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An approach to the Study of Complex Problems in Developing Nations

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INTRODUCTION

This paper is intended to throw some light upon and provoke discussion of some issues relating to methods of study and sources of data for expirical analysis of topics in developing nations. A brief general discussion is advanced and problems relating to the use of data from official and secondary sources are raised, based on both personal experience and evidence available from the experiences of others. Finally, in the last section is outlined at length the research methods used and problems encountered during the execution of a programme of empirical research recently conducted in the rural-urban fringe of New Delhi.

In all fields of research within the social sciences it is necessary to develop methods of study which are appropriate to the subject one is investigating. This is particularly true when attempting to gain an understanding of complex and largely unknown dimensions of human experience. Such studies in general necessitate crossing disciplinary boundaries within the social sciences, and as yet the approaches for empirical work of this nature are poorly developed. Although there has been a growing consciousness of the need for such work in recent years and pioneers such as Barrington Moore Jr. (1967) and David Harvey (1973) have begun to develop a theoretical paradigm which both reflects and expands this awareness.

It is tempting, in such cases, to feel that the more difficult the problem the more sophisticated must be the methods of analysis used to investigate it, and indeed in many cases this proposition is valid. When dealing with a complex set of experiences whose patterns of interrelationships and overall structure are largely unknown, however, one's primary concern should be to develop a method of investigation which neither ignores vital aspects of the problem nor predetermines its structure and the importance of certain aspects of the total.

Consequently, one's chief criteria in adopting a method in such situations must be:

1. Flexibility, an ability to incorporate the unexpected whilst still retaining an overall perspective of the problem and some coherence.
2. Capacity to look for and identify hidden, discontinuous or tenuous relationships between seemingly unconnected phenomena.

3. Ability to take account of and investigate a wide range of phenomena and assimilate data on this range into one's overall perspective of the subject.

4. Minimalization of preconceptions concerning the relative importance of different variables and/or patterns of interaction.

There are obvious contradictions between the acceptance of these criteria and adopting a more formal, quantitatively-based empirical approach, as it is in general extremely difficult to incorporate in such a method the flexibility, variety, and versatility which are the central needs in the study of complex, poorly understood problems. This is particularly true when, as is often the case in empirical research on developing nations, techniques developed in one context are applied to a different situation where the overall structure and data constraints may be entirely different. As Stoner (1968) points out:

"The case for employing directly any Western theory in a non-Western analysis is tenuous at best. A close date fit to the tools employed need not indicate the validity of the model" (p.72).

For example, Nangia (1976) Ch.II applies a series of techniques developed in and for Western nations to a study of the Delhi metropolitan region without any consideration of either their applicability to an Indian context or the data constraints acting upon her. Much the same is true of the work of Lo (1975) on Hong Kong and many others.

This is not intended as a general criticism of quantitative techniques, as they are of great importance and proven merit in a wide range of cases, including many instances of their use in third world studies (Chapman and Wanmali (1977); Edmonds (1979)). Such techniques are at their best, however, when dealing with a known systems in which patterns of interrelationships are well understood in a general sense. In such instances, data requirements and the significance of individual variables, with regard to the overall structure, are (or should be) definable. The method of analysis may then be used to provide greater insight into the nature and mechanics of these relationships; to test different possible states of the system, etc.

The key point, however, is that the structure of the topic under investigation has to be known in an informal sense before it can be formalized and the relationships within it quantified in precise terms.

In many cases, of course, the basic form of interrelationships will already be known and one can therefore proceed to a more formal mode of analysis without the need for a preliminary study of an investigative sort.

In other cases this is not so, however, and to attempt to analyse statistically before understanding the structure of the system and the relevance of different componants to the whole inevitably leads to work which is deterministic, which has the false seductiveness of apparent empirical objectivity and which in general gives a false or, at best, superficial and distorted picture of the subject under investigation. This classically takes the form of extrapolating causal or structural relationships between phenomena on the basis of their statistical correlation; the inadequacies of this approach have been well documented by Peter Gould (1970). (What he calls the "Geographers wild goose"). For example, the attempt by Tewari et al to analyse the "structural pattern" of Bangalore city-region on the basis of five demographic variables and a distance-decay function, in which they assert that:

"The model can be used for delimiting the city-region and also for identifying the most significant variables that determine the structure and spread of the city-region" (p.6).

- clearly a somewhat tenuous proposition -

The faults associated with this sort of work are compounded when applied to areas of great complexity, such as the urban fringe; the area of research which inspired this paper.

The urban fringe is an area of complexity and variety which is experiencing rapid and fundamental structural change. Moreover, there cpmplexity takes many forms and a diverse and variable range of factors appear to combine in any one location to generate the transition from rural to urban which is at the heart of the fringe process. Little is known about the way the transition process operates at a local level, about the forces which generate the changes occurring within this process or about the types and patterns of interaction between the many and diverse factors involved in any one fringe locality.

The study from which this paper on methods of investigation has arisen set out with the intention of gaining some insights into these phenomena for the fringes of one city, Delhi, with the wider intention of distilling from the information collected a broader theoretical framework designed to offer some insights into the urban fringe transition process in a general sense.

To achieve this aim it was recognised at an early stage that a method of investigation would have to be adopted which permitted the study of the wide range of phenomena involved. It was originally expected that data from secondary sources and information collected via direct fieldwork in Delhi's fringes would play roughly equal and complementary roles in this investigation. However, for reasons discussed below, it subsequently became clear that the reliability of much of the data available from official sources was extremely doubtful and its usefulness for the purposes originally envisaged open to serious question. Consequently, a far greater emphasis came to be placed upon local-level primary work in which the full range of phenomena could be investigated and the transition processes considered as an integrated whole. The techniques used to execute this task are discussed below, along with a rationale for them which argues that, while the method adopted is perhaps open to serious criticism for a lack of rigour and statistical objectivity, it permitted the accumulation of information and the identification of hidden relationships which provide insights into the fringe process which it would have been extremely difficult, if not impossible, to achieve if a more formal empirical approach had been adopted, whether using exclusively secondary data or data collected via fieldwork, but with the constraints of collecting statistically verifiable samples.

SECTION 1

Problems associated with the use of data from official and secondary sources

Before outlining my own field method, it is necessary to discuss at some length the problems associated with the collection and use of data from official records and other secondary sources which have arisen during the execution of this research project.

This is an important topic, for a great deal of research in contemporary Third World studies relies heavily on data from such sources, and it seems likely that many of the anomalies and contraditions in this field are in part attributable to the dependence of many researchers on, and their faith in, unreliable and, at times, consciously distorted data sources.

I wish now to advance a number of points concerning the state of much secondary data, and to consider the possible consequences of the dubious quality of such data. The list presented here is neither comprehensive nor universally applicable, however. The issues raised are mainly ones which have been encountered during the execution of my own work, but some attempt has been made to verify and expand the points by drawing upon the work of other authors for either illustrations or supportive statements.

The uncertainties regarding documentary data outlined below are common and their implications are all too often either glossed over or ignored completely. These are not side issues, but are considerations which are fundamental to the development of concepts and tools of analysis which have the capacity to offer a true understanding of the complex experiences one finds in contemporary developing societies. As Alwin (1977) points out:

"No matter how sophisticated one's analytic tools, the quality of one's inferences is intimately tied to the quality of the data" (p.132).

The first points concern the basic unreliability of data, such unreliability alone casts doubt upon the validity of many of the studies using these sources.

In many cases the systems of collection and collation of data is unreliable, leading to serious errors in the accuracy of the final tables. These faults are often a consequence of the impossibility of

obtaining comprehensive or reliable coverage; particularly so when one is dealing with large and mobile populations or diverse and largely uncontrolled ranges of activities (e.g. small-scale manufacturing, or bazaar-level commercial activities in Third World cities), but one should also not underestimate distortions due to the inefficiency of the data collection agencies involved, and even to corruption and, at times, a lackadaisical attitude among data collection officials. All censuses and general surveys have an acknowledged percentage of error in their totals. Alwin (1977 p.135) discusses these in the U.S.A., and one would expect the margins of error in developing nations to be much greater than, for instance, the 5% given by the census of India for their general population tables. Sain (1976 p.86) for example, demonstrates that the 1971 census for Chandiganh does not include 54% of retailing establishments in the salient tables because they did not conform to the definition of a census house. That other concrete examples are hard to come by illustrates the degree to which these issues are overlooked by academics using this data. (Although the time-lag between collection and publication, of course, makes verification impossible in many cases. Over half of the 1971 Census volumes for Delhi Union Territory had not been published by 1979).

Much documentary data is of questionable value because of the equivocal nature of the categories used in its compilation. It is a common practice to give headings or divisions without explicitly stating the rationale behind their adoption. Many such divisions are totally arbitrary, and in fact, obscure real patterns and differences in the data which would be revealed by a more realistic breakdown.

Farmer (1974, p.29) provides an excellent example of equivocal categorization with reference to the land-use totals in the census of India. He demonstrates the dangers of taking the land-use divisions at face value, showing that the category 'cultivable waste' is meaningless and misleading. Sundaram (1977) shows that to an extent the same is true for urban categories:

"Varying emphasis has been given to varying aspects of the definition (in different states), which has led to several anomalies" (p.53).

As Chandrasekaran and Zachariah (1964) demonstrate for South Asia, international comparisons are particularly difficult because of the widely different criteria adopted for classifying urban areas.

One also encounters deliberate distortion or obfuscation of data by bureaucrats and vested interest groups, either for political reasons or personal gain. This problem is common both at a local and a state level, and its importance must not be underestimated if one is to attempt to use data from official sources. At a minimum, some fieldwork must be conducted to attempt to verify the official data provided.

An example of conscious distortion of information at a local level was encountered during fieldwork around Delhi. In each village or group of villages a local official (the Patwari) is responsible for the maintenance of land-use records and the authorization and registration of tenure changes and changes in land-use. These villages are designated as green-belt and changes in use from agriculture to urban are illegal.

In these areas, however, one frequently finds areas of new housing, factories, etc., developments which do not appear in the official land-use records. This is because the Patwari is, in such cases, bribed to register the change of ownership only, and not the change in use from rural to urban. This practice is widespread, and it undoubtedly leads to such a level of distortion in the official land-use records in this area that they are rendered all but useless.

There is also a tendency to present plans or projections as reality, whereas in fact the two often have little to do with each other. For instance, when asked for details of the land-use pattern in Delhi, the local planning authority (the D.D.A.) promptly produced the projected land-use plan from the master plan of 1959. A cursory comparison with the city's existing land-use structure made it clear that plan and reality were totally different. Much the same was true for other data and reports obtained from that agency. For instance, their data on resettlement estates created during the resettlement programme of 1975-77 gives extensive lists of services and facilities such as shops, health clinics, latrines, etc. Fieldwork in three of the estates revealed that the stated facilities did not, in many cases, exist, or existed only in part. The D.D.A's data gave facilities planned for these estates, not facilities actually constructed. This was not made clear anywhere in the reports.

There are other serious problems associated with the use of secondary and official data from developing nations, even if the actual data tables available can be shown to be fairly accurate and reliable. Let us now consider these problems, all of which tend to be, to some extent, interconnected.

A serious problem is the selective nature of available data. In developing nations, large parts of a population's activities have no contact with, and are not monitored by, data collection agencies of state or other institutions, whereas other sections of the community or economy are intensively and comprehensively monitored. Chana and Morrison (1975), in their work on Nairobi's informal economic sector, illustrate this point well:

"Little is known about the informal sector for, almost by definition, firms operating within it are excluded from official statistical enumeration" (p.120),

- a conclusion verified by Sain (1976) in Chandigarh.

If one relies on data collected by official bodies, therefore, and even assuming that one is aware of the full range of activities at work in any one area, the investigator will inevitably find his work distorted by the selective nature of the data available. Where research dealing with an unknown or only hazily understood structure, however, the problem is far more acute, as one will almost inevitably produce a grossly distorted set of constructs, with far greater importance being placed on certain variables than their true position deserves whilst other important, and perhaps vital, variables will be underplayed or ignored altogether for the simple reason that they have not been adequately monitored.

This problem is to a great extent self-perpetuating, as there is a tendency for data-collectors (both individuals and institutions) to base their enquiries on the experiences of people and agencies who have in the past collected data in the same broad categories. Singh and De Souza (1977) highlight these problems well in an overview of urban studies in India, in which they emphasise the need for more comprehensive and reliable data if one is to understand the problems of slums in Indian cities. Mozayeni (1974 p.267) arrives at much the same conclusions in his discussions of city planning in Iran.

A tendency noticeable among some investigators which is partly, but not wholly, a consequence of the above two factors, is the tendency to use sets of data and create variables which have little or no relevance to the problems one is attempting to analyse simply because the data is available in a readily usable form, whilst more relevant data is not. In such cases, researchers are adapting their research methods to fit the data, rather than collecting and using data specifically designed to throw light upon the particular problem which they are attempting to investigate.

There are numerous examples of this tendency in the literature, the most common fault being the use of population censuses to measure such things as rural-urban relationships, regional economic structures and urban dominance. Studies by Ellefsen (1962), Lal (1972), Arunchalam Tewari et al, Lo (1975), and Bradnock (1972) illustrate these tendencies and their pitfalls well. For instance, Lal (1972) attempts to measure and analyse urban influence on rural settlements via statistical analysis of census data on population and housing densities without any attempt to explain how these particular indices are related to the question of urban dominance.

Such an approach has no empirical validity, and the executors of this type of study do a great disservice to the analytical tool they use.

A factor which is related to the problems outlined above is the tendency to become almost 'mesmerised' by the use of secondary data and 'sophisticated' quantitative techniques in Third World studies.

In some cases, whilst the quality of secondary data is open to doubt, there is a vast quantity of censuses, surveys and other varied data sources available to an investigator. In such cases the quantity of data assures a seductive power, as the use whatever is available without thought as to whether it is salient to the analysis of the problem one is interested in. If accurate and comprehensive data were indeed available, this would be far less of a problem but, as we have seen, this unfortunately is generally not the case.

Secondary data generally relates to spatial divisions of some sort, in general administrative divisions or census tracts. This raises three potential problems.

Firstly, if one is concerned with a topic in which local level interactions between different factors are important then the level of aggregation found in secondary data will obscure these interactions, and perhaps a distorted picture of the processes involved. This is not necessarily a serious problem, but it necessitates at least some programme of fieldwork to provide an understanding of the role of local interactions even if comprehensive and accurate secondary data is available.

Secondly, different indices drawn from official sources often relate to different geographical divisions, throwing any attempt to correlate them open to serious conceptual problems. One must, therefore, either limit the analysis to the indices available at one spatial division or throw the analysis open to potential distortion by drawing inferences from the correlation of phenomena, for which the data relates to different spatial scales. For example, in the Census of India (to draw again on my own experiences) for Delhi Union Territory, certain demographic and employment statistics are available at a village level for the rural areas, but only at an aggregated level for the urban areas; all data on migration is only available at a Tehsil (an administrative division of 100-200 villages) level, etc.

Thirdly, many phenomena are not conveniently confined by the spatial divisions in which data is collected. Thus, what may be on the ground a coherent, internally homogeneous and externally distinctive functional area (for example, an industrial estate, an extensive squatter area, etc.) often transcends administrative boundaries, and the data on it may be divided among several local administrative tracts. Similarly, a perennial problem of urban studies is data which relates accurately to the entire urban area. There is a general awareness of this problem among both administrators and academics, and the creation of administrative areas such as the Standard Metropolitan Areas in the U.S.A. reflects this (see Berry and Horton, 1970, Ch.8, for a discussion of these issues). This awareness does not mean that the problem has been solved, however, and it is one which should be borne in mind whenever using data which contains a spatial dimension.

A factor whose significance will vary greatly from study to study is a problem which one could call time comparability, where a range of variables needed for a particular study has been collected at, and will relate to, different points in time. The importance of this will depend upon both the range of data one is looking at and the rapidity of change within the system under study. In areas such as urban fringes, where an extremely diverse range of data must be considered if one is to reflect and understand the complexity of the area, and where change over time is both extremely rapid and a dimension of central importance to the analysis and understanding of the problem, the difficulties relating to the chronological comparability of different indices derived from documentary data is of critical importance. If one again looks at Nangia's (1976) study of the Delhi region, in particular focusing on her section delimiting the city's fringes, we find a complicated set of indices drawn exclusively from official sources. This has resulted in the delimitation of the rapidly changing fringes of Delhi on the basis of, for instance, census data from 1961, the 1969 telephone directory, 1970 'bus and railway time-tables, etc. Clearly the use of indices relating to different stages of the fringe's development and expansion will seriously distort and, I would argue, totally invalidate the delimitation proposed in this work.

It is impossible to understand the processes, causes and significance of change over time in a complex system if the individual variables one uses are collected at and relate to different points in time. In general this is the case with documentary sources. Even a gap of a few years between the collection of different sets of data may result in information which relates to radically different states of the area, and in consequence one's analysis cannot reflect the true picture. In studies such as my own, therefore, even if the points advanced above concerning the use and validity of secondary data do not apply, the distortion caused by the difficulties of obtaining data relating to one point in time would, to a great extent, invalidate any conclusions arrived at from an analysis of such data.

SECTION 2

Fieldwork in New Delhi: Methods Adopted

The remainder of this paper consists of an outline of, and rationale for, the format used in the execution of a programme of fieldwork in ten localities within Delhi's fringes. The central objective of the whole programme of research is to gain an understanding of the processes operating in that diverse and elusive area the urban fringe, where different localities experience a transition from the recognisably rural to the indisbutably urban. At an early stage it was recognised that fringes are extremely complex and heterogeneous areas, and that the transition process involves complicated and variable interactions among a large number of different factors: the land-use pattern, the structure of economic activities, population characteristics, types of links with and levels of accessibility to the urban system as a whole, etc. The choice, therefore, was seen to be between focusing down upon one or more aspects of the processes involved (such as migration and industrial location) and studying them in depth with some empirical exactness or attempting to understand, rationalise and explain the total experience by looking at the relationships and interactions between the different phenomena involved and their patterns of change and evolution over time. These relationships, and the experiences and perceptions of the people involved in their working, are at the very heart of the fringe transition process and my central objective in the programme of empirical research has been to understand them. My choice, therefore, was inevitably the latter alternative, which has the capacity to attain this goal, despite the methodological problems this entails.

Although it was, of course, considered desirable to obtain data which was as precise as possible, achieving objective exactness was considered secondary to gaining insights into the subtleties of the hidden relationships and complex patterns of interaction whcih are characteristic of fringe localities. This approach can be supported by the rationales used within other social science disciplines; most forcefully, of course, from anthropological studies and certain branches of sociology. The theoretical insights and empirical experiences of authors in these disciplines such as Redcliff (1975), Saberwal (1976) (who was also supportive in a personal capacity) Panani (1977), Sharma (1977) and Hesselbach (1972), were instrumental in reinforcing my convictions on the need for and validity of this approach.

The method of study which evolved reflected these basic objectives and has been, it is felt, largely successful in achieving them.

Some preliminary work was done with the 1971 census to provide some idea of the outer limit and internal structure of Delhi's fringes at that time, and along with the work of one or two authors (notably Sundaram and Tyagi (1972), Rao (1970) and Shrinistava (1977), some documentary data and the limited range of maps available, was used as a basis for reconnaissance work. The results of this work were intended to indicate the areas in which fieldwork could be expected to be conducted. An extensive programme of reconnaissance around Delhi was then executed with two objectives in mind: firstly to gain an overall perspective of the types of development found in the fringes of this particular city and, secondly, to draw up a list of localities from which fieldwork sites could be selected. It was intended that the localities chosen for in-depth investigation should be as representative as possible of the different forms and patterns of urban development found in Delhi's rural-urban fringe, whilst recognising that, even with a number of localities, it would not be possible to select typical examples, as the heterogeneous nature of a city's fringe precludes this possibility. The best one can hope for is areas with certain broad characteristics, such as government-sponsored low-class residential estates, industrial areas, squatter areas, etc. It is only by extensive first-hand experience and intelligent reconnaissance with the intention of identifying and appreciating the structures which appear to be characteristic of this area that such localities could be chosen.

The region in which Delhi is located is a densely-settled agricultural region, and a large number of villages (111 by 1981 according to Sundaram and Tyagi (1972)) have been, or are in the process of being, absorbed by and assimilated into the city as it grows outwards. It seems realistic, therefore, and was indeed perhaps inevitable that all of the localities selected should contain at least one old agricultural village and wherever it was practical the boundaries of the local study areas were taken to be the boundaries of the village's traditional lands. In certain cases (and especially those in the more developed areas) this delimitation technique was found to be inappropriate, as certain blocks of development transcend the old

boundaries (an issue discussed above with reference to secondary data). In seven out of ten cases, however, a village and its lands were used as study areas in the other three localities areas of a comparable size were chosen.

To recap, therefore, fieldwork sites were chosen, via reconnaissance and observation work, with the aim of selecting localities which contained types of change and development which reflected both the diversity of the fringe experience in Delhi and patterns and consistencies within this diversity.

Once an area was selected the basic objective of the fieldwork was to discover as much about as many aspects of the area as possible. A quick and broad land-use survey was conducted and a working categorisation of residential groupings and economic activities drawn up to provide a basis upon which to select informants, and to assist the development of my understanding of the area. (See Appendix I for a sample categorisation for one of the fieldwork sites). At this stage and throughout the subsequent interview work in each locality, observations on all aspects of life in the area were continually made. These were often supplemented and/or verified by information elicited from people on the scene. Information gleaned from these observations often proved extremely useful in revealing trends and relationships, and many of the ideas suggested by observational work could be followed up by specific questions to informants in the interviews conducted in that area.

With the benefit of hindsight I would emphasise the value of such work. Informal observations and enquiries can reveal much about the way people think and act in their own environment and, especially, can assist one to put the information obtained in straightforward interviews into its proper perspective. As such, it is an integral part of the method outlined here and without it the type of fieldwork advocated here would be lacking an essential dimension. Field studies by authors such as Wiebe (1975), Stanley (1978) and Rao (1976) have also made use of insights and information gained by informal observation within their study areas, and its role in supplementing data gained by a more formal approach can be seen in their work.

The bulk of information in each locality however, came from interviews with people living or working there. The interviewees were neither ramdomly selected nor intended as a statistically verifiable sample. Respondents were selectively chosen to cover all aspects of the area's residential and economic structure, based on the broad categories identified in the reconnaissance (see Appendix I). These categories were revised and extended, as and when it became necessary, as we gained further knowledge of the area during the course of the work. For instance, in many cases it was found that the original village had been extended by recent residential constructions which were at first indistinguishable from the original village, but which were recognised as distinct locally, and which had different histories and functional characteristics. There was a broad aim of choosing numbers of respondents in proportion to the apparent importance of the category into which they fall, but in general a proportionally greater number of owners, managers etc. of factories, shops and workshops were interviewed, as it was apparent at an early stage that these enterprises, although less in number, were likely to play an important role in the urbanisation process in fringe localities. In addition, in many cases it was necessary to conduct additional interviews to follow through on points raised in previous ones or to clarify areas of uncertainty about certain aspects of change. This, again, emphasises the importance of the flexibility in method which we were continually striving for. This capacity to follow through and clarify areas of uncertainty was an essential feature of this method, and it would have been difficult to achieve with a more formal approach, and impossible with a predetermined sample to which one had to adhere for statistical validity.

Before starting fieldwork in the first locality, which was intended as a pilot study to test techniques, five questionnaires were prepared with the intention of covering different categories of people. The questionnaires contained a first section of specific questions about the personal characteristics (job, residential details, family, origins and migration history, etc.) of the respondent and, in the case of entrepreneurs or managers, on the business history and commercial links of that particular enterprise. In a second section, questions both general and specific, were asked about the activities which one could find in the area, the types of jobs, places of work and origins of the inhabitants of the area, various types of linkages

between the locality and the general urban area and, perhaps most interestingly, the various forms of change which, in the experience of the informant, have taken place in the area during the time in which it has been experiencing a process of transition from rural to urban.

It was found at a very early stage, however, that even with five different questionnaires to choose from, it was impossible to follow a fixed questionnaire format because of the extreme variety of the interviewees.

For example, one of the questionnaires related to residents of the locality interviewed in their place of residence. Despite having separate categories for original inhabitants and migrants into the area and an extremely long series of wide-ranging questions, however, it was found that in such interviews some questions were relevant and others were not and the list of interviews, however copious, was not extensive enough to take account of the tremendous variety in origins, personal characteristics and activities of the people encountered in any one fringe locality, reflecting the heterogeneous and rapidly changing nature of such areas. It was felt, therefore, that general questions on, for example, the respondents' origins and migration history, job characteristics, etc., supplemented by proddings and requests for clarification when necessary, revealed the facts more freely and coherently. The same was true for other aspects of the body of information we were after, such as residential typologies, which often displayed an even wider range of characteristics. Thus it was found that, given the desired range of information and diversity of our interviewees, a formal questionnaire technique was too unwieldy and impractical for use in this study.

It was decided, therefore, to abandon this format in favour of an open, unstructured technique, and consequently the use of set questionnaires was abandoned. Precedents for this approach were gained from Saberwal (1976), Panini (1977) and Shrinistava (1977), as well as from the anthropological approach of participant-observation. It is worth emphasising, however, that there are fundamental differences between the scope of study undertaken by anthropologists using this technique and the aims of my own research. It would be erroneous, therefore, to draw too close a parallel between the method outlined here and that of anthropologists, although there are some important similarities between them.

The same two broad categories of information were elicited in an unstructured approach, but is was far easier to ask questions which were appropriate to the individual respondent's particular circumstances, to follow up points of interest and to clarify areas of uncertainty when one was not attempting to adhere to a sequence of fixed questions. This, again, was a fundamental prerequisite for my research needs. My basic aim was, as we have seen, to gather information as a broad range of phenomena and to look for relationships between the different aspects of change. To do this it was necessary to have the ability to accommodate points advanced by the informants which were not expected, as these may have revealed important aspects of the area's development. These points were often thrown up in answer to general questions and as a rule needed clarification, achieved by asking impromptu questions and following up the points raised until their significance became clear. This sort of flexibility is obviously achieved far more readily within the framework of open, unstructured interviews.

Moreover, with an open technique it is far easier to accommodate group interviews; where several individuals congregated (usually gravitating to the point of an interview whilst it was in progress) and were usually willing to contribute information and add their observations on the patterns of life and processes of change in the study area. Many of the most successful interviews were with groups rather than individuals, as people tended to be more articulate and accurate, and opinions advanced were arrived at as a group concensus, often after protracted discussion amongst the informants. It would be extremely difficult to conduct group interviews with a more structured, formal approach to fieldwork (not least because they generally just 'happened'), where the scope for deviating from a format would be slight if one was aiming to collect data which could be collated and used in a formal statistical analysis, for which consistency would obviously be essential.

We can see, therefore, that the fieldwork technique used in this study is aimed at establishing patterns of relationships between different phenomena found in the selected fringe localities, examining their sequences and patterns of change over time and exploring the consequences of these changes for the form of urban development found in the area. Obtaining precise, objectively valid data for statistical analysis on, for example, the occupational structure or detailed land-use pattern was considered of secondary importance to discovering the patterns of relationships between the diverse phenomena found in a fringe locality.

There is a basic conflict between surveys aimed at the consistency and comparability needed for the former and the flexibility needed for the latter. The information gathered from the reconnaissances, observations and interviews was used to build up a picture of the contemporary structure of the locality's land-use, population characteristics and economic activities, to examine the links between the locality and the rest of the city and to trace the sequences of change which have occurred in the area during the period of transition from being a rural area in the city's hinterland to arriving at its contemporary position in the process of urbanisation. Sequential and causal relationships between such diverse phenomena as, for example, the state planning and administrative system, small-scale industrial location, residential construction, growth of rents as an important subsidiary source of income for the original community, in-migration and the development of 'informal' sector commercial and retailing activities (to list but one group of interactions) were found in several of the field localities. The analysis of the data is still in progress, so it is not yet possible to advance a schematic picture of the fringe transition process, as it occurs around Delhi, but that this will be possible from the data obtained by the method outlined here is not doubted.

A further comment on the selection of informants is necessary. It has been stated above that no attempt was made to use random sample (or comparable) techniques to choose interviewees, as the primary aim was not to gather data for precise statistical analysis. Even if this had been an objective, however, I doubt whether, in the context of Indian fringes, it would be possible to achieve this aim. To select randomly one would need some form of comprehensive list which took account of all the diverse people and activities one finds in fringe localities. Even if such a list were available for one point in time (itself a dubious proposition, unless one follows the example of authors of micro-studies such as Gopi (1978) and conducts ones own census, a task only possible for one locality because of the time it takes), in the volatile and rapidly changing context of a city's fringes it would soon be outdated, and it is probable that important segments of the locality's population would be left out of ones survey, again reflecting the issues discussed in Section I. Moreover, actually finding the selected informants would, as anyone who has been in an Indian village or shanty town will know, be difficult enough in itself. In addition, the reaction of many people to our initial approach was one of suspicion and hostility (reflecting the resentment and fear of 'officialdom' and government agencies of all

sorts felt by most people); a reaction which was often difficult to overcome. If we had at empted to locate named individuals this reaction would have been greater, and it is probable that we would have been able to find and talk to only a small proportion of those selected. That it is not a practical proposion to conduct surveys with such methods adds further weight to the use of the more informal approach outlined above, where ones informants are consciously selected to ensure that all aspects (or at least all discussible aspects) of the problem are covered, and where the method adopted is not dependent upon some form of preselected sample.

This, again, emphasises one of the many pragmatic problems one faces when attempting empirical work in the contemporary Third World. These are issues which must be recognised and taken into consideration in the formulation of research methods, not glossed over or ignored altogether, presumably in the hope that with benign neglect they will eventually go away. In this paper these issues have been discussed at length and a method of investigation which, whatever its other faults, takes them into account has been described. This method was developed for a particularly complex and elusive field of research, and the problems encountered in this work do not, of course, apply universally in Third World studies. There is undoubtedly, however, a great lack of methodological tools developed for (and which take account of) the particular problems one faces in developing nations (except in anthropological studies, by far the most methodologically thoughtful of disciplines in this field). Investigators interested in this field must recognise this fact and concentrate on the development of such tools. It is hoped that by emphasising these problems this paper has contributed something to the development of methods of investigation which take into account the constraints one is invariably operating under in the contemporary Third World, for without them we shall continue to perpetuate the myths and misunderstandings which pervade this subject.

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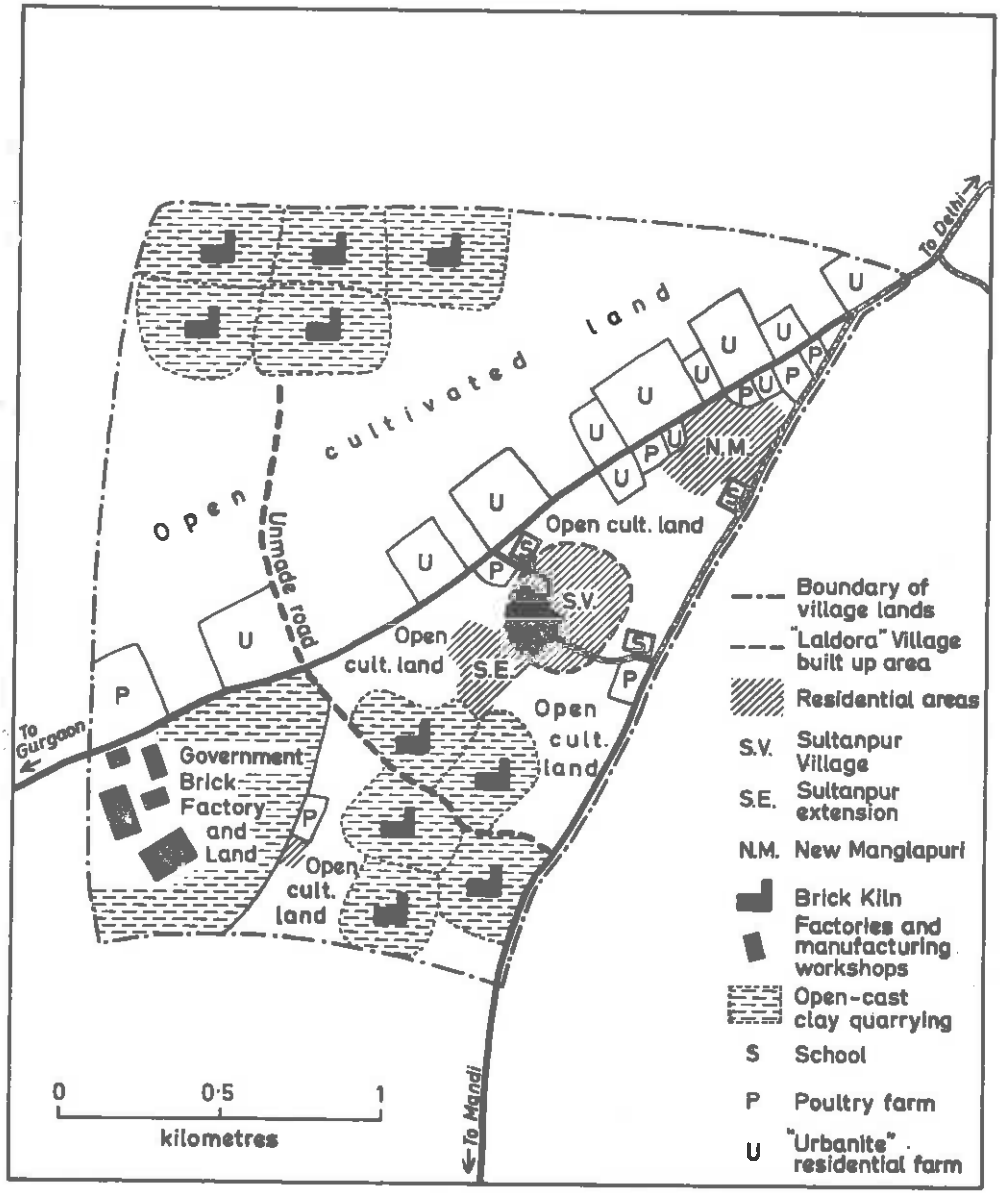
SULTANPUR VILLAGE

Land-use Pattern February 1979



APPENDIX I

Sultanpur Village: initial survey and categorisation of activities and areas

Residential Areas:

1. Sultanpur Village: still a distinct area with few visible signs of change.
2. Sultanpur Extension: unauthorised residential colony attached to, but distinct from, the village. Only partly developed.
3. New Manglapuri: a distinct and separate residential area north of the village.
4. A small group of squatters adjacent to the large brick factory.

Industrial Activities:

1. Private brick kilns: two groups, one south of the village, and one in the extreme north-west of the area.
2. Government brick factory: a large mechanised plant with a large area of open-cast clay quarrying.
3. A group of small factories on the edge of Sultanpur Village, within the village's administrative boundary.

Agricultural Activities:

1. Traditional village fields: unfenced and cultivated by the villagers.
2. Poultry farms: low brick sheds owned and operated by outsiders.
3. 'Urbanite' farms: surrounded by high walls and containing large bungalows. The fields are intensively farmed along market-garden lines. Owned by outsiders.