CHAPTER - III
THE STUDY DESIGN

As we discussed in the last chapter, a large number of factors -- among them, the quantum and nature of funding -- together gave shape to, and contoured, a particular understanding of the population resource question. These factors also coloured the research that was undertaken along with the launching of population control programmes in third world countries.

A large number of studies with a neo-Malthusian understanding of the problem were carried out, beginning in the nineteen fifties. One of the most influential of these was the Khanna Study(1), funded by, among others, the Rockefeller Foundation. We will take up the Khanna Study for a brief review simply because it was so monumentally influential on policy and perspective in the field of demography; but we shall not lavish attention on the host of studies similarly undertaken.

A review of all the studies in family planning would not only be too daunting a task but would also be largely unnecessary. As we noted in the last chapter, studies using neo-Malthusian ideas and methods are, in a sense, self-validating. That is to say, they appear to prove what they set out to prove -- for their assumptions lead axiomatically to certain conclusions. This is indeed a field where the aphorism "the eye does not see what the mind does not know" holds absolutely. One major and fundamental problem, either explicit or implicit, with the majority of studies undertaken is that populations are assumed to be homogenous. In other words, socio-economic variables which determine demographic events are assumed to be uniform for all sections of the population. That the basic economic considerations in relation to fertility -- and therefore response to family planning -- can be totally different among different segments of the population is not appreciated.(2) To illustrate, Rao(3), in her excellent bibliography of 550 studies on family planning in India, lists only eleven studies which are even informed of social differentials in fertility. Of these eleven, the majority use caste or education as the basis of
stratification. These criteria, while having some merit, also have serious shortcomings. After reviewing studies in family planning in India, Krishnamurthy wonders if there "are significant differences in fertility between social classes."(4)

A second major problem is that we have a plethora of studies which tell us about certain associations; but not about other related and equally relevant ones. A certain kind of fractured vision of reality, utterly un-holistic is adopted. Thus we have studies telling us, for example, of fertility in relation to occupation, fertility in relation to rural-urban residence, fertility in relation to landholding, fertility in relation to education and fertility in relation to age at marriage and so on. Then we have studies on infant and child mortality in relation to all these variables, viz. occupation, rural-urban residence, landholding, education income etc. Then yet again, we have sets of KAP studies against these same variables. What is singularly lacking is a holistic and relational picture of all these variables among discrete sections of the population -- the social differentials that Krishnamurthy says is lacking.

Patnaik(5) sums up the scenario pertaining to data collection in the social sciences in general, concluding that in spite of the masses of data regularly generated "at present we can form no idea of the economic characteristics of rural classes." In her characteristic form she explains why this is so.

To give an analogy from the natural sciences: suppose we are studying the population of all mammals. We collect information on the physical characteristics of a sample of mammals, such as their weight, height, hairiness etc. We then proceed to tabulate the weight data by weight groups, the height data by height groups, and so on. In other words each characteristic is treated in isolation from the others. At the end of it all, we are in no position to distinguish by its special characteristics the class (species) of elephants from the class of mice even though we have all the relevant data.

This aptly sums up the research data generated in the field of family planning also.

To come now to the Khanna Study, there can be no better critique of this study -- its conceptualisation, methodology, data collection and analysis -- than Mamdani's(6). We shall therefore confine ourselves to highlighting some of the
issues raised by Mamdani and pointing further to the methodological limits of the Khanna Study. The most important point that he underlines is the study's conceptualisation of the problem. "The study", he points out, was plagued very little by the sort of 'cultural' misunderstanding that it had feared in the earlier stages. What did plague them was the directors' basic perception of the problem. To them, overpopulation was a disease...to be treated with the techniques of an epidemiologist.

He quotes the authors: "Overpopulation is a malady of society that produces wasted bodies, minds and spirits just as surely as have other familiar scourges - leprosy, tuberculosis, cancer." This perception of the problem, argues Mamdani, was "an analytic tool for misunderstanding." Mamdani points out that this view was not confined to the study directors alone, but was also shared by the middle class, educated and urbanised staff of the study. What plagued the study was a class bias. He shows us that the study population's perception of the problem was entirely different, but that the study was not equipped to understand either their perception or the factors that moulded them. Thus when the study population seemed unreceptive to the idea of family planning promoted by the study, it never occurred to the study directors that there may be something wrong with their hypotheses. Instead, the study design was altered on the assumption that the villagers were ignorant and did not know what was in their own interests, and therefore required to be "educated". The changed study design made no difference to the study results. The study was thus a dismal failure; but the authors do not, Mamdani reveals, want to take cognisance of this. They come to the conclusion that "Westerners have strong feelings about the value of persons and of human life not shared by Punjabi villagers."(7)

In addition, there are several methodological issues. The study claims:

More specifically, we tested the ability of a contraceptive programme using then existing methods to decrease prevailing birth rates in a representative population of a developing region.

The claims for having selected a representative population are in no manner substantiated with economic, social or demographic data. The representative criteria
are merely that the population was rural and "they were aggregates of people with long standing social relations." But in fact, the study villages are not representative of even the district of Ludhiana, leave alone Punjab, or the rest of India. To cite just a few criteria provided by the study, the landholding, the population density, the age at marriage, the sex ratio and emigration distinguish the study area from the rest of the district. Similarly, the authors do not provide data on the comparability of the study population and the control population. The data provided reveal that they are not, in fact, comparable. The Control Population A differs from the study population in greater population density, in having a lower proportion of men working in agriculture and a higher level of education. Control A also had a higher age at marriage and a lower proportion of married men; death rates in the control area were lower. More significantly, to quote Mamdani, "the social structure in Manupur (the area of the Khanna Study) was radically different from that in most of contemporary rural India." Indeed the study does not state the criteria for the selection of the study tehsils. It states that "a statistically valid random sample of villages would have produced more reliable results;" but does not follow this procedure. The study population and the controls were actually selected purposively for accidental and logistic reasons.

That such a deeply flawed study was nonetheless so influential was not due to the validity of the study conclusions, but to other factors which shall not detain us here. We will look into other studies which will throw more light on the issues we are concerned with.

In our view, Mamdani's study was a pioneering one. It was carried out in the same area as the Khanna Study, and it sought "an alternative understanding of the population problem". This Mamdani did by locating the "problem" in its context: by way of understanding the material conditions of existence of the agrarian population, the role of technology in a given social context, the supreme importance of family labour, and the influence of all these factors on the desired size of a family. He argues that given the material conditions of the lives of the population studied, there exists a necessity for family labour, which in turn determines family size. There is,
therefore, rationality in the given socio-economic context in the desire for a large family. He concludes that by and large, for all sections of the agrarian population, resorting to family planning would be to "court economic disaster".

Unfortunately, however, Mamdani's study lays itself open to the charge of being largely anecdotal and hence meriting little weight. (8) The most glaring shortcoming is that other than case studies, he furnishes little data to support his hypotheses. Since no data on the family size in the different socio-economic groups is provided, one is not aware if the desire for family labour expressed by his respondents is actually reflected in the size of families. Secondly, accepting that material conditions of life influence the desired family size, what impact do the same material conditions have on the biological determinants of family size? How do infant and child mortality, for example, behave in the various sections of the population? Thirdly, given the economic differentiation within the peasantry, which Mamdani testifies to, it appears improbable that all sections of the population desire more children. According to him, even the rich farmers who had an economic need for curtailing their family size had a social necessity not to do so. This in effect undermines his own argument. Fourthly, from Mamdani's work it appears that the need for labour within families overrides the importance of the labour situation of the class to which the family belongs. Family labour is subsumed by the labour availability, or lack, of the class to which the family belongs; and Mamdani contends that the former is the determining factor. Given the overall unemployment among agricultural labourers, for example, is it still possible that such families experience a need to supplement the labour at the command of the family? Finally, Mamdani fails to discuss the rationale for the classification of the peasantry that he utilises, one based solely on the size of landholding. That this criterion is inadequate and may merely indicate economic status and not class, especially in a Green Revolution region like Punjab, will be argued later.

S.K. Rao takes us further in understanding the relationship between economic categories and family size, and the consequent response to family planning. (9) Rao offers the convincing proposition that "irrespective of the expenditure on family
planning there are always a number of people in society who are motivated to adopt birth control." If, therefore, the number of acceptors of the family planning programme is not a function of the expenditure on family planning, what are the other factors which can be said to determine fertility? He argues that two factors are crucial and these are infant mortality and the desired family size.

Examining the relationship between fertility and infant mortality he comes to the conclusion that: a) As survival rates improve, birth rates remain flat and growth rates rise up to a point; after that birth rates fall more than proportionately and growth rates decline. The initial unresponsiveness of birth rates to improvements in mortality is due to the fact that at very low survival rates, the minimum number of children required to ensure the survival of children with some confidence may be so large, that it might exceed the fecund capacity of the mother, or the economic capacity of the family to support so many children to start with.

b) The number of children a couple might end up with on average may be larger than the desired number. A couple, in an attempt to hedge against the risk of losing all their children, have so many that in general the actual number of surviving children exceed the desired number of children.

Rao next examines the desired family size of different economic groups taking into consideration the costs of children and the motives parents, in general, have for children. He distinguishes four economic groups on the basis of income and the ownership of property. These are:

Class 1: Workers consisting of landless labourers in rural areas and industrial manual workers in urban areas. This class is characterised by a low level of income and dependence on others for employment.

Class 2: Peasants and petit bourgeois consisting of small peasants who cultivate land mostly with family labour, and petty traders and artisans who live by household industry. This class is characterised by self-employment and a higher income level than Class 1.

Class 3: Capitalist farmers, industrialists and big traders. The members of this class are characterised by the fact that they are employers and live by ownership of
property.

Class 4: Professional classes comprising people who enjoy fairly high incomes, higher than classes 1 and 2, by performing jobs which require skills acquired through education; this class includes civil servants, doctors, engineers and so on.

Rao distinguishes the costs of children as the direct costs of feeding etc., and the indirect costs of women foregoing employment. He postulates that women in Class 1 take up employment because it boosts family income considerably. In Class 2, employment is usually limited to family enterprises. In Class 3, he assumes that women do not work. In Class 4, women do take up employment although not as often as in Class 1. The indirect costs of children therefore falls as one moves from Class 3 to Class 4. The direct costs as a proportion of income also has a similar pattern. Thus the total relative costs fall and are lowest for Class 3, and rise slightly between Class 3 and 4.

He then considers two major motives for having children:

a) children are a source of income; and
b) children act as an insurance against old age.

The motive for children as a source of income would be strong in Class 1 as income levels are low. This, however, would be offset by a number of other factors such as the low levels of employment, its seasonality and the nucleation of families in this class. He therefore concludes that the expected net addition to family income in this class would be low. In Class 2, the income stream associated with a child would be higher than in Class 1, since the chances of employment are greater; and also because children are likely to stay on much longer in a joint family due to dependence on family property. The motive for children as a source of income would be low in Class 3 because incomes are high and are not earned by work. Children in this class, he postulates, would be desired to manage property but weighing against this is the fear of sub-division of property. Again, in Class 4, the motive for children as a source of income would be weak, although not as weak as in Class 3.

The insurance motive for children, Rao hypothesises, is likely to be high among workers (Class 1), but it is precisely in this class that parents cannot depend
upon any one child alone, since the income earned is small, forcing safety of numbers. In peasant and petty bourgeois families (Class 2), the insurance motive is likely to be stronger. In Class 3, this motive is likely to be weak; and in Class 4, it is likely to be strong again, since parents in this class do not live on property.

On balance, he suggests that the net motivation for children may be strongest in Class 2 and weakest in Class 3; the motivation is stronger in Class 1 than in Classes 3 or 4. He concludes that it is not cultural factors which determine fertility, but objective socio-economic circumstances such as nature of livelihood and chances of child survival.

Rao’s able model, however, has not been substantiated with data to support his hypotheses. The empirical evidence he mobilises is patchy and inadequate, dealing with aggregates of population and not with the categories he employs. He admits himself that the model he constructs is based on certain assumptions the empirical validity of which remain untested. Further, the economic classification he employs can be described as idiosyncratic at best. Property does not a capitalist make! His understanding of the peasantry and its differentiation is equally limited and simplistic. Also, whether the motives for children in the "small peasant" are operative in reality, is a moot point:

In a situation of widespread unemployment of agricultural labourers, the return to family labour that such (namely poor peasants) peasants are obliged to accept may well be below the agricultural wage rate. Indeed...the poor peasants are typically obliged to underfeed themselves in order to obtain the very conditions of production, namely, land.

Can we not expect that such peasants would curtail their family size? In the present socio-economic conjuncture, can artisans be described as being independent and self-employed? Finally, with regard to the influence of declining mortality on fertility, it is not sufficient to demonstrate this at the level of aggregates of population. To give life and blood to his hypotheses, the influence of falling mortality -- differentially shared -- must be demonstrated in the classes that he distinguishes.
We have dilated upon Rao’s study at length since it offers a plausible conceptual framework. It illumines the directions in which studies need to be undertaken: it recognises the need to classify populations, on the basis of concrete economic criteria — into classes; in order to understand the differential behaviour of a large number of factors which govern fertility and acceptance of family planning.

A large study, The Mysore Population Study,(12) investigated the relationship between mortality, fertility and socio-economic variables. The study found that:

a) In rural areas the families of agricultural labourers and temporary tenants had the highest infant mortality rate.
b) There was a relatively low birth rate in the same group. Higher birth rates were associated with higher socio-economic status.

This is a remarkable finding, going against the grain of most "common sense" assertions. But this finding did not receive the attention it deserved in the welter of data generated by the study.

The Mysore Population Study however does not provide data on family size, child survival etc. in relation to the socio-economic categories identified. The classification adopted is, as we shall see, highly inadequate. In rural areas, two groups in the population, households living in huts and those in better types of houses but with no member working, were excluded from the study for inexplicable reasons. The rest of the rural population was sub-divided on the basis of tenure and land ownership into the following groups:

a) labourer or temporary tenant;
b) owner cultivator with less than three acres of land or permanent tenant with less than five acres; and
c) owner cultivator with more than three acres of land or permanent tenant with more than five acres.

The rationale for utilising this classificatory schema is unfortunately not specified. It would appear that landlords have been excluded from the study. Or if they have been included in category "c" above, their presence would distort the composition of this group, which presumably consists of rich and middle peasants,
and possibly, even some poor peasants. The aggregation of owner cultivators and tenants further confounds the groupings; for a tenant, a juridical category, can consist, in class terms, of any section of the peasantry barring the landless agricultural labourer. Again, this study also uses land ownership as the criterion for classification.

Djurfeldt and Lindberg, in their study of a village in Tamil Nadu, find that the number of births per wife is inversely related to class status among the agricultural population. They do not examine infant mortality among the classes identified, nor do they study the response of the different classes to the family planning programme; relying for the latter on anecdotal evidence from some sections of the population. The economic motivation for children and the need for children as an insurance against old age are examined, but unfortunately, not in relation to the class categories employed. Data on household size is offered but not in relation to class. The classification of the peasantry is, once again, solely based on land ownership.

A large-scale study conducted by Misra et al in five districts of Allahabad Division of Uttar Pradesh, sought to understand the functioning of the family planning programme and the reasons for the poor response it received. This study utilises what is described as an open systems framework; the approach is to emphasise the inter-relatedness of factors -- economic, social, demographic and organisational -- which govern family planning acceptance. A massive sample comprising forty five primary health centres, and a study population of three thousand couples was covered. The focus of the study, however, pertained largely to organisational factors. The emphasis is on the implementation of the family planning programme, arguing that "the realities of the administrative process determines much of the success or failure of family planning policies."

The stratification of the study population was on the basis of landholding and the unit of study, the household. For our purposes, the significant findings of the study are the following:

a) Mean household size and land ownership are positively related, the landless having
the smallest household size. The Mysore Population Study also reached the same conclusion.

b) Given the scarcity of land and other resources, "children can play a relatively active role in the economy."

c) Infant and child mortality are extremely pervasive; few families escape the experience entirely. Thus most respondents idealise a relatively large family size.

d) There is a close relationship between caste, education and landholding.

While these and other findings reveal the critical influence of socio-economic stratification, the authors have not given this factor the importance it deserves. Thus many demographic, social and economic variables -- age at marriage, education, and desired family size for example -- are not studied in relation to the landholding strata. Not surprisingly, there appears to be no systematic relationship between income and landholding; revealing the weaknesses of landholding as the criterion for classification. How income data are collected is not specified, although it is well known that obtaining data on incomes is notoriously difficult.

The National Sample Survey also offers data on fertility, mortality and socio-economic categories. These data are mysterious if not misleading; they are certainly confounding. As per the 15th Round, infant mortality rate is found to rise progressively with the increase in per capita monthly household expenditure.(15) (Emphasis added.) The data collected during the course of the 16th and 17th Rounds confirm this finding.(16, 17) The estimated annual birth rate per monthly household expenditure indicates that the birth rates declined with the increase in monthly household expenditure. The annual death rate per monthly per capita household expenditure shows that the death rate in the households having a per capita expenditure of more than twenty one rupees, were slightly higher than in households with a per capita monthly expenditure below this. These baffling findings about death rate in the 15th Round are repeated in the 16th Round. It also appears that there is no systematic relationship between monthly household expenditure groups, infant mortality rates, birth rates and death rates. Regarding household size, the data reveal that "the size of the household increased with increasing (land)holding size"(18) --
which is certainly surprising, given the lower birth rate and higher infant mortality rate and death rate in households with a higher per capita monthly expenditure. It is not surprising therefore to note that N.S.S. data do not inspire much confidence among scholars.(19)

This brief review draws attention to two major problem areas:
1) Problem with classification: The need for an adequate classification of the study population has not been appreciated. Where attempts have been made to do so, they have generally been on the basis of inadequate criteria such as landholding. Classes, where they have been utilised, have not been adequately conceptualised and satisfactorily concretised.
2) Problem with data base: Where the first problem areas, classification, has been dealt with, however tentatively, we encounter an extremely critical set of problems regarding data base. The data on the differentials in the determinants of mortality and fertility, and their relationship with social classes, are either extremely tenuous or non-existent.

We have noted that in the studies which seek to examine differentials in fertility, there has been a very inadequate and imprecise understanding of classes in the peasantry. We have observed also that stratification has been inevitably and solely based on the criterion of landholding. We shall turn our attention to these issues now.

The criterion of landholding, while possibly indicating the economic status of a household, is not adequate as an index of the economic class of a household. Patnaik(20) has forcefully demonstrated the manifest inadequacy of treating farm size as a sufficient index of class status; she argues that farm acreage cannot provide any analytical explanation (and very poor statistical explanation) of observed variation in farm economics. It is possible, she argues -- and demonstrates -- that any given acreage group, for example the "five acres and below" used by the Mysore Population Study, will contain every type of household in terms of class categories, ranging from the very poor agricultural labourer with land to the small-scale, self-employed peasant, and the large-scale, primarily hired-labour based peasant
holdings.

If landholdings run on different organisational bases -- namely with hired labour and with family labour -- differed only in the extent of acreage operated, the criterion may possibly have been satisfactory. In reality, however, they differ significantly with respect to other factors which are as important as, if not more important than, farm size. An acre of high fertility or irrigated land differs from an acre of low fertility or arid land. Even if standardised acreages are utilised, the same area can be cultivated with low productivity level of technique or with a high productivity level of technique. The intensity of cultivation, depending on the extent of capital investment, can vary a great deal. The greater the variation in techniques and methods of cultivation, the more inaccurate farm acreage becomes as an index of the scale of production and of class status. (21) The inadequacy of farm acreage as an index of scale or class position is more striking in a situation of technical change. In a given acreage group, the better off cultivators already using some hired labour would be able to invest in new inputs, expanding their scale of production and generating larger surpluses. In the same acreage group, the poor peasants in deficit and the small peasants just breaking even, would be unable to take advantage of the new technology, and their relative position would worsen. By lumping together both types of holdings, the acreage groupings would obscure the class differentials. (22)

Acreage categorisation is rendered even more inadequate when acreage holdings of cultivators and tenants are treated on par (as for example in the Mysore Population Study). Given the high degree of class differentiation within the peasantry, and the fact that class categories cut across tenural status, it is "not legitimate to identify tenurial status with class status...The legal category "tenants" contains extremely heterogenous elements in class terms ranging from the poor and middle peasants to rich peasant and capitalist". (23)

Data on the ownership and operation of land, livestock, implements and other means of production are a striking indication of the high degree of concentration of both land and non-land resources. (24) The implication of such a high degree of concentration of the means of production is a correspondingly high degree of
economic differentiation within the peasantry. There are also qualitatively different types of holdings which differ in the manner in which their production activity is organised. A minority of holdings possess so much resources relative to their family size, that they cannot cultivate with family labour; but rely primarily on the labour of others. At the other end of the spectrum, a large proportion of households have so little resources relative to their working capacity and consumption needs, that they must rely primarily on working for others. These two groups of households then enter into relations with each other through labour hiring and the lease of land.

Agrarian classes are thus defined in terms of these related criteria, namely the possession of the means of production and the exploitation of labour. (25) Patnaik has worked on a single comprehensive criterion in order to empirically distinguish classes among the peasantry. Abstracting from the classical works, she specifies three closely related criteria to distinguish classes:

1) The extent of ownership of land and other means of production.
2) The extent of employment of the labour of others or the extent of working for others, relative to self employment on land possessed. Working for others can take two forms: hiring out labour for wages and leasing in land on rent.
3) The satisfaction of consumption needs and the production of retained surplus available for re-investment.

The essence of the concept of class in agriculture lies in the location of a household in terms of these three criteria. Patnaik argues that the most important single aspect of the concept of class is the question of whether a household primarily derives its income from exploiting others, whether it is primarily self-employed or whether it is primarily itself exploited, i.e., the second of the three criteria above, "which goes to the heart of the concept of class". (26) This is the degree and type of labour exploitation in relation to family labour. The index evolved is the labour exploitation ratio.

The Labour Exploitation Ratio

The labour exploitation ratio can be arrived at by knowing the labour usage and tenancy status of households. On the basis of the labour exploitation ratio,
agrarian households can be classified as follows.

The labour exploitation ratio is given by the formula:

\[
\text{Labour Exploitation Ratio} = \frac{\text{Net Labour Days Hired In} + \text{Net Labour Days Appropriated Through Rent}}{\text{Family Labour in Self-Employment}}
\]

\[
X \quad (\text{Hi} - \text{Ho}) + (\text{Lo} - \text{Li})
\]

\[
\text{or E} = \frac{X}{Y} = \frac{(\text{Hi} - \text{Ho}) + (\text{Lo} - \text{Li})}{\text{F}}
\]

where

\[
\text{Hi} = \text{Labour days hired in} \\
\text{Ho} = \text{Family labour days hired out} \\
\text{Lo} = \text{Total labour days on land leased out} \\
\text{Li} = \text{Total labour days on land leased in} \\
\text{F} = \text{Family labour days in self-employment}
\]

On the basis of the value of the \( E \), agrarian classes are categorised as follows.

1) The Landlord/Capitalist Class: The landlords are distinguished by the fact that family members do not perform manual labour in any major farm operation; supervision or operating farm machinery is not considered manual labour. The value of \( E \) is therefore positive and high; the value of \( F \) is zero. They rely entirely on the labour of others either through hiring (which defines the capitalist landlord) or through rent extraction by leasing out land (which defines the feudal landlord). The value of the numerator \( X \) is positive and high.

2) The Rich Peasant Class: The members of the rich peasant class perform manual labour and are therefore distinguished from the landlord class in having a positive value of \( F \). Their resource position is so favourable that appropriation of the labour of others is as important as family labour in cultivation. \( X \) is not only positive but equals and usually exceeds \( F \); \( E \) is therefore positive.
3) The Middle Peasant Class: The middle peasant is primarily self-employed, since on average his resource position is such as to employ family labour adequately, and provide a livelihood at a customary subsistence level. A middle peasant may exploit the labour of others but self-employment is more important. F exceeds X which is positive and small, E is positive. These holdings have just crossed the subsistence barrier and can generate small retainable surpluses through small-scale exploitation.

4) The Small Peasant Class: The small peasant is one who is primarily self-employed. He does not exploit others' labour, but may himself be exploited to a small extent by working for others. E is negative and F is greater than X. The small peasants are typically constrained by the struggle to reach a subsistence. They either just manage to break even through self-employment or, more commonly, must supplement an inadequate income by working for others to a small degree.

5) The Poor Peasant Class: The poor peasant or semi-proletarian household's resource position is so bad as to necessitate working mainly for others in order to obtain a subsistence. This is to a greater extent than, or at least as great an extent as they are self-employed. X has therefore a negative value and is greater than F; E is negative. Typically, poor peasants cannot make ends meet and have to depress consumption standards.

6) The Landless Labourer Class: The full time labourer does not operate any land at all, and is entirely dependent on hiring out his labour for wages in order to obtain a subsistence. Some full time labourers may own a small strip of land which they lease out. However, the labour equivalent of rent received is not large enough to balance or outweigh their labour given out in hiring. F is zero and X is large and negative; E is negative.

The landlord/capitalist class and the rich peasant class are primarily exploiters of labour. The middle peasant and the small peasant are primarily self-employed. The poor peasant and the landless labourer are primarily exploited by others.

As we noted earlier, there does exist a host of data on various biological, social, and economic determinants of fertility at the level of aggregates of population.
For example, fertility in relation to infant and child mortality, or age at marriage of women or income have been studied. But given the lack of homogeneity in a population, this does not help us in delineating and understanding the spread, behaviour and impact of these factors among different classes in the population. Again, there has been a tendency to study the influence of some factors on fertility at the cost of others, i.e. in isolation; whereas it is in fact the cumulative impact of social, economic and biological factors which has a bearing on fertility. Class categorisation of the study population offers us an opportunity to study these issues comprehensively. And that indeed was the purpose of our study.

We come now to our study design. The hypotheses of the study were the following:
1) Class position determines the differentials in the determinants of fertility.
2) These differentials in the determinants of fertility result in differentials in family size among the classes.
3) Based on these factors, differential needs are thrown up by the different classes in relation to the family planning programme.

The objectives of our study were the following:
1) To study the spread and behaviour of selected social, economic and biological variables among the different classes that we identify.
2) To study the association between these variables and the differentials in family size among the classes.
3) To study the differential needs for family planning services among these classes.

The data required to be collected fall into the following two main categories:
1) Data for classification of the study population: The Labour Exploitation Ratio was utilised to classify the study population. The heart of the data required thus pertained to the hiring in or out of labour in each family relative to self employment. The method employed in obtaining this data is discussed later in this chapter, in the section on the tools used.
2) Data on the spread and behaviour of certain selected social, economic and biological variables in relation to fertility among the classes.
The area chosen for the study was the Mandya District of Karnataka. This district was selected purposively for the following reasons. First, the investigator is familiar with the language and the mores of the area. Second, the district, popularly referred to as the Punjab of South India, had been selected under the Integrated Agricultural Development Programme (I.A.D.P.), to receive additional attention to agricultural development more than two decades back. Consequently, it has been documented that not only is agricultural production in the area one of the highest, but also that an increasing differentiation within the peasantry has occurred concomitantly. (27) Third, industrialisation and the development of infrastructure, including health and family planning services, have not been neglected.

Mandya district was carved out of Mysore district in 1939. (28) The district, as is the wont, is named after the district headquarters town, Mandya. The name itself has its origins in mythology. ¹ The district comes under the group of districts known as the maidan (plains) districts, and is situated in southern Karnataka. Somewhat mango shaped, the district is bounded on the north by Hassan and Tumkur districts, on the east by Tumkur and Bangalore districts, on the south by Mysore district, and on the west by the districts of Hassan and Mysore. It lies between 12 degrees 13' and 13 degrees 04' latitudes. The average annual rainfall in the district is 691.2 millimetres, mostly confined to the months between April and November.

Rich in history and architecture, ² the district is not particularly well endowed with mineral resources. Striking is the contrast in terms of physical attributes: the barren, boulder-filled, stark landscape of Nagamangala taluk on the one hand, and on

¹ Account has it that towards the end of the Dwapara Yuga, a childless king Indra Varma came here hoping to be blessed by a son. His prayers were granted. His son Soma Varma is said to have built a fort named Mandavemu. Mandavemu, it is said, was corrupted over the centuries into Mandya. Another account is that the town was named after a sage called Mandavya who carried out tapas here in ancient days.

² Srirangapatna, named after the famous temple of Sriranga, the famed capital of Haidar Ali and Tipu Sultan is located in this district, the stage of the four Anglo-Mysore wars. The district is dotted with splendid temples, among others of the Hoysala period; and palaces and forts now crumbling. At the heart of Old Mysore, it was not directly under British administration but under the then territory of the Maharajah of Mysore.
the other, the lush green fields of Mandya taluk, tinkling with the sound of water running down irrigation channels. By and large, however, the impression one retains of the district, the image that lingers, is of gentle slopes covered with the iridescent green of paddy or stalks of sugarcane broken by clumps of trees or gneiss outcroppings. What forms the heart of the district is of course the river Kaveri (Cauvery) coursing through its western part.\(^3\) It was realised well in the middle of the nineteenth century that the river offered vast possibilities for irrigation; but it took more than six decades for this possibility to take concrete shape. In 1911, the Government of Mysore commenced the construction of a massive dam at Caniambadi, about 20 kilometres from Mysore. The dam was named Krishna Raja Sagar (K.R.S.) after the ruling maharaja Sri Krishna Raja Wodeyar. Irrigation from the dam began to flow in 1931 transforming the district. The network of canals constructed was named after the architect of modern Mysore, Sir M. Visvesvarayya.

When the district was brought under assured irrigation subsequent to the construction of the Visvesvarayya canals, the Government of Mysore "recognised that the prosperity of the region would depend in a large measure on the profitable cultivation of a commercial crop like sugarcane and that this would be possible only if manufacture of sugar on modern lines was initiated on a fairly large scale."\(^{(29)}\) The Mandya Sugar factory was consequently established and started production in 1934. As a means of disposal of molasses, a distillery was inaugurated in 1935 as an adjunct to the factory; this was the "first modern distillery plant in India". And in 1962, the Mandya National Paper Mills was inaugurated to produce high quality paper from sugarcane bagasse. In 1965, a second sugar factory was inaugurated at Pandavapura as a co-operative enterprise.

\(^3\) Chapters 11 to 14 of the Skanda or Kartikeya Purana also known as the Kaveri Purana describes the origin and course of the river. It is said that a great sage Kavera Muni selected Brahamagiri in Coorg (Kodagu) district for meditation. He prayed to Brahma for children. Brahma gave him Lopamudra for a daughter; she came to be called Kaveri after her new father. The sage Agasthya, visiting the Ashram of Kavera Muni, sought Kaveri as his bride. She was not keen on marriage, wishing instead to serve the people. But in view of Agasthya's entreaties, she agreed on the condition that should he ever leave her alone, she would be free to forsake him. And one day, in an unguarded moment, Agasthya left her alone as he went to bathe. Kaveri plunged into a holy tank to thence emerge as a river, fulfilling her desire to pour her blessings on the people.
Mandya, the district headquarters, at the heart of the irrigated region, has thus expanded rapidly. From a sleepy market town with a population of no more than six thousand inhabitants in 1931, to a population of twenty one thousand by 1951, a little above one hundred thousand in 1981 and a bustling busy one hundred and twenty one thousand by 1991. It is extraordinarily well connected by road and rail to both Bangalore and Mysore, and forms the hub of an elaborate road network within the district. The office of the District Health and Family Welfare organisation is located on the highway between Bangalore and Mysore, not far from the bus stand, the railway station and the district hospital.

The principal crops of the region are paddy (Oryza sativa) and sugarcane (Saccharum officinarum). The other crops are ragi (Eleusine coracana) and jowar (Sorghum vulgare). The minor crops are black gram (Phaseolus mungo), avare (Dolichos lablab), green gram (Phaseolus aureous), tur dal (Cajanus indica, Bengal gram (Cicer arietinum), peanuts (Arachis hypogea) and horse gram (Dolichos biflorus). Coconut (Cocos nucifera) is an important plantation crop of the district. As sericulture is an important cottage industry, mulberry (Morus alba) is also extensively cultivated.

Mandya district is divided into seven talukas: Mandya taluk, Malavally taluk, Maddur Taluk, Srirangapatna taluk, Pandavapura taluk, Krishnarajpet taluk and Nagamangala taluk. At the time of the field study, there were fifteen primary health centres in the district, distributed as follows.

**Mandya Taluk**
1) Shivally P.H.C.
2) Keragode P.H.C.
3) U.F.C. Mandya

**Malavally Taluk**
1) Halagur P.H.C.
2) H.H.Koppal P.H.C.
3) U.F.C. Malavally

**Maddur Taluk**
1) K.M.Doddi P.H.C.
2) Kesthur P.H.C.
Srirangapatna Taluk
1) Kodiyala P.H.C.

Pandavapura Taluk
1) Pandavapura P.H.C.
2) Chinkurli P.H.C.

Krishnarajapet Taluk
1) K.R.Pet P.H.C.
2) Akkihebbal P.H.C.

Nagamangala Taluk
1) Bellur P.H.C.
2) Haradanahalli P.H.C.

From the office of the District Health and Family Welfare Officer was obtained the list of P.H.Cs in the district and their family planning programme performance records over the previous two years. This list and the information supplied are included in Appendix 1. The P.H.Cs were then ranked on the basis of sterilisation performance.

Out of these P.H.Cs one was to be selected as the universe of the study. The criteria evolved for this purpose were the following. First, it was necessary that the study villages be located in an irrigated area where the "Green Revolution" inputs were easily available and extensively utilised. In other words, we sought an area of "advanced" techniques of agricultural production. This was done for two reasons; a theoretical understanding of the implications of such advances in a stratified population which had been borne out by empirical studies as by Epstein’s in the same district.(30) Epstein’s study had revealed sharply increasing polarisation of the peasantry consequent on the adoption of the Green Revolution package. This phenomenon has been documented by other studies also.(31) Second, we sought a study population which was primarily agricultural; the objective of our study was to explore differentials in precisely such a population so often assumed to be homogenous. Third, it was essential that a P.H.C. be available to the study population. The P.H.C. we sought was one whose performance was average in terms of the family planning programme. The P.H.C.s which were poor performers and
those that were good performers were therefore to be excluded. Lastly, we sought a
P.H.C. where the staff was in position, offering family planning services to the study
population. This was in order to study the differential response, if any, to the
programme.

On the basis of the family planning programme performance in 1983-1984, the
following six P.H.Cs were short-listed as average performers.

2) P.H.C. Bellur.
3) P.H.C. Kesthur.
4) P.H.C. K.M.Doddi.
5) P.H.C. H.H.Koppal.
6) V.F.C. Malavally.

All the short-listed P.H.Cs were visited, some on more than one occasion, to
assess their suitability. The P.H.C. Bellur was rejected as it was located in the
predominantly dry area of Nagamangala taluk. Another important reason for the
rejection of this P.H.C. was that the area was currently in the process of obtaining
irrigation facilities through extension of the Visvesvarayya canal grid. The region
was thus in the grip of social and economic turmoil.

The U.F.C. Malavally was rejected as it was located in an urban area, the
taluk headquarters, and obtaining a primarily peasant population would not have been
possible.

The P.H.C.s at K.R.Pet and Kesthur were found to be located in rain-fed
agricultural areas which precluded their selection. The P.H.C. at K.M.Doddi,
although located in an irrigated area, was excluded as the town is a fairly large centre
of trade and has a private sugar factory located there.

The P.H.C. at H.H.Koppal met all the criteria we had set for selection. It
was therefore purposively selected as the universe of our study. We make no claim
to having obtained a sample which is representative of either the district or the state.
It could only be indicative of the more advanced areas of agricultural production in
the district.
Hittanhally Koppal is better known in its abbreviated form as H.H.Koppal. Its name probably derives from the fact that this was once an area of extensive ragi cultivation; hittu in Kannada refers to ragi flour which once formed the staple diet in the area. It is located in Malavally taluk of Mandya district. It is situated 20 kilometres away from the district headquarters at Mandya and 11 kilometres from the taluk headquarters at Malavally. A partially metalled, circuitous road connects Mandya to Malavally. As it runs south towards Malavally, the road, now lined by tall and handsome *Ficus mysorensis* trees, bisects the village Hittanhally Koppal. Accompanying the road and on its west is the water channel, the Nedughatta Branch of the Visvesvarayya canal.

Although the village H.H.Koppal is one village for all purposes including the official, it actually comprises three villages. It has a rather unique history having been formed in the late fifties by the relocation of the three discrete villages lying some distance from each other. The relocation was apparently necessary because of the construction of the road, and more importantly, the canal. These three villages named Hittanhally, Koppal and Budke Gowdan Doddi (B.G.Doddi or more popularly known as Doddi) which were located in low lying areas, were shifted to higher ground on either side of the road. The villages have, during relocation, maintained their erstwhile spatial relationship to each other. The village Koppal is located to the east and the villages Hittanhally and B.G.Doddi to the west of the road. The Adi Karnataka "colony" (the scheduled caste colony popularly known as colony even among its residents) is located discretely to the south of Hittanhally. A cluster of hutments forming the Madagaru colony is at the northern end of Koppal, and quite segregated from it as is revealed by the accompanying village map.

A tract of land to the east of the road, linking Mandya to Malavally, was reserved for erecting buildings for public use at the time of relocation. This area houses spaciously the P.H.C. Complex, a primary school, a middle school, a high school, the offices of the Co-operative Society, a veterinary dispensary, a branch of
the Canara Bank and a sub-post office.\textsuperscript{4}

As per the records available with the Village Accountant, H.H.Koppal had a total of 480 households, with a population of 3109.\textsuperscript{5} The records at the P.H.C., however, showed the following figures.

<table>
<thead>
<tr>
<th>Village</th>
<th>Number of Households</th>
<th>Total Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Koppal</td>
<td>266</td>
<td>1573</td>
</tr>
<tr>
<td>Hittanhally</td>
<td>207</td>
<td>1395</td>
</tr>
<tr>
<td>B.G. Doddi</td>
<td>43</td>
<td>204</td>
</tr>
<tr>
<td><strong>Total H.H. Koppal</strong></td>
<td><strong>516</strong></td>
<td><strong>3172</strong></td>
</tr>
</tbody>
</table>

Our study was of an exploratory nature to understand the differentials in fertility in discrete socio-economic groups or classes; we have already noted the singular dearth of such studies. Cassen has observed that there is "unfortunately little reliable information on differential fertility, mortality and family size by socio-economic groups."\textsuperscript{(30)} Given this lack of information, it would not have been possible to statistically calculate the sample size necessary for our study. It was therefore decided to survey all the households in H.H.Koppal. In order to increase the validity of our findings, the following survey design was adopted to increase the period of observation. All the households in Koppal were first covered by our

\textsuperscript{4} No official records were available with the Village Accountant pertaining to the history of these villages. What information is recorded was obtained through interviews with members of the erstwhile village panchayat and other older residents of the village. This was not very easy as the older residents, without exception, hark back to golden times in the past as opposed to the degenerate present. Even the elderly dalit residents who admit that prosperity has come to the village, bemoan the lack of values, manhood and vigour of the past. "Men could then lift ten pallas of rice. No man can do it now; they will want a machine." was a frequently heard observation.

\textsuperscript{5} The Village Accountant had an extremely curious attitude to records. He held all of them as "useless" and saw no point in maintaining them. He was unclear as to the source of the figures that he had and the year they pertained to stating "it must be the 1981 census". He was unable to give separate figures for Koppal, Hittanhally and B.G.Doddi. While he was more than willing to share his information on landholding he was equally frank in asserting that they were "all bogus".
survey. The households in Hittanhally and B.G.Doddi were then surveyed. After a year, the households in Koppal were again re-surveyed to assess demographic events over the previous year.

Data collection was carried out over a period of 22 months from March, 1985 to January, 1987. This rather long period was necessitated by several factors. One was, of course, due to the limitations of a single researcher dealing with a study of this nature and size. The second was the requirements imposed by our survey design. The third was that it was felt that it would be worthwhile to sacrifice time in order to establish rapport and allay suspicions. And finally, data collection was stopped for three prolonged spells. The first was when rumours began to arise regarding the bona fide of the researcher early in the study. The rumour was that the government, being fully aware of the "bogus" nature of land records, sought to assess agricultural incomes for taxation by the indirect method of obtaining data on labour utilisation. Data collection per force had to stop and attention paid to further gaining the confidence of the people. This rumour possibly arose from newspaper reports of a discussion in Parliament on the question of taxing agricultural incomes and the subsequent newspaper editorials. The second period was when newspapers published reports of a scandal involving the export of corpses and skeletons. Rumours of child lifting were rampant in the district in August, 1985 and 3 people suspected of being child lifters were burnt to death in the district.6 The third period was in early 1986 when the region was in violent turmoil over the moves of the state government to de-reserve Vokkaligas, the dominant community in the region, from the list of O.B.C.s entitled to reservation.

A schedule consisting of several parts was drawn up to collect data. Part 1 was to obtain general information and data on the household or family composition, structure, and size. Data in this section was obtained from the head of the household or his wife. Part 2 consisting of data on births, deaths, pregnancy histories was addressed to the wives alone. Part 3 elicited data on the perceived economic value of

6. "The government", I was told, "now plans to steal all children born after the second. Their bodies will be boiled and the bones sent to foreign countries".
children. Data in this section was obtained from both husband and wife. Part 4 elicited data on labour utilisation. Data in this section was obtained from the menfolk. The last part elicited data on the family planning needs and services offered, and was addressed to both men and women.

In constructing the schedule to elicit information on labour utilisation, the first step was to prepare a list of all the crops grown in the village. Next a list was prepared by consulting twenty five men and five women of all the operations involved in the cultivation of each crop. The list was then pared to elicit information on the major operations involving labour. This was confirmed by visits to the fields to actually watch these operations being performed and to assess the labour requirements. Finally this labour utilisation was disaggregated for male, female and child labour for each operation. While obtaining data therefore, the lists of operations were invaluable. Data would first be obtained on the nature and extent of crops grown over the preceding 12 month period and using the lists, data was obtained on the labour utilisation in man, woman and child terms for each crop, and whether this was labour hired in or family labour in self employment. Data on labour hired out was obtained in the form of labour days per man, woman and child.

The schedules were pre-tested on 30 selected households before being finalising with some modifications. Canvassing of schedules was done over several sittings in an informal atmosphere. In few households was a schedule completed in one sitting. In addition to obtaining quantitative data, effort was expended on obtaining qualitative data in all the concerned areas from all the classes in the population.

Finally, the limitations of our study. A fundamental one to be borne in mind is that this was a PhD study. It was therefore carried out by one person with all the limitations implied in terms of ideas, time, finance and personal proclivities. One final caveat appears to be in order. This is not in the first instance an anthropological or sociological study -- although we had no hesitation in using some of the tools of these disciplines. We also avoided the positivist elan of many anthropological and sociological studies. One nagging doubt that remained was: what right had we to
attempt to penetrate another world? What in fact were the ethics of field work, of
data collection? This questions grew especially poignant when several respondents
shed tears recalling infant and child deaths and their utter helplessness. Not only
were we encroaching on the deeply private, we were also inflicting pain. What is
striking is that there is so little discussion of these issues in social science literature.

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