds being made available. Even though research was considered to be an extremely important part of the teaching agronomists' job, the funds had to be found outside of the university funding. In practice this was often from private business. The military government increased the amount of the 'grant' given. These grants were not however given indiscriminately for the donors defined the aims and objectives of the research. In this way knowledge was developed in the explicit interest of the wealthiest agriculturalists or industrialists. Generally those who were geared to industrialisation, labour displacement and the maximisation of profit. Although these research projects represent the development of only a small proportion of the total knowledge content of the agronomy courses at U.N.A., their influence was disproportionately high on the courses, because courses were often organised around the research projects of the agronomists. It is one area where theory and practice did go hand in hand, This means of financing research has been explicitly copied from the North American system,

consequently the development of much agronomy knowledge could well be a direct economic product in this way.

A further revealing indication of this relationship is the analysis of the main beneficiaries of research and extension projects. Of the 'research contracts' at the university dealing with food, 83% of the agricultural beneficiaries were identified as medium to large-scale farmers or exporters. Only 3% of the beneficiaries were identified as small/^{scale}farmers. The main consumer beneficiaries were identified as urban and foreign - 66%.

Roughly two thirds of the 'staff and student research projects' focused on 'popular foods'. Despite the fact that most of the popular foods were produced by the small-scale farmer, almost 80% of these research projects benefitted large-scale agriculture. Similarly, the technical assistance projects undertaken by the university staff and students overwhelmingly benefitted the large-scale farmers (almost 90%). Over 50% of the consumer beneficiaries were identified as the 'urban middle class'.

This clear evidence of the results of economic influence over agronomy is generally not recognised because of the strong classification of knowledge which implicitly denies the possibility of such a relationship, and explains the production of such knowledge as 'scientifically correct'. The internal logic remains that if the knowledge is scientifically correct then it cannot be a social product, but that the form that agriculture takes is in fact considered a 'scientific product'.

This is facilitated by the classification of knowledge which separates the different components into apparently isolated areas, and the classification of the division of labour which separates the responsibilities and concerns (the problematics) of the different categories of workers into apparently isolated areas.

The agronomy course was explicitly intended to produce 'experts' who could apply their knowledge and abilities in the real world. In practice it is often difficult to establish what exactly constitutes the 'real world'. Gaining employment is often dependent on judging the real world accurately. The agronomy students certainly needed to be able to assess future opportunities. A comparison of their aspirations and expectations reveals that most students' aspirations are not very different from their expectations. Nevertheless, significantly more students expected to work for the State, Co-operatives and large-scale farmers than would have actually chosen to do so. More students would have liked to work for the small-scale farmer and a university than expected to do so. By far the largest discrepancy between aspirations and expectations concerned working with the small-scale farmers where 21% would have liked to find such employment but only 4% expected to do so.

The student body can be examined with reference to the different social backgrounds of the various groups of students. Each group of different social background indicated preferences in aspiration and expectation which can be considered as social tendencies. Typically, for example, those from an urban background tend to want urban employment, those from a rural background tended to want rural employment.

These conclusions tend to be tentative because apart from those from a 'professional' background, all the samples are small. In general terms, the results are far more significant, particularly when the students' choices of optional courses are examined with reference to their aspirations and expectations.

The optional courses were generally courses that specialised in particular crops or particular skills relating to particular crops or processes. Six students had to choose a course for it to run. Significantly, none of the courses relating to export crops were forced to close. The least popular courses were all concerned with 'popular foods' (horticulture, rice, etc.,) or 'nutrition'. The most popular courses were the tropical cultivation courses and the two export crops - sugar cane and cotton.

In other words the 'choices' made by the students reflect their expectations far more strongly than their aspirations. In this way employment prospects as envisaged by the students effects the development of the knowledge content of the agronomy course. This selection of courses takes place within the parameters already set of what counts as agronomy knowledge. This can be demonstrated as dependent on the needs of large-scale farming, both in terms of the development and selection of knowledge, and also in the attempt to produce a 'professional' as an economically viable 'product' in the labour market.

What counts as agronomy knowledge also concerns the classification of agronomy knowledge, not only in terms of taken-for-

granted knowledge content, but also in terms of what is excluded from the knowledge category and the relationships between the different categories within what counts as agronomy. These relationships are dependent on the classification of the social division of labour, both in terms of cultural reproduction (-the principles of classification and framing and the world view based on the underlying principles of science), and also in terms of different employment requiring different specific knowledge.

In this way the system of agriculture is reproduced.

REPRODUCTION

Considering the form of agriculture advocated by the agronomy course is to recognise that it is not merely a system of agriculture, but a system of 'development'. Generally farms are assumed to be privately owned, or more accurately, operated as if they were privately owned. Maximisation of profit is assumed to be the main aim. This is frequently assumed to result in maximum production even though this is very often not the case. Labour displacement is assumed to be a part of 'good farming' where this cuts costs and so increases profits. In fact it is often assumed to be cheaper and more profitable to mechanise when there is no direct evidence to support the assumption. Mechanisation is invariably assumed to produce more food when it can^{be} demonstrated in all the studies undertaken that it produces less food per area of land, even if more food is produced per worker.

Conversely, peasant agriculture is considered by definition to be an obstacle to 'development'. Without supporting evidence

it is assumed to not only produce less food per 'worker', but also less food per area of land, which can be shown to be quite incorrect. One of the main reasons it is considered an obstacle to development is that it is not conducive to large-scale mechanisation and industrialisation. It is therefore considered to be inefficient by 'industrial' standards, clearly 'traditional' and therefore worse than 'modern' farming. The crops are considered to be of 'lower quality', the criteria being marketable 'looks' and not nutritional value.

These assumptions are taken for granted by the agronomists because peasant agriculture is not based on a legitimate 'scientific knowledge', but on generations of practical experience. The same criteria that legitimates their own form of academic knowledge as culturally legitimate, invalidates all other forms, considering them as inherently inferior because they are not the same. The fact that the different forms of knowledge and agriculture are attempts to solve quite different problematics is not recognised by agronomists. This is because agriculture is considered to be either a 'scientific product' and therefore 'good', or else a 'non-scientific product' and therefore prone to 'superstitious' and other 'bad' practices. It is not recognised that both agricultural practice and theory serve 'arbitrary' objectives that are in effect defined by the Relations of Power.

This has enormous repercussions for the model of development. In Europe and the U.S.A., the mechanisation of agriculture coincided more closely with the rapid expansion of labour intensive industry. The development of technology in industry in the attempt to increase profits by reducing often increasing labour costs, has resulted in modern capital-

intensive production methods. This technology also forms the basis of the industrialisation of urban Peru. Consequently there is little employment available for those displaced from agriculture. Also by comparison to the U.S.A. where a great deal of arable land became available to the agriculturalists (and high productivity per worker was perhaps more important than high productivity per area of land), land is considered 'overcrowded' in Peru. Under these conditions it may be more rational socially to employ the vast numbers of rural workers who appear to want to work the land intensively. In this way more food would be produced which would eliminate hunger and the need to import food, and the high unemployment would also be significantly reduced.

In practice this alternative (or any other) is not a viable alternative because it fails to take account of the power and control over the mode of production. Within the mode of production it is perhaps not surprising that the colonisation of the jungle is considered to be an important aspect of 'development'. The model envisaged is the implementation of agronomy as it exists. Large-scale extensive production of profitable crops, industrialised and exported to the lucrative world markets. It pays little or no attention to the social problems of mass unemployment, labour relations, the need for foodstuffs in Peru itself, nor the rights of the indigenous Indians and their lifestyles in the jungle as it exists. Neither does it consider the ecological problems that result from this style of agriculture originally developed in quite different social and environmental conditions.

In fact the development of agronomy as a social product can be considered to have two aspects:-

- 1) The content of agronomy defined in terms of its classification.
- 2) The legitimation of this knowledge and its consequences, defined in terms of its framing and the relationship between the framing and the classification (with respect to the power relations reproduced).

The fact that the science of agronomy has social, economic, political and ecological repercussions as it is practiced in Peru, is not recognised because of the form of its legitimation, which denies the possibility of agronomy as a science being able to produce anything but the best of possibilities, and fails to recognise that the actual consequences are a product of the same forces that produced the nature and character of agronomy - the power relations.

Agronomy education can therefore be considered a social product in that it exists in relationship to society and the prevailing dynamics of power. Agronomy education at U.N.A. can be demonstrated to be economically dependent and an expression of a dominant 'cultural arbitrary'. Within this social context agronomy education tends to reproduce the conditions and relations of the dominant mode of production. Further, due to the specific role of the 'technocracy' as agents of control in Peru, agronomy education plays a role of legitimating power relations.

In practice, legitimacy depends on the strong classification of knowledge which not only denies that knowledge is a social product, but also legitimates the higher status of theoretical knowledge in terms of 'scientific excellence'. In this way, the development of theoretical knowledge as dependent on the aims and objectives of the dominant mode of agricultural production is in effect concealed. Similarly the authority of intellectual labour over

manual labour is misrepresented as due to the inherent superiority of 'scientific knowledge'. The authority of teachers, which is a reflection of, and dependent on the authority of the agronomist in the dominant mode of production, is similarly misrepresented as purely due to the understanding and knowledge of scientific principles.

The form of reproduction can be identified as follows:-

- 1) The teaching of knowledge appropriate to the dominant capital-intensive mode of large-scale/agricultural production, both in terms of teaching 'required knowledge', and also in terms of the classification of knowledge which takes for granted (and therefore fails to examine) the problematics of the owners of the means of agricultural production and reproduction (particularly the main sources of profit and power in agriculture, the processing plants and distribution networks).
- 2) Producing appropriate expertise, both in terms of knowledge and skills required by employers, and also in terms of the ability to wield 'cultural authority'.
- 3) Reproducing the agents of social control both in terms of consolidating the social position of the new middle class (the 'technocracy') as the agents of control, and also in inculcating a system of beliefs that explains and legitimates the 'symbolic violence' that characterises the imposition of a 'cultural arbitrary' as socially legitimate.
- 4) Legitimizing the dominant mode of agricultural production not in terms of its own objectives (which are dependent on power and the attempt to maximise profit), but in terms of the scientific method in the interest of the 'general good'.

- 5) Invalidating alternative forms of agriculture, not because they do not serve the interests of the capital investor, but because they are considered 'non-scientific' and therefore by definition guilty of 'bad' practices.

The student of agronomy is, of course, unaware of most of these relationships. Similarly for the majority of the teachers, teaching agronomy is merely an attempt to increase the skills, knowledge and expertise available for the general benefit of agriculture and those who depend on its efficiency and development. However, power relations underpin the knowledge content, course structure and pedagogic relationships. Knowledge content and social relationships are learnt by students as expressions of scientific excellence, when in practice they are dependent on and reproduce power relations in society, and 'symbolic violence' is legitimated in the name of scientific development.

APPENDIX

Table 57

FORMATO P. A. A. - C - 73

LLEVAR		PROGRAMA ACADÉMICO DE AGRONOMIA															
PROGRAMA DE ESTUDIOS PARA BACHILLER EN CIENCIAS - AGRONOMIA		III 18 Créditos		IV 20 Créditos		V 20 Créditos		VI 20 Créditos		VII 20-24 Créditos		VIII 20-24 Créditos		IX 20-24 Créditos		X 20-24 Créditos	
CÓDIGO	NOMBRE DEL CURSO	III 18 Créditos		IV 20 Créditos		V 20 Créditos		VI 20 Créditos		VII 20-24 Créditos		VIII 20-24 Créditos		IX 20-24 Créditos		X 20-24 Créditos	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	QUÍMICO GENERAL	1	2														
2	CÁLCULO I	1	2														
3	CÁLCULO II	1	2														
4	FÍSICA GENERAL I	1	2														
5	FÍSICA GENERAL II	1	2														
6	CÁLCULO III	1	2														
7	BIOQUÍMICA	1	2														
8	BIOQUÍMICA I	1	2														
9	BIOQUÍMICA II	1	2														
10	NOTAS GENERAL	1	2														
11	NOTAS DE LABORATORIO	1	2														
12	REACTIVOS TÉCNICA	1	2														
13	REACTIVOS TÉCNICA	1	2														
14	TECNOLOGÍA DE ALIMENTOS	1	2														
15	TECNOLOGÍA DE ALIMENTOS	1	2														
16	TECNOLOGÍA DE ALIMENTOS	1	2														
17	TECNOLOGÍA DE ALIMENTOS	1	2														
18	TECNOLOGÍA DE ALIMENTOS	1	2														

UN MÍNIMO DE N CRÉDITOS EN CUALQUIER DE LAS SIGUIENTES ÁREAS ALIMENTICIAS.

Table 58

RELACION DE CURSOS PARA LAS ORIENTACIONES Y CAMPOS COMPLEMENTARIOS DE AGRONOMIA:

CACIONES (20 créditos mínimo)		B.-CAMPOS COMPLEMENTARIOS (20 créditos mínimo)	
ultura	<p>Historios: Olericultura General (3); Fruticultura General I (2); Fruticultura General II (2); Floricultura General (3); Tópicos Especiales en Horticultura (1).</p> <p>Historios: Manejo de Viveros (2); Olericultura Especial (3); Fruticultura Especial I (3); Fruticultura Especial II (3); Mejoramiento de Cultivos Hortícolas (3); Fisiología de Cultivos Hortícolas (3); Fisiología y Manejo del Producto Cosechado (3); Viticultura (2); Enfermedades de Cultivos Hortícolas (3); Plagas de Cultivos Hortícolas (2); Mercadotecnia (3); Principios de Horticultura Ornamental (2); Control Químico de Malezas (2).</p>	1. Economía y Administración	<p>Obligatorio: Análisis Micro-Económicos (3).</p> <p>Electivos: Principios de Contabilidad (3); Contabilidad General (4); Principios de Administración (3); Mercadotecnia (3); Economía y Sociología de la Cooperación (3); Economía de la Producción (3); Formulación y Evaluación de Proyectos (4).</p>
cción Agrícola	<p>Historios: Mecanización Agrícola II (3); Control Químico de Malezas (2); Riegos y Recuperación de Tierras I (3); Ecofisiología de la Producción Agrícola (3).</p> <p>Historios: Algodonero y otras fibras vegetales (3); Caña de Azúcar (2); Arroz (2); Malz y Sorgo (2); Cereales Menores y Queropodiáceas (2); Oleaginosas (3); Leguminosas de granos (2); Tuberosas y Raíces (3); Cultivos Tropicales (4); Cultivos Forrajeros (3); Olericultura General (3); Fruticultura General I (2); Fruticultura General II (2).</p> <p>* No son válidos los cursos tomados para completar los 12 créditos en Cultivos Obligatorios en el presente Currículum.</p>	2. Extensión Rural	<p>Obligatorio: Principios y Métodos de la Extensión Rural (4); Teoría de la Comunicación (3); Psicología Social (3); Movilización Campesina (3).</p> <p>Electivos: Planificación y Evaluación de la Extensión Rural (3); Administración y Supervisión de la Extensión Rural (2); Cambio Social (3); Principios de Contabilidad (3).</p>
id Vegetal	<p>Historios: Control de las Enfermedades de las Plantas (3); Nematología (3); Evaluación y Crianza de Insectos (3).</p> <p>Historios: Entomología Forestal (3); Plagas de Cultivos Industriales (2); Plagas de Cultivos Hortícolas (2); Plagas de Cultivos Alimenticios (2); Patología Forestal (3); Enfermedades de los Cultivos Industriales y Alimenticios (3); Enfermedades de los Cultivos Hortícolas (3); Micológia (3); Apicultura (2).</p> <p>* Por lo menos un curso deberá ser de Fitopatología si la inclinación es en Entomología y viceversa.</p>	3. Forestales	<p>Introducción a las Ciencias Forestales (3); Dendrología (3); Dasonomía (4); Ecología Forestal (3); Silvicultura (4); Conservación y Economía de Recursos Naturales (3); Entomología Forestal (4); Patología Forestal (3); Tecnología de la Madera (4); Aprovechamiento Forestal (4).</p>
ogía	<p>Historios: Análisis de Suelos y Plantas (3); Cartografía del Suelo (3); Relación Suelo-Agua-Planta (3).</p> <p>Historios: Geología (3); Suelos de Zonas Áridas (3); Suelos Tropicales (3); El Suelo y la Nutrición Mineral de Plantas (3); Microbiología del Suelo (3); Fisiología del Suelo (3); Riegos y Recuperación de Tierras I (3); Riegos y Recuperación de Tierras II (3); Tópicos Especiales en Suelos (1).</p>	4. Ingeniería Agrícola	<p>Topografía II (3); Riegos y Recuperación de Tierras I (3); Riegos y Recuperación de Tierras II (3); Mecanización Agrícola II (3); Construcciones Rurales (4); Administración de Distritos de Riego (2); Manejo de Cuentas (3); Proyectos de Irrigación (2); Topografía III (4).</p>
		5. Zootecnia	<p>Nutrición (4); Alimentación Animal (3); Anatomía Comparada de los Animales Domésticos (4); Fisiología Animal (4); Reproducción Animal (3); Mejoramiento Ganadero (3); Producción de Vacunos de Carne (3); Producción de Vacunos de Leche (3); Producción de Ovinos y Alpacas (3); Producción de Aves (3); Producción de Porcinos (3).</p>

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