

Center on Principles and Policies  
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CONCEPTS OF AGGLOMERATION AND CONSOLIDATION  
AND RELATED RESEARCH METHODOLOGY

By

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## Introduction

This lecture consists of two parts. The first deals with the theory of agglomeration and consolidation, including and examination of all related concepts and terms. The second part describes research techniques that may be used in this sphere.

### PART I THEORETICAL ANALYSIS

#### A. Definitions of the two basic concepts:

1. The agglomeration process describes the cumulative concentration of increasingly fragmented holdings in the hands of a decreasing number of owners.
2. The consolidation process describes how farmers obtain adequate land of suitable layout in their attempt to operate at optimum economic efficiency - i.e., to make full employment of their resources at the given level of technology.

#### B. Relative importance to Land Settlement

1. In certain cases existing farm owners and operators are creating special problems that can only be satisfactorily solved by Land Settlement programs.
2. Land Settlements may overlap, adjoin, or be economically related to areas undergoing agglomeration or consolidation.
3. The quality and quantity of potential settlers as well as the supply pressures of would-be settlers will be affected, amongst other things, by these processes.
4. The timing and priorities in allocation of resources for land settlement should be related to the overall agrarian problem within which the two processes can be significant items.
5. Land Settlements should have tenure systems and systems of land rights that are less likely to promote undesirable agrarian processes within the settlement, even in the long period.
6. Consolidation is a useful concept as regards optimum sized farms in settlement programs. An understanding of the motives and methods of local farmers who attempt to obtain consolidation can be useful in planning settlement schemes.



## C. Basic Concepts and Terms

1. A farm is an economic unit of production that is based on land.
2. A farm will consist of one or more pieces of land. Each piece may be defined in a legal document called a grant or title. Any piece may be divided by the farmer into several fields. (E.g. Padi)
3. The farm boundaries are clear in the farmer's mind. Cadastral survey systems and land registration systems like the Torrens system can fix such boundaries on the ground and on a map.
4. Each piece of land therefore has (an) owner(s) and it may have (an) operator(s) who is/are separate.
5. Where ownership and operation are separate, then rent or wages will be paid. Exceptional cases: token or gift rent and unpaid family labour.

6. A holding consists of all the pieces of land owned by one person.

N.B. Joint ownership especially of inherited land.

7. A farm consists of all the pieces of land operated by the farmer.

N.B. Joint-operation where besides his labour inputs the farmer has the function of organization.

Thus legally a farm may consist of pieces of land that are owned by the farmer or rented from other owners. The farmer may not operate all the land he owns - i.e. he may rent some of the land he owns to another farmer.

8. The owner of a piece of land who rents <sup>or lease</sup> his land to a farmer is called a Landlord and such a farmer is a tenant.

9. Land ownership is transferred by sale, inheritance or gift.

N.B. Temporary transfers <sup>of ownership rights</sup> via mortgage or jual janji <sup>1</sup>.

10. A piece of land can be divided or sub-divided if the first owner wishes to transfer part of it or if the new owners wish to partition the piece of land between them.

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1. Jual janji: a quasi sale. In return for a cash loan land is transferred as in an ordinary sale, but with the understanding that it is to be transferred back to the original owner (I.e. the borrower) on settlement of the debt. Legally this is a sale though according to custom it is merely a pledge.



Sub-division is the process whereby pieces of land become smaller and smaller through time.

11. A farmer may have all his land in one piece, or he may have it in several pieces. In this region the latter is more frequent. If the several pieces are so far from one another or so scattered about the village that the efficiency of the farm is lowered, then these pieces are in a state of fragmentation.
12. N.B. Whereas sub-division is the physical division of single pieces into several pieces, the existence of fragmentation depends more on economic considerations (i.e. not returns) than on the physical distribution of the several pieces. Thus without an examination of the farm economy it cannot be stated from observation of the lay-out of the pieces of farm land that fragmentation is present. (net)

#### D. The Agglomeration Process

1. In the initial stages in the history of a farming area the distribution of land ownership will be fairly even. Farms will be owner-operated and variations in size will correspond to skill, labour capacity, cropping system, etc.
2. Farm land is sometimes obtained by clearing jungles or draining swamps, and planting long-term crops like rubber or short-term crops like vegetables, fruits during the 'spare' time of plantation or mining workers, fishermen, or even government workers. (village extension + squatters)
3. As time passes (say 2-3 generations) land tends to be transferred to non-operators. This is the result of exploitation by traders, money-lenders and maladministration and the general process of poverty which is associated with the violent impact of Western technology and Western political and economic influences.
4. Once generated these processes accelerate. Not only is there a transfer of ownership from operators to non-operators, but there is:
  - (a) a transfer from rural owners to non-rural owners,
  - (b) a concentration of ownership among few persons in the village.
5. This process is reinforced by:
  - (a) a system of values wherein land ownership carries prestige (more than large income or large area of operation does.)
  - (b) Village traders who aim to create monopsonistic markets for the produce they buy from farmers.
  - (c) Village traders, money-lenders and rich peasants who aim to increase their incomes by taking high rents and



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other supplementary payments from tenants. Or by taking large profits by paying rural labour very low wages (i.e. lower than those set by the state or by agreement between the trade unions and the plantations.)

(d) The habit of investing cash and other savings in land rather than in other forms of investment.

6. Whatever motives may be involved, the fact is that through the generations there is increasing inequality in the distribution of land ownership.

Thus: Initially 90% of the operators own 90% of the land;  
Later 90% of the operators own 30% of the land;  
Finally 90% of the operators own less than 10% of the land.

7. The particular characteristic of such concentration of ownership is that it is not ownership of one large area. It consists of ownership of a large number of small pieces that are scattered about the village area. Thus, just as farmers come to operate fragmented farms, so owners come to own fragmented holdings.

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8. This process of the land being owned by a decreasing total number of owners each of whom owns an increasing area, is called the agglomeration process. Its distinguishing characteristic is the fragmental holding. The whole process is much facilitated by the rate of sub-division that goes on and the readiness of farmers, who often can do little else, to operate fragmented farms.

#### E. The Consolidation Process

*(N.B. no approval or support for tenancy of this type)*

1. This process is familiar to all students of agricultural economics. A farmer endeavours to operate an area of land sufficiently large to keep his other resources fully employed for any given crop or livestock system. I.e. the operator seeks maximum economic efficiency.
2. In its simplest form the consolidation process can be seen where a farmer increases the land area he is working on by renting or buying an adjoining piece of land. Or he may rent out a rather distant piece and rent in a more conveniently located piece of approximately the same area, and thereby avoid the 'cost' of fragmentation.
3. Consolidation aims to offset under-employment of factors of production.
4. However, contiguity is not the sole criterion. The farmer will consider access, drainage and irrigation, fencing, terracing, a presence of pests, personal security, etc., etc.



5. Consolidation may be achieved vertically (combination of functions as well as horizontally (improved lay-out)).

Thus a farmer may be able to set up a processing plant (large scale rubber smoke house, copra kiln or sugar crusher) by increasing his operated area and offering his processing services to other farmers. A group of farmers may consolidate vertically by cooperative processing schemes.

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6. The essential characteristic of consolidation is that it represents a continuous attempt by the farmer to better his lot by getting the right size of farm and the optimum lay-out so as to give him the maximum efficiency or maximum income for his given resources.

#### F. Comparison of the two processes

1. Both processes are self-generating, cumulative and dynamic. Whereas agglomeration is associated with the way in which ownership comes to be distributed, consolidation describes how operation is carried out.
2. Consolidation has a limit which is defined by the availability of economic resources, and the prevailing level of technology. On the other hand, agglomeration can proceed to a great extent. Theoretically it only ends when the owner is left. However, the process can be exacerbated by further fragmentation of farm operating units. I.e. there is no equilibrium in the agglomeration process. Consolidation makes for rising farm incomes while agglomeration makes for increasing poverty.
3. Agglomeration also results in absentee (non-village) ownership of village lands and an increase in the proportions of tenant farmers and landless labourers.
4. When the two processes interact in a laissez-faire situation, then agglomeration will predominate. State action is necessary to promote and maintain consolidation so long as any agglomerative tendencies are present.
5. Tenure rights and other aspects of ownership in land settlements as well as the economic organization or the settlement should be designed:
  - (a) to prevent any onset of the agglomeration process,
  - (b) to keep out non-settler agglomerators (sometimes even to be found amongst officials administering settlement schemes.)
6. Settlement planners should study local instances of consolidation with a view to designing optimum-sized farm units based on efficient utilization of all local economic resources.



7. Settlement administrators and policy makers can consider how farm areas in a state of hyper-agglomeration can be rehabilitated through creation of small settlements each of which could be the nucleus of a consolidation process.

## PART II. FACT-FINDING TECHNIQUE

### A. Objectives

#### 1. What to aim at

- (a) Study of current situation - Distribution of ownership and of operation to show if there is fragmentation of farms or holdings and if agglomeration seems apparent. Efficiency of farms to see if consolidation is apparent.
- (b) Study of historical background - Rate of sub-division and of transfers to study the pace of agglomeration - Attempts of farmers to improve area and lay-out by transfers and renting and so consolidate.
- (c) Other possible studies (associated with either of the above). Institutional influences on agglomeration or consolidation, e.g. family structure, education, income levels, occupational patterns, type of farms, group work, inheritance customs, etc. Productivity of factors of production. Marketing systems - monopsony and monopoly, indebtedness and tendencies for traders or other special groups to become agglomerators or absentee landlords. Tenancy systems - rent types, security of tenure, etc.

#### 2. Who to aim at

Farmers and owners who may be found through location of pieces of land on maps or from official land records.

N.B. The ultimate aim is farms and holdings, but data about these can only be obtained from first hand interviews with the operators and owners concerned.

#### 3. Where to aim at

Primarily a survey may be undertaken because some form of rural development work is intended. It may be the intention to create a land settlement in the area or adjoining to it. Possibly because it is intended to assess the scale and nature of settlement programmes the state requires a wide survey of the extent and incidence of agglomeration and consolidation. Cadastral or physical boundaries are defined



for the area to be surveyed. This is the area.

## B. Methodology

Problems of selection.

1. It is not intended to deal with the general theory and practice of rural economic surveys. Discussion will be limited to special techniques for investigating the processes of agglomeration and consolidation. The discussion is also limited to this region.

2. Method of selecting farms/holdings.

(a) Comprehensive survey.

Investigate every piece of land in the area. Interview the operator and ascertain the name and address of the owner. Also, collect production data, etc from the operator. Ascertain all pieces worked by operator. This is the farm.

Locate owner(s) of each piece of land. Obtain data on all pieces of land owned. This is the holding.

(b) Random sampling survey.

The area is treated as a sampling frame. All pieces may be demarcated on a map or listed in land office records. Using an appropriate sampling system select a proportion of the pieces for investigation. Other procedures are similar to the comprehensive survey method.

### Special problems common to both methods

3. Area boundaries

(a) The best possible situation, for this Region, is where there are fairly up-to-date cadastral maps showing each piece of land together with a reference number. Scale may be 8 chains = 1 inch. Such maps also show roads, rivers, and administrative district boundaries. Such maps facilitate the use of random sampling.

(b) Otherwise, more general maps are likely to be available, in which case a comprehensive survey is preferable. In such a case physical boundaries like roads, rivers, canals or foothills, jungles edge, etc. can be referred to. Great care should be taken to see that every operator in the area is interviewed. This is not particularly confusing if crops like wet padi, rubber or coconuts are grown. However some difficulty may be



encountered in areas where mixed crops like maize, tapioca, sugar cane or bananas are cultivated by a large number of small farmers.

(c) All the owners in a village may be located through land tax records or with the aid of the local tax collector, village headman, etc. The operators could then be indicated by the owners concerned.

4. Random techniques should only be applied where there is no doubt about the validity, up-to-dateness and arrangement of land records. Those planning the survey should be thoroughly familiar with the nature of the different legal titles to land, local institutions regarding ownership, operation, tenancy and inheritance.
5. If a grid system of squares is laid on a map and the numbered squares are selected according to a table of random numbers, then all pieces of land which have more than half the area inside the square can be selected for investigation. If squares are designed to include about 5 pieces, then once one piece is located, the field worker can easily locate the others.
6. A trained statistician must be consulted regarding the alternative possibilities for any such survey.
7. It is emphasized that field workers must visit every sample piece.
8. Although the comprehensive method implies that to locate the operator and the owner of a piece of land is to interview him for the basic data, at the same time it may be useful to select a smaller number of farms or holdings on a random basis for very detailed investigation.
9. (a) Land Office records including lists of titles, tax returns, etc. are only an aid and cannot be a substitute for field work in collecting data about ownership.  
(b) The investigator should begin from the selected piece of land and there should be direct personal contact between the investigator and the operator or the owner.
10. Multiple operators and owners  
(a) If the investigator can locate the piece of land then he can easily determine who is the operator of that piece. However, there are times when several people work on one piece of land. Thus several friends may cultivate and harvest a piece of padi land. Separate individuals may carry out different farming operations in the farm cycle. Thus men plow, women plant, and everyone harvests the padi in some areas. Who is the operator?



- (b) Sometimes it is clear that one person is the authority for all the main decisions. However, if it is not clear and there are several workers working together, this problem can be solved by carefully deciding what land forms part of the farm in question.

Thus even if some members of the group offer labour inputs elsewhere, any rewards they obtain should be treated as their personal income and not as part of the gross farm-income. In fact this outside work should be treated just as if they were a part-time factory workers etc.

- (c) If one of them were to operate another piece of land and keep the output and the income separately, then this should be treated as a separate farm.
- (d) The primary purpose is to collect data on the farm of which the selected piece is a part of, and/or on the holding of which the selected piece is a part.

1. (a) Multiple ownership is undoubtedly a more complex problem. Social systems, inheritance laws and attempts to avoid undesirable economic effects of such systems or laws together with attempts to avoid land disputes or even to avoid administrative sanctions have led people to participate in forms of joint ownership of land.
- (b) For this type of survey the problem becomes complicated because the several owners of the selected piece of land may be jointly or individually owners of other pieces of land.

Take the following example:

Ana, Baka, Caca and Dada jointly own 2 pieces of land Y and Z.  
Kele is a joint-owner of piece Z (but not of Y).  
Caca and Dada jointly own piece X with Haro and Ino.  
Baka is the owner of piece W.  
Ana is a joint-owner with Eki, Fifi and Gigi of piece V.

Piece Z is selected as the primary piece in the Survey.

Question: What is the holding ?

Answer: Piece Z is jointly owned by Kele, Ana, Baka, Caca and Dada.  
Piece Y is jointly owned by Ana, Baka, Caca and Dada.  
One half of piece X representing the quarter shares of Caca and Dada respectively.



Piece W is owned by Baka.

One quarter of piece V representing the quarter share of Ana.

Thus area of holding is  $Z + Y + \frac{1}{2}X + W + \frac{1}{4}V$

## C. Design of Questionnaires

### 1. General

All forms should have a head which has spaces for the following:

investigator  
informant  
location  
date  
time  
Survey ref. no.  
Form ref. no.  
name(s) of Owner(s)

### 2. Land Form I (Basic Land data)

(a) This is in tabular form.

(b) The Box-head has the following column heads:

serian no. (items)  
type of title  
title ref. no.  
date of title (first date)  
area in acres, rods, poles (or other system)  
area in decimal acres  
how title was acquired (purchase, inheritance, etc.)  
date acquired by present owner(s)  
crop(s) grown  
name of operator  
gross output p.a.  
sales value of gross output  
system of rent  
value of rent p.m.  
tax p.a.  
distance from operator's home  
remarks.

(c) The stub is divided into 3 types of land:

Type I	Owner-operated land
Type II	Land rented from others (or worker-operated)
Type III	Land rented out by the owners.



3. General Notes:

- (a) Use a separate form for each holding. If there is any doubt then use a separate sheet for each owner and indicate who the other co-owners are.
- (b) Use a separate row under the crop column if there are several crops. If possible, indicate area of each.
- (c) The Farm consists of all land of types I and II.
- (d) The Holding consists of all land of types I and III

4. Other land forms can record:

- (a) The history of ownership - forms of transfer, mortgage or lease and effects of subdivision of each piece.

Use one form for each piece of land.

- (b) The history of operation - turn over of tenants - variations in rent - rotations of crops - system of irrigation and other land development measures.
- (c) Production data.
- (d) Marketing data.

- 5. The history of ownership together with current ownership provides data for a case study of the agglomeration process.
- 6. The history of operation together with the current organisation of the farm including production and marketing data provide data for a case study of the consolidation process.
- 7. Household Form I (Basic household data)

- (a) This is in tabular form.

- (b) The box-head contains:

serial no.  
name  
sex  
age  
relationship to head of household  
marital status (present)  
period of residence in village  
occupation(s)  
literacy  
remarks

- (c) The stub is divided into 2 parts.
  - Members of the family living in the household.
  - Non-members of the family living in the household.



8. General notes:

- (a) The head of the household should be listed as the first serial item. Thus the relationship of other persons can be shown:

Baba	H/H	(head of household)
Sana	wife	
Pogo	F	(father)
Dodo	F/L	(father in law)

- (b) Occupation(s) should include all income earning occupations.

- (c) Literacy is shown by a simple code system.

R = reads, W = writes  
M = Malay, T = Tamil, C = Chinese.

The test can be ability to read/write a simple letter.

Summary and Conclusion

Two concepts related to the ownership and operation of land are described. An attempt is made to go beyond the usual description of Regional agrarian problems in terms of subdivision and fragmentation. Agglomeration and consolidation are two fundamental processes that explain why poverty is either increasing or not being significantly reduced in many areas.

This theoretical apparatus can be useful in the formulation of land settlement policy.

Of course the incidence and extent of each process will vary for the different parts of Region. The pattern will be more complex in areas where there is a high density of population or where several systems of law and custom are observed. Nevertheless a careful study of the nature and extent of each process in the countries in the Region may contribute towards development through a more realistic appraisal of local agrarian problems.