# THE SPATIAL IMPACT OF ISOLATION ON URBAN-RURAL RELATIONSHIPS IN SETESDAL, SOUTH NORWAY

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ABSTRACT

THE SPATIAL IMPACT OF ISOLATION ON URBAN-RURAL RELATIONSHIPS IN SETESDAL, SOUTH NORWAY

By

Vincent Paul Miller, Jr.

This study focuses upon the economic, social, and political relations between an interior valley in Norway, Setesdal, and urban centers on the coast. The study is an evaluation of the relative importance of economic, social, and political forces to the process of centrality and the growth of small urban places.

In order to better understand the processes at work in the growth of towns two hypotheses are posited and a holistic model of the forces of centralization constructed. The major hypothesis states that central places are unable to develop in areas of a stable agricultural land use system. The minor hypothesis states that a subsistence land use system may be recognized by an analysis of combinations of land use criteria. The two models represent a deductive schema for the investigation of the problem. The model of the forces of centralization shows hypothetical relationships before and after the process of urbanization occurs. The model depicts the forces to be unbalanced in favor of the social components and to the disadvantage of the economic components during incipient phases of the growth of towns. After the process of urbanization has progressed the social forces are disfavored and those of exchange economy become dominant. Politics may become a medium of feedback in attempts to restore social dominance or maintain equilibrium in the intermediate stages of growth.

The empirical phase of the study focuses upon the dichotomous and the interactional components of urban-rural relationships in the study area of Setesdal. Dichotomous components are those which tend to retain isolation in Setesdal. The research shows that the forces against urban centralization and the economic dominance of the major urban node of Kristiansand have been primarily social and political. The social force of traditionalism has been particularly important as expressed in extolling the gamalt (old things) of that mountain valley, as interpreted from published accounts of life in the valley, field work, and statistical data on land use practices. The interactional components are those which link Setesdal to the "outside world," particularly the urban center of Kristiansand. These components are principally transportation and communication. A railway was constructed to the head of the valley late in the last century and the growth of urban-like clusters has been linked to changes in accessibility into and in the area. Accessibility is analyzed here in travel time and frequency of service relationships between places. The data shows that transformations have occurred in the hinterlands of the small places of Setesdal and can be correlated with changes in accessibility into and within the valley.

The study shows that for the valley of Setesdal the models of centrality are fairly realistic, namely that economic forces have overcome social forces and that these changes correlate with the growth of small urban-like clusters. The major hypothesis that a stable land use system

can resist economic changes eminating from outside the study region is concluded to be false. An analog of land use stability is seen to be a boundary of traditionalism, which in the case of Setesdal is complex, blocking out some but not all economic forces for change, allowing land use transformations. The minor hypothesis that a subsistence economy may be recognized through land use is concluded to be true for Setesdal because of the persistence and stability of certain land use practices.

# THE SPATIAL IMPACT OF ISOLATION ON URBAN-RURAL RELATIONSHIPS IN SETESDAL, SOUTH NORWAY

by

Vincent Paul Miller, Jr.

A THESIS

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## ACKNOWLEDGEMENTS

This study is the outcome of a long and abiding interest in things Scandinavian and a view that the world is not a simple place. Towards these ends I have attempted to show that contact between different cultural components is fit subject matter for the geographer in his pursuit of Truth.

The subject matter of this study is complex, all the more so for a non-Norwegian audience requiring some explanations in the way of a preface. The use of the Norwegian language throughout the thesis is minimal, thus translations from the Norwegian unavoidable. Many of the translated terms and phrases come out rather poorly in English and in that sense represent only the approximate meaning of the original Norwegian. Such approximate translations are designated by single quotation marks (').  Exact translations are accordingly undesignated. Whenever Norwegian or other non-English terms are used in the text of the study they are underscored, however, proper names of individuals or groups of individuals or place names are not.

Throughout the thesis statistical analysis is used in places. Every effort has been made to render the analysis accurate. The data has mostly been taken from the official Norwegian statistics. All cards were punched by the author and checked for accuracy. In

the fourth chapter multiple correlation procedures have been used as well as the residuals from those correlations. A certain amount of experimentation thus is implied in the analysis of these data. In an heuristic vain the residuals were normalized in order to see if more distinct patterns emerge, a procedure which in the author's opinion yielded negative results, thus the normalized residual data is omitted from consideration.

This study represents the efforts of numerous people other than the author. Much appreciation and thanks must be extended to Dr. Lawrence Sommers of Michigan State University, the principal advisor of the study for his time and patience in guiding these efforts. Appreciation is also extended to those in Norway who were so helpful, particularly Tor Rasmussen formerly of the University of Oslo for his contacts in that city and Mr. and Mrs. Augund Brettveit of Valle i Setesdal for their valuable assistance in a number of ways. In this country Miss Jaimie Warns, a student at Indiana University of Pennsylvania, provided invaluable help in typing and editing the text; Miss Dorothea Munshower of Indiana typed the final copy in a very exact and professional way. Lastly I must express my thanks and devotion to my family, my wife Alida and my son Bradley, for living with this enfant terrible for so long in a sane and loving manner—to paraphrase Milton, "they also serve" in an inestimable way.

Vincent P. Miller, Jr.
Indiana, Pennsylvania
Summer 1970

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# CHAPTER I

## INTRODUCTION

Geographers have extensively studied the functional relationships of city and village, rural area and urban area. Some have attempted to define systems of cities that exist in exchange economies; others have been concerned with the relationship between central places and surrounding rural areas, or urban-rural interaction. Urban and rural interaction may be analyzed as a primary phase of the development of an exchange economy. Such an analysis is the focus of this research.

### THE THEORETICAL FOUNDATION

Research into the development stages of urban-rural interaction may provide further needed insights for central place theory.[1] Theoretical geographical research into the development of urban-rural relations has been relatively rare to date. The study of emerging economic systems has been left to other scholars, particularly economists and social anthropologists. Anthropological concern with emerging (mostly non-Western) areas largely omits the details of the system's spatial interaction.[2]

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[1]See Walter Christaller's Central Places in Southern Germany. Trans. C. W. Baskin, Englewood Cliffs: Prentice-Hall, Inc., 1966.

[2]Some anthropologists (notably Clark Wissler) favored a geographical approach in their discipline, which has suffered a relative decline in recent years.

Moreover, many geographical studies of evolving urban-rural relations seem to be attempts to perfect the tool of geographical analysis rather than to understand the forces at work in economic development. The geographers endeavor to develop a sounder methodology seems to be a logical necessity, but more attention must be paid to understanding processes of causation. Technique should not outdistance understanding.[3]

The recognition of causal process is as difficult as it is fundamental. Process may be viewed as a phenomenon changing through time and space. Many problems have arisen in attempts to isolate and examine the processes of economic development. Moreover, once such changes are isolated, students do not agree on their significance, i.e., their relevance to theory. With reference to economic geography, one school of thought, for example, insists that an equilibrium theory of economic development, such as Adam Smith's system of economic checks and balances, is adequate for understanding the workings of the space economy. A proponent of equilibrium theory in geography might suggest that a given space-economy is the result of a balance—equilibrium—between certain forces affecting the space-economy.[4]

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[3]Despite persistent methodological proposals studies of incipient centrality are few. The importance of process has been underscored in geographical literature. Perhaps the most notable emphasis on process by geographers is to be found in W. L. Thomas, Ed. Man's Role in Changing the Face of the Earth. Chicago: University of Chicago Press, 1956.

[4]The example was suggested by J. W. Tukey in Thomas, ibid.

Others may criticize such an explanation as being superficial. They would prefer to go beyond the analysis of countervailing forces at a given time for a particular place. Such researchers might state that a given economic landscape is caused by accumulative forces that have operated through time and space. Such advocates may also suggest that economic forces bring about different reactions at different places in the same economy, e.g., giving support to the idea that "the rich get richer and the poor get poorer". With respect to these two schools of thought, the Swedish political economist, Gunnar Myrdal, suggests the latter, that of the analysis of time-space continuum, as being suited to the isolation of process.[5] Myrdal's assumptions are seen as an ideal basis for this research.

## RESEARCH DESIGN

The focus of this study is mainly centered upon two adjacent areas—one declining, one expanding—in the Norwegian economy. The general focus of the investigation is the section of Norway called Sørlandet (The South-Land). Within Sørlandet specific attention has been given to the rapidly changing urban area of Kristiansand and the tributary rural area to the north in the valley of Setesdal.

The areas were chosen not only because they approximate opposite ends of a continuum of economic development, but also because they

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[5]Gunnar Myrdal, Economic Theory and Under-Developed Regions. London: Gerald Duckworth and Co., 1963, particularly Chapter 2. This concept is often called The Theory of Circular Causation.

are spatial "near neighbors". The areas are also quite diverse in societal nature.[6] Such a situation offers possibilities for the cultural geographer interested in the effects of social change on the economics of land use or the economic impact on land use and its effect on society. Setesdal, for the purposes of this dissertation, then is the landscape-laboratory. Certain hypotheses concerning the nature of economic change in a socially conservative section of Norway may be tested here.

This writer's attention was first drawn to Setesdal when he studied in Norway in the summer of 1959. During this visit several lecturers at the Oslo University International Summer School pointed out that Setesdal was somewhat different culturally.[7] More specific attention was focused on Setesdal in a research seminar conducted by Dr. L. M. Sommers of Michigan State University.[8] At this time the rate of change of certain population characteristics for southern Norway was examined in detail. The study indicated that Aust Agder county and particularly the four townships of the county called Setesdal have had an extremely slow increase in population when compared to the remainder of southern Norway. Relative to all of Norway, Setesdal's birth rate is lower than almost every other area of similar size. In contrast, Kristiansand, the major urban center, has had a

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[6]Documentation for this statement is presented in Chapter 2.

[7]These courses were: "Norwegian Music", taught mostly by Miss Liv Greni, Rikskringkastinghus (Royal Broadcasting Studio), and"The Social Systems of Norway", taught mostly by Dr. Knut Kolsrud, then curator of the Bygdøy Folkemuseet, currently professor of Sociology, University of Oslo.

[8]Fall quarter, 1960, Michigan State University.

rapid population increase in recent years. Figures 1 and 2 show pertinent details of Sørlandet and Setesdal respectively.

The problem of the dissertation is to investigate the development of urban centrality in the rural area of Setesdal. Figure 1 shows that centrality basically occurs along the coast. The objective is to gain further insight into the effect of the processes of urbanization through an analysis of the spread of urbanism towards the interior of Sørlandet. The strategies used to obtain this goal are: (1) posing and investigating basic questions concerning the economic effects of urbanism in a rural area, and (2) investigating yet other urban-rural relations often omitted through a disregard of non-economic factors in central place theory.

Geographers have only begun to systematically investigate questions relevant to the development of the urban hierarchy. A recent notable example of such research is Bergsten's description of the changing relations between a medieval Swedish factory town and its surrounding area. Bergsten describes the transformation of the town's economy from a subsistence to an exchange base.[9] (In a sense Bergsten has described a qualitative change from one economic situation to another trough time.) Allen Pred has expanded such historically-oriented research through (1) the study of a larger geographical area, and (2) the introduction of a series of hypotheses that have been tested using historical data.[10]

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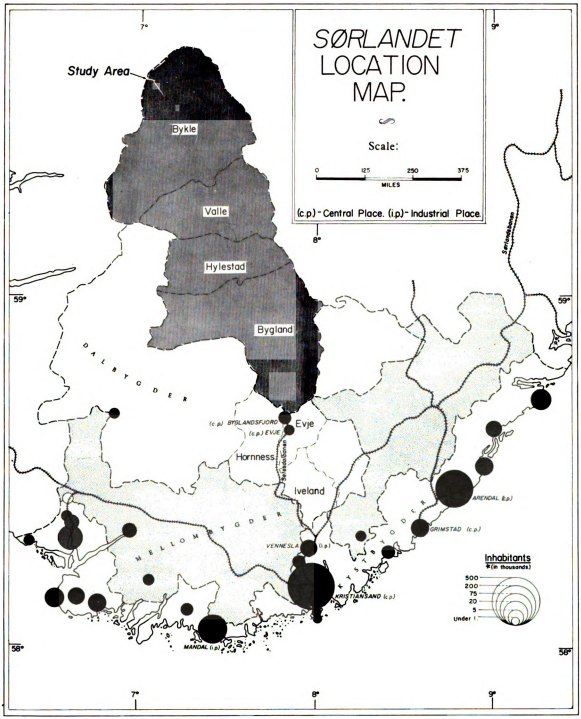
[9]Karl Erik Bergsten, "Methodical Study of an Ancient Swedish Hinterland, The Iron Factory of Finspong, Sweden," Lund Studies in Geography, Series B, Human Geography, n.d.

[10]Allen Pred, The External Relations of Cities During the "Industrial Revolution," with a Case Study of Göteborg, Sweden, 1868-1890. Chicago: Department of Geography Research Paper No. 76, 1962.




Source: Urban Data from Myklebost, 1960

Figure 1.

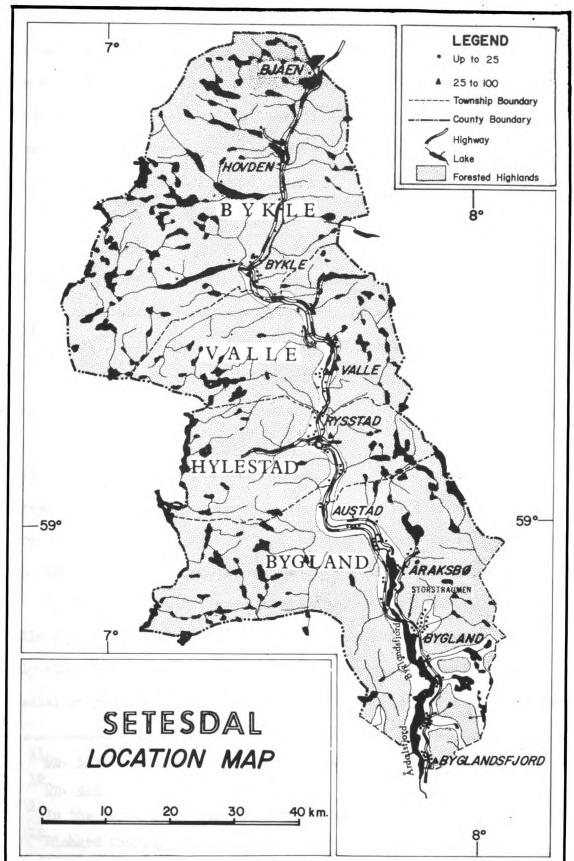

LEGEND
Up to 25
25 to 100
Township Boundary
County Boundary
Highway
Lake
Forested Highlands
7°
8°
59°
BJÅEN
HOVDEN
BYKLE
BYKLE
VALLE
VALLE
HYSSTAD
HYLESTAD
AUSTAD
BYGLAND
ÅRAKSBØ
STORSTRAUMEN
BYGLAND
BYGLANDSFJORD
SETESDAL
LOCATION MAP
0
10
20
30
40 km.

Figure 2.

The contrasts that exist between the landscape laboratory of Setesdal and the coastal region may be indicative of a deep and fundamental difference between different economic situations similar to those investigated by Bergsten[11] and Pred.[12] These differences may be more than quantitative, more than variations. Using the assumption that "economics makes the world go around," the above quotation seems perfectly obvious and plausible. From the perspective which sees economic scale shift as a result of complex cultural situations, the statement appears to oversimplify the case.

In light of the foregoing discussion, an alternative view of the development of exchange economy and central place is proposed. Centrality as viewed here results from the various forces of cultural change and can be expressed symbolically:[13]

$$(1) \quad C = (f)\ ef + pf + sf$$

C is centrality, ef, pf, and sf are economic, political, and social forces respectively. The above formulation (1) is a synthesis of forces that appear to exist in the real world; that these forces affect the development of central places is the thesis of this research.

Equation (1) may be represented by the use of a model. Model building, according to Chorley,[14] involves the association of supposedly significant aspects of reality into a system possessing some special properties of intellectual stimulation, and is so employed here.

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[11] Op. cit.

[12] Op. cit.

[13] In the formula (f) should read "function of".

[14] Richard Chorley, "Geography and Analogue Theory," Annals of the Association of American Geographers, 54, (1964), pp. 107-126.

Figure 3a gives a very general picture of the forces of centralization. The various forces are shown to be equal (as represented by the equilateral triangle) and to operate in the described direction; thus, political forces impel economic forces which in turn impel social forces. Figure 3a should be refined, however, because the three-fold components of culture are normally unequal in any given situation; the model fails to represent the various elements of cultural lag.[15] Cultural lag may be described as a force against change; thus, an economic impetus for a change to our urban society may be counterbalanced by a social or a political reaction favoring rural society.

Figure 3b includes an additional dimension of cultural change i.e., a reaction to an economic stimulus. The solid lines represent economically impelled forces for change and the dashed lines represent "feedback" forces which mitigate <u>against</u> change. If the feedback is equal to the force for change, the whole system is then considered static or unchanging. In this respect, from the perspective or equilibrium theory,[16] Figure 3b is actually an approximate[17] model of the forces affecting centrality through a subsistence economic spatial continuum at a given point of time. Figure 3b may be a fairly

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[15]See George Carter's discussion of cultural lag on pp. 84-85 of his <u>Man and the Land, a Cultural Geography</u>. New York: Holt, Rinehart and Winston, 1964. One of Carter's chief criteria for the identification of lag is the failure of an area to develop a "...town dwelling society."

[16]See the discussion of equilibrium theory, p. 3.

[17]The model is approximate because it is still somewhat unrealistic. No subsistence society appears to have a "perfect" balance of forces in any respect. This topic of lag and change in culture has been the subject of considerable anthropological discussion.

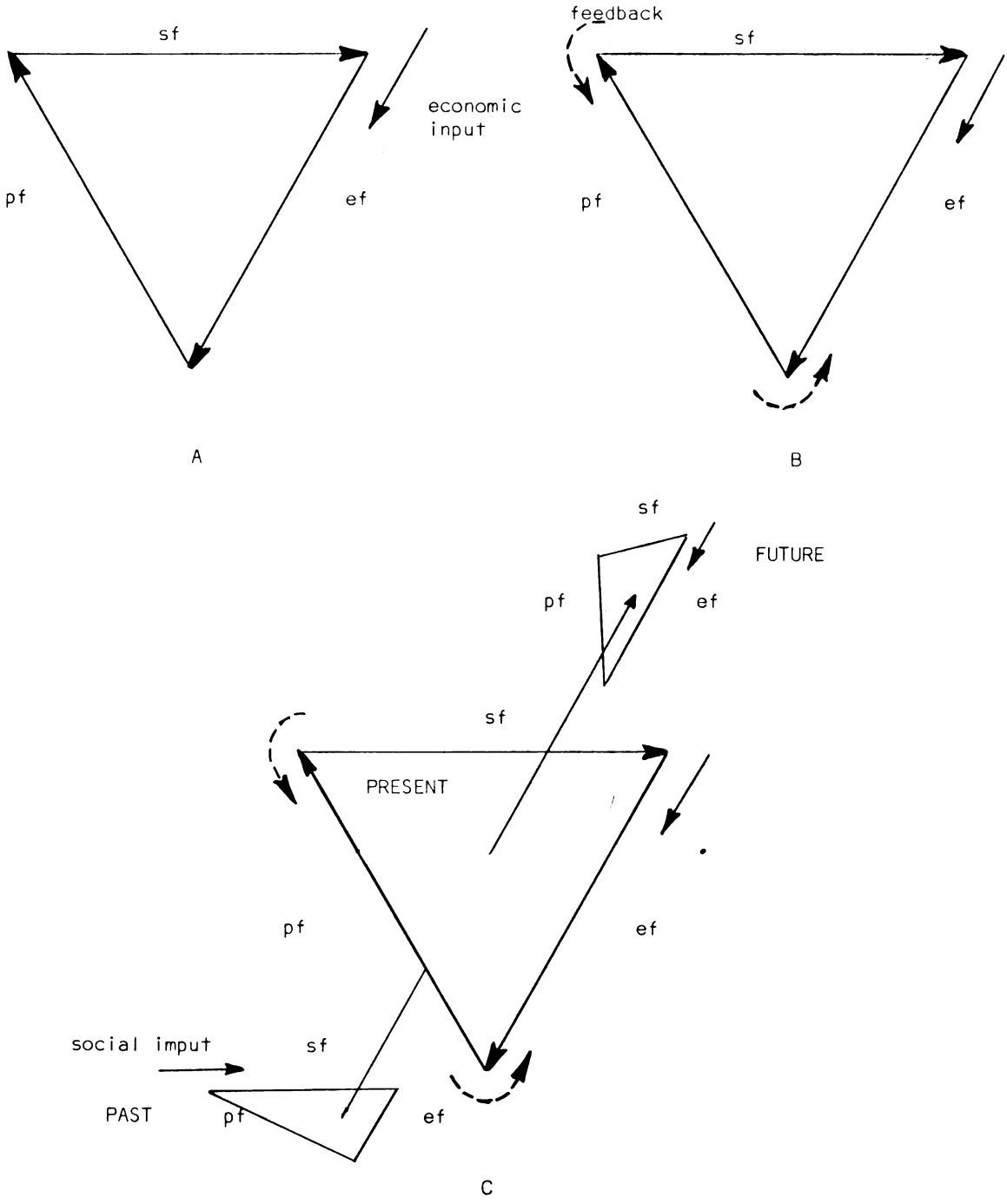


**Figure 3. Models of the forces affecting centrality.**

realistic model of the forces affecting centrality. The model is not predictive or particularly explanatory, however, because it fails to show changes in those forces through a time continuum.

Figure 3c represents a three dimensional model showing the growth of central places. The first two dimensions depict earth-space relationships as in Figure 3a and 3b. The third dimension(arrow) shows time relationships.

The model illustrates how one would expect the components of culture to change as urbanization expands. Note that town life is more dependent upon social forces (sf) in the direction of the past; a factor that is also illustrated in angular separations between lines ef, sf, and pf. Hypothetically, a developing exchange economy does exhibit the economic trends accounted for in central place theory. This model, however, shows that exchange economy may also be caused by social and/or political goals coming closer to the economic goals of culture, which is represented by the "closing" of the angles between ef, sf, and pf in the model. In this last example questions remain as to process. Thus has economic development promoted centrality or have changing socio-political goals permitted centrality? The questions are important in the investigation of the concept of an urban-rural dichotomy. The future time increment in Figure 3c represents a cultural system that is almost completely dominated by an exchange economy. Here centrality is more or less free to migrate through the space according to the locational attractions of the market and raw material as described in more traditional location and central place theory.

Figure 3 illustrates that, hypothetically, change in a cultural

system need not progress to a total economic-materialistic orientation but may for example become socially dominated. Such a social system may result from the forces of traditionalism having become entrenched through a long period of trial-and-error type experimentation. Social dominance might also be, in part, the more immediate reaction to growing urban control. The typology of the dynamics of cultural change as shown in Figure 4 helps to explain the latter situation.[18] A highly static society would resist a trend towards urbanization or other land use change through a strong and stable traditional system, resulting from a viable core value system, as illustrated in Figure 4. Thus, an unchanging society is the result of powerful stabilizing forces for the traditional life. To completely resist change, however, the component of traditionalism must somehow stifle or redirect resistence to its authority. The creative system is then called upon. This creative component in a changing culture may increasingly take its clues from innovations in the perceptual realm, perhaps through perceiving some more profitable land use practice introduced through the spread of exchange economy. The real task of the traditional component of culture in this example is, therefore, to somehow redirect the disturbance in the traditional land use practices in such a way as to forestall greater urban dominance. This is illustrated on Figure 3b and 3c as a social and/or political feedback to the economic forces.

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[18] This diagram was suggested by a reading of Morten H. Fried's, "Land Tenure, Geography and Ecology in the Contact of Cultures," American Journal of Economics and Sociology, XI (1952), pp. 391-412.

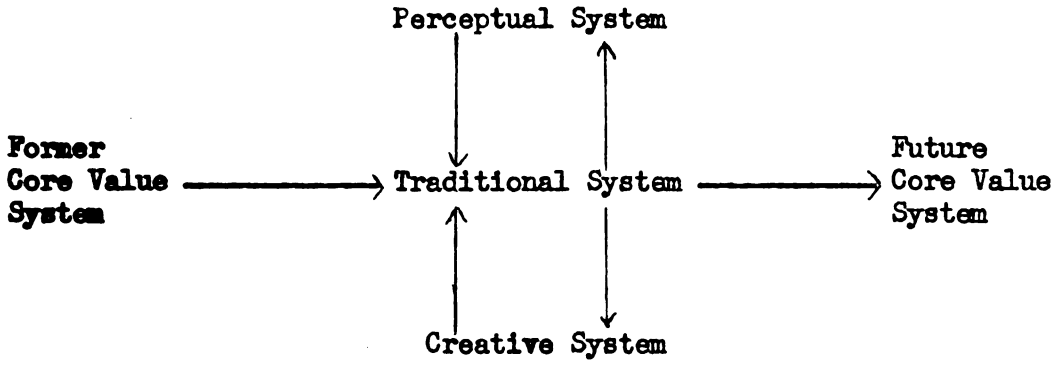


**Figure 4.** The Components of Cultural Change. See p. 12 for The Analysis of the Diagram. Diagram suggested by Fried, op. cit.

As will be shown, such may well have happened in the case of Setesdal. Problems of social reactions to economic change has been well-noted generally in the behavioral sciences but perhaps less so in the geographical study of land use.[19]

Two examples from the recent geographic literature serve to illustrate how the social forces have been ignored by geographers to help explain centrality. Reino Ajo investigated the development of the hinterland of Helsinki, Finland.[20] The premise upon which Ajo constructed his model is that urban entities generate their own hinterlands and that the magnitude of these hinterlands might be explained through mathematical models. Ajo uses a biometric model

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[19] Political activity may be the outgrowth of conflict between social and economic systems, according to Franz Neumann's "Approaches to the Study of Political Power," Political Science Quarterly, LVX (1950), pp. 161-180. The topic of cultural lag may thus be properly assigned to political geography; however, political geographers have largely ignored this; at least substantive literature is nearly non-existent on the subject.

[20] "An Approach to Demographical System Analysis," Economic Geography, 38, (1962), pp. 359-371.

which indicates that the "city lights" (attractive forces) of Helsinki are the stimuli for rural emigration and that city's growth—the analogy to the growth of the cell is obvious. He uses a deterministic model which is based upon "...the classic mathematical notion of direct cause and effect."[21] This model seems inappropriate if human beings really do have a choice in selecting place of residence. In essence Ajo ignores an important question: are "city lights" the positive cause of centralization or the result of a "negative" or permissive factor, the breakdown of rural society?

Richard Morrill more closely comes to grips with this question while avoiding the problems of applying deterministic models to human inter-relationship.[22] Morrill attempts an explanation of urbanism through the application of a simulation model. Individual models of central place distributions are constructed for a period of time. A model for a new time level is then compared with reality to test the validity of the hypotheses used to construct the new model. If proven valid, the hypotheses then become theoretical explanations for the new model. The use of such "stochastic" or probabilistic models appears to be more realistic than a deterministic model because of "...the element of uncertainty or indiscriminancy in all [human] behavior."[23]

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[21] Op. cit.

[22] "The Development of Spatial Distributions of Towns in Sweden: A Historical-Predictive Approach," Annals of the Association of American Geographers, 53 (1963), pp. 1-14.

[23] Ibid., p. 1.

Morrill's model allows for, but does not isolate, the social forces of centralization. That is, it does not isolate the social forces that may disfavor economic centrality. He indicates that agriculture "...is a close link between the natural environment and human settlement"[24] and so is an important factor in centrality, but he does not discuss this subject further. Apparently, only the economic forces for centralization have been investigated in Ajo's and Morrill's studies; other causes have been ignored.

Geography and Cultural Change. Figure 4 further serves to emphasize the subtle but serious misrepresentations of a purely economic analysis of the process of urbanization. The illustration shows the contemporary spatial organization of any given human traditional system is the product of the creative and perceptual subsystems. The three "levels of living" thus interact to form a future core value system which will in turn be manifest through the subsystems of life. One may assume that in an affluent culture the perceptual system, particularly its spatial phase, tends to dominate the other two systems. Underdeveloped peoples, however, even though they desire to own land do not have a well developed pattern of spatial organization.

The development and justification of the concepts thus far presented may follow several paths of analysis. The ideas of the study are closely related to several approaches in both geography and

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[24] Ibid., p. 2.

anthropology. This dissertation focuses upon spatial diffusion, and thus is related to the topic of acculturation, a focus of the discipline of anthropology.

Central place theory may be generally thought of as an explanation of the spacing of cities and the hierarchical integration of their economies. The overall theme of central place theory is that of spatial integration, and so antithetical to spatial isolation.[25] In a sense then central place studies seem to be biased towards an integration perspective and so have failed to stress degrees of isolation that may exist between urban units.

The study of acculturation (the process of cultural change) is in similar fashion biased towards an understanding of the transmittal of culture traits and perhaps neglectful in developing the theoretical aspects of cultural lag. The diffusion studies of geographers while in many ways different from the acculturation research of anthropology tend also to focus on change, that is the spread of ideas and material culture through space.

In general isolation is seen as being implicit to and perhaps overly neglected by the approaches cited in the preceding paragraph.

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[25]Research in central place theory has apparently not considered the topic of isolation, even to the point of refuting the idea that one can isolate himself from a well developed exchange economy. Brian Berry presents an interesting theoretical alternative that differs from the approach of this study for substantiating the presence of and the effect of isolation upon central place theory in his "Cities as Systems Within Systems of Cities" in J. Friedmann and W. Alonzo, Eds. Regional Development and Planning. Cambridge: The M.I.T. Press, 1964, pp. 116-133. These concepts are elaborated in Appendix 1.

An analysis of the reason for such neglect will lead to an appraisal of some of the fine points of these geographical and anthropological perspectives. Such a discussion would become a critique of central place theory and an overview of the status of the theoretical views of acculturation and diffusion.[26]

The Hypotheses. The problems of applying the models of Figure 3 to the explanation of centrality are many. So complex is the situation that one may proceed in several directions. The purpose of this research is to understand and test the validity of the models relative to Setesdal. One key to the relationship between an ecologic system and the other dimensions of culture in this Norwegian valley seems to be that of land use. Two hypotheses concerned with land use are tested here.

The major hypothesis is that central places in Setesdal are unable to develop because of a stable subsistence agriculture. The purpose of the major hypothesis is to explore the proposition that in Setesdal agricultural stability[27] has precluded or slowed the

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[26] A full elaboration and justification of these concepts are presented in Appendix 1 "A Statement on Geographic and Anthropologic Theory and Cultural Change."

[27] A working definition of a stable land use system (in the case of a tradition-oriented system) is interpolated from Parsons' comments on agricultural development and land reform. Simply, stability is the absence of change, change that allows either greater effective participation in the farm economy, and an improvement in farm production and land use practices, or, a deterioration of the status of economic participation and farm production and land use practices. See Kenneth H. Parsons, "Land Reform and Agricultural Development," in Parsons, Penn, and Raup, Eds., Land Tenure. Madison: The University of Wisconsin Press, 1956, p. 6.

development of central places. This negative (nul) hypothesis provides a major vehicle for the analysis of the impact of isolation on the development of central places.

Setesdal was chosen as an area most ideally suited to investigate the hypothesis. The uniqueness of Setesdal, stressed previously, represents an excellent type of landscape laboratory or control situation for this kind of analysis. As will be shown subsequently, Setesdal is distinct because of past and present social, economic, and political isolation.

The minor hypothesis is that the traditional cultural system in Setesdal may be recognized and mapped through the analysis of combinations of land use. Specifically, cultural lag can be recognized by high population density and a great fragmentation of land holdings, coupled with low values of urban services. The research is concerned with accepting, adjusting, or rejecting this hypothesis. The adjustment of the hypothesis may involve rejecting some of the criteria used and/or finding a better combination. In this respect the ideal combination is considered to be one that approximates a stable subsistence land use situation as is assumed to exist in portions of the study area, Setesdal.

Agricultural stability is here primarily viewed as a cultural phenomenon. Setesdal has been chosen as an ideal area to investigate the man-land and other cultural relations that have brought about such stability because of the marked persistence of the old ways (in Norwegian gamalt) in Setesdal. In this respect Setesdal may be seen

as an example of a peasant subculture. These concepts and basic documentation for Setesdal are provided in succeeding pages and particularly in chapter II.

The hypotheses are complementary. The minor hypothesis provides a means for evaluating the stability of a given land use system, and the major hypothesis provides a way of integrating such conclusions with central place theory. The testing of the hypotheses and the subsequent interpretation will allow for the isolation of pertinent centrality forces in Setesdal. The question is whether the development of urbanism in the study area is primarily related to the deterioration of a subsistence land use system or to forces issuing from a large expanding exchange center.

Basic Assumptions and General Terminology. The focus of this research is the development of centrality in a traditionally-oriented, relatively self-sufficient segment of the Western World.[28] The residents of the study area, Setesdal, have been typified as being so tradition-oriented as to not subscribe to the mores and norms of urbanized Norway.[29] These people are assumed to be relatively self-sufficient in that they are fairly representative of Western-European

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[28] The terms "Western" and "Non-Western" are used in accordance to the concepts expressed by V. M. Dean in The Nature of the Non-Western World, New York: Mentor, 1958.

[29] The term tradition-oriented society is used in accordance to concepts expressed by David Riesman, et. al. in The Lonely Crowd, New Haven: Yale University Press, 1953. There is ample evidence of the traditional-orientation of Setesdal; this documentation is indicated throughout this study.

peasantry, hence "...nine-tenths...are...just able to maintain themselves and their families by hard and unremitting work."[30]

The term "subsistence" implies a complete dependence upon oneself and family for the necessities of life. The citizens of Setesdal are only partially dependent upon themselves, and thus the notion "relative self-sufficiency" is introduced to avoid semantic difficulties. A relatively self-sufficient society makes or produces most of the necessities of life and buys relatively few goods from the "outside" world. A necessary corollary to the concept of relative self-sufficiency is that an exchange economy is not greatly developed in an area of relative self-sufficiency. Thus, if an exchange economy has not attained a great degree of development, then urbanism and centrality must be minimal. As Wagner notes, however, some centrality exists even in the most undeveloped region.[31] Therefore, the difference between trading towns of developed and undeveloped areas seemingly is related to the presence of an urban hierarchy. Underdeveloped areas have a poorly developed hierarchy. Well developed areas have a more strongly linked system.

Setesdal has been selected as the landscape-laboratory of this research because it retains a high degree of relative self-sufficiency. The area has only recently been exposed to the influence of an exchange

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[30] G. G. Coulton, Medieval Village, Manor, and Monastery. New York: Harper Torchbooks, 1960, p. 32. In the passage Coulton compares the plight of the Modern European peasant-proprietor to that of his medieval descendant.

[31] P. L. Wagner, "On Classifying Economies," in Ginsburg, Ed. Essays on Geography and Economic Development, University of Chicago, Department of Geography, Research Paper No. 62, 1960, p. 62.

economy. The basic assumptions of this dissertation, therefore, are that Kristiansand is an urban place representative of exchange economy and that Setesdal is a non-urban area representative of relative self-sufficiency. Other premises used during the initial design of this research and subsequently verified through field or library work in Norway are (1) that Setesdal actually has been exposed to the effects of exchange economy and (2) that the impact of the expansion of exchange economy has affected the cultural geography of the area. The former assumption is developed in chapter two; the latter is the general focus of the study and will be summarized in the final chapter.

## OTHER ANTECEDENTS TO THIS RESEARCH

The hypotheses may represent an unusual approach to the problems of centrality, but, none the less, have precedent in the literature of geography, other than those already noted. The work of M. Aurousseau is fundamental to the minor hypothesis.[32] Aurousseau suggested an approach to the study of the distribution of population in rural areas using land-use criteria rather than "range" of urban functions.[33] Aurousseau based his proposal on the supposition that, in areas poorly exposed to the effects of an exchange economy, the

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[32] M. Aurousseau, "The Distribution of Population," Geographical Review, 11 (1921), pp. 563-592.

[33] The "range of a good" is indicative of the extent of central service hinterlands.

relationships between town and country are atypical of functional urbanism.[34] Others[35] note that the structure of small towns is different from that expected through a study of the urban hierarchy, perhaps indicating a weakness of central place theory. David Ward[36] and Jerome Fellman[37] approached the problem of incipient centralization in another fashion, by empirically tracing the "natural history" of cities from their pre-urban land use patterns.

Literature cited above suggests that the geographer's view of urban structure[38] and the urban hierarchy is incomplete. For example,

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[34]The term "dispersed city" has been used in lieu of "functional urbanism" in the United States, although precise terminology is not agreed upon. Howard Stafford, "The Dispersed City," The Professional Geographer, XIV, No. 4, (July, 1962), pp. 8-10.

[35]Victor Roterous and Wesley Calef, "Notes on the Basic Non-Basic Employment Ratio," Economic Geographer, 31 (1955), pp. 17-20; and John Alexander, "The Basic Non-Basic Concept in Urban Geography," Economic Geography, 30 (1954), pp. 246-261.

[36]David Ward, "The Pre-urban Cadaster and the Urban Pattern of Leeds," Annals of the Association of American Geographers, 52, No. 2 (June 1962), pp. 150-166.

[37]Jerome D. Fellman, "Pre-Building Growth Patterns of Chicago," Annals of the Association of American Geographers, 47 (1957), pp. 59-82, and "Urban Intent and Urban Expansion," Land Economics, 31 (1955), pp. 280-282.

[38]The three traditional theories, as listed by Ward, op. cit., p. 165. See also: E. W. Burgess, "The Growth of the City," in R. E. Park, E. W. Burgess and R. D. MacKenzie, Eds., The City, Chicago: University of Chicago Press, 1925, pp. 47-62; Homer Hoyt, The Structure and Growth of Residential Neighborhoods in American Cities, Washington: U.S.G.P.O. 1939.

Smailes alludes to the urban rural dichotomy but doubts that "there... is a clear cut dichotomy of town and country...there is no definite point where rural ends and urban begins."[39] Berry and Pred have reinforced this opinion by stating that the effects of exchange economy extend to the smallest built-up unit, the hamlet.[40]

Under the heading of acculturation, anthropologists have focused a great deal of attention on problems that are direct analogies of the urban-rural dichotomy. In a broad summary of acculturation, Fried states:

> Three factors are of vital importance in the determination of the nature of cultural contacts between two societies which are of unequal socio-political complexity. These factors are geography, ecology, and social organization; they do not work singly but always in tandem. Geography, the spatial distribution of natural environmental features about the earth, plays a significant role in setting the place and time of contact. It also conditions the continuity and intensity of subsequent contacts and eventually may offer a source of refuge for the conservative elements of a culture threatened by change from the outside. Ecology, the interaction of man as a cultural animal with his environment through the medium of technology, plays an even more direct part in deciding the broad nature of acculturation. Finally, the forms of social organization, especially as they are expressed in systems of land tenure are invariably decisive. The critical diagnostic clue is the difference between the ways in which exploitative rights to strategic resources are distributed in the two societies. In a certain sense, as we have attempted to indicate, the focus of the conflict between invader and invaded lies in this arena.[41]

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[39] A. E. Smailes, The Geography of Towns, Hutchinson University Library, London: 1960, p. 33.

[40] Brian Berry and Allen Pred, Central Place Studies, A Bibliography of Theory and Applications, Philadelphia: Regional Science Research Institute, 1961.

[41] Fried, op. cit., p. 412. Underlining added in order to emphasize passages which are especially pertinent to this research.

If viewed simply, Fried might well be speaking of the urban-rural dichotomy, the range of goods on either side of the dichotomy, and the social reaction (feedback) on the part of the subsistence group to an invasion by an exchange economy.

Based on the preceding samples from literature, it would seem that highly developed nations might have areas of relative subsistency that are poorly integrated with their exchange economies. Are such areas of relative subsistency to be called "functionally urban" because the residents can afford a few manufactured articles from the outside? These may be a-urban rather than ex-urban in their outlook. Thus, assuming the existence of subsistence and exchange type entities somewhere at some level, an urban-rural dichotomy must exist. The literature cited indicates that the assumption of a subsistence economy is plausible, even in well developed nations. This study will indicate the possibilities of its existence in Setesdal.[42]

## METHODOLOGY

Before the reasons for the kind of data used can be explained, some note of the nature of the area of enquiry must be made because of its significance to the selection of data. In this respect the function of the "agglomerated settlement" seems to be of primary importance. Here "contact" between exchange and subsistence economies could be expected to produce change in the human activity of the latter. Such

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[42]In light of this discussion, the generic term "agglomerated settlement" will be used in lieu of "central place" for the urban-like clusters of Setesdal. The use of the former is fairly consistent with current geographical usage as defined by Stamp, A Glossary of Geographical Terms, New York: John Wiley, 1961, p. 11.

changes have been recorded in some of the scholarly literature on Norway. Barth well documents the changing functions of society in a Norwegian community as it evolved into a well-developed exchange entity. Peter Munch and M. Cabouret have narrowed the focus to the sociological aspects of the urban-rural dichotomy in a lengthy study of Aurdal in Valdres.[43] As expressed by Parsons, the key issue appears to be that "land tenure relations are social relations, central toward which is man's relation to man in the use of the land,"[44] a precept that directly invites the use of geographic analysis. This reference indicates that the functions of the central places of Setesdal and their relation to Kristiansand must be delimited. A suitable scheme for the classification of an urban system must be explored and selected.

The Classification of Centrality. Geographers have devised many means for the analysis and classification of urban systems, several of which could be of interest here. A. K. Philbrick's classification of areal functional organization,[45] for example, is concerned with qualitative functional difference between low and high-order central places in an urban "hierarchy."

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[43] Fredrik Barth, "Subsistence and Institutional Systems in a Norwegian Mountain Valley," Rural Sociology, 17 (1952) pp. 28-38; Peter A. Munch, "A Study of Cultural Change, Rural Urban Conflicts in Norway," Studia Norvegica Vol. III (1956), M. Cabouret, "L'Evolution de la vie pastorale dans la vallee de l'Otta," Revue de Geographie Alpine, LII (1964), pp. 631-684.

[44] Kenneth H. Parsons, op. cit., p. 3.

[45] A. K. Philbrick, "Principles of Areal Functional Organization in Regional Human Geography," Economic Geography, 33 (1957) pp.299-336.

Other classifications[46] more directly concerned with the importance of services to the urban system basically analyze the existence of a hierarchy using a combination of techniques, i.e., statistical testing and class-ratio arithmetic.[47] Yet another group of scholars approaches the problem of urban systems through spatial analysis in an endeavor to test for random or non-random scatterings of urban units.[48]

The Scandinavian literature, too, contains studies somewhat similar in nature to Philbrick's work, i.e., efforts which are purely classificatory and highly suitable to the general needs of this research. A Swedish geographer, Gerd Enequist, has published many papers on centrality, two of which are interesting here: "Sweden's Smaller Urban Places,"[49] and "What is an Urban Place."[50] In these studies Enequist distinguishes between urbanized central places and rural agglomerated settlements. Hallstein Myklebost has followed

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[46]The examples are numerous, but attention is especially drawn to two articles of B.J.L. Berry and W.L. Garrison in Economic Geography for V. 34 (1958), "The Functional Bases of the Central Place Hierarchy," (pp. 145-154); and "A Note on Central Place Theory and the Range of a Good," (pp. 304-311).

[47]i.e., the ranking of entities and the statistical testing of the dispersion of these entities for clustering in a hierarchy pattern. For an abstract explanation, see Braithwaite, Scientific Explanation, New York: Harper Torchbooks, 1960, pp. 134-140.

[48]See Dacey, op. cit.

[49]"Severiges mindre Tätorter," Ymer, 1947, p. 35.

[50]"Vad är en tätort," in Tatorter och omland, Lund, 1951, p. 45.

this lead and classified all of Norway's central places.[51] The latter study is suited to the classificatory problems of this research.

Once the method for the classification of the function of the central places and agglomerated settlements has been selected, one must select appropriate land use data and measure co-variation of such data from place to place.

The Classification of Rural Land Use. Two measures of land usage have been selected from the vast amount of data available in Norway, rural population density and an indication of the degree of fragmentation of land holdings, i.e., the number and the size of the holdings. The minor hypothesis will be tested by noting the co-variation of these criteria according to the primary function of the community which serves the rural area.[52] The analysis of the data as it changes from urban field to urban field will enable the establishment of a set of (maximum and minimum) parameters using the land use data for the study area. Some general conclusions will be sought concerning the value of the method and criteria in understanding the nature of the linkage between an exchange and a subsistence economic system.

A Note on the Areal Statistical Units. Basically this research is an attempt to uncover the meaningful aspects of the interaction

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[51] H. Myklebost, Norges Tettbygde Steder, 1875-1950, Oslo and Bergen: Universitetsforlaget, 1960, 371 pp. "Tettbygde" in Norwegian means "built up area" and here is translated rather loosely as "central place."

[52] Regression analysis will be used for determining quantitative parameters.

between a densely-populated region of exchange economy and a sparsely populated area having a near-subsistence economy. The relative size of these units becomes important in order to understand the level of significance of the findings.

Norway has a range of statistics which corresponds to a hierarchy of spatial units. Rather complete statistical coverage is available for the country (det land) as a whole and such statistical material is herein designated as of first order significance; for 'county' units, (fylker), the second order of significance; and for 'township' units, (bygder or herreds), the third order of significance. Additionally, some statistical data is available for scattered 'sub-portions' of 'townships' (krets), of a fourth order of significance. Fourth order data has been utilized whenever feasible. Other data for kret-sized areas has been gathered through the use of questionnaires and field work.

## PLAN OF THE DISSERTATION

Chapter I has provided a theoretical-methodological introduction to the aims and the problems of the research; the hypotheses have been presented and the means of the testing explored. The next chapter is devoted to a description of the landscape-laboratory from the vantage points of time and space. The third chapter focuses upon the evolution of the use of space in Setesdal under the general heading of accessibility. The fourth chapter is devoted to an analysis of changes in land use in Setesdal and Sørlandet, the concern of the minor hypotheses and other conclusions of the study.

## CHAPTER II

### SETESDAL: THE GEOGRAPHY OF ISOLATION

The late A. R. Radcliffe-Brown saw great value in

> ...a procedure that presupposes that every system can be conceptually isolated from every other and from all else in the universe; it further presupposes that this conceptual isolate will have a relatively high degree of conformity with phenomenal reality.[1]

Setesdal is now considered as a conceptual isolate in order to (1) document the general assumptions of Chapter I, (2) present an objective view of the degree of this isolation, and (3) describe the landscape-laboratory of Setesdal.

Isolation may have several distinct definitions. The word may mean distant with respect to physical distance, divergent in the sense of alien or foreign, or separate as to be aloof from or inaccessible.[2] Setesdal is neither distant from nor alien to the heart and pulse of modern Norway, but it seems to have achieved an aloofness. Such aloofness in part stems from the physical setting.

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[1] A. R. Radcliffe-Brown, A Natural Science of Society, Glencoe: Free Press, 1957, p. 23. In effect Radcliffe-Brown proposes treating societies as closed systems. This chapter in part documents the extent to which Setesdal is a "closed system."

[2] Webster's New Collegiate Dictionary, Springfield, Massachusetts: G. and C. Merriam Co., 1961, p. 716.

THE PHYSICAL SETTING

The traditionalism of Setesdal has been seemingly fostered and/or reinforced by major physical barriers. The topography of Finland and Northern Scandinavia is dominated by one of the oldest and largest continuous rock complexes in the world, the Fenno-Scandian shield. The pre-cambrian and younger rocks of the shield are particularly prominent throughout Norway, forming the Keel (Kjølen) of that country. Portions of Southern Norway and the interior of Sørlandet consist of an eroded plateau area which is part of the pre-cambrian shield. This interior is a vast natural wilderness with economic exclaves existing only in the valleys such as Setesdal that breaks the continuity of the plateau surface.

These valleys have been the models for classic geomorphic description. William Morris Davis called such pathways from the sea "bluntheaded valleys,"[3] terminology that must be taken only figuratively in the case of Setesdal. The valley leads to the barren high vidda (plateau-surface), and the valley's floor is an extension of the high vidda surface. In such a physical situation egress is possible but economically unimportant because of the surrounding desolation, except to the South. (Figure 5).

Setesdal has been isolated from exchange economy because it, along with some other of Norway's interior valleys, lacks an inland focus. The high plateaus of southern Norway generally have remained

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[3]Quoted in W. R. Mead, An Economic Geography of the Scandinavian States and Finland. London: University of London Press, 1958, p. 29.

Figure 5.

Plateau (vidda) surface to the East of Valle. Note the large expanse of area valuable for grazing. (Photo: Augund Brottveit)

economically dormant because of distance, inaccessibility, and a lack of economically imported resources. The central portion of the southern vidda has remained economically stagnant through what is judged to be a basic conflict of interest between the interior and the coastal regions, perhaps well-described as a land-sea dichotomy.[4] Whatever the reason, all-weather routes have not been provided into the interior (including Setesdal) in the past.

The Norwegian vidda is an underdeveloped area. The bygder ('townships') of the region share the miseries of economic prostration and lack of common interests. If commonality exists, it is in the landscape: high altitudes, extremely variable climates (from summer to winter, hilltop to valley), and poor soil.[5] As if to emphasize this environment Norwegians have classified them as the fjellbygder (mountain 'townships').[6] Bykle, the innermost 'township' of upper Setesdal (Øvre Setesdal) is classified as one (the southern-most) of the underdeveloped fjellbygder.

Traveling northward through Setesdal the contrast between the

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[4]Elements of proof for this assertion are presented in the remaining material of the chapter. Some geographers implicitly affirm the concept, e.g., Isachsen notes that the concept of Sørlandet is generally associated with the exchange of the interior. See: Werenskiold, op. cit., p. 114.

[5]See: George Hubbard, "The Unity of the Physiographic History of Southwest Norway," Bulletin of the Geological Society of America XLV (1934), pp. 637-54 for some details of the physiographic unity. Eskeland indicates that the fjellbygder have a great many problems in common; viz., Av ulike Driftsformer i Fjellbygdene, Oslo: Norges Landbrukøkonomiske Institute, Saermelding No. 2, 1953.

[6]Many sources describe the problems of the fjellbygder, the two most pertinent to this discussion are: Axel Sømme Jordburkets Geografi i Norge (Geography of Norwegian Agriculture), Bergen: Skrifter fra Norges Handelshoyskole, J. E. Eides Forlag, 1954, and Eskeland, op. cit.

valley floor and the vidda is striking. On such a journey one feels as if he has ascended long, gently rising stairs. At Bykle the top is all but attained. Here the valley bottom lies near the lower limits of summer snowfall,[7] and the farmer must cautiously choose the fields on solsiden (sunny side) of the mountain if he is to have a crop.

Climate, particularly microclimate, is critical. The mountain townships of Norway experience certain climatic anomalies when compared to the valleys. In the winter the mountain and plateau surface of South Norway is blasted by storms from the South and Southwest. The intensity of these storms is comparable to the 'Westerlies' of the Lofoten Islands or the Northeasterlies of New England. Even though the storms are bitter, the temperature characteristics of the fjell (mountains) are not as severe as those of the valley bottoms. Average temperatures for the higher altitudes in January are above -11°C (12°F) whereas average minimum temperatures for the valley floors range from -25°C (-13°F) and -37°C (-34.6°F).[8] Summer brings a reversal of this situation; the fjell is bathed mostly by winds from the Northwest and West-Northwest causing colder temperatures at the high points. Typical July temperatures[9] for the mountain 'townships' range

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[7]Hans W:son Ahlmann indicates that summer snow comes above 1000 m. (ca. 3250 ft.); H.W. Ahlmann: Norge, Natur og Næringsliv, Norsk utgave ved Fridtjof Isachsen og Hallstein Myklebost, Oslo: Universitetsforlaget, 1957, p. 85.

[8]Ibid. Bykle-centrum (-center) is ca. 650 m. Byglandsfjord at the entrance to the valley is 203 m.

[9]This data has been culled from Ahlmann, op. cit., pp. 84-85, and Sæme, op. cit., pp. 12, 15, and 143-149.

between 10°C (50°F) and 14°C (58°F), while in the valleys the range is several degrees higher.

The temperature conditions of the fjellbygder have a certain economic importance. The 10°C (50°F) July isotherm is generally the limit of cultivation. Areas having temperatures below 10°C (50°F) usually are devoted to pastures; land whose July temperatures range between 10°C (50°F) and 14°C (58°F) are marginal for agriculture. The most productive land in Norway is found in areas having average July temperatures greater than 14°C. In terms of these agricultural requirements, Bykle has but one-third the heat resources of the richest (i.e., warmest) agricultural region along the coast of Oslofjord.[10] Other agricultural problems in Øvre (upper, northern) Setesdal occur because the Western Kjølen produces a rain shadow and locally irrigation must be practiced.[11]

In general the physical isolation of Setesdal is topographic and climatic. Topography has reduced communication and transportation into as well as in the valley. Access to Setesdal is difficult in all directions, save the South. Climate has further affected contact with the world beyond the mountains in basically two ways. Primarily the climate of the vidda is too severe for productive agriculture in the ordinary sense, allowing the higher surrounding plateau surfaces

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[10]The fjellbygder receives 400 or less growing degree days whereas the coastal agricultural areas receive 1200 or more growing degree days. See: Sømme, op. cit., p.15.

[11]Confirmed through private correspondence with Augund Brottveit, Supt. of Schools, Valle i Setesdal, 27 November, 1965.

to remain virtually depopulated most of the year. Secondarily climate has restricted transportation in the winter, especially in Øvre Setesdal.

Regardless of topographic and climatic impediments, Setesdal's contact with other parts of Sørlandet has evolved rapidly in recent times. The following section recounts the ever increasing complexity of these contacts in an attempt to document the degree to which the valley still retains its traditionalism.

## THE NATURE OF SETESDAL'S ISOLATION

The very first published reference to the valley treats it as being (even) beyond the seters, af Setrum[12] and the area became known as the "valley of the seters," Setesdal. The name was never of local invention, but rather was brought in from somewhere to the West, probably the agricultural area south of Stavanger called Jæren. The manner through which Setesdal received its name emphasizes that from time immemorial the valley has been terra incognita, known of, but not understood.

Through time the lowland communication into the valley was slow to develop, as indicated by Setesdal's language, folklore, and traditional ways of life. The folktales of Setesdal are classics of their kind.[13]

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[12] The term appeared in Magnus Lagabøte's Landslov (1274?), see Lars Renton, Seterbruk in Noreg, v. III, pp. 6406, Oslo: Universitetsforlag, 1955. Stagg states that the first specific mention of the area stems from 1020 in South Norway, London: Allen and Unwin, 1958, p.138.

[13] The tales have been edited and published by Dr. Olav Bø, The Folklore Institute, University of Oslo. Dr. Bø is a native of Setesdal.

The language is a softly inflected version of nynorsk ("new" Norwegian) reaching back to Viking times, atypical of the urban language of Norway. This area's land use has attracted great interest on many counts, of which the retention of the seter is the most famous.[14] A seter is a small hut constructed in the uplands where needed additional pasturage (utmark) for the family farm is found. The structure is used by shepherds (teenagers and women) in the summer and is usually unattended during the winter months. Today the seter system is declining, as is transhumance[15] in general. The rate of decline in Setesdal is less than the Norwegian average and the area is well-known as a stronghold of the ancient land use system.[16]

Culturally Setesdal lies between two dissimilar centers of development. To the north and northeast lie the counties of Telemark and Østfold, areas that have been responsive to the older

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[14]For a critique of publications on the seter see, Halvard Bjorkuik, "Norwegian Seter-Farming," The Scandinavian Economic History Review, XI (1963), p. 15.

[15]Transhumance is the periodic or seasonal movement of flocks or herds of domestic animals between two areas of different climatic conditions according to Stamp, op. cit., p. 458.

[16]Material partially culled from Renton, op. cit. A questionnaire circulated for the purpose of this research indicates that some seter-farming still occurs in all of the four townships of Setesdal, but most seters have been abandoned. In Bygland the earliest abandonment reported occurred in 1920, latest in 1947, median 1938-1940. In Valle the earliest reported abandonment occurred in 1945, latest in 1962, median year 1953. No range of figures available for Hylestad; utmark herding is an established industry in Bykle, but none of the residents of this sparcely populated area returned the questionnaire that was circulated.

center of development, Østlandet (the East Land), (Figure 6). Østlandet developed as a cultural node from the conservative agricultural areas north of Oslo.[17] During the formative period of Norwegian nation-statehood, Østlandet retained a regional identity and struggled quite successfully with the other centers for leadership.[18] Østlandet continued to remain aloof from "provincial" areas such as Vestlandet and Trøndelag through a slow identification with the ways of the Swedes and, to a greater degree, the Danes.

To the south and southeast of Setesdal (Figure 6) is the second cultural core area of interest, namely, Sørlandet (the South Land). Sørlandet, a term of relatively recent origin, is the region that has been successively occupied by the Egder tribe[19] and Swedish groups. During prehistoric times the Egder people effectively controlled the coast from Boknafjord to Skienfjord, hence the name Agdersiden (the Agder Coast). During the 800's the Swedes established a kingdom that included the entire Agdersiden as well as its hinterland. The present geographical concept of Sørlandet is more an historical than a geographical concept. The

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[17]Material from Magne Ommundson's A Short Outline of the Geography of Norway, mimeo, Oslo, 1958, p. 9.

[18]A relatively isolated nodal region that has grown from within.

[19]A very powerful group, first referred to by Jordanes (ca. 550 A.D.) see F. N. Stagg, South Norway, London: George Allen and Union, 1958, p. 129.

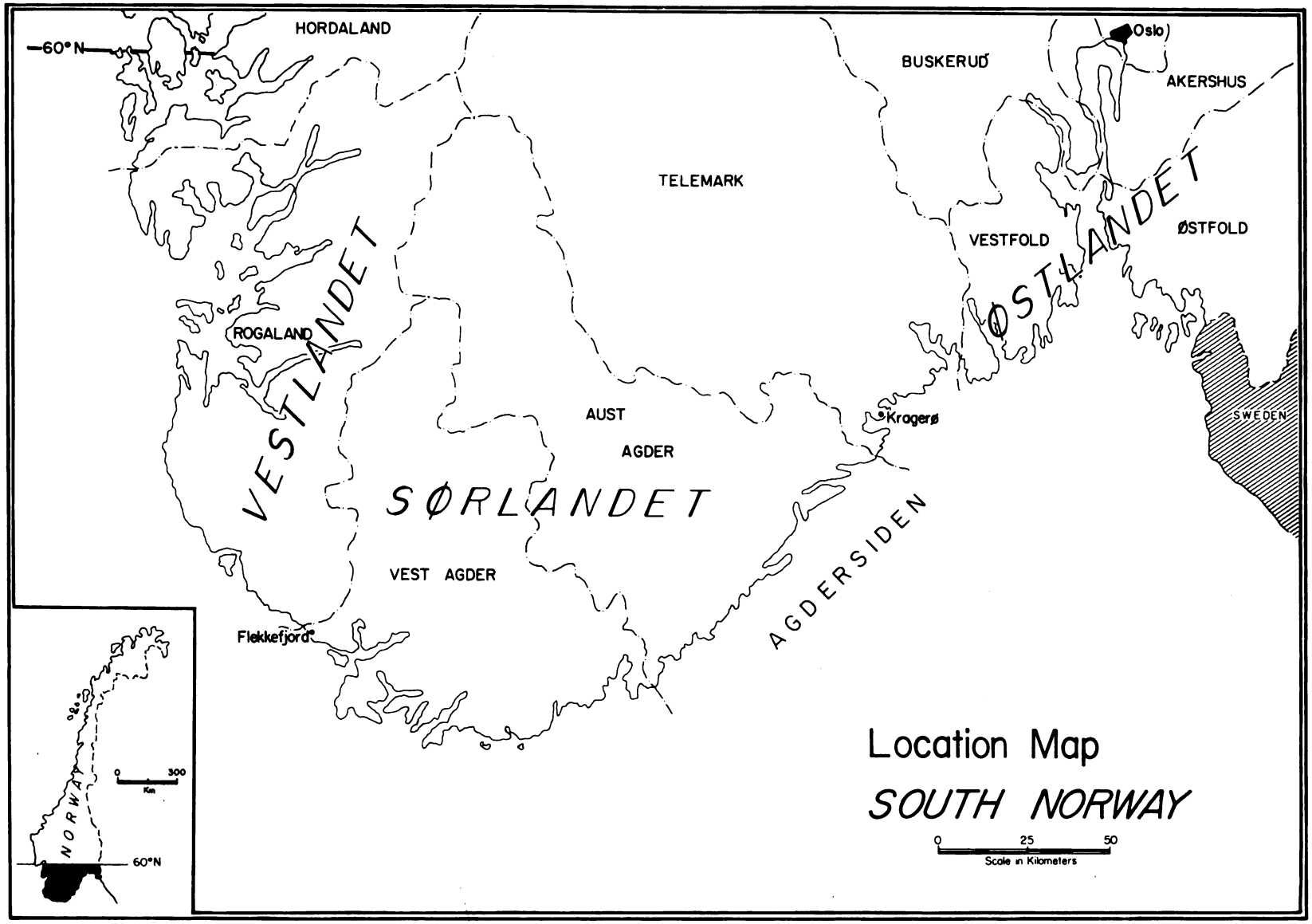
60° N
HORDALAND
BUSKERUD
Oslo
AKERSHUS
TELEMARK
VESTFOLD
ØSTFOLD
ØSTLANDET
VESTLANDET
ROGALAND
AUST
AGDER
Kragerø
SWEDEN
SØRLANDET
VEST AGDER
AGDERSIDEN
Flekkefjord
NORWAY
0
300
Km
60°N
Location Map
SOUTH NORWAY
0
25
50
Scale in Kilometers

Figure 6.

boundaries of the region are particularly vague along the coast, especially on the western side of the Oslofjord. Here the South and the East Lands merge imperceptibly because of a heavy belt of population extending south from Oslo. Sørlandet is usually defined as the area between Flekkefjord and Kragerø or the area comprising Aust Agder and Vest Agder Counties (Figure 6).[20]

The hinterlands of the two centers of development merged toward the mountainous interior of Norway. Setesdal may be considered a cultural and economic outlier of both Sørlandet and Østlandet.

Varying Definitions of Setesdal. The traditional gateway to Setesdal is through the town of Byglandsfjord; the geographical limits of the region have varied through time, however. From antiquity Setesdal proper included only Valle, Bygland, and Hylestad. (Figure 1). The populated areas to the north and south of this genetic core of Setesdal were "outside", and thus responsive to "other" influences.[21] At least one writer views the southern end of (lake) Byglandsfjord as one of the most pronounced "racial" frontiers in all of Norway: "...quite suddenly there is a complete change of racial characteristics—dress, architecture and decoration, language and customs, way of life, cuisine..."[22] To the north the influence of Rogaland and Telemark (Figure 6) are to be seen in the folkways of

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[20]So defined by Odell, op. cit., p. 266.

[21]See Isachsen in Werenskiold, op. cit., p. 110.

[22]Stagg, op. cit., p. 154.

Setesdal.

Others have viewed Setesdal from an economic perspective and find no particularly sharp regional boundaries to the north and south. A broader definition, based on economic considerations, might well include Evje, Horness, and Iveland herreds as part of Setesdal.[23] Indeed, great historical precedent exists both for inclusion and non-inclusion of these political units. The additional three herreds had been included with Setesdal in the old administrative district known as the Röabyggelag (the 'corner-district').[24] Before 1860 Setesdal proper was either ignored as a part of Sørlandet and included with Telemark, or considered as within the Röabyggelag. After 1860 the entire physical unit of the valley was annexed to Aust Agder (Figure 1).

For the purpose of this study Setesdal is defined as the physically isolated valley proper, i.e., the herreds of Bygland, Hylestad, Valle, and Bykle.

Recent Views of Setesdal's Culture. Attitudes as well as opportunities contribute to man's organization of space. Some attitudes may become so ingrained in culture as to become universals, that is, viewpoints that are accepted without question.

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[23]Peter Tvedt, Director, Aust Agder Regional Planning Association, in a letter to Communications Minister Trygve Bratteli, 7 November, 1960. A copy is in the possession of this writer.

[24]An administrative area that is carried over to this day in the official statistics as "Setesdal Fogderi."

Here we should pause and ask what is the modern Norwegian view towards Setesdal. Has this attitude become a universal that must be included in a consideration of Setesdal's contact with the world beyond the valley?

The folkways of Setesdal may not have been generally understood in the distant or recent past, but to say that they have been unnoticed is erroneous. The popular press, for example, has focused upon the architecture of the valley. One author noted that the residents had the peculiar custom of building a vintage 1940 addition onto a vintage 1500 dwelling (Figure 7), and the result was "regrettable and tasteless".[25] Another has taken note of such building trends and asks "...could not a building rennaissance take place in Setesdal?"[26] Here the rennaissance is used in the sense of advocating a renewal of the old ways, that such a combination of house types represents a "deformity," i.e., a corruption (Figure 7). The origin of these architectural forms was assigned to the influence of the landhandel (country store) and other traits emanating from an exchange economy.

On occasion lively debates have ensued about the strength of the culture of Setesdal. One published debate discloses that the residents of Setesdal (Setesdølene) themselves, or at least some of them, hunger for the old way. A dialogue came about because Professor Olof

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[25] Orlof Hasaas, "Hus of Husflid i Setesdal," Kristiansand og Oplands Turistforening Aarbok, 1942, pp. 12-16, viz. p. 16.

[26] Christian Wilke, "Af Setesdalen," (Aftenposten's Turistspalte), Aftenposten, Lørdagaften, 11 June 1921, p. 7.

Figure 7.

A typical farmstead in Hylestad. The dwelling to the left, background, is actually two structures. The older right side is probably hundreds of years old, whereas the newer, left side may date from early 1900's. (Photo: V. Miller)

Benneche (who, according to his opponent, "knows Setesdal better than most") declared that the culture of Setesdal way was dying.[27] A Professor Liestøl, himself a Setesdølene, replied that Benneche's picture was entirely too dark for various reasons. Benneche responded that nonetheless the change was beginning: "...the modern way of life was coming over them...they were no longer constructing buildings, stabburene, as in the old days for example (Figure 8).[28] Forthwith, Liestøl declared that for various reasons the new will not overtake the culture of Setesdal. Benneche retorted that the effect of the landhandel was not to be minimized, that it was replacing the cottage-industries of the valley.

The exchange of views on Setesdal's culture has been presented in order that the reader might begin to perceive the complexity of the valley's cultural relationships to the outside world. Evidence exists that the milieu of the valley has been closely watched and glorified, not for what it was, but for what it seemed to be, for what it should have been, and for what it represented. Setesdal's culture has been romanticized in the fullest subjective sense, showing

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[27] "Forfattern, Olaf Benneche om Setesdalen og Setesdølene," Agdertidende, Onsdag 18 July 1923, p. 4.

[28] "Er Setesdalenes gamle kulture døende?- Olof Benneche er pessimistisk, men Professor Liestøl er optimistisk," Nationen Fredag 22 September 1922, p. 5. Stabburene are the out-buildings used for grain storage on many Norwegian farms.

Figure 8.

Portion of a seter-compound (seterstøl), Bykle. The construction techniques are very old. Note the obvious use of local raw materials, such as logs and sod roof. (Photo: V. Miller)

perhaps little understanding of contemporary processes in the valley.[29] The romantization has been more implicit than explicit and so all the more subtle.

Apparently Setesdal's popular image has been reinforced from within and has, when needed, helped to create a facade of solidarity to the outside world. How "solid" is Setesdal's culture? How well can it resist change? A discussion of these questions will shed more light on recent views of Setesdal's culture.

Some of the stability of Setesdal's way of life may be traced back to a religious revival movement known as Hauganism, a term taken from the name of the movement's leader, Hans Nielsen Hauge. The movement may be briefly characterized as an attempt to substitute Christian pietism in the form of a Free (non-state) Lutheran Church for the growing worldliness of the State Church.[30] Hauge's piety was well-accepted in Setesdal and is here interpreted as a

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[29]This comment is relative to a theoretical point in anthropology made by I. C. Jarvie. Jarvie notes that several possible functional relationships may exist between subcultures. Such groups may understand each other either in terms of explanation of say some trait, or in terms of assessing the importance of one group to another. The selections taken here from the Norwegian press are interpreted as understanding of this latter class, that Norwegians regarded Setesdal as a kind of living museum and Setesdølene used this attitude as a means of protecting their cultural identity. See "Limits of Functionalism and Alternatives to it in Anthropology", I. C. Jarvie, in Theory in Anthropology, A Sourcebook, R. A. Manners and David Kaplan, Ed., Chicago: Aldine, 1968, pp. 196-203.

[30]One informant disclosed that Valle's Free church is one of the largest in Norway.

cultural defense mechanism. This pietism, or religious moralism, has been apparently strong even after the post World War II period.[31]

One may hypothesize that Norwegian society at large has accepted the Setesdølene pietistic defense mechanism as indicative of "Norway's time of greatness"[32] and unconsciously wished to eliminate possibilities for cultural change there.[33] In any case the embracing of the Free Church movement placed Setesdal's culture beyond public (or state) control and gave license for a significant few to safeguard the culture in the name of religion. Setesdal's pietistic attitude and its acceptance beyond the valley then becomes an important social-geographical barrier towards change and should be included in a consideration of non-economic aspects of centrality.

The excessive migration of young people is another factor seen as disturbing the cultural norms of Setesdal today. This migration <u>could</u> mean that the culture of Setesdal is literally dying for want

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[31]To this writer's knowledge, no studies of piety in Setesdal have been published; therefore the statement can only be verified by personal field work in Setesdal, 1962, through the author's wife's conversation with Mrs. Kristin Brottveit (a native of Trondheim living in Setesdal who freely expressed her views on her new home) and Miss Liv Greni, Norskkringkastinghuset, who attempted to collect folk songs in Setesdal in the late 1950's. Occasionally printed accounts will mention that folk dancing and singing no longer flourishes in the valley (as say compared with Telemark); Miss Greni believes this is so because of a pietistic distaste for public contact between the sexes.

[32]<u>Op. cit.</u>, Agdertidende 18 July 1953.

[33]One Norwegian professor in Oslo stated to the author that Norway is a small country and thus could better afford to tolerate such living museums as Setesdal. More documentation for this hypothesis will be given in the course of this chapter.

of a labor supply to keep the farms going. Because of the system of primogeniture,[34] young girls and women have more reason to migrate than men, thus making marriage within the valley difficult and the labor problem more acute. In a few cases the eldest son will disclaim his birthright to land, threatening the very roots of the primogeniture system and an important part of the valley's cultural system.[35]

The original culture of Setesdal may be dying, but probably not as fast as the migration and other demographic statistics seem to indicate. The labor-intensive subsistence economy depends upon "imported" labor during the peak work periods, particularly harvest time. The needed labor is willingly supplied by former Setesdølene who return during their summer vacations to assist on the family farm.

These examples are presented not to prove that Setesdal's culture is withering, but rather that the area's traditionalism has had a remarkable ability to resist outside forces. Norwegians seem to intuitively recognize and respect the cultural autonomy of the valley. Component cultural processes, acceptance from the outside and stability from within, are seen to have created a geographical barrier that has retarded the growth of exchange economy in the study area of Setesdal.

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[34]A system where the eldest son has first claim on family land; it is still practiced in Setesdal.

[35]These problems are common to many of the isolated areas of Norway. The author's attention was first drawn to this situation at a lecture given by Knut Kolsrud, Oslo University Summer School, Summer 1959.

Setesdal's Physical Geography and Its Interior Isolation. The first portion of this chapter ("The Physical Setting") shows that Setesdal's environment is transitional, between that of the Kjølen's high plateau surface and the alluvial lowlands that comprise the more populated regions of Sørlandet. As one travels from the north to the south through the valley of the Seters a figurative metamorphosis in the environment can be sensed. An observer can readily sense that the world of the valley is distinct from that of the flanking mountains, and the valley itself actually consists of several isolated regions: the "communities" of Setesdal.

Sømme indicates that the deciduous forest growth of Sørlandet predominates in Northern Setesdal (Bykle), that coniferous growth dominates south of the 'township', and that grass rather than root crops form the major agricultural landscape.[36] The area devoted to hay and other forage crops in Setesdal was roughly twice that given to arable crops in 1939. The production of grasses, however, has fallen rapidly since World War II, a decline that correlates with a decline of summer pasturage, grazing animals, and the use of seter by farmers from the West, particularly Rogaland. Today the old grazing industries of Bykle are being replaced by a "new" form of herding, the rise of an embryo reindeer industry with the aid of locally employed Lapps.[37]

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[36] Sømme, op. cit., p. 143.

[37] See: Egil Remi Jensen, "Fascinerende Reinskuespile en time fra Sørlandske—Reindriften stadig Populær bi-yrke Fjellbondene," Dagbladet, 27 July, 1963, p. 9.

Bykle is topographically and climatically marginal between the more southern portion of the valley and the surrounding high fjell. Physical, coupled with cultural, isolation indicates that Bykle is an interesting landscape fragment for the investigations of the hypotheses set forth in the preceding chapter.

In past times the isolation of Bykle was all but complete in winter because of the "dreaded pass, Byklestigen". Byklestigen is the name given to the narrow gorge that the Otra River cuts into the fjell south of Bykle (Figure 9). Until the 1870's the only approach to Bykle was over the fjell. Byklestigen was both a topographic and a linguistic boundary. The people of Bykle did not speak the "classic" Setesdal dialect (i.e., of Valle, immediately south), but rather a tongue reminiscent of Telemark to the north.

Upon entering Valle one feels a change from the mountain world of Bykle. Here even the River Otra seems less aggressive, taking time to meander over rather than incise into the valley's floor. The site of Valle-centrum (center) is a broad well-cultivated plain. From a gross scale its topographic features are somehow better defined, perhaps because of the intense angular relationship between the cliffs and the valley bottom. The sharp contrast between side and bottom is in greater evidence on the west side of the valley. To the East, morainic kame-like deposits jut from the highlands; Setesdølene have taken full advantage of better soils; here farmsteads spread far up the hillside close to the vidda. Valle is a

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[38]Quote from Stagg, op. cit., p. 55.

Figure 9.

View of the southern approach to Byklestigen in northern Valle. This pass in former times was a considerable obstacle to communication between Valle and Bykle. (Photo: V. Miller)

dispersed settlement that fans from its center on three sides. The topographic homogeneity of the Valle-region is slowly terminated to the north as one approaches Byklestigen (Figure 9) through a narrow valley of complex topography. Northward, farming naturally gives way to lumbering. To the south the plain terminates about two kilometers from Valle-centrum at Hallandsbru (-bridge), the site of an engaging waterfall (Figure 10), and the beginning of rougher land that effectively isolates Valle from Hylestad.

The physiography of Hylestad is transitional between Øvre and Ytre (outer) Setesdal. Hylestad is unlike Valle in that only discontinuous patches of farming are to be seen on the Otra's bottom lands. The river in this section of Setesdal once again takes on the appearance of youthfulness; meander flats give way to rapid flowing water. The paucity of arable land is associated with poor soil and elevations too high for many crops. The common landscape denominator of Hylestad, like that of the fjellbygde farther north, is diversity; the herred bridges the "plateau-levels" of Valle and Bygland.

As the geographer Fridtjof Isachsen has said, "Setesdal doesn't go to the sea, only to Byglandsfjord,"[39] (Figure 2). From Ose to the community of Byglandsfjord, the water of Araksfjord and Byglandsfjord dominates the landscape, dividing the northern and southern component parts at the narrows of Storstraumen.

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[39]In Werenskiold, op. cit., p. 117.

Figure 10.

Waterfall immediately south of Valle-centrum. Falls such as this and a narrowing of the valley separates the discrete settlements of Setesdal. This particular falls separates Valle from Hylestad. (Photo: V. Miller)

The northern portion of Bygland 'township' is somewhat different in environment from that of Øvre Setesdal. Aside from the omnipresent effect of the twenty-seven miles of ribbon-lakes, the singular massiveness surrounding Valle gives way to a multiplicity of high mountains and alluvium. The gross land use patterns become more complex with heavily timbered regions beside and beyond the cleared agricultural areas.

At Storstraumen the road crosses the narrows to the eastern side of the valley. Here the road hugs a heavily-wooded mountain side only to break into the large colluvial fan that is the site of the dispersed settlement of Bygland. The north and south developed portions of Bygland are isolated by three to four kilometers of wooded area along the road. About 22 kilometers south of Bygland lies the community of Byglandsfjord. Although not so classified,[40] Byglandsfjord is the only settlement in Setesdal that takes on the semblance of a central place, as is shown subsequently.

Degrees of Isolation Within Setesdal. The previous description of Setesdal's physical geography suggests that Setesdal is isolated from Sørlandet and so the remainder of Norway. Secondarily, the four townships comprising Setesdal proper are separated topographically from one another. This results in a fragmented human occupance of the valley and prompts a question: Do significant differences exist in the dispersion of settlement patterns or relative isolation between the four 'townships' of Setesdal?

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[40] i.e., classified by Hallstein Myklebost, op. cit.

Figures 11 and 12 are two views of the gross land use relations of Setesdal. The first cartogram contrasts Øvre and Ytre Setesdal. Clearly both regions have a great disparity between arable and unproductive land. The second of these figures shows similar relations for the individual townships. Close examination of this cartogram reveals much about the "permissiveness" of the terrain. For example, a paradoxical situation exists between Bykle and Valle in Øvre Setesdal. Bykle is the larger of the two; it has the least arable land and the most productive forests. Valle herred is roughly half as large as Bykle; it has nearly twice as much arable land, supplies fewer forest products, and has about half as much totally unproductive land. The contrasting land uses of the two areas apparently reflect the physical geography of upper Setesdal (assuming geographical possibilism).

Interestingly, marked contrasts exist between Bykle and Valle which are about 29 kilometers (18 English miles) from one another. The mileage is minimal, yet because of Byklestigen the time distance is great and was even greater in the past.

A further examination of the cartograms shows that two 'townships,' Bygland and Valle, have more developed resources than the other two, Hylestad and Bykle. The descriptive material given previously indicates that Hylestad and Bykle effectively isolate Valle, particularly from Bygland. If one considers only the major regions of Øvre and Ytre Setesdal, the latter has a greater comparative advantage with respect to the area of developed agricultural land and exploited forests. Is the greater comparative advantage of Lower

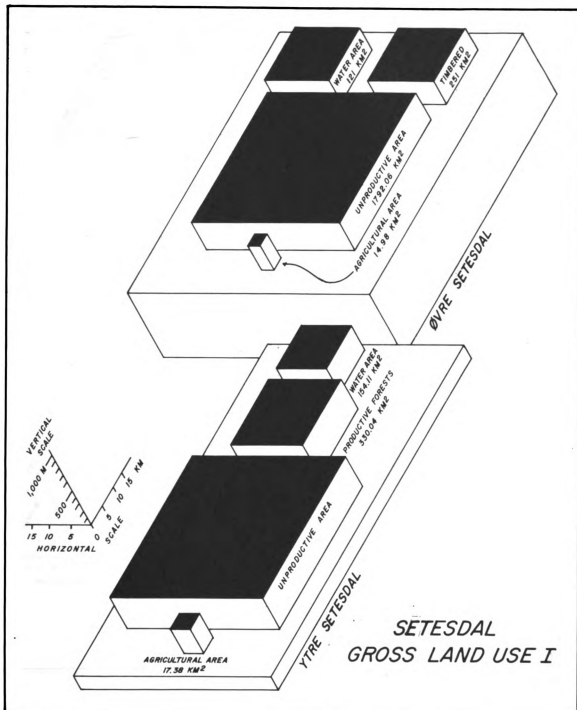


Figure 11.

Source:
Folketelling, 1950

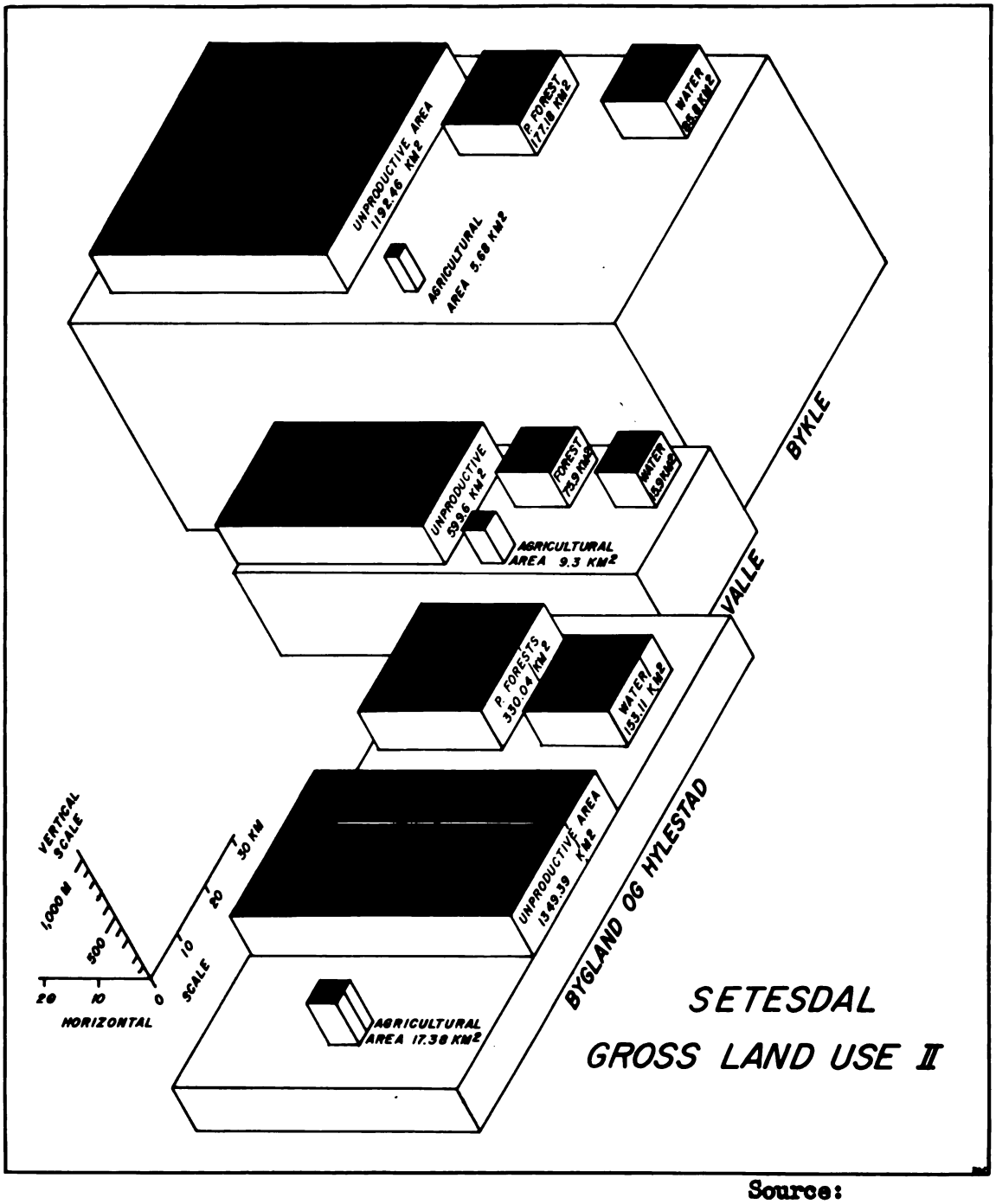


Figure 12.

Source:
Folketelling, 1950

Setesdal because of the larger resource base or closeness to markets outside of the valley? If Bygland represents an intervening opportunity for the exchange economy beyond the valley, why has Valle rather than Hylestad (the next best intervening opportunity) flourished? Indeed, has Valle flourished to the extent that Bygland has? Finally, what has the physiography of the valley to do with all of this? What has been the role of outside influence? The remainder of this chapter and the next chapter are devoted to seeking answers to these questions.

Figures 11 and 12 suggest that isolation within Setesdal and the rest of Norway is a simple relationship between population and land area. When the product of the ratio of cultivated to uncultivated land is small, emptiness and thus isolation is the result. A further analysis of the factors that contribute to Setesdal's isolation is useful here.

The cartograms show that the amount of uncultivated land is much greater than that of cultivated land. Figures 11 and 12 do not give a picture of the factors of distances and elevation and their relationship to settlement patterns. An inspection of a good topographic cultural map of Setesdal shows that Ytre and Øvre Setesdal are quite different with respect to the factors of elevation and the dispersion of farmsteads.[41] The herreds of Bygland and Hylestad

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[41] The "Sauda" (No. 32-4) and the "Mandal" (No. 32-1) sheets of the AMS Series M515, scale 1:250,000 have been used as a basis of this analysis.

have a greater homogeneity with respect to these factors than do Valle and Bykle. The particular components of the homogeneity of Ytre Setesdal are a greater number of stream valleys leading from the main valley to the western and eastern highlands of the region and a greater dispersion of houses and farmsteads. The northern two herreds have a more forbidding topography with respect to communication with their highland flanks. The terrain is more rugged, the stream valleys more precipitous. The settlement geography in Øvre Setesdal correlates with this topography in an isolated-clustered pattern of living.

In general, the lower portions of the valley have a topography favoring dispersed settlements whereas the topography of the upper portions favors a more nucleated settlement form. Of the herreds of Setesdal, Valle is unique because of its excessively rough terrain. The settlement density, of Valle-centrum is unusually high, which is seen as a consequence of surrounding rough topography, in addition to flat bottom lands surrounding the area. Valle is then an exceptional example of the aforementioned clustered settlement pattern. The residents of Valle mostly live in the area but are isolated from other areas of Setesdal by topography.

## THE EVIDENCE OF ISOLATION

Isolation and its major result, underdevelopment, could be expected to exhibit notable effects in a region of supposed economic contrasts such as Sørlandet. The lack of development, however, is not entirely an economic phenomenon; to be true to the broad analysis of this study, the indices or evidence of underdevelopment must

include the range of human relationships. Also, a theoretical yardstick must be used in order that the data has meaning. Therefore, two questions are now asked: What are the relationships between Setesdal and its surrounding area of Sørlandet? Do these observations conform to expectations gained from the traditional ideas of underdevelopment?

Economic Relationships. When considering the economics of underdevelopment, researchers suggest that the distribution of tertiary[42] industries is a meaningful index of growth. The Norwegian census breaks the tertiary sector into three divisions: private and public administrative, retail and wholesale, and specialized salaried personnel (of the entrepreneurial type). Theories of economic development hold that an analysis of the contrasts between these three types of services can reveal meaningful inequalities of development.[43] The even distribution of only retail service personnel may be representative of incipient development. A greater degree of economic development is often represented by increasing numbers of highly trained managerial persons in a region.

Distribution of services in Sørlandet is depicted on Figure 13. The inset maps of Figure 13 are comparable because each shows service personnel per thousand residents for the major geographical areas

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[42]The tertiary section of the economy concerns trade and services.

[43]See: Bert F. Hoselitz, "Noneconomic Factors in Economic Development," in Okun and Richardson, Eds. Studies in Economic Development, New York: Holt, Rinehart, and Winston, 1962, p. 341.

SØRLAND:
DISTRIBUTION OF SERVICES, IN SERVICE EMPLOYEES PER 1000 RESIDENTS

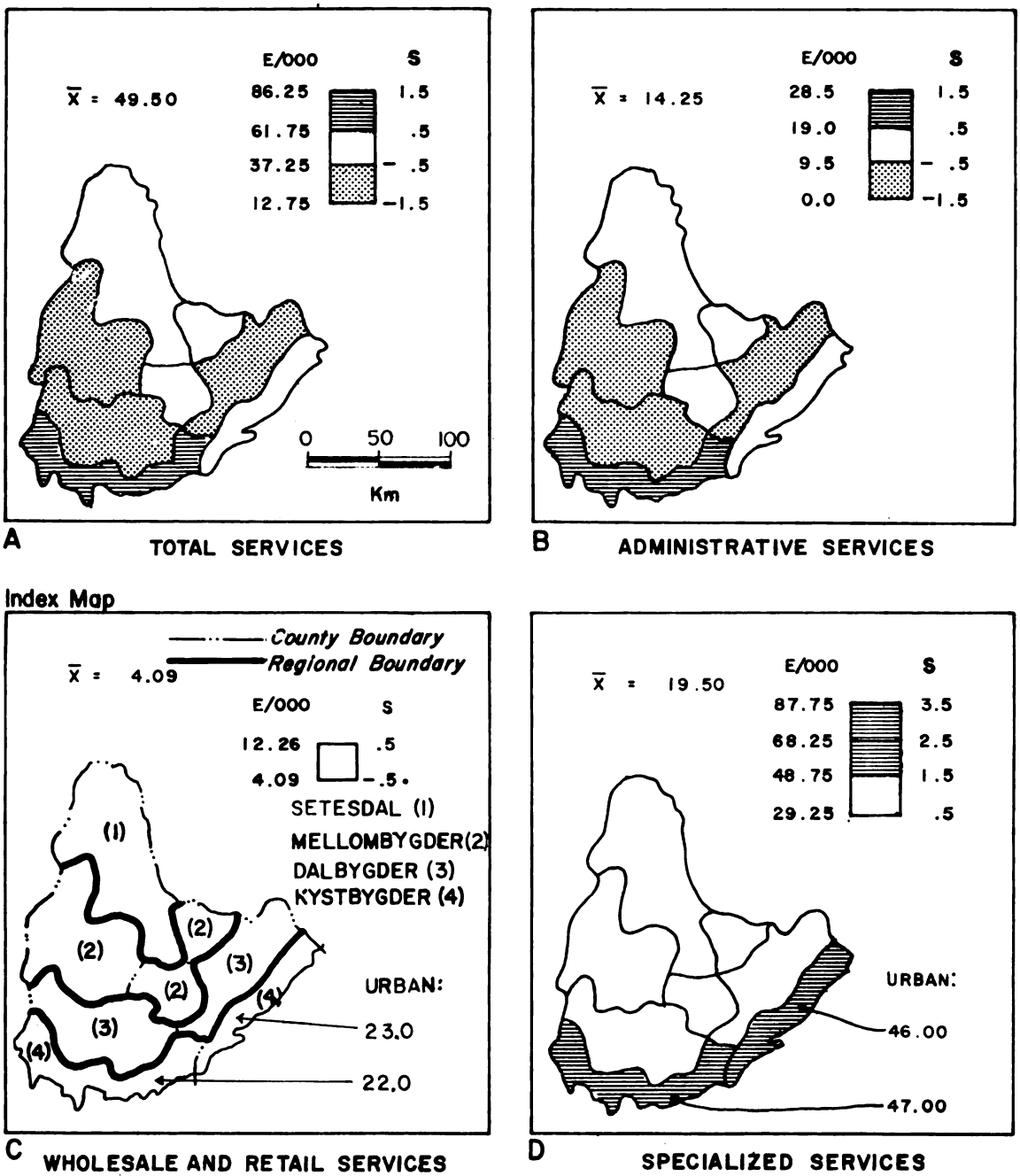


**Figure 13.** **Source: Norke Folketelling, 1950**

of Sørland, i.e., the coastal 'townships' (kyst-), transitional (mellom-)and mountain (fiellbygder) 'township'.[44]

Figure 13a illustrates the distribution of all services in the two counties comprising Sørlandet. Interestingly, there is a greater difference of services between the coastal and interior areas of Vest Agder than of Aust Agder; the rural coastal areas of Vest Agder are also better developed in this respect.

Narrowing the view to particular types of services, an identical pattern is revealed for the distribution of administrative officials. The more highly urbanized coastal areas have more service officials per thousand population than do any other Sørland region, and again the intermediate region (mellombygder) is lacking in this respect. Inset Figure 13c reveals that the two county areas are almost completely homogeneous with respect to wholesale and retail service personnel. Note should be made that there are distinct differences between urban and rural areas with respect to "salesmen". The urban areas have roughly three times as many retail and wholesale service representatives as do the rural areas (not shown on these maps).

Figure 13d depicts the distribution of various specialized service employees. The pattern shows that skilled service personnel are to be found mostly in the coastal region, and that Aust Agder has more of these than Vest Agder. The pattern supports the contention of Aust Agder's Regional Planning Office Director that a sharp dividing line exists between the interior and the coast. Specifically the line

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[44]The mapping units are standard deviations.

of demarcation seems intimately connected with transportation routes, particularly the Sørlandsbanen (the Sørland Railway).[45]

The above patterns emerge even more clearly by applying a $.01X^2$ test to these patterns seen in Figure 14. The Chi-square test shows a real economic distance between the coast and interior of Sørland with respect to all services as well as specialized service personnel (Figure 14 a and d). The test further indicates that there is no significant difference between Setesdal and the other geographic areas with respect to retail and associated activities as shown in c, and administrative services have accumulated in the coastal region of Vest Agder (Figure 14b).

Figure 14b, shows that there is no significant difference between Setesdal and the remainder of Aust Agder with respect to rural administrative services available. There is a significant difference between Setesdal and the coastal portion of Vest Agder "administratively". Does Vest Agder actually dominate the administrative situation for all of Sørlandet? Applying a $.01X^2$ test for the urban areas of both counties, where public and private officialdom would naturally locate, one must reject the hypothesis that Vest Agder actually dominates its sister county. Then, does any particular city dominate the "administrative geography" of the two county area? Kristiansand employs about twice the number of people as the next

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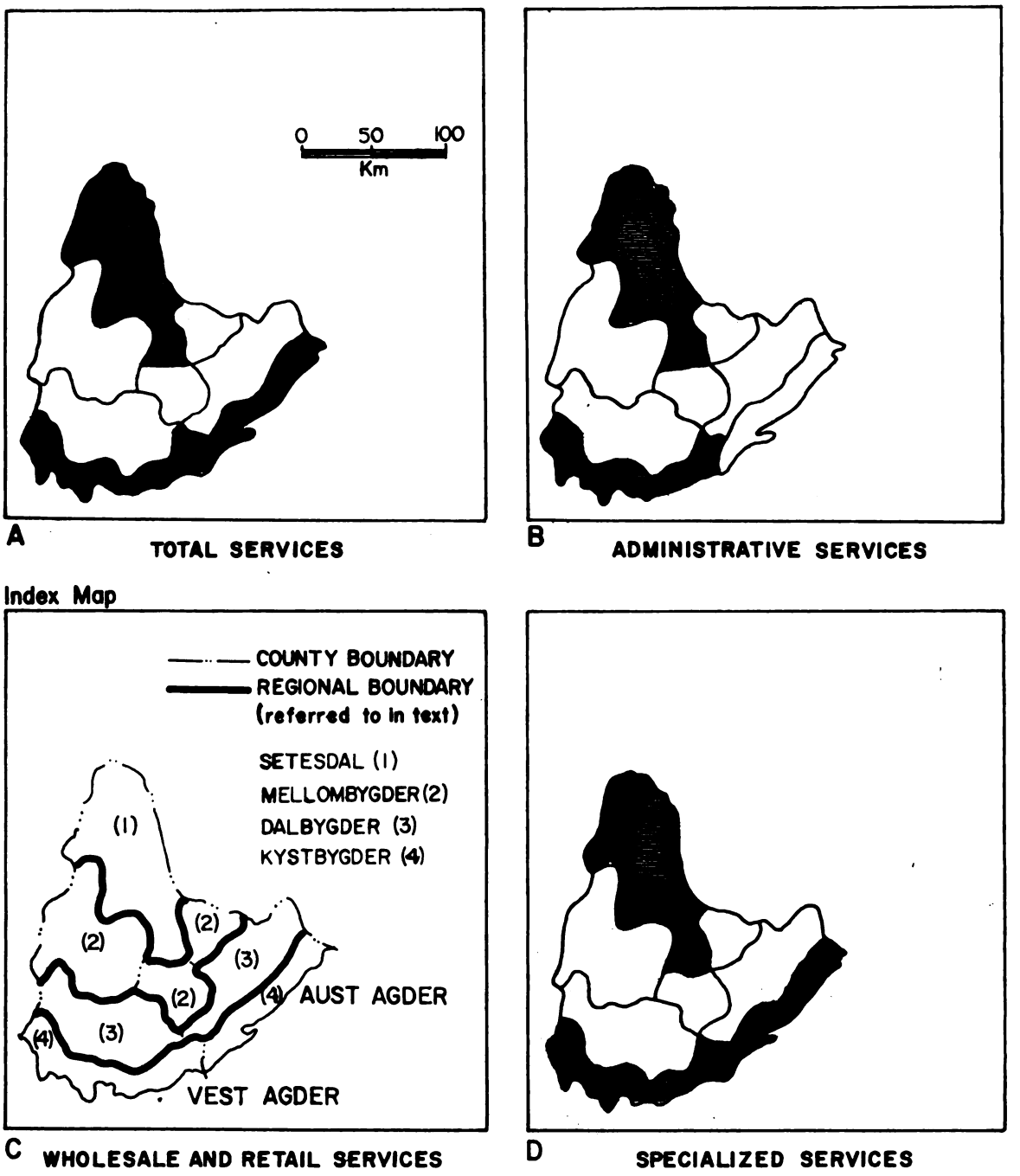
[45] e.g., see: Peter Tvedt, "Problemet med Utkantbygdene," Arbeidsmarkedet 8 (October 1962), pp. 5-12. On page 8 the author states that in ten years of working with regional planning in the area, he has never met an industrial official who was willing to locate to the interior of the Sørlandsbanen, although certain guarantees were offered.

SØRLAND:

AREAS OF SIGNIFICANT DIFFERENCE WITH RESPECT TO SERVICES FOR NON-URBAN AREAS

SIGNIFICANT DIFFERENCE DEFINED AT .01 LEVEL




Source: Figure 13

Figure 14.

largest city, Arendal. Undifferentiated data shows that Kristiansand completely dominates Sørland in respect to all of the services, and so could be expected to dominate the administrative services.[46] The conclusion is that Kristiansand is the "primate" city of Sørland, the kingpin of the region's urban hierarchy.[47]

The above analysis indicates that a multivariate relationship exists between the coast and the interior of Sørland. On one hand there exists a distinct economic dichotomy, well-pronounced between the Coast and the Interior, but also fairly well-pronounced between the city and the country in Vest Agder's coastal region. These economic differences are best developed administratively and least developed in selling activities. A second dichotomy exists between the rural coast and interior, best exemplified by administrative differences. Further study of the patterns shown in Figure 14 indicate that the greatest economic difference with respect to services is found between Setesdal and Kristiansand. Note that the variations between Setesdal and the other interior regions are not significantly different with respect to any type of service.

The relationships between the "developed" and "underdeveloped" portions of Sørlandet are what theory[48] has taught us to expect. More specifically, the theory and observations from Sørland suggest that

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[46]The urban and rural data are not strictly comparable.

[47]Cf. Mark Jefferson's "The Law of Primate Cities, "The Geographical Review XXIX (April 1939), pp. 226-232.

[48]i.e., The theory of circular causation by Myrdal, op. cit., in Chapter I, p. 3.

exchange economy is working imperfectly if a balance of trade is not present. The even distribution of the wholesale and retail trade in the two-county area indicates that the coastal areas can dispose of their products in rural areas, but that the converse is impossible. The interior rural areas are net importers and the urban and rural coastal areas are net exporters of goods and services, as can be seen from the geographical patterns of service employees; Kristiansand is the chief exploitive entity in these relations.

Social Relationships. The social relations between areas of diverse economy are less tangible than the economic relations because no universal index exists for describing such differences. The concept of "social distance" has not been reduced to a theoretical framework, and consistent generalizations about the "social" conditions of underdevelopment do not exist.

Demographic criteria are most often used to interpret the social condition of a given region. Generally, an undeveloped area, as opposed to an underdeveloped one, may have a high natural increase and low emigration of population. An area such as Sørland which has experienced the primary stage of development would be expected to exhibit markedly different demographic characteristics. Areas of incipient development should show a decline in the natural increase of population coupled with considerable emigration.[49] Rødevand shows

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[49]The theories of the social relations between developed and underdeveloped regions have been explored in Chapter I, and the models proposed in Figure 2.

that Setesdal and the interior of Sørlandet falls into this latter category.[50]

In other demographic respects the political divisions of Setesdal are somewhat more unique. More than any other region of comparable size, Setesdal has the greatest percent of native born population. In Valle, 94.8% of the population has been born in the herred; corresponding figures for Hylestad and Bykle are 91.5% and 90.9% respectively.[51] The figures for the northern three townships of Setesdal indicate that the rate of population change must very nearly correspond to natural population increase.[52] Thus, few imigrate into northern Setesdal, most emigrate. The data very strongly suggests that northern-most Setesdal has retained distinct isolation from outside settlement. If centralization has occurred in the northern townships of Setesdal, it has occurred as the result of a natural increase of population and not through an influx of population and industry. Table 1 indicates the average in and out migrations for the townships of Setesdal as well as Evje Township.

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[50] Rødevand, Nordmenn på Flyttefot, Oslo: Universitetsforlaget, 1959, p. 36.

[51] Ibid.

[52] The situation in Bygland and Byglandsfjord is quite different, as sown in Table 3.

TABLE 1

SUMMARY OF MIGRATION STATISTICS
SETESDAL AND VICINITY 1950-59

| Township | In-Migration | | Out-Migration | | Net Out-Migration | | Resultant |
|---|---|---|---|---|---|---|---|
| | No. | Rank | No. | Rank | No. | Rank | Rank |
| Bykle | 203 | 4 | 347 | 4 | 144 | 4 | 3 |
| Valle | 217 | 3 | 401 | 3 | 184 | 1 | 2 |
| Hylestad | 139 | 5 | 228 | 5 | 89 | 5 | 4 |
| Bygland | 621 | 2 | 781 | 2 | 160 | 3 | 2 |
| Evje-Horness | 1370 | 1 | 1540 | 1 | 170 | 2 | 1 |

Source: Norske Folketellingen, 1 November 1960.

The ranking of the data presented in Table 1 allows an immediate comparison of the positions of the townships concerned with respect to migration. Evje-Horness scores highest in emigration, illustrating that this area, along with its principal community of Evje, is the primary focus of migration from Setesdal, i.e., the likely first stop in the emigrants' journey to the town. The fact that Evje-Horness ranks second in net out-migration indicates that the area has an economic potential to hold its population. Indeed, Rødevand has declared that Evje has more economic activity than any interior township in the Agders and thus is a refuge for rural immigrants.[53]

[53]Rødevand, op. cit., p. 36.

Correspondingly, the fact that Valle ranks first in net out-migration indicates that this area is the least able of the townships of Setesdal to support its population. Hylestad and Bykle are customarily noted as being areas of greater economic depression than Valle; the ranking of Valle as first in emigration is therefore surprising. The high emigration score for Valle is probably related to the remaining possibilities for farming in the area, which are nil when compared to Hylestad and Bykle. Bygland and Valle have equal rank with respect to the turn-over of population, i.e., second behind Evje and Horness, but for different reasons explored subsequently in this chapter and the next.

Analysis of the data of Table 1 indicated that Bygland is as different from Valle as Kristiansand is from Oslo. Bygland's relationship to Valle is complementary in the same manner that Kristiansand and Oslo are complementary. Substantiation of the foregoing assertion is brought out below and in Chapter 3.

The social symptoms of isolation are indeed subtle. A careful analysis of these symptoms with a focus on Setesdal indicates that the area, more than any other in Norway, is distinctly different. Of the townships of Setesdal, Valle emerges as being the most unique demographically.

Political Relationships. Politics is perhaps the most erratic of the non-economic relationships affecting economic development; it is one that may be reducible to two equally convincing but diametrically opposed theories. Economists hold that man has an unlimited desire for the "better" things of life, particularly

those made attractive through the conditions of economic take-off. Anthropologists say that the labor of undeveloped regions is at best apathetic to the "things" of an exchange economy and is more concerned with conserving its traditions, its culture. Thus, anthropologists and economists disagree as to the basic wants and needs of human beings.[54] Attitudes toward economic development are activated through the political relationship between town and country. The only problem is to gather empirical data to describe these relationships and then to interpret their meaning.

Data on political attitudes throughout Norway is relatively easy to obtain because most of the Kingdom's 155 advertising newspapers follow definitive political lines and geographical data on the circulation of these papers is easily obtained.[55] The data of tables 2 and 3 are a survey of the newspaper reading habits of Setesdølene. An analysis of the data shows that Setesdal's newspaper readers overwhelmingly identify themselves with Kristiansand in two ways. In terms of political orientation a majority of the readers subscribe to political views left of center, shown in Table 2, and that Kristiansand newspapers are favored above others in Setesdal, as shown in Table 3. The meaning of the newspaper circulation data is not easily interpreted. The figures do not necessarily indicate that Setesdal is politically sympathetic to Kristiansand's

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[54] For a review of the controversy, see: W. E. Moore, "Labor Attitudes Towards Industrialization in Underdeveloped Countries," in Okum and Richardson, op. cit., pp. 381-385.

[55] The prime source is the Norsk Aviskatalog, published annually by Avisenes Informasjonskontor, Bogstadveien 3, Oslo NV.

leadership; they may merely indicate that Kristiansand's merchants better serve the economic interests of the valley, or that the papers are larger, more worth their price. Fortunately for this study, the question of political unification of the two counties of Sørlandet has recently been a controversy and people have had an opportunity to form an opinion on this question. The results of the survey are presented in Table 4.

The sample poll shows that, of those surveyed, Setesdal is a rather typical illustration of the theoretical dilemma briefly sketched on page 68. The high figures of item "b" in Table 4 ascertain that Setesdølene look to Kristiansand to represent their "interests." One must assume that the term "interests" was given an economic interpretation here because of the evident disinterest in the unification of the two counties. A $.02X^2$ test indicates that a significant difference exists between item "a" for Bygland and Valle regardless of the smaller sample for the former. On the basis of the limited sample obtained, Bygland and Valle have different attitudes toward the unification of the two counties of Sørlandet and so toward eventual political control by Kristiansand. The two have similar attitudes towards the economic leadership of Kristiansand. One may conclude then that, in part, both the economist and the anthropologist are correct in their respective theories for Valle, i.e., that the situation is complex.

TABLE 2

SETESDAL:

NEWSPAPER READING HABITS ACCORDING TO THE NEWSPAPER, SOURCES OF NEWSPAPER AND POLITICAL AFFILIATION, 1963

| Newspaper, source | Left | Right | Labor | Independent | Total |
|---|---|---|---|---|---|
| Kragerø Blad | | 1 | | | 1 |
| Aust Agder Blad (risør) | | | | 2 | 2 |
| Agderposten (Arendal) | 54 | | | | 54 |
| Grimstad Addressetidende | | 1 | 302 | | 303 |
| Agdertidende (Kristiansand) | | | | | 0 |
| Christianssands Tidende (Kristiansand) | | 34 | | | 34 |
| Fæderlandsvennen (Kristiansand) | 1189 | | | | 1189 |
| Sorlandet og Tiden (Kristiansand) | | | 332 | | 332 |
| Lindesnes (Mandal) | 7 | | | | 7 |
| Farsunds Avis | 1 | | | | 1 |
| TOTALS | 1251 | 36 | 634 | 2 | 1923 |

Source: Norsk Avis Katalog, 1963-64, pp. 114-115.

TABLE 3

SETESDAL:

NEWSPAPER READING HABITS ACCORDING TO GEOGRAPHICAL SOURCE OF PAPER - BY SUBSCRIBERS, 1963.

| | |
|---|---|
| Kragerø | 1 |
| Risør | 2 |
| Arendal | 54 |
| Grimstad | 303 |
| Kristiansand | 1555 |
| Mandal | 7 |
| Farsund | 1 |
| TOTAL | 1923 |

Source: Table 2

TABLE 4

A SURVEY OF POLITICO-ECONOMIC ATTITUDES
IN SETESDAL, BY HOUSEHOLD*

| | Valle | Hylestad | Bygland | Summary: Percent of those surveyed** |
|---|---|---|---|---|
| a. Favoring political union of the two counties: | 38% | 00% | 59% | 43% |
| b. Stating that Kristiansand represents their interests better than does Arendal: | 80% | 100% | 84% | 85% |
| c. Percentage of household surveyed: | 11.1% | 3.7% | 3.0% | 5.1% |

Source: Questionnaire

* These percentages represent figures only for those who replied to the questions concerning attitudes toward Arendal and Kristiansand. See Appendix for a translation of the questionnaire and a summary of the results.

** These figures do not represent a simple average because every informant did not answer every question.

In Valle mixed emotions are harbored concerning the economic and political advantages of Kristiansand's leadership, a fact evident through the comparison of items "a" and "b" of Table 4 for Valle. In Bygland, the anthropologists must be judged as being incorrect in their assumptions because the respondents far more consistently favor Kristiansand both politically and economically.

The material presented here only suggests that a political cleavage exists between Valle and Bygland. The data does agree, however, with the essential geographical character of the two 'townships,' one—Valle—composed of a single settlement, and the other—Bygland—composed of a number of more tightly-knit agglomerated settlements plus the community of Byglandsfjord that approaches being a central place.

## SUMMARY

Material has been presented indicating that Setesdal, especially its northern portion, is "different." Setesdal and the nearest major example of an exchange economy, Kristiansand, have not established a reciprocal economic exchange. The exchange between Setesdal and the coastal urban units is unbalanced in favor of the cities. The demographic patterns of Setesdal are unique for Sørlandet and the entire country. A majority of the populous area of Setesdal is apparently fearful of political domination from Kristiansand and yet have few economic ties with Arendal, their political capital. Setesdal may fear Kristiansand because the two are dissimilar; Kristiansand is an exchange entity, Setesdal is a subsistence economic entity.

The discussion of Setesdal's isolation indicates that an

urban-rural dichotomy may exist between Kristiansand and interior Setesdal. Urban-rural differences in Sørland are three-fold in nature; political, economic, and social. The analysis further suggests that urban-rural difference perhaps should be defined as existing on three scales, i.e., on a political, economic and social level, rather than merely on an economic scale. Thus, from an economic view alone, it may be impossible to define the urban-rural dichotomy.

In substance then the material of this chapter most importantly has established that the urban-rural dichotomy may be said to be representative of opposite positions on certain quantitative scales of economic, social, and political behavior. When these scales are viewed together, the town-country differences emerge in the form of two qualitatively different ways of life.[56]

At this point the view presented on the nature and existence of the urban and rural differences between Setesdal and Kristiansand are tentative. The important dimension of time has not been thoroughly considered and becomes the focus of the next chapter.

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[56] In a discussion of the linkage of social subsystems, S. Z. Klausner has reached a conclusion similar to the ones expressed here, which has only very recently come to the attention of this writer. Klausner deals with personality types rather than a land use typology, and in part states: "Individuals in power(of a poorly linked subsystem) receive satisfactions that encourage them to fixate on past and present and to resist structural change. Passivity becomes a personality characteristic of those inhibited from acting. They become incapable of responding creatively to a later challenge...this individual incapacity becomes a social inability to respond." An interpretation of the passage, particularly the underlined portions indicates that Klausner and this researcher are speaking of similar situations. Klausner also has interesting concepts about the boundaries existing between societal subsystems, referenced in more appropriate sections of this research. See, S. Z. Klausner, ed. The Study of Total Societies, Garden City: Anchor Books, 1967, p. 23. Underlining added.

## CHAPTER III

### SETESDAL: THE GEOGRAPHY OF CIRCULATION

The preceding chapters have been concerned with the theoretical implications of this study and the isolated nature of Setesdal. The specific purpose of this chapter is to document change in Setesdal's circulation[1] with Sørland in general and its political center of Arendal in particular. An attempt is made to distinguish those periods of time when Setesdal's integration with the above mentioned geographical entities was unusually rapid and to study the impact of such changes and intervening periods of adjustment on the culture and land use system.

The concept of circulation is sophisticated and difficult to apply to a given region. For the purposes of this study pertinent aspects of Setesdal's circulation are defined to be the increase of (1) transport accessibility into and within the valley and (2) functional urbanism into and in the valley. Functional urbanism,

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[1] The term circulation is used to allow a certain degree of freedom in the analysis. Borrowed from the French, the word has no English equivalent as a geographic term. It implies a holistic view of human movement, a comprehensive view of the organization of space, as suggested by Moodie. Wolfe states that circulation spans the rigid boundary that separates communication and transportation. See A. E. Moodie, "Intro-European Circulation," in East and Moodie, Eds., The Changing World, Yonkers-on-Hudson: World Book Co., 1956, and R. E. Wolfe, Transportation and Politics, Searchlight Book #18, Princeton: Van Nostrand Co., 1963, p. 7.

the dependence of rural areas upon exchange economy, is viewed as being the major tangible effect of increased accessibility in a subsistence area.

## ACCESSIBILITY

As Ullman points out, transportation is a major component of the geography of accessibility.[2] The notion of accessibility, furthermore, may be meaningful in the analysis of transport systems and may be conceptually approached from a number of viewpoints. Some geographers have elected to study this concept from the perspective of the organization of a transportation system. Kansky, for example, explores the coherence of a transport net from a theory of mathematics, namely topology.[3] Geographers have commonly utilized the economic analysis approach, such as the cost-distance method in von Thünen's classic study of Die Isolierte Staat. The concept of cost-distance has been particularly developed by American and German geographers to express ideas which emphasize economic interaction through space.[4]

Other geographers, particularly British and Swedish, have concerned themselves with the time-distance relationship in an effort to understand the "socializing" effect of increased mobility. More

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[2]E. L. Ullman in James and Jones, eds., American Geography Inventory and Prospect, p. 311 (Chapter on "Transportation Geography.")

[3]e.g., Kansky's "Structure of Transportation Networks," University of Chicago Dept. of Geography Research Paper No. 84, 1963.

[4]Brian Berry, "Recent Studies Concerning the Role of Transportation in the Space Economy," Annals of the Association of American Geographers, Sept. 1959, pp. 328-342.

specifically, they have devoted considerable attention to the effect of bus service on hinterlands, an approach that is of interest to this study. These geographers see accessibility as an effect resulting from transportation improvements, i.e., greater spatial interaction. From this last statement it follows that changing spatial interaction and transportation improvements may be used as an index of differences in accessibility.

The practical problems of mapping or otherwise measuring accessibility are difficult and subtle but very important. Changing accessibility may be effectively mapped for exchange economies through journey-to-work data for a period of time and a number of places. Unfortunately, precise journey-to-work data does not exist for the study area. Even if available, such data's value is limited for subsistence economies because most of the residents work and live in the same locality. The problem of mapping accessibility in Setesdal may be approached through the use of isochrones, i.e., by preparing a series of charts that show changing time-distance relationships between Setesdal and certain other key termini through time.

Different time-distance measures have been developed. The Swedish and British studies have generally used train and bus schedules to secure their time-distance information. They assumed that the time taken to travel between two points is a measure of accessibility. Such data actually gives an index of the potential traveling time, indicating only minimal time-distance between two points.

As Forbes points out, accessibility is also a function of

availability of transportation.[5] Thus if points A and B are thirty minutes apart and ten vehicles depart from point A every two hours, the maximum travel time is 42 minutes: 30 minutes travel time plus a maximum of 12 minutes wait to board the bus. In her empirical study, Forbes found maximum travel time a more reliable indicator than travel time as an index of accessibility.

Thus, accessibility exists in the mind as also in fact. The probability of a person making a journey is a function of the length of travel and the convenience of travel as measured by the frequency of departure, which may be expressed simply:

$$(1)\ A = f(D/S,\ F).$$

In (1), A = Accessibility, D = Distance in absolute terms, S = Speed of Travel and F = Frequency of Departure. [In the formulation, if there were an infinite number of departures from a given point to a second point (requiring no wait for the bus), defined here as minimum accessibility, Am, we would have:

$$(2)\ A_m = D/S,$$

that is, minimum accessibility is equal to a ratio of distance to speed, F = 1.]

The condition of minimum accessibility is certainly not approached in Setesdal today. The number of departures is still low as compared to a Norwegian urban situation so that frequency of departure must be considered. When "F" is included in the calculation (equation 1), certain practical problems occur because of the

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[5] Forbes, Jean, "Mapping Accessibility," Scottish Geographical Magazine, 80, (1964), pp. 12-21.

irregularity of the bus and train schedules from day to day, season to season, and year to year. Because of the variance of schedules the concept of mean-maximum accessibility ($A_{mm}$) is introduced. Mean-maximum travel time is defined as the actual time spent in travel plus the average time in minutes spent waiting for the vehicle to depart for a 24 hour period. In all cases the 24 hour period that had the least frequent service was selected for mean-maximum analysis.

Chronographs[6] have been compiled for Setesdal beginning in 1899 when the Setesdalbanen was completed to Byglandsfjord. The lines between the sample ten-year points on these graphs represent trends in accessibility. The charts show (1) the linkage between Setesdal and Sørland, i.e., Byglandsfjord and Kristiansand, cities which in a historical context have been the most significant nearest neighbors,[7] and (2) a series of five graphs showing changes between Byglandsfjord and her sister communities within Setesdal. The evolution of Setesdal's interregional accessibility depicted on the graphs had its seeds in history, as shown through the following analysis.

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[6]Charts showing changing time-distance relationships for ten year periods, a concept suggested by Forbes, op. cit.

[7]That is, nearest neighbors of significance for the context of this study. Nearest-neighbors may be defined as closest points on a surface for geographical study purposes. As Warntz notes the geographer may study surfaces other than those of the physical landscape; he may study "conceptual surfaces...based on social, economic, and cultural phenomena..." He further notes that "Always...these conceptual surfaces may be regarded as overlying the surface of the real earth and whose geometric and topological characteristics...thus describe aspects of the real world." See William Warntz, "A Note on Surfaces and Paths and Applications to Geographical Problems," Discussion Paper #6, Michigan Inter-University Community of Mathematical Geographers, Ann Arbor, Department of Geography, University of Michigan, June, 1965, p. 2.

INTERREGIONAL ACCESSIBILITY—SETESDAL AND SØRLANDET

In the past, several urban units have bid for Setesdal's trade. Prior to the decade of 1640, the entire coastal portion of Sørland was controlled by the merchants of Arendal. Christian IV's creation of Kristiansand "with a stroke of the pen..." created competition for hinterlands that was in time to involve Setesdal. In the 1690's, however, Setesdølene seemed to be uninterested in connections with the coast.[8] Various accounts indicate that trips to the South, particularly from Øvre Setesdal, were only made when necessary, to buy oats during poor crop years, for instance. Two reasons account for this lack of contact: (1) the high cost of items from the cities of Arendal and Kristiansand, and (2) the poor road conditions and the dangers attendant in climbing the "heath-road" (heidevegane).[9]

Before the construction of the post road[10] in 1844, the preferred trading center seemed to be Arendal. If trips were made in the winter months, the fjord was followed to Evje, (Figure 15) then along Hovlandsdalen to Arendal. During the warmer season the path led to Bygland, from there via Jærdalsheidi to Tovdal and Arendal. Gradually a pattern of two trips a year evolved; these were taken in the spring and the fall as the area slowly became dependent upon certain staples from Arendal such as iron, salt, hemp, and luxuries

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[8]Sverre Steen, Kristiansand's Historie 1614-1814, Oslo: Grøndahl of Søn, 1941, p. 257.

[9]Torleiv Aakre, "Gamalt fraa Valle," Agder Tidende, 29 October 1925, p. 1.

[10]An improved road for use in mail delivery.

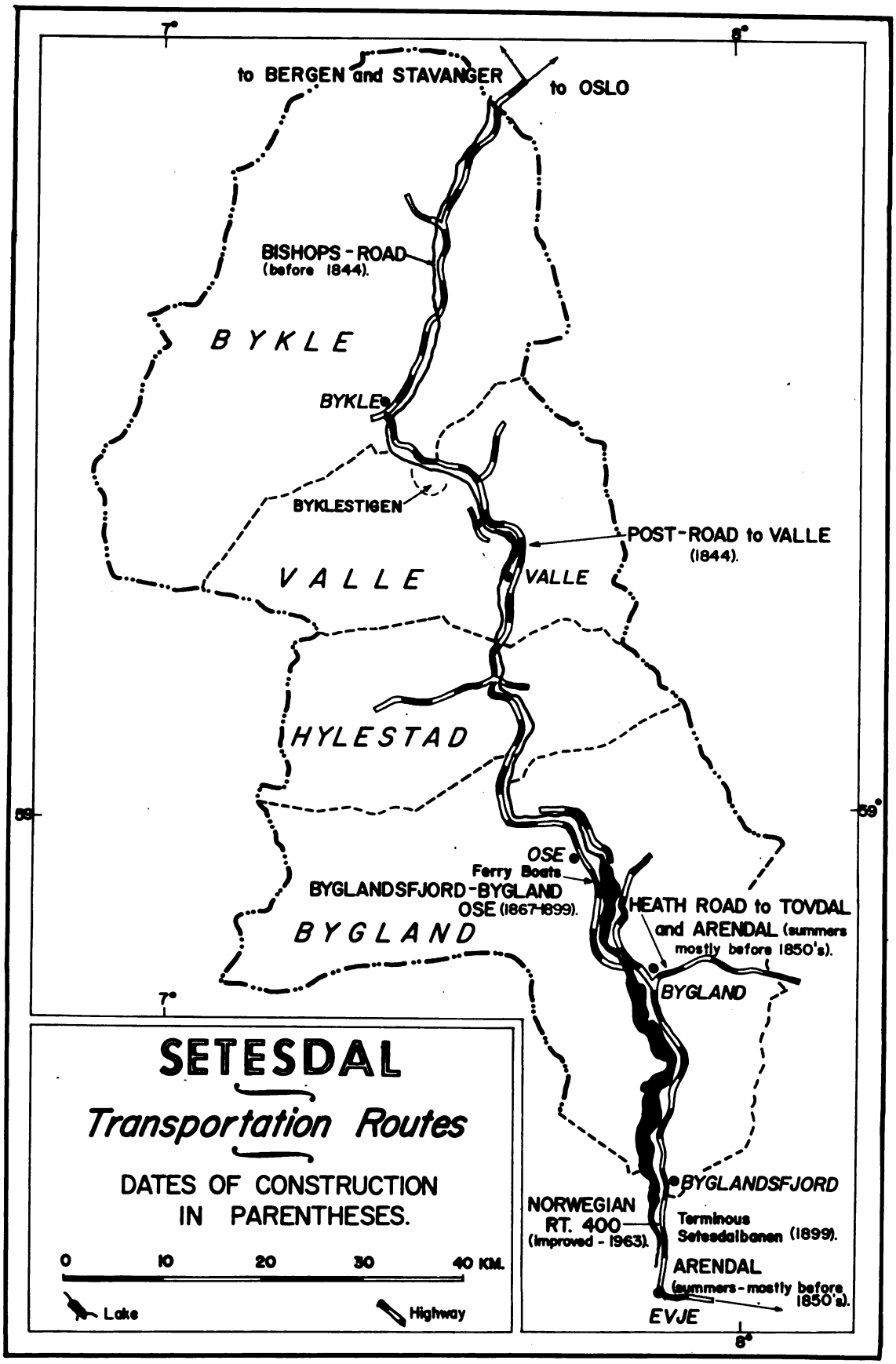
SETESDAL
Transportation Routes
DATES OF CONSTRUCTION IN PARENTHESES.
0 10 20 30 40 KM.
Lake
Highway
to BERGEN and STAVANGER
to OSLO
BISHOPS-ROAD (before 1844).
BYKLE
BYKLE
BYKLESTIGEN
POST-ROAD to VALLE (1844).
VALLE
VALLE
HYLESTAD
OSE
Ferry Boats
BYGLANDSFJORD-BYGLAND
OSE (1867-1899).
BYGLAND
HEATH ROAD to TOVDAL and ARENDAL (summers mostly before 1850's).
BYGLAND
BYGLANDSFJORD
NORWEGIAN RT. 400 (improved - 1963).
Terminous Setesdalbanen (1899).
ARENDAL
(summers - mostly before 1850's).
EVJE
7°
8°
59°

Figure 15.

such as tobacco. One historian notes that tobacco regularly found its way to Valle in 1810, by which time the trade had already existed for some 150 to 200 years.[11]

Before the construction of roads, topographic as well as economic obstacles fostered isolation in the valley. The trip to Arendal, by whatever route, seemed to be particularly difficult. As a result, one must assume that the area "...offered the least treasures..." to the merchants of the coast.[12] The gradual encouragement of Setesdal's interregional trade started with the road building era of the 1840's. Prior to this a trip from Valle to Kristiansand (162 km) took a full three weeks by horseback. The residents of Bykle, north of Byklestigen, rarely went to Kristiansand, preferring to go to the north to Ryfylke or Fjordane and the cities of Stavanger and Bergen, apparently because of fewer physical difficulties.

Transportation was further improved in 1867 with the addition of a ferry line from Byglandsfjord to Bygland and Ose. By the year that the Kristiansand of Oplands Turistforening began its work in 1886, Setesdal was still a terra incognita. The yearbook of this organization suggests that the increasing interregional accessibility was responsible for the "romantization" of the area because the occasional tourist or interested person would come back with tales

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[11] Torleiv Aakre, "Gamult fraa Valle," Agder Tidende, 29 November 1921, p. 1.

[12] Sverre Steen, op. cit., p. 257.

that were equal to those coming from Africa or the Antarctic Seas.[13]

Northern Setesdal was not entirely isolated, even before 1844. A Bispevei (Bishop's Road) was maintained to enable priests to visit the northern part of the valley. In 1827 an Englishman, a certain Mr. Inglis, journeyed through Setesdal and stated that established routes were used from Øvre Setesdal to Stavanger, Bergen, and Oslo.[14] Because of this linkage, as well as the lack of linkage between Bykle and the south, Bykle's cultural involvement with the north of Setesdal seems to be strong in the early period; however, the northern interconnections seem to be relatively unimportant to the study of modern changes in accessibility for the area.

Figure 16 shows the trend in interregional accessibility from the date of the completion of the Setesdalbanen (Setesdal railway) in 1899 to present. In the first decade of the operation of the railroad, accessibility, as measured by the "distance" between the two lines on the graph, was constantly improved; from 1909 to 1929 a "plateau" was reached, then there was further improvement until 1939. From 1939 to the dismantling of the narrow gauge railroad in 1959, the availability of service decreased and the minimum travel time increased, somewhat reversing the trend of the previous forty years.

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[13]Aug. Abrahamson, Reisehaanbog, "Sæ tesdalen," Christiansand S.: C. Torviks Forlag, 1901. Additional material in this paragraph was taken from Nils Nersten's "Samferdslemidlar i Sæ tesdal," in Aarberetning for Kristiansands of Oplands Turistforening, 1919, Kristiansand, 1920, pp. 17-20.

[14]"Mr. Inglis reise gjennom Setesdalen over Telemark, 1827," Kristiansands og Uplands Turistforening Årbok, 1935, p. 18.

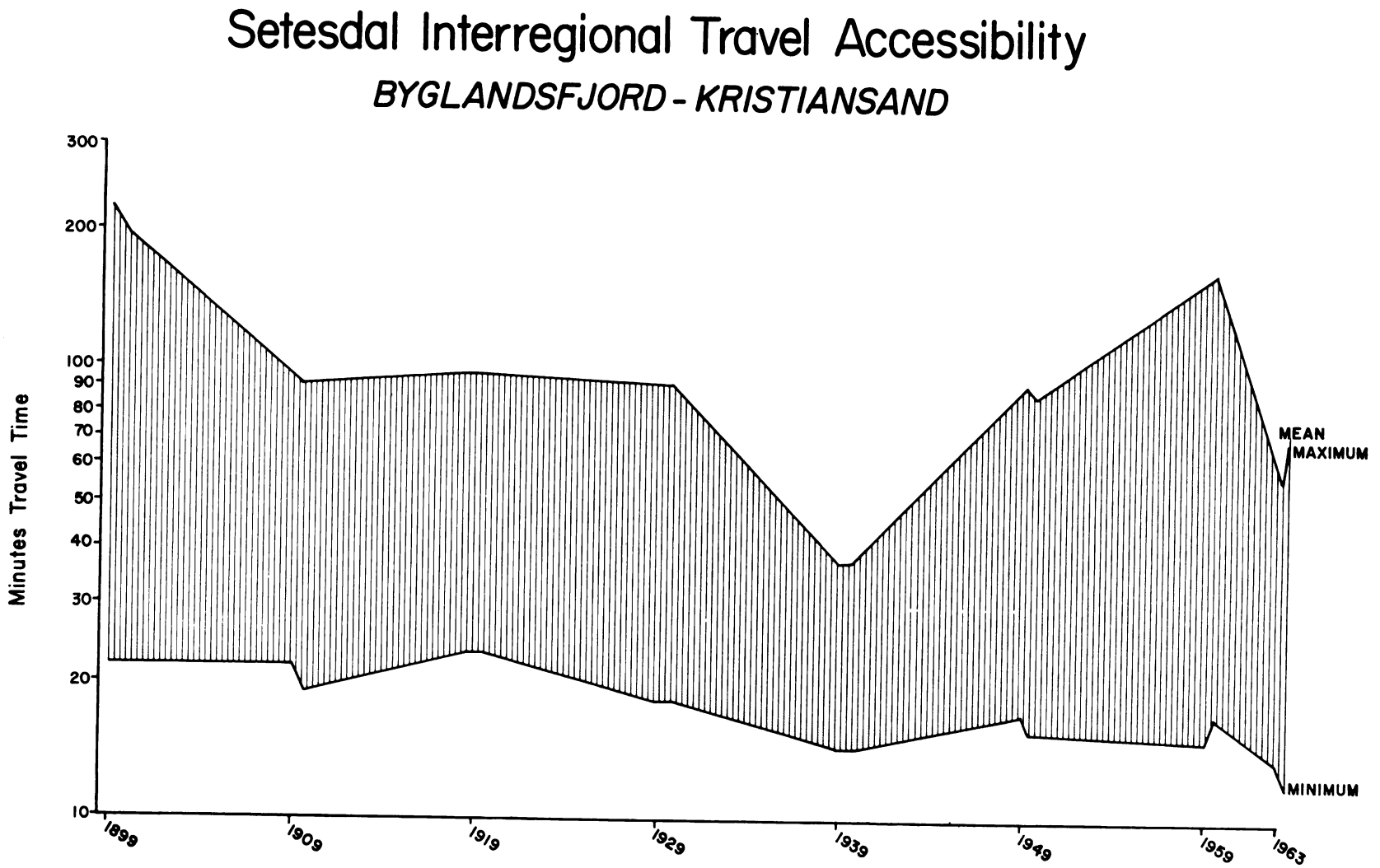
Setesdal Interregional Travel Accessibility
BYGLANDSFJORD - KRISTIANSAND
Minutes Travel Time
300
200
100
90
80
70
60
50
40
30
20
10
1899
1909
1919
1929
1939
1949
1959
1963
MEAN
MAXIMUM
MINIMUM

Figure 16.

The sharp increase of service shown after the 1959 summer largely represents the efforts of a single bus company of Byglandsfjord, the Setesdalbilrutor, to reestablish and surpass the connections possible during the heyday of the Setesdal Railroad.

The graph (Figure 16) indicates that in the last 60-odd years Setesdal has experienced two transportation "take-offs." The first started in 1899 and culminated in the decade 1929-39. The second has only recently started, and its consequences cannot be predicted.[15] The graph shows the remarkable effects on accessibility of the introduction of efficient bus service; today Setesdal is enjoying more interregional access than it ever has had. Interregional travel between Byglandsfjord and Arendal in Aust Agder never developed to the extent of that between Kristiansand and Byglandsfjord because of the completion of the Setesdalbanen. Evidently the merchants of Kristiansand "captured" Setesdal trade from Arendal through the building of the Setesdalbanen.

## INTRAREGIONAL ACCESSIBILITY

The history of intraregional accessibility in Setesdal naturally parallels that between Setesdal and Sørlandet, but some details must be added to understand the nature of sub-regional isolation. In

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[15] Discussion of the cause of the reversals in these trends is beyond the purview of this study. They have been discussed elsewhere. See particularly Neils Olsen, "Setesdalsbanen Ombygging til Bredtspor," Trafikkoversikt i Aret 1945, and H. Myklebosts typewritten report to the 'Communications Department,' January 21, 1949, stating that the narrow gauge of the Setesdalban should be abandoned for a more efficient means of communication, perhaps the construction of a highway.

physiographic terms, one may divide Setesdal into three accessibility regions: (1) the southern portion of the valley along the shores of Aurlands- and Byglandsfjorden, (2) a central part centering in Valle, and (3) the portion north of Byklestigen. The three regions formerly seemed to be effectively isolated from one another by physical geographic barriers. Access from Bykle to Valle was so poor that it was practically non-existent in the early 1800's.[16] "Knowing" travelers from Valle rarely went further south into the valley than Ose, preferring to take the westerly route, Vestheida, to come out of the valley at the site of the old Byglandsfjord station or else the heath-road and so to Arendal. The population of the southern region lived on the east side of the two fjords and traveled the main trend of the valley to Byglandsfjord, then either to Kristiansand or Arendal.[17] For these reasons there seemed to be little mixing of the valley's population in early times.

The nature of the interregional linkages began to change with the introduction of regular postal service in the 1830-1840 decade.[18] The regular delivery of the mail in Valle every 14 days soon led to the establishment of the post road in the 1840's and the gradual abandonment of the mountain roads ascending from Ose (Figure 15). Ferry service started in 1867, and by 1889 two boats, the Dolen and

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[16]Nils Nesten, op. cit., p. 17.

[17]Ibid., p. 18.

[18]Described in Torleiv Aakre's, "Dei fyrst postberarar i Setesdal." Unge Agder, 3 March 1938, p. 3.

the Bjoren (both built in 1869), established regular service between the Nickelworks and Kile and from there to Byglandsfjord, Bygland, and Ose.[19] Data is lacking for the period before 1889, but one must assume that intraregional accessibility for the southern two regions actually started between 1869 and 1889. In this period much work was done on the road between Bykle and Valle. Even so, the road remained dangerous: "...in summer the horses had to be helped..." and only sleds could be used in the winter.[20] Authorities indicate that the three regions of Setesdal were linked by road or ferry at about the same time, in the 1870's (Figure 15).

By the turn of the century Setesdal was served by one principal road. This road extended through the valley to Valle Church, from that point to Bykle as an unimproved road, and as a riding road (a narrow path) from Bykle to Breivik. The consensus was that "the site and situation of many of the places in Setesdal are such that the roads cannot be improved without great expenditures."[21] Apparently most of the "roads" were simply footpaths or paths used for the driving of animals. Many of these roads connected to neighboring herreds outside the valley. The nature of Setesdal's transportation network during this period indicates that egress from the valley was difficult. The building of roads, however poor, did permit greater

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[19] Rutebok for Norge, 1889.

[20] Wereskiold, Ed., Norge Vart Land, "Setesdal," by F. Isachsen, p. 112, Oslo: Gyldendal Norsk Forlag, 1936.

[21] Amund Helland, Norges Land og Folk, Statistisk Beskrivelse over Nedenes Amt, part 2, Byerne og Herrederne, "Kommunikationsmilder," Kristiania: H. Aschehough & Co., 1904, p. 647.

personal travel beyond the valley but still inhibited the movement of goods.[22]

Figures 16 to 21 depict change in mean-minimum travel-time between Byglandsfjord and the communities of Bygland, Hylestad (Ose), Valle, Bykle, and Hovden. All information on the graphs was extracted from the Rutebok for Norge starting in 1899 and ten years thereafter; "critical periods" of change were scrutinized in more detail and are shown on some of the graphs. The graphs include data from all transport services available within Setesdal, i.e., railroad (until 1959) and bus services.

The northern topographic-accessibility region includes the transport nodes of Bykle and Hovden. These graphs show that the region did not have service (from Bykle) before the summer of 1920, and that regular year around service did not start until 1929 for Bykle and 1939 for Hovden, Figures 20 and 21 respectively. Also, the "quality" of service seemed to vary greatly between summer and winter before and after the 1929-1939 decade, as indicated by the solid lines for the sample years.

Figure 19 shows that Valle had bus service to Ose starting in the summer of 1909 which continued until 1929.[23] Before 1929 the water and bus service was extremely erratic, though better in summer than in winter. More dependable service was supplied from 1929 to 1949, and maximum travel time was constantly lowered.

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[22] Ibid.

[23] Consistent data before 1929 on water transport was not included in Rutebok for Norge.

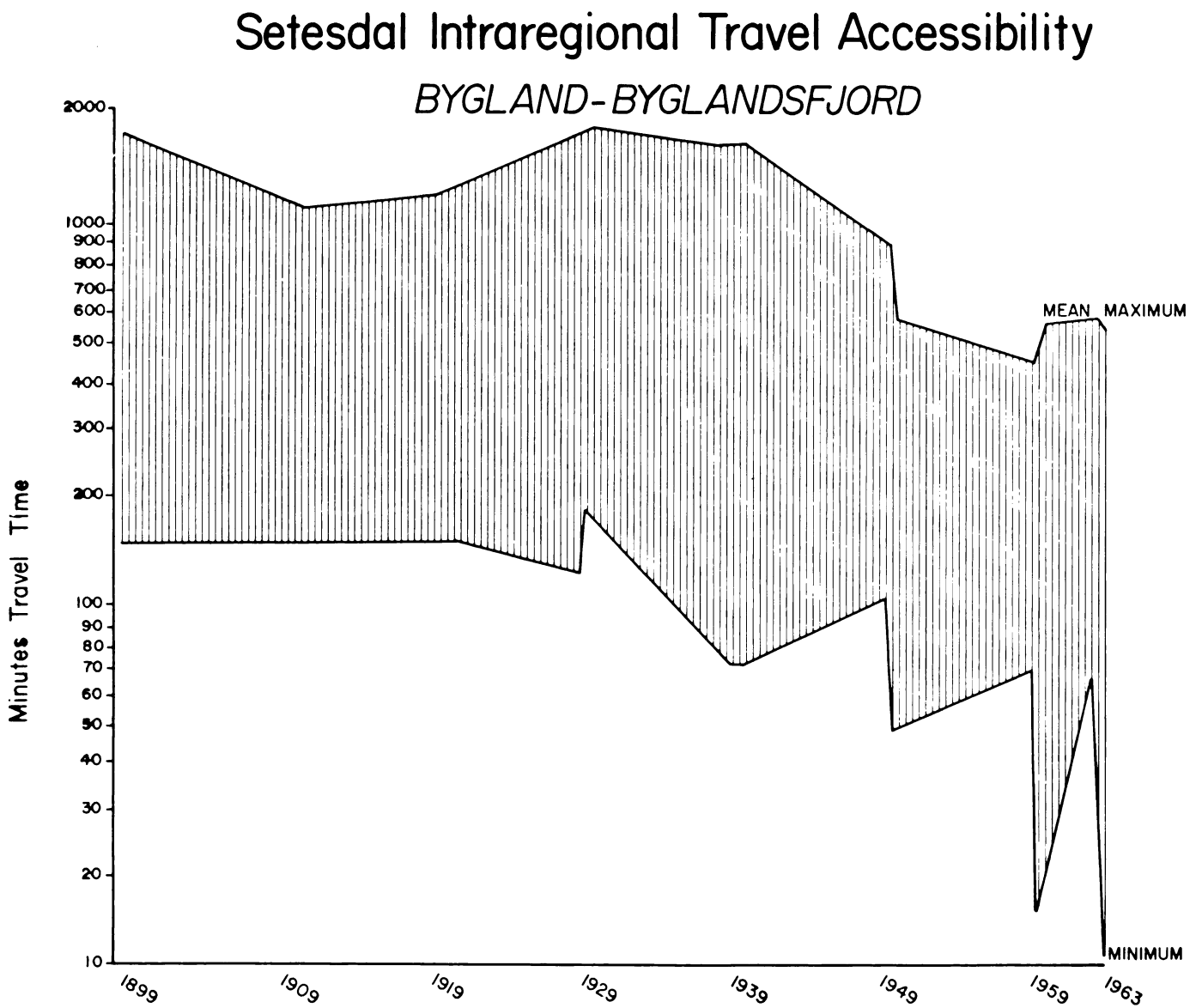
Setesdal Intraregional Travel Accessibility
BYGLAND-BYGLANDSFJORD
Minutes Travel Time
2000
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
1899
1909
1919
1929
1939
1949
1959
1963
MEAN MAXIMUM
MINIMUM

**Figure 17.**

# Setesdal Intraregional Travel Accessibility

*HYLESTAD BYGLANDSFJORD*

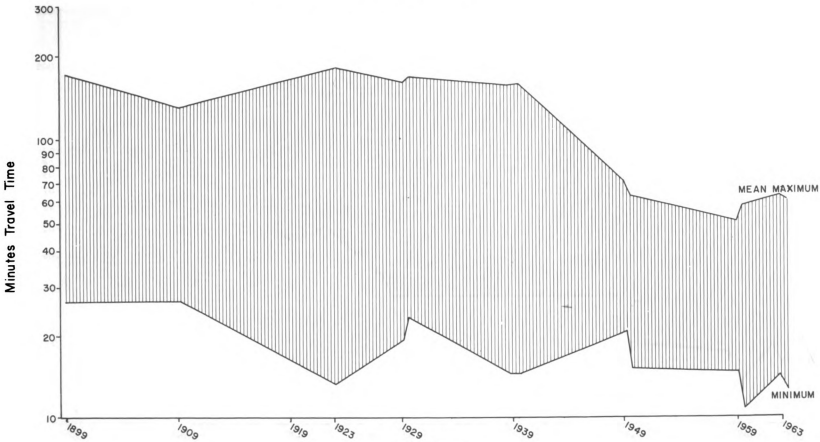


**FIGURE 18.**

# Setesdal Intraregional Travel Accessibility

## *VALLE - BYGLANDSFJORD*

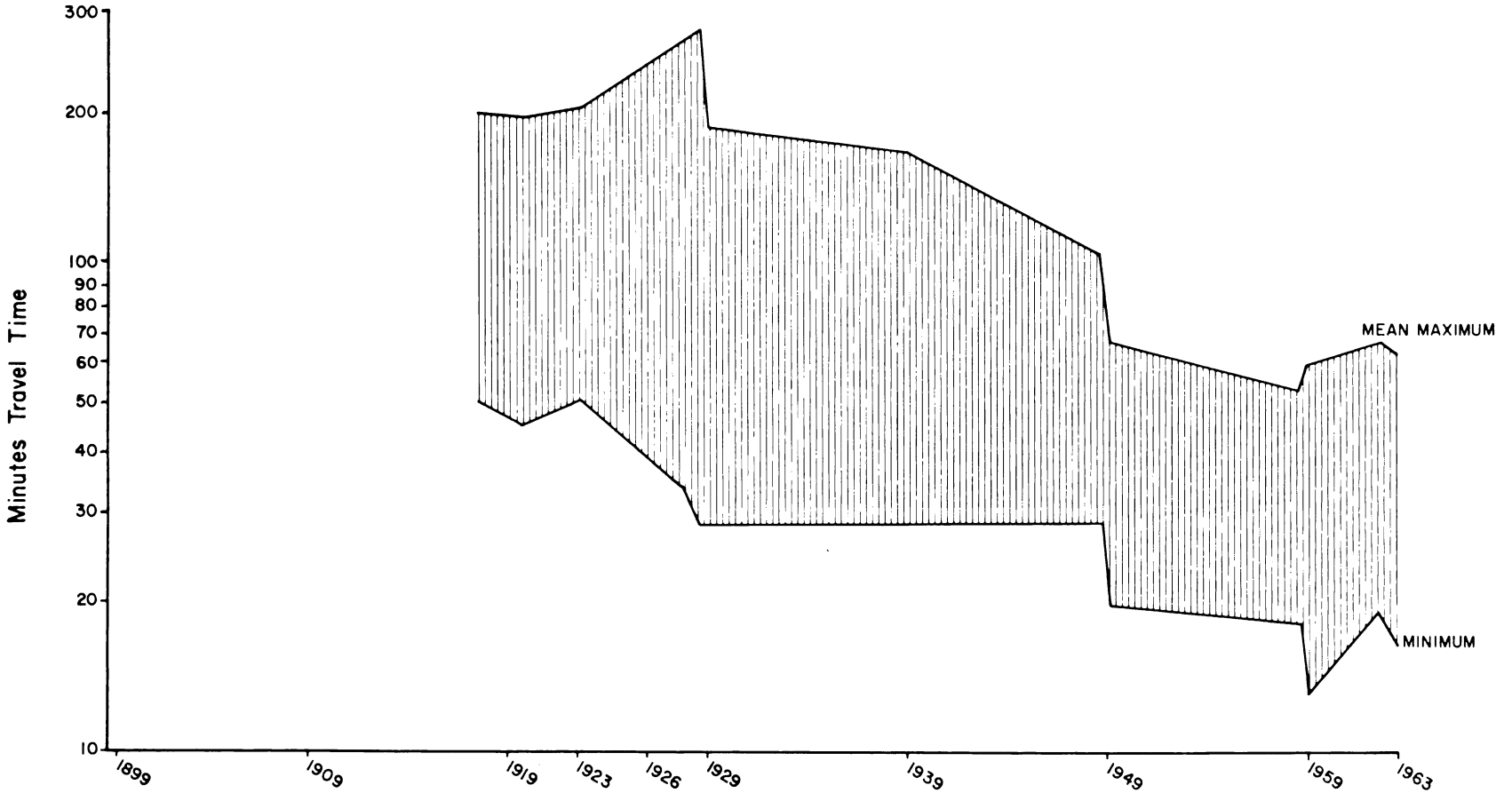


**Figure 19.**

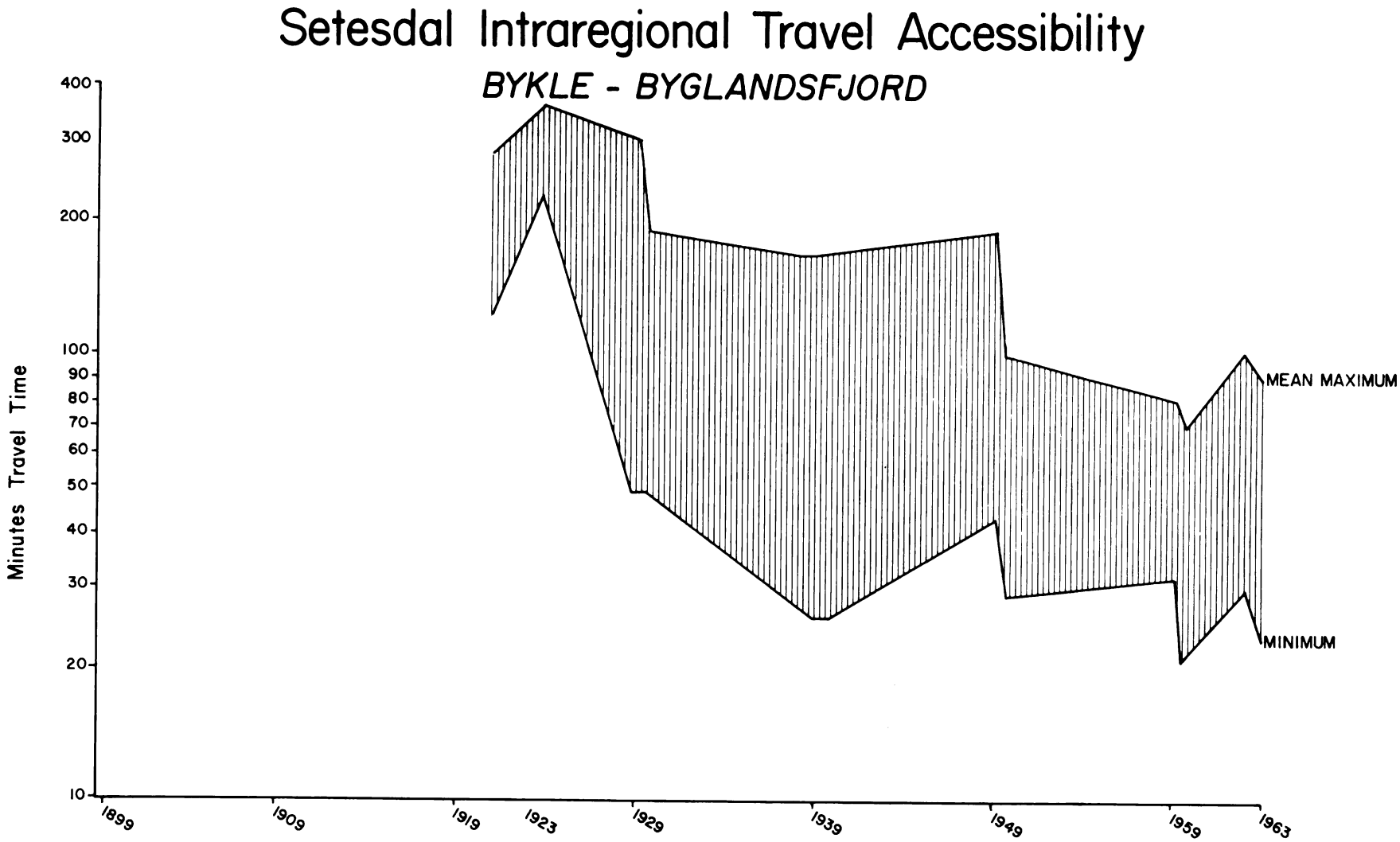
Setesdal Intraregional Travel Accessibility
BYKLE - BYGLANDSFJORD
Minutes Travel Time
400
300
200
100
90
80
70
60
50
40
30
20
10
1899
1909
1919
1923
1929
1939
1949
1959
1963
MEAN MAXIMUM
MINIMUM

**Figure 20.**

# Setesdal Intraregional Travel Accessibility

## *HOVDEN-BYGLANDSFJORD*

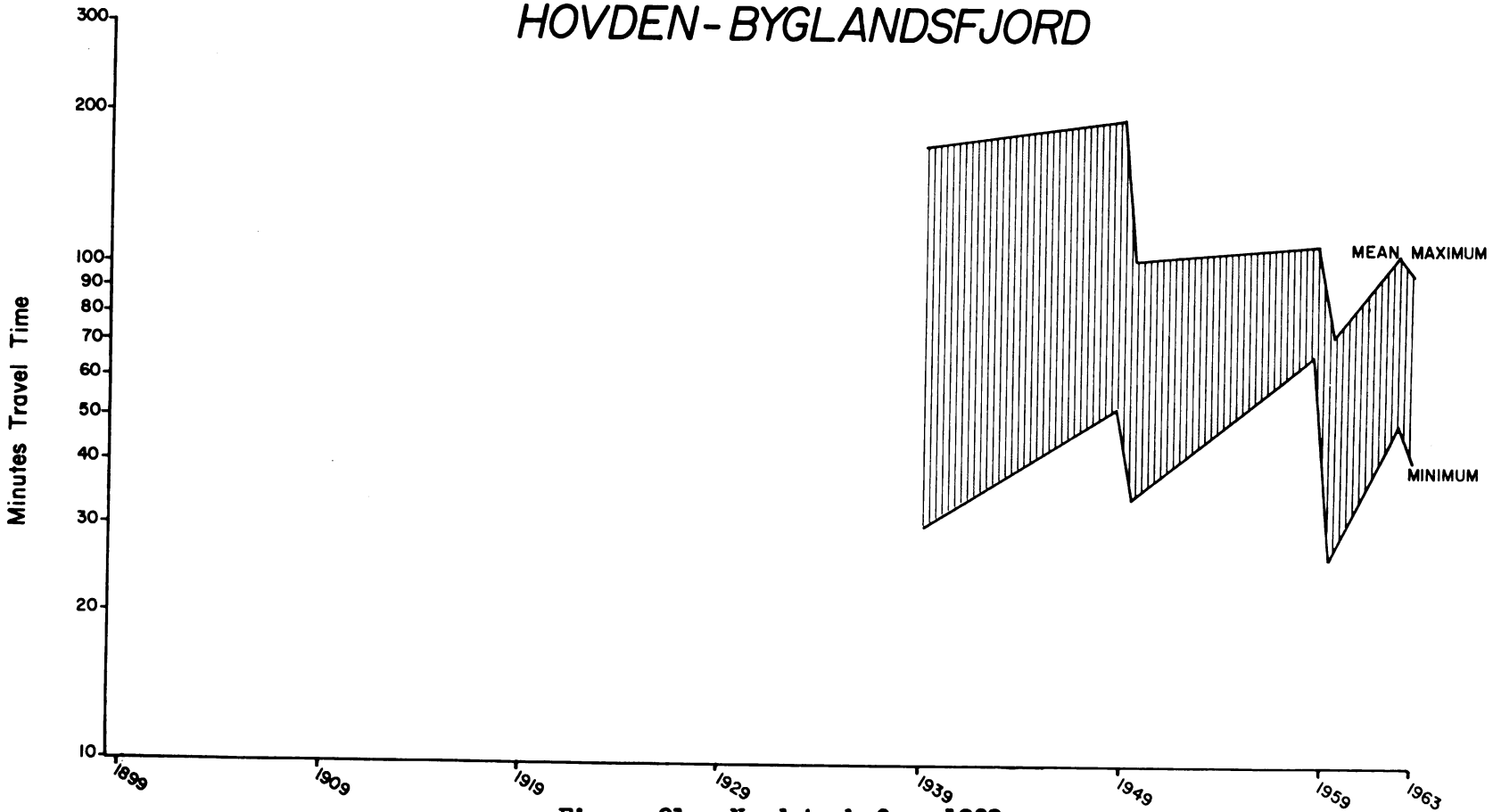


**Figure 21. No data before 1939**

Figures 17 and 18 show changes for the southern region of the valley. Figure 17 shows from 1899 the service for Hylestad-Åse and Bygland has been irregular, somewhat more reliable in the summer. For Hylestad the decades 1929-1939 and 1949-1959 represent periods of most reliable summer and winter service as well as periods of minimal travel time. A careful study of Figure 17 (allowing for distortions caused by the use of semi-log paper) shows that Bygland has enjoyed a considerable transport linkage with Byglandsfjord and that minimum as well as mean-maximum travel time has constantly been reduced. The 1929-1939 decade again represents the period of most consistent summer-winter schedules. After that time accessibility changes markedly with the season (indicated by the solid lines) as has the minimum travel time. The conclusion is evident that all of the southernmost region is very "close" in a time-distance sense to Byglandsfjord.

When viewed from the context of consistency of service, one can divide the modern history of Setesdal's intraregional accessibility into four intervals: (1) the pre-1929 ferry-bus period, (2) the 1929-1939 period of transport stability, (3) the World War II period, and (4) the post-1960 period of markedly increasing intraregional accessibility. There was a long span of change from 1899 to 1929, then a term of adjustment that seems pronounced during the decade of the 30's, then a deterioration from the 40's to the 60's, after which another span of positive change has apparently occurred.

Figure 16 (Byglandsfjord-Kristiansand) indicates that similar conditions occurred in interregional contact, that the 1930 decade was a period of maximum accessibility only recently approached again

during the 1960's. Note on Figure 16 that minimum travel time from Byglandsfjord to Kristiansand is less in 1963 than in 1939, but that mean-maximum travel time is greater.[24]

Minimum and mean-maximum travel time into and within Setesdal has fluctuated greatly since the establishment of regular transportation services. Some discussion of these changes is pertinent, but detailed explanations are beyond the scope of this study.

Figure 16 shows that transportation services between Kristiansand and Byglandsfjord have varied greatly through the years. Two factors appear to be relevant to these oscillations in the availability of service: transport costs and the economic health of Sørlandet.

The Setesdalbane was a narrow gauge woodburning railroad constructed in the late 1890's. This railroad served a real purpose in fusing a linkage between the market center of Kristiansand and the interior, including Byglandsfjord. Once the railway was built, the number of trains completing the full trip on this railway was fairly constant from early in this century until 1929. From 1929 until 1939 service improved through increasing the number of trips, but not shortening the time in transit (compare mean-maximum and minimum travel times in Figure 16). Economic factors seemed to correspond with improvement in the frequency of service during this time of

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[24]This observation is not meant as criticism of Myklebost's report, op. cit., because the "scale-shift" from train to bus was not yet complete in 1963 primarily because a new road was only partially completed by the summer of 1963.

recession and depression. During this time it appears that the merchants of Kristiansand turned from international to interregional trade and the Setesdalbane facilitated the realignment.[25] From 1939 to 1959 the number of trains decreased markedly and mean-maximum travel time increased greatly. Minimum travel time (time in transit) remained constant during the period. The year 1939 marked the start of hostilities in Europe, which undoubtedly had its effect on the use of the Setesdalbane, at least until the end of the occupation. After the war, however, the service of the Setesdalbane continued to deteriorate with respect to mean-maximum travel time. This disuse of the railway partly can be explained through the post war readjustments of the Norwegian economy, necessary economy moves, and the like. Officialdom was also reconsidering the role of the transport facility, and their deliberations are mirrored in the decrease of trains between 1949 and 1959.[26] After 1959 this narrow gauge railway was disbanded and a modern system of bus transportation was instituted. The effect of this bus company is seen in Figure 16. for the period after 1959.[27]

Comparison of Figure 16. (Byglandsfjord-Kristiansand) and the series of graphs depicting Setesdal's intraregional travel times (Figures 17 - 21) indicates that transportation service fluctuation

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[25]This statement will be more fully developed in the next section on the villages of Setesdal—Forsteder or Arbeidsteder?

[26]See Myklebost, op. cit.

[27]Details of the goals of greater accessibility for Setesdal have been set forth in a letter from P. Tvedt, planner, 7 April 1964.

within the valley does not correlate well through time with the fluctuations between Byglandsfjord and Kristiansand. This observation further suggests that a set of complex relationships have existed between Setesdal and the coastal regions which are analyzed in the following section.

THE VILLAGES OF SETESDAL—FORSTEDER OR ARBEIDSTEDER?[28]

At this point the effect of changes in interregional accessibility on Setesdal must be considered. What adjustments to changes have occurred? What is the relationship between the small places of Setesdal and the string of urbanized communities generated by the traders of Kristiansand along the Setesdalbanen's right-of-way through Otradalen? Are these small settlements suburbs (forstedar) or more loosely connected work places (arbeidsteder) with respect to Kristiansand? Are the settlements, in J. W. Webb's terms, isolated or integrated?[29] An isolated urban society is one having a nucleated settlement with differentiated functions, but with no significant contacts with other urban settlements. An integrated urban society has a significant and free exchange of goods and services with other urban settlements.

A comparative study of the meager literature suggests interesting conclusions with respect to the settlements in and near Setesdal. No empirical work of a geographical nature has been done for the valley

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[28] Forstedar is the Norwegian term of suburb; arbeidsteder is the term for a manufacturing center or work places.

[29] J. W. Webb, "Analysis of Small Urban Centers of Minnesota," Annals of the Association of American Geographers, Vol. 49 (March 1959), pp. 55-72.

per se, but Dag Omholt-Jensen has studied the evolution of a community in Torrisdal, Vennesla, which is on the transport link from Kristiansand to Setesdal.[30] Omholt-Jensen's conclusion for Vennesla was that the town is not to be considered a suburb of Kristiansand in the sense that the community is dependent upon Kristiansand for work, goods, and services.

In coming to these conclusions Omholt-Jensen traced the evolution of the center from the 1660's. During the early period of his analysis the center was mainly dependent upon timber and salmon fishing. Products went to Kristiansand which established itself as an international market center in vigorous competition with Arendal. Both major cities seemed to be at the mercy of international economic ups and downs. These economic shocks seemed to be softened in the mellombygder (Figure 1) (and Vennesla) according to the degree of self-sufficiency retained. Hypothetically, adding to this author's conclusions, the shock would be less severe in Byglandsfjord than in Vennesla, in Valle or Bykle than in Byglandsfjord.

During times of economic crises the Arendal and Kristiansand merchants naturally looked inland for new markets, as during the crises of 1814 and 1856. Vennesla and certainly Setesdal were affected during these times of economic-geographic readjustment because the two trading towns were searching for markets in the same place, interior Sørlandet. This trade "war" seemed to be particularly

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[30] Dag Omholt-Jensen, Vennesla-Fra Landsbygd til Industrisenter, Hovedfagsoppgave i geografi, Oslo: Universitetsforlaget, Høsten, 1959.

centered on Setesdal according to Omholt-Jensen. Southern Setesdal, since the 1600's, had been supplying Vennesla with unhewn logs. From the middle 1850's the competition between the two large market centers was keen and the weapons of the trade war were means of communications, i.e., increased access to the interior, credit, and advertising. Omholt-Jensen notes that two specific effects of this search for markets were the establishment of the Evje Nickel Works (1872) and Ottaelvens Papirfabrik (1875). Such "industrialization" of Torrisdal called for a mass-transport system, and the Setesdalbanen was built in the 1890's. During the planning for the railroad both Arendal and Kristiansand evidently thought each would benefit the most from its construction.[31]

Until the completion of the Setesdalbanen, the mellombygder of Oddernes, Tveit, Søgne, and Vennesla carried on more manufacturing than Kristiansand. Evidently a sort of geographical division of labor between the coast and the immediate and far interior had developed. The coast cities of Arendal and Kristiansand provided exchange functions, the interior mellombygder the "hard" goods for that exchange, and the more interior dal- and fiellbygder providing raw materials. The construction of the Setesdalbanen had brought about this tripartite economic division of space between Northern Setesdal and Kristiansand.

Kristiansand seemd to gain ascendancy in the hinterland through the use of German and Canadian capital in the establishment of

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[31]Note that although Arendal is not on the mainline of the Sørlandsbanen, the town is linked to it by a spur line.

manufacturing concerns. Additional money entered the interior market areas in the form of credit and other trade-producing incentives, such as agricultural research. Thus, even in the 1859's Kristiansand's capital was used in the Vennesla region to experiment with crops. A stimulated agricultural economy led to the establishment of a regular market day and increased economic intercourse between (1) the farmers and the town of Vennesla, and (2) Vennesla and Kristiansand.

The Kristiansand merchants apparently realized the spatial ties between the coast and the interior could not always be maintained by such means alone. Communications were as necessary as financial links in holding and improving this circulation through space. The crises of 1814 and 1856 had taught them that their hold on the hinterlands of Sørlandet was indeed fragile at such times.

The construction of the Setesdalbanen enabled a string of central and industrial places to grow up along its right-of-way. (Figure 1) Byglandsfjord became the terminal point for the railroad and the farthest inland market place, as shown by the maps of Figure 3.[32] Myklebost states that the opening of the Setesdalbanen in 1896 caused the development of Evje and Byglandsfjord. (Note that although some industry is located in these communities they must be classified as central places.[33]) No other Setesdal village qualifies as a central

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[32]The classification of centrality shown on Figure 3 is taken from Hallstein Myklebost, Norges Tettbygde Steder 1875-1950, Oslo: Universitetsforlaget, Ad Novas Series No. 4, 1959. See Chapter I for a brief discussion of Myklebost's method.

[33]Ibid., p. 234, see also footnotes 1 and 2. Note that Myklebost further classifies the towns as industrial places and central places, i.p. and c.p. on the map. Industrial places are simply referred to as central places in this study.

place as defined by Myklebost.

Evidence suggests that the retail establishments of the Kristiansand merchants were never very successful in Setesdal as a whole. Until the coming of the railroad to Byglandsfjord the valley seemed distinctly aloof from the ties of either Arendal or Kristiansand. Efforts to improve crop methods and link agriculture to an exchange economy were mostly restricted to the Lake Byglandsfjord area. An agricultural high school was established in Setesdal (in Bygland) in the middle 1880's. In the 23 years since its inception until 1919 no student had come from Bykle, only 6 from Valle, 16 from Hylestad, and 38 from Iveland which lies to the south beyond the limits of the valley, per se.[34] Why so little interest from students in Øvre Setesdal? Apparently the residents could not afford to send their children off to school and the parents in the upper valley felt that the elementary school supplied all the knowledge that was needed for a farmer's life.

The brief history of economic linkage between Kristiansand, Vennesla, and the villages of Setesdal is interesting in view of N. S. B. Gras's contention that there is no such thing as a national economy, but only metropolitan, i.e., regional economies working within the framework of the state.[35] Thus, from Gras's view, nations do not

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[34](T. Kummen,) "Landbruksskolen i Setesdal," Agder Tidende, Torsdag 11 Sept. 1919, p. 1.

[35]N.S.B. Gras, "The Development of Metropolitan Economy in Europe and America," The American Historical Review, XXVII (1922), pp. 696-705.

trade, but rather areas of nations trade, such areas representing a specific geographic specialization which occurs in three evolutionary stages: that of vollage, town, and city economy. A three-stage division seems to have existed through space for Sørlandet as the region became organized through the evolution of Kristiansand as its principal center. Returning to Webb's concept of isolated and integrated urban entities, one observes that the evidence suggests that the villages of Setesdal have in the past remained well-isolated, that the town of Vennesla is transitional, sometimes integrated, sometimes isolated, and that the community of Kristiansand is well-integrated with foreign and/or domestic markets. The basic motivations for change in all three cases has been economic impetus from beyond the region and competition within. This shows that the interior areas may have suffered because of too little government control or interest.

The short comparative history suggests some interesting relations concerning the economic geography of the area:

(1) A chain of cause-and-effect relations has existed through the space that separates Setesdal, Vennesla, and Kristiansand which has pushed primary production (such as forestry and agriculture) gradually towards the interior through time. In the 1660's Vennesla was the primary producer for Kristiansand, resulting in agricultural sophistication and some industrialization geared to the needs of Kristiansand. Setesdal was terra incognita. Southern Setesdal became one of the primary producers for the Vennesla area. Evidently, however, the revolution in exchange economy was anything but

complete in that valley of tradition and isolation. That basic situation seems to exist yet today.

(2) Economic trepidation in Kristiansand was often followed by a loss of contact with the interior which in turn resulted in "regression" to rural self-sufficiency, out-migration, or both. One might theorize relative self-sufficiency was always present, or else "total" out-migration would have to necessarily occur. Thus the nodal economic region of Kristiansand along the coast was paralleled by an "anti-" economic nodal region towards the interior. The "anti-" region was built upon a paradigm of traditional folkways which became a refuge of relative self-sufficiency during periods of depression. The region was obscured during the good times and became emphasized during the bad. The evidence for this in the case of Vennesla is seen to be inconclusive at this point, somewhat more conclusive for Setesdal.

(3) The transportation take-off of the 1890's and after seems to have been instituted to serve Kristiansand primarily rather than the interior bygder. The railroad certainly should not have been considered "Setesdal's Railroad" in any sense. The accessibility charts for that railroad interestingly enough indicate that the best linkage occurred during poor times (the decade of the 1930's). Was this to Setesdal's or Kristiansand's advantage? The analysis given above indicates that the Setesdalbanen was built to satisfy economic needs along the coast. The economic needs of the interior have not been served through the railroad's construction, indicated by the disbalance of trade shown in Chapter II, pages 61-63 and Figures 14, 15.

(4) Gras's four criteria for recognising the evolution from subsistency seems to apply imperfectly to this analysis. Thus greater specialization seems to have been substituted by an opposite trend in the case of Kristiansand. More immunity from distress and famine seems to be a product of subsistence as well as exchange economy as in the case of Vennesla and Setesdal. In Setesdal, however, the type of distress, natural or man-made, is important.[36] Certainly the evolution has been accompanied by a greater surplus of items of exchange economy and a greater general division of labor.

(5) Gras sees the three primary units of production as the village, town, and city wherein labor, skills, and capital respectively are mobilized. Certainly most villages of Setesdal remain arbeidsteder or central places where labor predominately focuses.

THE EVOLUTION OF RETAIL TRADE IN SØRLANDET 1891-1950

Circulation perhaps has its final expression in tangible results in the form of a better life. There are, of course, many ways to define a "better life." Without departing upon metaphysical speculation, one can assume that a better life is attained when more goods and services are available at lower and lower prices. The natural by-product of such a revolution of rising expectations would be an increase in retail service which is now analyzed.

Figures 22 and 23 depict the changes in retail services employees

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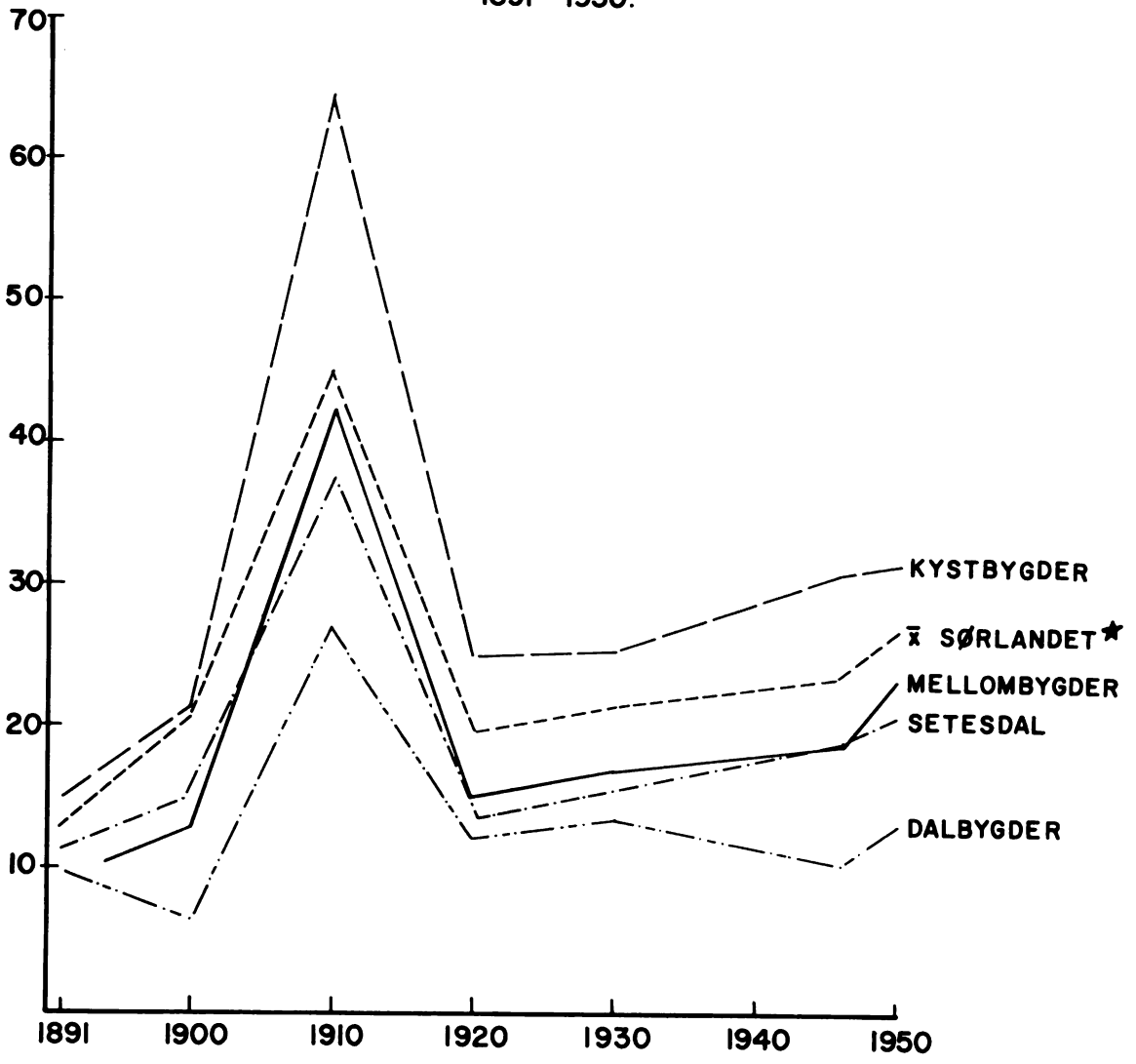
[36] Exchange economy provides relief from natural disaster; subsistence exchange economy provides relief from man-made depressions. Further insights to this view are offered in the following chapter, particularly in the analysis of the residuals of regression section.

# VEST AGDER

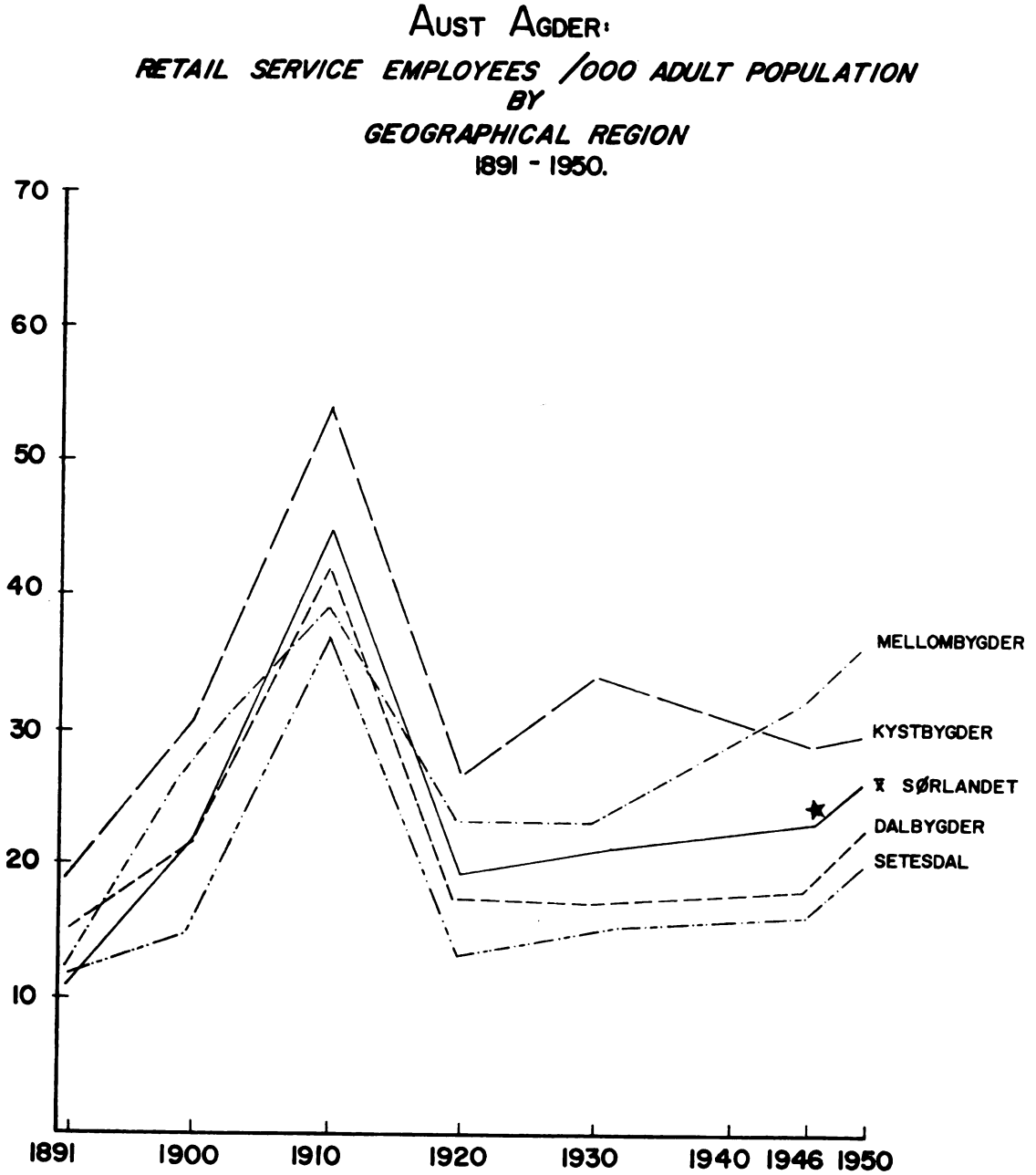
*RETAIL SERVICE EMPLOYEES /000 ADULT POPULATION*
*BY*
*GEOGRAPHICAL REGION*
1891 - 1950.




★Excepting SETESDAL.

**Source: Norke Folketelling, for years indicated.**

**Figure 22.**




*Excepting SETESDAL.

**Figure 23. Source: Norske Folketelling for indicated dates.**

per 1000 resident population by geographical region for the years 1891 to 1950, as plotted on normal graph paper. Data for Setesdal is plotted for both Aust and Vest Agder for easy comparison.

The figures for Aust and Vest Agder show similar trends that vary in important details. In the 1890's the number of retail services in the three geographical regions of the coast (kystbygder), the transitional (mellombygder) and the mountain (dalbygder) 'townships' did not differ markedly. In both Vest and Aust Agder the dal- and mellombygder have very nearly the same number of retail service employees per 1000 adult inhabitants. In both counties the Coastal Region had more such employees; Aust Agder having more than Vest Agder. From 1900 to 1910 there was a sharp increase in this relative relationship between service employees and adult population, and after 1910 to 1920 a sharp decline.[37] From the 1920's until the 1950's reasonable stability in most of the region prevailed with but few exceptions.

From the 1920's to 1946, the retail service employees of the dalbygder of Vest Agder experienced a net decline and that of Aust Agder experienced a net increase. The figures for Setesdal are lower

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[37] An examination of the data reveals that this rise and decline of retail employees per adult population seems to be associated with a pronounced decline of population in all of the geographical regions in 1910 without a corresponding decline in service personnel. This explanation is tentative because the raw data for 1900 and 1910 is not comparable due to a change in the classificatory system in the 1900 census. A comparison of 1891 and 1910 figures (where the data is comparable) indicates the above statement is true.

than those of the dalbygder of Aust Agder but not Vest Agder.[38] In Vest Agder Setesdal's ratio of retailer to population is consistently higher than that of the dalbygder, and at times higher, at times lower, than that of the mellombygder. Both graphs show that the coastal townships throughout most of the period have enjoyed more retail service employees than any other region. An important exception is the kystbygder of Aust Agder which seems to have actually fallen below the mellombygder of that county in the ratio.[39]

The graph for Vest Agder, including Setesdal, is most important as it further supports the arguments proposed concerning the effects of communication on the circulation of the region. The trend of all of the lines on the graph for Vest Agder are the same with the exception of the dalbygder, which differed from the prevailing trend in the 1890 decade and in the 1930 to 1946 period. Also, with the exception of Setesdal, no "crossing" of lines is evident on the Vest Agder graph, which is to say that none of the regions has changed positions with respect to the ratio used. In Aust Agder the mellombygder has changed position three times, once falling below the dalbygder then regaining its position above the dalbygder in the 1900's and 1910's respectively and finally gaining pre-eminence over the kystbygder during the inter-war and World War II period. Setesdal changed positions with the mellombygder of

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[38] No attempt is made to explain this apparent anomaly, which could easily be the subject of other major research. Possible explanations could be the location of the interior Sørlandsbanen, the low population densities of the region, or the nature of the geographical isolation of the area.

[39] Again explanation is omitted because it is not central to the problem of the dissertation. See footnote 38 above.

Vest Agder, falling below the latter in the first decade of the century and yet closely paralleling the trend for those transitional townships.

The figure for Vest Agder indicates no change of rank of the geographical regions of the county, except for Setesdal, as noted above. The upward trend of both the mellombygder and Setesdal in the first decade of the century must be ascribed to the completion of the Setesdalbanen in 1899 and its importance to the establishment of market towns.[40] Apparently the Setesdalbanen along with the wide gauge Sørlandsbanen "stabilized" the ranking of these geographical regions with respect to the criteria used here. Such stability does not seem to appear in the graph prepared for Aust Agder, probably because no means of mass-transport between the coast and the interior was created. The dalbygder of Vest Agder have not kept pace with respect to the ratio used because of their peripheral location with respect to transport facilities. The sharp rise and fall of service personnel per adult population (see tentative explanation in footnote 38, page 108) further suggests an over-specialization in the services for the Coastal Regions, particularly so for Vest Agder. A close examination of the graph for Vest Agder reveals that the Coast region experienced the greatest rise and decline in the service ratio during the first score of years of our century, followed by the Transitional Region, Setesdal, and the other Valley Townships. In other words, those areas having the least integration with the coast

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[40] See reference to Myklebost, p. 85 this chapter.

have suffered the least fluctuation with respect to the services. In Vest Agder the rise and fall apparently varies according to distance from the coast. Such is not the case in Aust Agder where the dalbygder experienced greater changes than the mellombygder, changes which were almost as great as those experienced by the kystbygder. Setesdal's changes closely paralleled those of the dal- and kystbygder of Aust Agder even though it is, in terms of accessibility, more closely linked with Vest Agder.

## SUMMARY AND CONCLUSIONS

This chapter analyzes the circulation--integration in the broader sense--through time for the geographical units of Sørlandet in order to isolate periods of economic growth, adjustment, and decline. Quantitative and qualitative data reveals that six periods of circulation development exist for the region as a whole:

1. The undeveloped stage; prior to 1890. The rural areas were apparently remarkable homogeneous with respect to the lack of services, and transport services were totally absent in the modern sense. The cities of Kristiansand and Arendal were the only representatives of a larger metropolitan economy. These larger cities at times organized the space of the interior through competition and investment.
2. The incipient stage of development, 1890-1900. Transport scale changes were introduced in the form of railroads which decidely affected the service ratio for all of Sørlandet; trends toward an exchange economy were more pronounced in Vest Agder and Setesdal than in Aust Agder because of the

construction of the Setesdalbanen.

3. The rapid developmental stage, 1900-1910. Increased accessibility permitted a diffusion of service into the interior bygder which may have quickly led to an overdevelopment of retailing because of a pronounced decrease in resident adult population throughout the area; again the trends toward exchange economy are pre-eminent in Vest Agder and Setesdal.

4. The stage of readjustment, 1910-1930. A sharp decrease in the service ratio, more so in Vest Agder and Setesdal than Aust Agder, was accompanied by a plateau of transport interregional stability; at this time intraregional stability in Setesdal was developed from south to north among the herreds of that region. Byglandsfjord remained the one market place of the region. Setesdal thus was semi-developed, as seen by the high service ratio in Bygland and the low ratio in the remainder of the valley, as shown in the next chapter.

5. Stability, 1930-1946. During this stage Setesdal's intraregional accessibility changed little from year to year and season to season. The travel time between Byglandsfjord and Kristiansand did improve and was accompanied by gradual increases in the service ratio in Setesdal. Similar conditions prevailed in the other geographical regions of Vest Agder, excepting the dalbygder. The trends were similar but not so pronounced in Aust Agder, except its kystbygder whose development contradicted the general trend during the period.

6. The post war recovery and development stage. All regions in both counties experienced a development of their service ratio. Intraregional transportation within Setesdal either remained constant or increased. Transportation between Kristiansand and Byglandsfjord declined greatly until the advent of a new transport scale-shift in the form of the replacement of the railroad with bus service.

Several general tentative conclusions pertinent to the central problem of the study emerge from the information presented in this chapter:

The interior areas, particularly Setesdal, have traditionally been remote from the life along the coast, especially the urban entities of the coast. Remoteness generally correlates with lack of accessibility, fostering regionalism in underdeveloped stages and complementary rather than tight economic relationships in stages of greater development.

Retail up- and down- turns are felt to a lesser degree as distance is increased from the coast; more direct correlation in service ratio changes and economical activity is seen in the geographical regions where a means of mass transport is available, as in Vest Agder.

Therefore, mass transport improvement and innovation (scale-shifts) are the chief means of spurring increased retail activity and thus an exchange economy; in the case of Sørlandet in general and Setesdal in particular, scale-shifts in the 1890's brought about

a rapid increase in retail activity.

Questions still remain to be answered—those concerning the reactions of society during the periods of advance, decline, and adjustment of retail activity as measured by land-use changes.

## CHAPTER IV

## THE GEOGRAPHY OF EXCHANGE AND SUBSISTENCE IN SØRLANDET AND SETESDAL

> If things were left to market forces unhampered by any policy interferences...almost all economic activities... would cluster in certain localities and regions, leaving the rest of the country more or less in a backwater.[1]

Gunnar Myrdal realized that poverty is in part a geographical matter. The author goes on to say that economic geography naturally sets the stage, giving some places a greater competitive advantage over others. The favorable environment of a region is often counter-balanced, however, by historical accident. Whatever the original precedent for a city's location,

> ...the ever-increasing internal and external economies... are fortified and sustained by their continuous growth at the expense of other localities and regions where instead relative stagnation or regression becomes the pattern.[2]

The geography of economic stagnation in an area adjoining a milieu of exchange is the particular focus of this study. The previous chapters have been concerned with an analysis of Setesdal's isolation and integration with itself, the national economy of Norway, and the international economy. This chapter is a basic

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[1]Gunnar Myrdal, Economic Theory and Under-developed Regions, London: Gerald Duckworth & Co., 1963 pp. 26-27.

[2]Ibid.

statistical examination of some selected criteria of subsistence in the larger region of Sørland and a comparison of that region with Setesdal.

The methodology employed in this section has precedent in both the literature of geography and regional economics. Many geographers have studied variations of economic patterns through spatial continuums.

Of the Fenno-scandian geographers, Reino Ajo has made contributions to the understanding of the workings of the space economy. Ajo groups his studies under the general heading of "social physics", attempting to describe regional variation in economic data using a variety of models borrowed from physics.[3]

The regional economists have done research on spatial variations in economic data. The breadth of such work is difficult to assess in any short methodological introduction. Of particular interest however is Perloff's How a Region Grows.[4] Part of the Perloff study is devoted to the mechanics of regional growth; the author tries to understand the role of export and import industries as determinants of regional growth in a way similar to the analysis given in this study in Chapter III. Perloff attempts to relate economic factors (mineral, agriculture, services, etc.) to long term changes in the regional distribution of economic activity.

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[3]Ajo, op. cit.

[4]H. S. Perloff, How a Region Grows, New York: Committee For Economic Development, 1963.

The approach of this chapter is similar to that of Perloff described in the preceding paragraph except that here the goal is to identify particular regional types rather than to understand determinants of economic growth.

## THE METHOD OF OBTAINING DISTRIBUTION OF SERVICES IN SØRLANDET AND SETESDAL, 1929-1949

The comparisons, or coefficients of correlation, shown on the tables of this chapter give a numerical picture of the relationships between dependent and independent variables for groups of census units. Because of the nature of the dependent variable (i.e., the service ratio) these calculations depict aspects of the relationships between the quantity of services and land use patterns for the census units. The premise is that through careful analysis these relationships can be translated into a relative assessment of functional urbanism. The basic assumption is that the number of service personnel per 1000 adult population is indicative of the quantity of urban functions, and that land use patterns will show a relationship to the ratio. The independent variables serve as indicators of various degrees of economic development. Some of the variables are accepted as basically subsistence in nature, such as <u>seter</u> use, while the role of others is not completely understood. Hopefully the correlations will afford a greater understanding of the relationship between farming patterns, such as the size of farm units and the spread of urbanism into Sørlandet and particularly Setesdal.

The following analysis has its limitations and thus is meant

only as an exploratory model. The criteria have been chosen to fit the hypothesis presented in the first chapter. The use of a simple ratio to assess functional urbanism may appear to be crude, but its use seemed to be most feasible with respect to the problems inherent in using statistics for various years in different geographical regions. The effectiveness of the calculations has been reduced by the necessity of comparing data for different census enumerations. In Norway the agricultural census is taken in years ending in "9" and the population census is taken in years ending in "0", thus 1930 and 1950 population data has been compared with 1929 and 1949 land use data respectively.

Technical computer problems include the problem of error in punching data cards. (All cards were punched by the author and great effort has been made to ascertain that these data cards were correct.) One card was punched for each bygder for each comparison period. The cards contain a complete array of data used and all subsequent calculations, such as the computation of the service ratio and the correlations, are based on these cards. Thus, for the computer, each card represents an "observation." Many observations are more meaningful than few "observations," which is to say that the correlations for the smaller geographical units of Sørlandet having fewer bygder must be used with caution. This problem is discussed further in the analysis.

## THE REGIONALIZATION OF ECONOMIC DEVELOPMENT

Sørlandet. A comparison of the coefficients of correlation for the entire area (Tables 5 and 6) and Figure 24 indicates two things

for the period of analysis: (1) most of the values are negative, but not significantly so, i.e., tending more towards a zero value; and (2) there has been some positive change for most criteria through the 20 year data interval. In general (specific exceptions will be noted later) the negative correlation values are seen to be a basic indicator of relative self-sufficiency. The correlation values for the whole area seem to indicate that there is little relation between trends in service employment per thousand adult population and land usage. In actuality these relationships for the two county region may indicate the following: (1) rural[5] Sørlandet is not generally part of a metropolitan economy;[6] (2) opposite forces are operating in the individual counties which minimize coefficient values for the two county area; or that (3) the criteria and methods used are meaningless for large geographical areas in spite of the larger number of machine observations. The individual counties must be analyzed to comment upon these possibilities.

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[5]Urban data is not used in the computations.

[6]That is, an integrated national economy. See reference to N.S.B. Gras, p. 101, Chapter III.

Table 5

Footnotes

[1] During the last 10 year Census Period, prior to 1929.

[2] Including "outer" Setesdal, i.e., Evje, Hornness, as well as Bygland.

[3] A dekar is .247 acres.

[*] Numbers different from others on table at $X^2$.99 level of significance.

| | | |
|---|---|---|
| Class 1 | equals | 2.1 dekar |
| Class 2 | equals | 2.1-5 dekar |
| Class 3 | equals | 5.1-10 dekar |
| Class 4 | equals | 10.1-20 dekar |
| Class 5 | equals | 20.1-50 dekar |
| Class 6 | equals | 50.1-100 dekar |

Table 5

Coefficient of Correlation, Service Ratio with selected independent variables, by geographical region, Sørlandet, 1929.

| | Independent Variable | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Farm Size: | | | | | | | | | |
| | 1 Class 1 | 2 Class 2 | 3 Class 3 | 4 Class 4 | 5 Class 5 | 6 Class 6 | 7 Adult Pop. | 8 New Prod. Land[1] | 9 Land in Seter | 10 Total Agri. Area |
| Sørlandet: | -.38 | -.39 | -.25 | -.13 | -.086 | -.25 | -.48 | -.099 | -.077 | -.26 |
| Aust Agder: | -.45 | -.48 | -.42 | -.35 | -.023 | -.19 | -.61 | -.026 | +.30 | -.35 |
| Kystbygder | -.37 | -.38 | -.23 | -.15 | +.21 | -.045 | -.61 | -.18 | -.045 | -.20 |
| Mellombygder | -.56 | -.59 | -.57 | -.45 | -.34 | -.47 | -.48 | -.020 | -.18 | -.50 |
| Dalbygder | -.55 | -.25 | -.39 | -.34 | -.16 | -.17 | -.40 | -.45 | -.12 | -.35 |
| Setesdal | -.60* | -.51 | -.58 | -.39 | -.68* | -.52 | -.68* | -.70* | +.25 | -.73* |
| Vest Agder: | -.31 | -.31 | -.76* | -.12 | -.18 | -.29 | -.39 | -.24 | -.025 | -.25 |
| Kystbygder | -.34 | -.29 | -.082 | -.0075 | -.17 | -.25 | -.44 | -.18 | -.27 | -.21 |
| Mellombygder | -.58 | -.45 | -.29 | -.28 | -.11 | -.34 | -.29 | -.51 | -.056 | -.25 |
| Dalbygder | -.26 | -.023 | -.32 | -.15 | -.66* | -.53 | -.81* | +.052 | -.28 | -.71* |
| Setesdalbanen-bygder[2] | -.37 | -.18 | -.50 | -.064 | +.23 | +.26 | +.087 | -.53 | +.35 | +.11 |

See facing page for explanations.

Table 6

Footnotes

[1]During the last 10 year Census Period, prior to 1949.

[2]Including "outer" Setesdal, i.e., Evje, Hornness, as well as Bygland.

[3]A dekar is .247 acres.

*Numbers different from others on table at $X^2$.99 level of significance.

| | | | |
|---|---|---|---|
| Class 1 | equals | 2.1 | dekar |
| Class 2 | equals | 2.1-5 | dekar |
| Class 3 | equals | 5.1-10 | dekar |
| Class 4 | equals | 10.1-20 | dekar |
| Class 5 | equals | 20.1-50 | dekar |
| Class 6 | equals | 50.1-100 | dekar |

Table 6

Coefficient of Correlation, Service Ratio with selected independent variables, by geographical region, Sørlandet, 1949

| | Independent Variable | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Farm Size: | | | | | | | | | |
| | 1 Class 1 | 2 Class 2 | 3 Class 3 | 4 Class 4 | 5 Class 5 | 6 Class 6 | 7 Adult Pop. | 8 New Prod. Land[1] | 9 Land in Seter | 10 Total Agri. Area |
| Sørlandet: | -.39 | -.39 | -.31 | -.19 | -.23 | -.16 | -.24 | -.0054 | -.0018 | -.25 |
| Aust Agder: | -.34 | -.23 | -.18 | -.074 | -.23 | -.19 | -.068 | -.091 | -.051 | -.18 |
| Kystbygder | -.25 | -.024 | .36 | +.45 | +.034 | -.29 | -.22 | -.19 | -.29 | +.15 |
| Mellombygder | -.54 | -.63* | -.68* | -.56 | -.61* | -.51 | +.22 | -.45 | -.20 | -.64* |
| Dalbygder | -.91 | -.87* | -.87* | -.59 | -.45 | +.0079 | -.78* | -.44 | -.60* | -.52 |
| Setesdal | -.56 | -.23 | -.42 | -.48 | -.51 | -.67 | -.62 | -.33 | -.42 | -.72* |
| Vest Agder: | -.52 | -.72* | -.51 | -.35 | -.25 | -.12 | -.47 | +.12 | +.19 | -.38 |
| Kystbygder | -.55 | -.83* | -.42 | -.20 | -.45 | -.46 | -.43 | -.49 | +.27 | -.37 |
| Mellombygder | -.44 | -.57 | -.40 | -.30 | -.26 | -.81 | -.49 | -.044 | +.10 | -.44 |
| Dalbygder | -.55 | -.80 | -.21 | -.099 | -.15 | -.061 | -.60 | -.48 | -.14 | -.40 |
| Setesdalbanen-bygder[2] | -.93 | -.76 | -.93 | -.49 | -.0079 | -.051 | -.58 | -.24 | -.084 | -.13 |

See facing page for explanations.

Figure 24, Change in correlation values 1929-1949.
The graph shows changes in correlation values for the regions of Sørland and Sørland as a whole for the period 1929-1949.

Source: Tables 5 and 6.

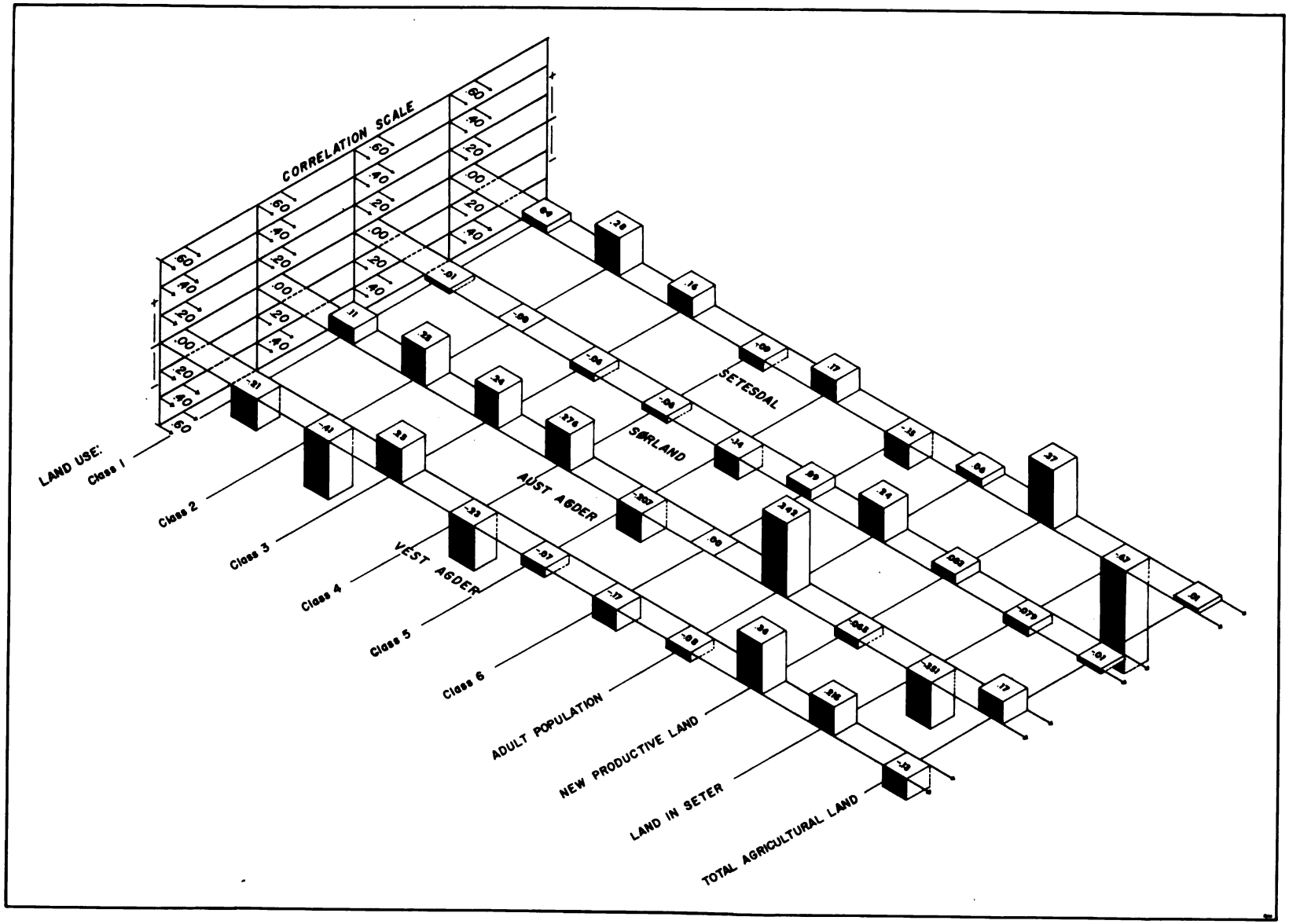
CORRELATION SCALE
LAND USE:
Class 1
Class 2
Class 3
Class 4
Class 5
Class 6
ADULT POPULATION
NEW PRODUCTIVE LAND
LAND IN SETER
TOTAL AGRICULTURAL LAND
SETESDAL
SØRLAND
AUST AGDER
VEST AGDER

Figure 24.

## THE INDIVIDUAL COUNTIES

Vest Agder. In Vest Agder a general negative change (approaching -1 between 1929 and 1949) is shown by the land use data and service ratio correlations. The greatest change was for the smaller farm units, classes 1, 2, and 3. Positive change is seen for class 6, larger farming units. Contrastingly, a positive change in the correlation values is to be seen for the more general land use criteria of seter use and new productive land; these changes may indicate a stronger coherence between the rural and urban economy of the county--thus a greater ability of Kristiansand in particular to influence change in the rural economy. A negative trend is shown, however, by the correlations for total agricultural land values.

Closer inspection of the figures indicates that the apparent inverse relationship between the service ratio and total agricultural land in production (Column 10, Table 6) is a reflection of decidedly negative correlation between 1929 and 1949 in the kyst and mellombygder. These changes suggest that urbanism is preempting agricultural activities and agricultural land nearer the cities(See Table 5).

As if to complement such negative change nearer the coast, the greatest positive change in total agriculture area has occurred in the dalbygder but not in the Setesdalbanen-bygder. This observation is extremely interesting in reference to the discussion of the previous chapter where it was found that primary industrial production was seemingly pushed toward the interior of Sørlandet by the forces of a metropolitan exchange economy.

The positive correlation trends between 1929 and 1949 for total

agricultural land use in the dalbygder may also indicate, however, a greater relative self-sufficiency, as is shown in subsequent discussion for Aust Agder. In Vest Agder's mountain townships class 2 and 3 farms show a negative change in relation to service ratio trends. The larger class 5 and 6 farms show a positive change, further reinforcing the view that primary production[7] in the time interval has been pushed to the edge of Kristiansand's hinterland. These relationships do not represent any sort of proof but rather heuristic observations of the process of geographical-economic displacement.

Leaving Vest Agder per se and going into its hinterland of Setesdal, one notes that the processes above also seem to have stopped or slowed in that there is a negative trend for most of the farm classes. Class 4 and 6 show positive trends in relation to the amount of service personnel. The degree of change is not particularly significant; indeed, for all land in agriculture it is minimal. The correlations, however, are some of the strongest shown on Tables 5 and 6. Because of the need to see these trends and patterns for Setesdal in the context of its total geographical milieu of Sørlandet, further analysis is delayed in deference to the discussion of Aust Agder.

Aust Agder. In Aust Agder a positive trend in correlation change exists for the total agricultural land in production for the period between 1929 and 1949, bringing the net change of correlations

---

[7] I.e., production of the primary sector of the economy such as forestry and agricultural production.

agricultural land use in the dalbygder may also indicate, however, a greater relative self-sufficiency, as is shown in subsequent discussion for Aust Agder. In Vest Agder's mountain townships class 2 and 3 farms show a negative change in relation to service ratio trends. The larger class 5 and 6 farms show a positive change, further reinforcing the view that primary production[7] in the time interval has been pushed to the edge of Kristiansand's hinterland. These relationships do not represent any sort of proof but rather heuristic observations of the process of geographical-economic displacement.

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Aust Agder. In Aust Agder a positive trend in correlation change exists for the total agricultural land in production for the period between 1929 and 1949, bringing the net change of correlations

---

[7] I.e., production of the primary sector of the economy such as forestry and agricultural production.

near the zero points. The relationship is paralleled by an insignificant change in the 1929-1949 correlations for new land in production while seter use showed a fairly important negative trend. Simultaneously adult population moved from a significant negative correlation to an insignificant positive one.

The gross land use figures for Aust Agder seem to indicate that different processes are operating here compared to Vest Agder. The changes in correlation values for the criteria of new land in production (Columns 8, Tables 5 and 6) accompanied by the trend of seter use to vary inversely with the distribution of services (Columns 7, Tables 5 and 6). Thus, seter use is more prevalent in the underdeveloped county of Aust Agder. This apparently indicates greater relative self-sufficiency in 1949 than in 1929. There is no general reinforcement of the trend by the land use class units for the county as a whole. An analysis of the small regions of the county does reveal distinct micropatterns.

The kystbygder region has had a positive change in the total agricultural land use relationships. Negative trends are shown by the mellom- and dalbygder. The change in the case of the mellombygder is to -.62 in 1949, while the change in the dalbygder is even greater but to a somewhat less significant correlation of -.52. In comparison, total land in production changed exceedingly little for Setesdal. In Setesdal new productive land did change from -.70 in 1929 to -.33 twenty years later, whereas seter production changed from a -.25 to -.42 because of the institution of commercial reindeer herding in northern Bykle. The figures for Setesdal then are at odds with those

for the other geographical regions of Aust Agder, as in Setesdal there is an apparent overall land use stability.

Setesdal's stability seems to be partly a function of change within the valley, especially in the use and disuse of seter and negative changes on the part of some sizes of farms, positive change on the part of others. Further inspection of the figures indicates that the positive changes have occurred in class 2, 3, and 5, [negative changes in class 1 (slight), 4, and 6, with changes in class 6 all but balancing those in class 2.] Undoubtedly, Setesdal's land use situation is different from the point of view of change than the rest of Aust Agder, but greater parallels are to be seen between Setesdal and the other interior regions.

What is the nature of this difference with respect to land use classes between Setesdal and the other regions? Along the coast the positive correlation change between 1929 and 1949 for all agricultural land is reinforced by positive changes in classes 1, 2, 3, and 4, and somewhat counterbalanced by classes 5 and 6. In the transitional mellombygder, minus trends are seen in classes 2, 3, 4, 5, and 6. Less change is evident in the smaller sized units and a slightly positive trend is shown by class 1 units. The dalbygder have changed negatively in all but the largest (class 6) holdings with strong negative correlations for the very small holdings.

Different forces are obviously affecting land use change in the different geographical regions of Aust Agder, and three distinct regions of change emerge: the kystbygder, the mellom and dalbygder, and Setesdal. Within the first two regions of change the smaller

units of agricultural production have a noteworthy tendency to change inversely with the service ratio, the magnitude being greater towards the interior. The exception is Setesdal where comparative stability seemingly exists.

Aust Agder is interesting in view of the strong trends upon the part of smaller farm units towards inverse change with the service ratio. Excepting Setesdal, Aust Agder must either be a bulwark of subsistence or an area of small intensively cultivated truck farms; it is not the latter.[8] Relative self-sufficiency is rather great for most of Aust Agder beyond the coast. This conclusion has been reached by field observation in Aust Agder in 1963.

A COMPARISON OF AUST AND VEST AGDER'S CORRELATION VALUES

The above described correlations show distinctly that opposite trends have occurred in the individual counties of Sørlandet. This means that the third possibility presented on page 118 of this chapter must be rejected; the correlation technique used here does uncover distinct trends and it does have meaning to geographical analysis. Further, the method shows that only a part of Sørlandet seems to be beyond the reach of a metropolitan economy, accounting for the fact that opposite trends occur in the two counties. More specifically, in Vest Agder the larger sized farm units show stronger negative correlation changes in proportion to a greater distance

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[8]An observation confirmed by the author through field work and also by more basic documentation given in this study, particularly Chapter II.

from Kristiansand. In Aust Agder the smaller sized farm units show a similar trend change, but the magnitude of the change is even greater through the intervening distance from Arendal. Evidently then, whatever the forces at work, they are a function of distance from the metropolitan places of the respective counties and a function of farm size. From the descriptions of the nature of Aust and Vest Agder (Chapters 2 and 3) and the above analysis, it is concluded that changes in the correlation values through time for the larger farm units, whether negative or positive, indicate an increase in functional urbanism. Positive changes in these correlations are to be expected nearer the urban centers; negative changes are to be expected farther from the centers. Conversely, decidedly negative changes in correlation values for the smaller farm units indicate a greater change towards relative self-sufficiency; strongly positive changes for the smaller farms are not noted in the computations.

A positive overall pattern of change towards urbanism emerges in Vest Agder but not in Aust Agder, which is to say that the economic space of Vest Agder is being organized locally at third and fourth order level of abstraction[9] by the forces of exchange economy. This statement should not be interpreted to mean that economic areal organization is absent in Aust Agder; it too may be occurring but not through forces of a vibrant exchange economy. If there is a process at work in Aust Agder, it is one more akin to that relative subsistence[10] which is unfortunately poorly understood.

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[9] See Chapter I, p. 26-27.

[10] See Chapter I, pp. 18-19 for a discussion of the concept of relative subsistence.

The correlations and changes in correlation values for Setesdal are of particular interest. The figures for Setesdal could pinpoint the specific 'townships' which are participants and non-participants in Kristiansand's exchange economy. The most reliable data for such analysis would be from the kret, i.e., fourth order data. Unfortunately, kret data is not available in the published census. In lieu of fourth order data, the third order data (from the larger bygder or 'township' units) has been correlated with the service ratio for the northern three bygder of the valley. A comparison of the calculations for the northern 'townships' with those of the entire valley allows analysis of Bygland's role in the changes that have occurred.[11]

The correlations for 1929 show distinct differences in the first four land use classes, some having strong negative correlations, others weak, others positive correlations. The two largest farm classes show negative correlations for the inner three bygder which are similar to the correlations for the entire valley. The regressions, however, seem to show different trends for the first four farm classes toward the interior than in Bygland, but similar trends for the last two (larger) classes. Common factors evidently

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[11]Correlation for single bygder cannot be obtained because there is only one "observation" for the computer. The correlations for Setesdal and "upper" Setesdal should be used with caution because of the fewer observations for computational purposes. These correlations would, no doubt, exaggerate the homogeneity of the valley. The correlations are discussed here in such a way as to minimize this basic data problem.

influence change in the larger two classes throughout the valley. Different factors operate to change farm tenure in the four smaller classes in the "inner" valley[12] than in Bygland discussed subsequently. Statistical abberations would not probably account for such differences because (1) machine observations are nearly the same for the two areas, and (2) similar trends have been particularly noted for Aust Agder's dalbygder.

Evidently, if Setesdal is "different" from its dalbygder milieu, it is so because of Bygland. Presumably the forces of exchange have influenced Bygland to a great extent. This distinctness of Bygland is revealed through further analysis. In "inner" Setesdal the population changed more directly with the service ratio than in Bygland. Correlations for seter use also differ between the inner-area and the entire area; they are strongly positive for the interior three 'townships', moderately negative for the entire valley. Similar trends in seter use have been noted for kyst- and dalbygder of Aust Agder. Viewed together, these relationships suggest that (1) seters have been factors in land tenure stability, and that (2) exchange economy is a factor of some land tenure instability for Setesdal and Sørlandet.

The 1949 calculations show an even more striking difference for "inner" Setesdal and the region as a whole. Only the largest (class 6) farms show common trends for the twenty-year period throughout the valley. Interestingly, correlations for adult population did

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[12] Here defined as the bygder of Hylestad, Valle, and Bykle.

not change for "inner" Setesdal or much for the region as a whole in the period of analysis. Total land in agriculture did, however, show greater change within the northern three bygder than in the entire area of Setesdal, but such change was not great. In view of the overall land use stability for the valley, these subtle trends must be analyzed in greater detail than is possible through simple comparisons.

Tables 7 and 8 show changes in the service personnel and total populations for the individual political units of Setesdal, including subtotals for the inner and the entire valley. A reference to absolute quantities here can add greater meaning to the relative comparisons of the correlations. The 1930 and 1950 population figures show that Bygland lost population whereas inner Setesdal gained. Thus, the relative population center of gravity shifted towards the interior of Setesdal in the twenty-year interim. An absolute loss of 257 people, coupled with a gain of 19 service personnel and the interior population displacement, indicated an apparent increase of functional urbanism in Setesdal. The absolute and relative (correlative) figures for the inner subregion indicate, however, that such is doubtfully so; the correlation shows a very stable relationship between adult population and service personnel. A greater change has occurred for the larger region (Tables 7 and 8), further strengthening the contention that the township of Bygland is the recipient of change in Setesdal.

Of importance then is the sort of change that is occurring in Bygland and its central place of Byglandsfjord. Bygland's change is

TABLE 7

SETESDAL SERVICE PERSONNEL CHANGE
1930-1950

| | 1930 | 1950 | + - |
|---|---|---|---|
| Bygland | 33 | 34 | + 1 |
| Hylestad | 3 | 8 | + 5 |
| Valle | 8 | 15 | + 7 |
| Bykle | 4 | 10 | + 6 |
| Inner Setesdal | 15 | 33 | + 18 |
| Setesdal | 48 | 67 | + 19 |

Source: Folketelling, 1 December 1930, 1950, 3rd volumes, Oslo: Statistisk Sentralbyraa, 1936, 1956.

TABLE 8

SETESDAL TOTAL POPULATION CHANGE
1930-1950

| | 1930 | 1950 | + - |
|---|---|---|---|
| Bygland | 1981 | 1504 | - 477 |
| Hylestad | 479 | 533 | + 54 |
| Valle | 703 | 756 | + 53 |
| Bykle | 382 | 494 | + 113 |
| Inner Setesdal | 1564 | 1783 | + 219 |
| Setesdal | 3545 | 3287 | - 257 |

Source: Folketelling, 1 December 1930, 1950, 3rd volumes, Oslo: Statistisk Sentralbyraa, 1936, 1956.

in the direction of a greater functional urbanism, either by "default" or its nearness to Kristiansand. Evidently Bygland's changes in service personnel lag behind population changes. "Inner" Setesdal shows no such relative trend for the twenty-year period.

Towards the interior of the valley population and service personnel are slowly increasing. The order of service growth from greatest to least by bygder is Valle, Bykle, and Hylestad. For population growth the order is Bykle, Hylestad, and Valle. Correlations for the individual units are not possible here, but from the above rankings Valle's service personnel growth is greater than the population would warrant. Such a growth in urban functionalism may be expected, however, from the analysis of Valle's physical geography (see Chapter II), Bykle's service personnel growth is less than warranted by population growth, indicating that two factors may be at work: (1) a higher relative degree of regional self-sufficiency, seen here to be the product of the interaction of geography and cultural traditionalism and/or (2) an incipient dependence upon Valle as a service center. The population increase of Hylestad is seen to be primarily related to accessibility to the interior as discussed in Chapter II.

## ANALYSIS OF RESIDUALS

An analysis of residuals of regression are of interest at this point in the study. A residual of regression is the difference between the calculated value of the service ratio (as determined from the independent variable) and the actual service ratio value.

Residuals have generally been used in three ways in geographical analysis, as summarized by Thomas: 1) to formulate new hypotheses and identify new variables of value to the study, 2) to establish or modify regional boundaries, 3) to isolate areas for further intensive study.[13]

A study of the 1929 residual values for greater Setesdal (the four principal townships plus Hornness and Evje, Table 7) yields certain interesting interpretations. The residual values for the area of Hylestad are high compared to those of the neighboring political units of Bygland and Valle, further justifying the division of Setesdal into two regions: Øvre and Ytre Setesdal (see Chapter II). In other terms, Hylestad in the year 1929 is different in terms of land use (size of farm criteria in Table 7). The higher residual values also expressed by the other residual criteria for Hylestad most nearly approach those for the more southern 'township' of Hornness, justifying the conclusion that both Hornness and Hylestad were, in 1929, isolated and sporatically settled areas.

In the more general sense the 1929 residuals from regression show that two of the four 'townships' of Setesdal do not conform well to an expected continuum of economic development. From concept of a continuum one would expect development to decrease in relation to greater distance from the principal center of economic development,

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[13] Edwin N. Thomas, "Maps of Residuals from Regress," in Spatial Analysis, A Reader in Statistical Geography, Brian J. L. Berry and Duane F. Marble, Eds., Englewood Cliffs: Prentice-Hall, Inc. 1968. A brief discussion of residuals that notes studies employing residuals subsequent to 1960 (the original publication data of Thomas op. cit. is L. J. King, Statistical Analysis in Geography, Englewood Cliffs: Prentice-Hall, Inc., 1969).

Table 9

RESIDUALS OF REGRESSION (GREATER SETESDAL* 1929)

| 'Township' | Land Use** Class: I | II | III | IV | V | VI | Adult Pop. | New Land in Prod. | Land in Seter | Total Ag. Area |
|---|---|---|---|---|---|---|---|---|---|---|
| Bykle | +.85 | +.97 | + 8.71 | + 9.12 | +10.05 | +9.75 | -12.51 | -8.29 | +15.00 | +.21 |
| Valle | -8.52 | -14.97 | -4.91 | + 1.66 | + 4.55 | +54.06 | -8.70 | -12.22 | +10.87 | +7.50 |
| Hylestad | +65.53 | +60.43 | +69.43 | +75.40 | +74.80 | +74.82 | +55.06 | -54.70 | +79.73 | +66.80 |
| Bygland | -13.96 | -30.49 | -20.72 | -19.93 | -10.81 | -1.70 | +10.55 | -14.81 | -15.77 | -10.58 |
| Hornness | -45.06 | -57.49 | -48.19 | -48.53 | -48.20 | +60.72 | -51.18 | -42.82 | -45.45 | -52.30 |
| Evje | -39.34 | -13.25 | -26.97 | -31.53 | -30.70 | -26.64 | -37.49 | -39.04 | -25.44 | -32.56 |

* Greater Setesdal includes the four principal townships of the study plus the two outer townships of the old Roabyggelag administrative district.

** See tables 5 and 6 for definition of land use classes.

Table 10

RESIDUALS OF REGRESSION (GREATER SETESDAL* 1949)

| "Township" | Land Use** Class: I | II | III | IV | V | VI | Adult Pop. | New Land in Prod. | Land in Seter | Total Ag. Area |
|---|---|---|---|---|---|---|---|---|---|---|
| Bykle | -7.58 | +459.18 | +117.88 | +6.81 | +104.98 | -296.93 | +156.54 | +5.12 | +39.38 | -511.08 |
| Valle | -21.17 | +390.62 | +104.75 | -3.69 | -148.50 | -782.64 | +34.42 | -35.80 | -103.37 | -160.55 |
| Hylestad | +3.13 | +196.51 | +93.48 | +1.82 | -115.47 | -229.01 | +156.21 | +39.89 | -39.70 | -548.08 |
| Bygland | -141.49 | -301.48 | -113.24 | -182.15 | -298.73 | -751.20 | -323.07 | -201.12 | -17.89 | +139.74 |
| Hornness | -254.78 | -132.76 | -171.64 | -151.90 | -206.11 | -68.33 | -173.66 | -275.81 | -231.77 | -361.51 |
| Evje | -133.33 | -276.09 | -131.38 | -191.89 | -231.50 | -168.65 | -104.80 | -138.04 | +373.86 | -162.08 |

* Greater Setesdal includes the four principal townships of the study plus the two outer townships of the old Roabyggelag administrative district.

** See tables 5 and 6 for land use classes.

Kristiansand. Apparently economic development has had a "leap-frog effect" from Bygland bypassing Hylestad to Valle. Field observations and a very careful analysis of the physiographic maps of Setesdal indicate that the lack of development in Hylestad may correlate with the roughness of the terrain, that is, the lack of continuous level area.[14]

Study of the 1949 residuals of correlation yield a somewhat different interpretation than for the 1929 residuals. The residual values for 1949 are much higher than those for 1929 because of the urban sprawl effect particularly in the coastal townships.[15] A comparison of these values for the two different time periods shows that the least changes have occurred for the 'townships' of Bykle and Hylestad, another way of saying that these areas have benefitted the least from the economic development that has eminated from the coastal regions in general, Kristiansand in particular.

The underdeveloped areas (relative to Setesdal) of Bykle and

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[14]In a very general sense the model described here conforms best to either a spatial model of Mydral's process of cumulative causation or Friedmann's centre/periphery model. In both cases the "trickle down" effect (decrease of production/income from the regional center) is continuous and uninterrupted by "barriers" or areas of unexpected underdevelopment. Setesdal does not conform well to these expectations in 1929 because Hylestad is an area of exceptional underdevelopment when compared to its neighbors of Valle and Bygland. See D. E. Keeble: "Models of Economic Development" in Socio-economic Models in Geography; R. J. Chorley and Peter Haggett, Eds., London: Methuen 1968, pp. 243-287; pages 257-266 are of greatest interest to this discussion.

[15]The Norwegian census material attempts to separate urban and rural data. In this analysis only rural data was used in order to avoid a distortion because of unduly high urban values for the service ratio. The residuals for 1949 are high because such distortion is unavoidable when urban sprawl occurs and the affected rural areas have not been reclassified as urban. Such a situation has occurred around Kristiansand and Arundal and Grimstad.

Hylestad then offer a possibility for further analysis because of their retarded economic development. The available data (Table 9) indicates small sized farms, especially classes 1 and 4, and the amount of land in seter may be a good indicator of what is termed in this study relative self-sufficiency. If in fact a subsistence economy does have either a definitive or shadowy (non-definitive) spatial organization, it may well involve such factors as innmark (intensive cultivation) and utmark (in Setesdal, the seter), as they adjust with the pulses of economic development, whether these economic pulses be the initial diffusion of an exchange economy into the region or later ebbs and flows of trade which are the product of bad and good times respectively.[16]

These data may be viewed in yet another fashion. The residuals for Hylestad and Bykle suggest that the citizens of these 'townships' do not respond (correlate well) with the service ratio; the residents of Bygland and Valle do respond to a greater degree to the service ratio. A question remains: if Hylestad and Bykle are relatively unaffected by the service ratio, what do they respond to, what is the frame of reference, the factors, that govern changes in their farming activities, the planting of crops, their use and disuse of seter, the

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[16] The hypothetical model described here most nearly conforms to Hoselitz's picture of parasitic cities. In the model Hoselitz posits that some cities, particularly in medieval Europe, grew at the expense of the surrounding country side. The models (Hoselitz's and the one described in the text) differ in that Hoselitz assumes that parasitic cities enjoy an unchallenged field of competition in their service area whereas the empirical evidence presented here portends that such may not always occur, that a subsistence economy may in itself be able to compete to a certain extent (within certain parameters subsequently discussed) with an exchange economy. See D. E. Keeble, op. cit., pp. 284-285.

abandonment or nonabandonment of farms? Strictly speaking the question is beyond the scope of this study but within the legitimate framework of an analysis of residuals,[17] and one therefore may be allowed to attempt a hypothesis. Setesdal appears to be a bipolar world with respect to decision making processes. The farmers of some areas, Hylestad and Bykle, may choose to emphasize the natural environment while not totally disregarding the economic environment in making decisions regarding their agricultural activities. Other farmers in other areas (Bygland and Valle) choose to emphasize the economic environment without totally ignoring the all important physical environment with regard to the decisions that affect their livelihood. In other words different farmers in different areas choose to play the farming game differently. These differences may occur because of long standing traditions, or fear of participating in market activities or both. The hypothesis furthers the notion of Myrdal that non-economic factors have too long been ignored in the analysis of economic activity.[18]

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[17] Criterion 1 of Thomas, op. cit.

[18] This analysis indicates that game theory may be a profitable means of discerning the nature of subsistence systems at least for small areas. A basic reference to game theory is Peter Gould's "Man Against his Environment: A Game Theoretic Framework," Annals, Association of American Geographers, Vol. 53, pp. 290-297, which presents a fairly simple means of analyzing a "bipolar" game, i.e., where the decision maker is confronted with a simple dilemma of two choices. Myrdal's statement has been presented in Chapter I, p. 3.

## PARAMETERS OF RELATIVE SUBSISTENCE

The discussion of the regionalization of the correlation values has been necessarily detailed to suggest parameters of subsistence for Setesdal. Two closely related problems are encountered at this point: (1) the feasibility of establishing land use parameters for traditional areas, and (2) the isolation of specific parameters of relative subsistence for Setesdal. In effect the discussion of this chapter is relevant to accepting or rejecting the minor hypothesis that a subsistence cultural system may be recognized and delimited by the analysis of combinations of land use criteria. More specifically, cultural lag is manifested by high values of population density and a great fragmentation of land holdings which is coupled with low values of urban services.

The general proposition of the minor hypothesis seems to be acceptable in the light of the foregoing discussion. The variance between degrees of functional urbanism and particularly the number of large farms and land in _seters_ throughout the more traditional areas of inner Aust Agder as well as Setesdal suggest acceptance of the hypothesis for the area studied.[19]

The specific criteria used, however, do not exactly fit the case of the study area of Setesdal. The data does not indicate that high

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[19] A conclusion which generally agrees with the rejections of "factory farm" methods, such as collectivization in Eastern Europe by peasants and other traditional agriculturists. See Ardrey's _The Territorial Imperative_, _op. cit._, pp. 111, 112 for a general discussion of this problem.

values of population density are necessarily coupled with low values of urban services and excessive land fragmentation in Setesdal. Indeed the relationship between population density and the use of land is more complicated in a number of ways. First, standards for the measurement of "high" population per unit area do not exist, and second, if they did, Setesdal probably would not qualify as a densely populated region. One characteristic of Setesdal's population, its stability, is interesting with respect to land use. The low correlation values between the service ratio and change in Setesdal's adult population indicates that the natural stability of the population (uncomplicated by, especially, excessive immigration that would obscure the meaning of such figures) may well be considered a factor in the continued relative self-sufficiency of the area. Two other parameters stand out as being relatively significant, namely land in seter and new productive land (Figure 24).

The striking negative change in seter use with change in the service ratio indicates that seters are either indicative of intense self-sufficiency or else, as in the case of Bykle, incipient economic development. The significant -.67 value shows that animal husbandry plays an important part in the ongoing traditionalism of Setesdal, regardless of whether the products of seter use find their way to the markets of the large central place or the individual farmstead's storehouse.

New land in production also seems to be a factor in the relative self-sufficiency of Setesdal although less so than seter use, as shown on Figure 24. In a very general sense the correlation values

for the six land use classes are what is to be expected from the preceding analysis of Aust Agder; greater positive change has occurred in the smaller holdings than in the larger. These conclusions merely suggest some land use characteristics that may inhibit economic development in the traditional agricultural economy.

## SUMMARY

In summary, functional urbanism seems to be slowly spreading into all Setesdal, but in an uneven pattern as conditioned by cultural-geographical factors. Valle is emerging as a service entity for the central portion of the valley, partly through the process of creating new markets and partly through preempting other markets, such as those of Byglandsfjord. Setesdal then is "different" from its dalbygder counterparts in Aust and Vest Agder, a difference that appears to be an amalgam of traditional subsistence and entrepreneurship as influenced by the lay of the land, as shown in Chapter II.

The community of Byglandsfjord emerges as an interesting possibility for further study. The community's changes in service personnel lag behind its population changes, which is to say that service functioneers did not decrease in the twenty year span shown on Tables 7 and 8, but population did. This may possibly be explained through an expansion of Byglandsfjord's hinterland. Myklebost, however, in his research on towns in Norway does not list Byglandsfjord in his classifications of central places, even though as shown the service industries are becoming economically more important to the community. From this one may conclude that Byglandsfjord is indeed an incipient central place whose form and economic function may in

the future qualify it to be included in Myklebost's listing of centrality.[20]

In general, the techniques and parameters used in the foregoing analysis do enable a greater geographic focus upon the direction and degree of regional change. Regardless of the general and specific limitations of the approach, distinct patterns of change and non-change are revealed and a comparative analysis of the change in both the absolute sense, using basic census data, and the relational sense, using correlative techniques.

Seter use is seen particularly as a mainstay of subsistence. One can only hypothesize as to the seter's function in the ebb and flow of subsistence in the face of an expanding exchange economy. There is a suggestion, as in the case of Bykle, that the seter is an ever-present source of additional production during hard times. Further, it is possible that the use of seters may have been, in past generations, incorporated as an important land use factor in the core value system of Setesdal's culture, accounting for the persistency of use there and perhaps throughout Scandinavia.

The data presented in this chapter substantiates Myrdal's contention that market forces in fact operate in such a way as to cluster economic activity in certain localities.[21] Other material

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[20] See p. 26 for a reference to Myklebost's methods of determining centrality which considers both the geographical form and the economic functions of communities.

[21] See p. 114, this chapter.

of this dissertation has shown that the expansion of market forces and centrality is tempered by other barriers to development, which are summarized in the final chapter.

# CHAPTER V

## URBAN-RURAL RELATIONSHIPS IN SETESDAL: A SUMMARY OF THE SPATIAL IMPACT OF ISOLATION

This study has focused upon space relations between rural Setesdal and its surrounding major urban centers as well as the urban-rural relations within Setesdal. The results of the research can be useful in the further conceptualization of the geography of changing urban-rural relationships through focusing on dichotomous or isolating and interactional components as illustrated by this Norwegian example.

### THE DICHOTOMOUS COMPONENTS OF URBAN-RURAL RELATIONSHIPS

Chapter II shows a complex cleavage between the majority of Setesdal and Sørlandet's largest city, Kristiansand. The diffusion of services, especially retailing, into all of Setesdal has been accomplished since the completion of the Setesdalbanen in the 1890's. The historical geography of the spread of Kristiansand's system of exchange economy and the resulting competition with that of Arendal is especially complicated, involving economic, political, and spatial considerations. In general, economic ties have certainly reduced Setesdal's isolation, indicating that economic activity is the prime motivation for urban-rural interaction in the study region.

This research suggests that Setesdal's and Kristiansand's social and political differences have been emphasized during the period of

increased economic interaction. These differences have a spatial function in that they are a barrier effect or boundary to the dissemination of certain kinds of ideas. Apparently, various forms of economic development have been resisted so that they have not yet been totally destructive to Setesdal's original culture. If emigration and population increases are objective correlative criteria, such figures for Setesdal may be interpreted as showing a very slow economic development in the twentieth century as well as before.

## THE HYPOTHESES AND THE MODEL

The hypotheses and a model of the forces of centrality have been presented in the first chapter. The hypotheses are "complementary" in the sense that they allow an examination of the conclusions at different levels of abstraction, specifically described on pp. 17-18. The major hypothesis then allows an examination of a more specific proposition, in the context of the material presented in subsequent chapters.

The major hypothesis is that "central places are unable to develop in areas of a stable land use system." The hypothesis posits the idea that the forces of exchange economy can be, at the will of a host culture, kept from transforming the population agglomerations of a subsistence region. The research, however, indicates that probably there is little a culture can do to stop the growth of central places. The hypothesis, therefore, must be rejected on the grounds that any cultural boundary to innovation is naturally complex and such complexity will probably admit some, perhaps the most profitable, elements of innovation but reject others.

The results of such partial dissemination of ideas is a geographically complex region which is perhaps both nodal and homogeneous at the same time. The villages of the region may focus upon a central place hierarchy whereas the hinterlands of the small places may not. Some economic concepts have passed through the barrier of traditionalism, while certain political and social concepts have not.

Further interpretation of the data indicates that an urban-rural dichotomy should be defined in holistic terms, not only through economic but also through social and political criteria. Assuming that urban-rural cleavages must be holistically complete to be judged dichotomous, sundering of urban-rural relationships does not now exist between Kristiansand and Setesdal. An analysis of historical information indicates that probably a complete separation of urban-rural relationships did exist for parts of Setesdal before the establishment of a post route in the 1840's. Before the 1840's some interaction between town and country existed, but such inter-change is viewed as insignificant in Setesdal.

Economic contacts between Kristiansand and Setesdal were geographically insignificant in former times because the barrier to the diffusion of Kristiansand's economic thrusts were relatively effective. In other words an urban-rural dichotomy may be said to exist when outside economic penetration does not disturb a relatively self-sufficient economy. Such resistance to "outside" economic forces has taken the form of (1) a buyer's resistance to products from the outside, or (2) the use of certain "economic supplements," expanded use of seters in Setesdal, to fortify and retain the local economy, or (3) both.

THE INTERACTIONAL COMPONENTS OF URBAN-RURAL RELATIONSHIPS

An analysis of the historical geography of the urban-rural interaction between Setesdal and Kristiansand suggests that the spread of the latter's exchange economy has been the chief component of this relationship, as already noted. Apparently, the extension of Kristiansand's services to the interior of Sørlandet has occurred because of the need for (1) new or different supply areas, and (2) new or different markets, or (3) both. Kristiansand's interest in exploiting the interior area seemingly had come about through increasing foreign trade difficulties and other external economic uncertainties. The interior areas of Vennesla and Setesdal were unperturbed by economic and other misfortunes abroad because of the very nature of their isolation.

Space is seen to have had an effect during the development of the economic component of urban-rural interaction. During times when Kristiansand's merchants were transforming and developing the areas mentioned, the mixture of subsistence and exchange economy decreased with distance from Kristiansand. Chapter III suggests that (1) subsistence has existed in higher degrees as greater distance is traversed from Kristiansand, (2) subsistence economy is most evident during periods of economic depredation, and (3) the bridging of space through an increase in accessibility has occurred particularly during such times of economic downturn.

Evidence from Setesdal suggests that traditionalism has been persistent during this century. The defense of these folkways has

taken the form of a political and social resistance to ties with Kristiansand. In this respect, isolation was a cultural barrier to innovation. Such resistance to the dissemination of ideas through space slowed the economic growth. The outlying areas vary in their dependence upon a central system of exchange according to what is most profitable to them.

In such a situation the location of the boundary of isolation between the rich and the poor, between exchange and subsistence, between the nodal and homogeneous region, may become particularly complex. In reality then Gunnar Myrdal's application of the autonomous processes of the creation of wealth and poverty, his theory of cumulative causation, takes on a very intricate geographical pattern.[1]

The purpose of the minor hypothesis is to suggest criteria for the identification of the complex regions discussed in the preceding paragraph. This hypothesis is that "a subsistence cultural system may be recognized by the analysis of combinations of land use criteria." This hypothesis in general terms can be tentatively accepted in the case of Setesdal. The acceptance of the hypothesis at this time is only of value for heuristic purposes.

Finally, the model of the relationships between economic,

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[1]Klausner, op. cit. pp. 26-27 (Chapter II, p. 74, this study), substantiates this conclusion concerning boundaries in a general way. He terms such an intricate system of boundaries a "pattern maintenance boundary", which is a zone of tension between two different politics, here exchange and subsistence systems.

social, and political forces of centrality, Figure 1a, Chapter I, appears to be a satisfactory model of changing urban-rural relationships in Setesdal. The model appears realistic because it has been shown in the case of Setesdal that feedback in the form of social and political resistance to ties with an economic control center correspond to aggressive exploitation from that center. In other words the maintenance of isolation should be viewed as an equal component of the culture of Setesdal.

Further refinement and testing of these concepts must await additional cross-cultural comparative and regional studies. In the words of J. Russell H. Whitaker, "The way lies open."

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# APPENDIX 1

# APPENDIX

## A Statement of Relevant Anthropologic and Geographic Theory and Cultural Change

The first chapter of this study emphasizes in one sense the need for understanding the effect of non-economic factors in cultural change. Enough information, including selections from the literature of urban geography, has been presented in that chapter to illustrate the results of omitting a consideration of the non-economic factors. This appendix is an attempt to further document the progress of anthropologists and geographers in cultural diffusion, and to relate diffusion theory to central place theory. This material is placed in the appendix so as not to detract from the central purpose of the larger study, the documentation of cultural lag in Setesdal.

Chapter I asserts the thesis that a consideration of non-economic factors is necessary for understanding the incipient development of central places. Assuming non-economic factors dominant in a rural folk area, then it follows that such a society may not wish to participate in exchange economy, and thus that the growth of towns may not conform to the expectations of central place theory. Hypothetically, certain areas may or may not be free to participate in an exchange economy,

as they prefer. From the perspective of traditional economics[1] a non-participating group may appear to lag in terms of its development. Such a phenomenon is commonly called "cultural lag".

Cultural lag is a topic that appears in abundance in the literature of both geography and anthropology. For example, George Carter has no fewer than twenty-eight index references to lag situations in his Man and the Land. However, Carter does not explicitly define the term. Anthropologists, too, allude to "lag" situations but seem not to agree on a definition of the term.[2] Apparently, there is no theory of lag that has been forthcoming recently from either the anthropologists or the geographers.[3]

In a sense then the term "cultural lag" is poor, because it is ill-defined. However poor or ill-defined the term, an understanding of the concept of lag is essential to the analysis of the play for forces that might exist on either side of a hypothetical urban-rural dichotomy. A general search of the

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[1] Described on p. 9.

[2] A diligent search of the literature and a request for aid has yielded little substantive in the definition of the term. See R. S. Trindell, personal correspondence.

[3] Which is not to say that anthropology lacks for a theory to explain "backwardness" in the past. These ideas are explained by Beals and are controversial today.

anthropological literature on acculturation[4] (the most likely antithesis to lag) indicates that that concept has come from the many cross cultural comparisons existing in anthropology. Clearly, the concept of acculturation is an empirical-inductive rather than a logically - or hypothetic-deductive concept. Beals demonstrates that the literature of acculturation has not greatly sharpened the concept or developed a theoretical structure of acculturation.[5] If the great interest in acculturation has produced little theory on the subject, one can begin to understand why its antithesis, cultural lag, is poorly defined.

Turning to literature on economic development yields further understanding of the term "cultural lag". Those interested in development have sometimes become preoccupied with the concept of backwardness. For example, one school of thought says that economic decisions (in peasant societies) are entirely determined by tradition (that is, a set of inflexible rules), and consequently, the village economy in general violates the economic principle of product (utility) maximization. Others say that the village

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[4]Defined by Redfield, Linton, and Herskovits in 1936, "Acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent change in the original culture of either or both groups." Quoted in Beals, op. cit.

[5]Ibid., p. 638.

conforms to the standards of this theory, that maximization is present, but that the values inherent to maximization differ.[6] The goals of one society may not be the goals of another, hence who is "backward"? Who lags?

How can such cultural resistance be explained? If hypotheses are given, perhaps cultural lag can be conceptualized, at least for the purposes of this study. Castillo poses a situation wherein a peasant cannot benefit from new technology, because those innovations are geared toward the needs of commercial rather than subsistence farmers.[7] Everett Rogers, in a paper in the same symposium, suggests that economic maximization may be deliberately avoided because of traditional predispositions to shun the "risky, novel, uncertain."[8] This would appear to be a hypothetical confirmation of Gould's concept of the absorption barrier to diffusion.[9]

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[6]See: Nicholas Georgeseu-Roegen, "The Institutional Aspects of Peasant Communities: An Analytical View," in Clifton R. Wharton, Jr., Ed., Subsistence Agriculture and Economic Development. Chicago: Aldine, 1969, p. 84.

[7]Gelia Castillo, "A Critical View of a Subculture of Peasantry," in Ibid., p. 137.

[8]Everett M. Rogers, "Motivations, Values, and Attitudes of Subsistence Farmers: Towards a Subculture of Peasantry," Ibid., p. 117.

[9]Peter Gould poses (but does not document) the existence of a reflexive barrier to diffusion. This barrier may be likened to the reverse of a gravity model where the innovation becomes an index of repulsion rather than attraction between two geographical entities. See Peter Gould, "Spatial Diffusion", Commission on College Geography, Resource paper No. 4, Washington: Association of American Geographers, 1969, p. 11.

Equivalent statements at the same level of generality seem not to appear in the literature of anthropology, where emphasis seems to be

> ". . .upon the continuity of the traditional pattern and postulation of particular evolutionary stages. Where the approach has been less committed to one of these extreme positions, it (socio-cultural integration) has usually dealt only with special aspects of culture suggesting developmental stages in such features as religion or political organization."[10]

A further search through earlier anthropologic literature yields little on the topic of lag, even where one might expect a discussion, for example, in reviews of the contacts between cultures.[11]

For the purposes of this study, how can cultural lag be defined? Is cultural lag a condition or a process?[12] Can cultural lag legitimately (i.e. without undue ethnocentrism on the part of the investigator) be said to exist between totally different cultures having different norms, or is it a phenomenon or process that can be theoretically justified only between a system and some closely related subsystem?[13]

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[10] Julian H. Steward, "Levels of Socio-cultural Integration, An Operational Concept" in Robert Manners and David Kaplan, Eds. Theory in Anthropology, Chicago: Aldine, 1968, p. 130.

[11] The reader is directed to two principle statements in this respect, Melville Herskovits' Acculturation, the Study of Culture Contact, Gloucester, Massachusetts: Peter Smith, 1938, and Ralph Beals, "Acculturation" in A.L. Kroeber et al Anthropology Today, An Encyclopedia Inventory, Chicago: The University of Chicago Press, 1953, pp. 621-641. Both of these studies review the literature of culture contact and generally confirm the statement given in the text. Beals proposes that more consideration be given to the reciprocal nature of change (p. 638).

[12] Note that Beals asks the same question of acculturation, op. cit., p. 626.

[13] That is to avoid the problems of ethnocentrism that may always occur in the cross cultural approach.

The question is important to this discussion because diffusion between cultures having greatly different norms is seen by this writer to be theoretically different from diffusion between a group of the same culture. A basic assumption of this research is that Setesdal is a subsystem.

The present study is oriented towards the isolation and definition of the process of the maturing of relationships through space between urban and rural entities. For the purposes of this dissertation cultural lag may usefully be considered as a process. The problem then remains to ascertain whether the process in question occurs between two separate and distinct systems in the sense of the cross cultural comparisons typical of anthropology, or if a system and a subsystem are involved.[14] Fundamentally the question must be posed as to whether a dichotomy can exist between a system (of cities) and a subsystem (rural, even subsistence economies). Such questions can not be answered in a priori fashion, but must be decided upon the basis of the empirical evidence and the inherent nature of the forces of change. The answer of many

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[14] Everett Rogers suggests that the relations between peasants and urbanites be considered in the system-subsystem context. Rogers' assumption is that meaningful generalizations about peasants as distinct from say urbanites or commercial farmers, can be made. In discussing the nature of the contact between the subculture of peasantry and its surrounding milieu, Rogers indicates that some members of a peasant society must have a cosmopolitan attitude, but that the nature of the impact (whether they be "gatekeepers" or "cultural brokers") has not been adequately studied. See Everett M. Rogers, "Motivations, Values, and Attitudes of Subsistence Farmers: Towards a Subculture of Peasantry" in C.L. Wharton, Jr., Ed., Subsistence Agriculture and Economic Development, Chicago: Aldine, 1969, p. 127.

urban geographers has been negative. (See the discussion of relevant literature in Chapter I, particularly p. 22).

In regards to the concept of cultural lag, the following working definition of the term is presented. Cultural lag is considered to exist when a farming society is unable or unwilling to participate to its maximum ability in an exchange economy. Implicit to this definition is the concept of utility or product maximization, i.e., that the aforesaid agrarian society does not accept the values of utility maximization of the exchange economy.[15] The appropriateness of this definition of lag with respect to Setesdal has been commented upon in the final chapter.

If lag as a process exists, then at any one time, the forces for and against change are in equilibrium; i.e., a force for change must be balanced with a force (feedback) against that change. In this regard the question can be asked, is there a place in the workings of the hierarchical system that geographers call central place theory where cultural lag can be predicted to exist? This requires looking at the theory in an unusual way, not from the viewpoint of the integration of the urban economies with a hierarchy as is typically done, but rather looking for evidence of isolation.

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[15] A concept suggested by Castillo in "A Critical View of a Subculture of Peasantry," Wharton, Jr., op. cit., p. 137.

## Central Place Theory and Isolation

Is there anything in central place theory that would suggest isolation? Can the theory account for or indicate conditions that would to an uncommon degree indicate the presence of isolation some place in the hierarchy? Does the very nature of such a hierarchy itself lead to degrees of isolation for some cities?

The rank size rule formulated by urban geographers, for example, shows that the rank of a city is equal to the population of that city raised to an exponential constant divided into the population of the primate city of the country. Further, the rank size rule indicates that a few cities can be expected to be very large, and a great many cities, very small. From this it follows that the density of urban population would likely decrease towards the lower portions of the hierarchy. Smaller urban places are in a sense then isolated by virtue of their smallness. Additional degrees of isolation may be related to their fewer service functions. The spatial range (the range of a good) of the service functioneers of smaller towns is less than those of larger communities; the hinterlands of small towns are small, and those of large towns and cities large. There are fewer linkages between small towns. People have less reason to travel between these places, and so, there is every likelihood that the communication net between villages will be less well developed than between the larger urban entities. These observations suggest that isolation increases towards the base of the urban hierarchy.

Isolation may be usefully conceptualized in the terms used in the preceding paragraph. Isolation is then a physical phenomenon (as outlined and sketched in Chapter II); also, isolation can be thought of as an implicit factor of systems. General systems theory leads us to expect degrees of isolation in a system and provides clues as to how to recognize such isolation.[16] Two principle notions of general systems theory are of interest here, that of information and entropy. Information (sometimes called negative entropy) is a measure of the order or organization present in a given system. The organization of the system obtains from the constraints on the system, thus, a closed system is likely to have more "information" than an open system. A completely closed system is one wherein no energy is lost, no effort is wasted, for example, and so is said to be a deterministic system. Information is the result of some regulator or regulators in the system, parts of the system that proscribe the behavior of other parts and thus the whole system. The opposite of information is entropy. Complete entropy would be an utter lack of information; a complete diffusion of energy in an aimless or random fashion because of the lack of systemic constraints. Entropy is then a measure of the randomness present in a system, or in the parlance of some geographers or mathematicians, a measure of stochastic

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[16] L. von Bertalanffy has published what is probably the most definitive volume on general system theory, his General Systems Theory, New York: George Braziller, 1969.

processes.

To what extent is the geographer's central place theory a deterministic or a stochastic system? The application of this question should enable one to understand the strength of the linkages in and between the hierarchical niches of the central place hierarchy. Brian Berry has supplied some answers to these questions in a study of the central place hierarchy as a system.[17]

In his evaluation of the central place hierarchy as a system, Berry indicates that the number of business places in a given community should be a measure of the information generating capacity of that place, and through implication, a comparison of the number of these business establishments from town to town will give a relative indication of the degreee of entropy or isolation between these towns. Of course, towns on the lower end of the hierarchy will suffer relatively greater isolation from those higher on the ladder, than from each other.

A genetic or time-series analysis, according to Berry, should allow the researcher to understand the processes at work. The presence of entropy between various niches of the hierarchy is seen here as an indication of "deviation correcting" tendencies. Entropy, then, becomes a measure of the ability of a subsystem to correct for or resist the influx of new ideas, for example, the

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[17]Brian J. L. Berry," Cities as Systems within Systems of Cities" in A. Friedmann and Wm. Alonge Eds., Regional Development and Planning, Cambridge: The M.I.T. Press, 1964, pp. 116-137.

spread of an exchange economy. External information then is a "deviation amplifying" process, one that would continually push the system towards change, for example, a rapid spread of exchange economy and attendant development of central places. What measure of entropy could be found in a place such as Setesdal? The hypothetical answer is feedback or an apparent negative reaction to economic development.[18] As Berry indicates, the system as a whole (i.e. central place system) cannot be understood until each of the subsystems are understood. For this study, Berry calls for an analysis of the relationships between Setesdal and the urban entity of Kristiansand in the terms of general systems theory.

The foregoing discussion indicates the partial use of the term isolation in the study. In addition to the more common usage, detailed in the second chapter, isolation implies the presence of entropy. Entropy is defined as a force (feedback) which mitigates against the forces of change (i.e. those forces of an exchange economy eminating from Kristiansand). Entropy or feedback is seen as being negative to change and positive to conformity in Setesdal. Feedback is a pressure that corrects a tendency of the subsystem to deviate from its former state.

The conceptual framework of isolation presented on these pages fits Myrdal's thesis of circular causation. In the urban hierarchy, Berry indicates that the operation of circular causation would lead

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[18] The conclusions of the present study.

progressively to a greater centralization of urban functions in fewer and fewer larger cities.[19] Thus, are the processes at work in Sørland, Norway, deviation correcting (thus, protecting the rural subsistence folkways) or deviation amplifying, or constantly strengthening the upper niches of the hierarchy? Berry's words provide a frame of reference for further study in this respect for this research:

> ...Any system, together with the subsystems into which it may be partitioned, contains many examples of both deviation correcting and deviation amplifying processes. One subsystem may be coming more highly organized, another may be approximating its most probable state. To understand the system as a whole demands that each of the subsystems be understood, as well as the relationship between them.[20]

## Cultural Lag and Systemic Isolation

If the concepts presented here on cultural lag and systemic isolation in central place theory are considered together, some generalizations emerge. Cultural lag has been tentatively defined as the unwillingness or inability of a farming society to participate to its maximum ability in an exchange economy.[21] This definition is a reasonable expectation based upon comments from literature on the interaction between farmers and urbanites. From the view of systemic

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[19] Berry, op. cit., p. 132, Berry specifically mentions Myrdal's Theory.

[20] Berry, Ibid.

[21] See footnote 14.

isolation, resistance to change in the form of feedback is theoretically plausible and consistent with the views of central place theory.

## Towards a Systems Approach to Cultural Diffusion

Cultural Diffusion, as a topic of analysis is frequently included within the purview of both anthropology and geography. The successful or non-successful transmittal of an idea or trait have usually been linked to the larger question of the degree of cultural development. The assessment of and explanation for cultural complexity has been the basis of at least two schools of thought in anthropology, the diffusionists and the evolutionist, according to Lévi-Strauss.[22] The evolutionist sees an underdeveloped situation (such as that of Setesdal) as a sort of relic landscape, using geographical terms. Such people then represent "survivals" of an earlier age.[23] The diffusionist would explain underdevelopment in the general terms of cultural lag, of particular interest here.

These students of diffusion have further conceptualized the process.[24] The diffusion of traits and ideas between cultures must

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[22] C. Lévi-Strauss, Structural Anthropology, New York: Basic Books, 1963, p. 5.

[23] See the section in Chapter 2, "Recent Views of Setesdal's Culture" containing excerpts from the press on Setesdal which is a summary of an essentially evolutionist view of Setesdal, pp. 39-46.

[24] For purposes of analysis the diffusion of culture is assumed to be a process, see footnote 12.

logically be appraised in terms of degrees of acceptance. Thus, there are "degrees of acculturation", and so "partially or wholly acculturated individuals".[25] Such statements can quickly lead us to some question concerning the anthropological conception of diffusion. Take the following extract:

> In the case of a wholly acculturated individual, clearly the acculturative (diffusion) process has terminated and we are speaking of a condition . . . Possibly what is generally meant is that assimilation is that form of acculturation which results in groups of individuals wholly replacing their original culture by another. . .[26]

Is the diffusion process unilinear? Does diffusion proceed in but one direction in the face of any and all obstacles?

Some anthropologists think that acculturation must be a two way process by which both (all) groups in culture contact are affected. One Latin American anthropologist has gone so far as to replace the term acculturation with transculturation so as to emphasize the necessarily reciprocal nature of most contact situations. Apparently the study of the reciprocal nature of culture contact has not been seriously considered by anthropologists.[27]

Anthropologists had apparently not scrutinized well the reciprocal nature of culture contact at least by the time of the

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[25] Quoted from Beals op. cit. p. 627.

[26] Beals, pp. 628-629.

[27] An opinion offered by Beals, op. cit. p. 628.

publication of Kroeber's Anthropology Today (1955). By the time of the publication of Manner's and Kaplan's Theory in Anthropology (1968) the implicit determinism of acculturative statements has apparently been rethought:

> It seems very doubtful that functional unity. . . characterizes many social systems. In addition, treating a social system as a functional unity without specifying the (traits) so unified results in a vague analysis and one that allows for no internal source of change.[28]

The underlined phrase in the above quote is of interest here. The author of the quote has concisely critiqued the problem, the theoretical gap, in acculturation. Stated in terms that are a paraphrase of Newton's Law, for every action there is maybe a reaction, and theory should allow room for, or provide an explanation of, that reaction.

Why the neglect of the reciprocal nature of cultural change in anthropology? Acculturation, the diffusion of traits from one culture to another, all too often according to Beals is descriptive, the analysis of the results of the process rather than an attempt to uncover its dynamics.[29] Reflection may offer additional interpretation. Diffusion studies in anthropology were often born of the cross cultural approach, which in the language of general systems theory is the contact between separate closed (in the sense of

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[28] Fancesca Cancian, "Functional Analysis of Change" in Manners and Kaplan, Anthropology Today, p. 205, Chicago: Aldine, 1968; underlining added for emphasis.

[29] Beals, op. cit., p. 628.

being unrelated) systems. Additionally many of these empirical studies were concerned with the contact between members of Western Civilization and underdeveloped peoples, situations where the innovative forces were superior to any source for internal change.

The geographer's understanding of diffusion has experienced a similar and yet different type of intellectual evolution. The maturation of the geographers' concept of diffusion was from the beginning more concerned with process than with the results of process. The preceding assertion is seen to be at least partially true by virtue of the fact that geographers apparently sought different results from their studies of diffusion than the anthropologists.

The early geographical studies in the realm of diffusion seemed to focus rather decidedly on the transmittal of material culture and dealt less with the socio-psychological sphere of cultural norms. An example of the geographers' approach to diffusion is Carl Sauer's "Agricultural Origins and Dispersals." The earlier efforts of the geographers was similar to that of anthropologists in that the analysis of evolution of culture areas must be based upon the determination of alien and native traits.[30] The early efforts at diffusion analysis by geographers were similar to the acculturation studies of anthropologists in that both were analyses on the macro-level. The anthropologists studied culture contact lag

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[30] A point suggested by a reading of P. L. Wagner and M. W. Mikesell, Readings in Cultural Geography, Chicago: University of Chicago Press, 1962, p. 203.

between distinct culture systems; geographers analyzed the flow of traits between such systems.

Gradually geographers began to narrow their focus as illustrated by Stanislawski's paper on the "Origin and Spread of the Grid Pattern Town". In his introduction, Dr. Stanislawski notes that the grid-pattern town was not immediately accepted by the new world natives from the Spanish.[31] Stanislawski seems to be saying that the transmittal of the grid-pattern town did not occur until degrees of acculturation had transpired. From the perspective of general systems theory the statement could be considered a recognition of the transmittal of traits between system and subsystem; i.e., system: Spanish; Subsystem: partially acculturated native culture. Perhaps the culmination of the evolution of the geographer's study of system-subsystem relationships is to be found in Torsten Hägerstrand's, "The Propagation of Innovation Waves".[32] In his study Hägerstrand emphasized the diffusion of motor cars in the southern Swedish province of Skåne. The Hägerstrand study is of interest in two respects: 1) the work focuses rather sharply on system-subsystem relationships, that of urban-rural entities respectively; and 2) statistical analysis is used to increase the validity of the analysis.

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[31] Dan Stanislawski, "The Origin and Spread of the Grid-Pattern Town" in Wagner and Mikesell, op. cit., pp. 318-329.

[32] Hägerstrand in Wagner and Mikesell op. cit.

Irrespective of the source of the analysis, Sweden or the United States, the geographers purview of diffusion has shifted from a cross cultural (or system-system) to a more indigenous cultural approach (the system-subsystems approach). In recent years the number of such quantitatively oriented diffusion studies has proliferated.

This brief resume of the analysis of diffusion and acculturation, those closely related terms used by geographers and anthropologists respectively, hopefully illustrates two methodological points: 1) A contact point (i.e., the geographer's boundary line) between groups of diverse culture may be better understood through examining its reciprocal nature; and 2) that general systems theory may be a readily available method for such analysis. This survey shows that these two statements are not innovative or in any way astounding, that the literature has pointed in the direction of general systems theory for some time. Yet another point has been suggested, that the contact points between culture groups is in a very real sense a boundary, and may so justifiably be part of political geography.

Figure 3, p. 10 depicts the hypothetical forces affecting centrality emanating mainly from Kristiansand and Setesdal. The empirical evidence presented in this study indicates that such a model is useful in analyzing the development (and lack of development) of an exchange economy in Setesdal. The model may also be thought of as illustrating a contact point or boundary between two diverse culture poles, in this case probably indicative of a

system-subsystem relationships.

The application of the model to the analysis of "inner-workings" of a boundary allows further understandings from the views of general systems theory. The model may perhaps offer potential for the future in terms of the control of boundaries inner-workings through the use of cybernetics. More specifically control theory may be applied to the analysis of the feedback component of the model.[33] (Feedback has been linked with the traditional folkways of Setesdal.) The dynamic model of Figure 3c could be hypothetically quantified and "generations" of change (e.g. ten year periods) then could be analyzed to understand the nature of the feedback vector. The calculations would no doubt be very difficult and tedious because the model is necessarily stochastic (probabilistic) in nature.

As Bellman shows, the tedium of the multi-stage approach may be shortcut through substitution with the "policy approach".[34] The policy approach notes the significant characteristics of the system under study. The researcher might understand the approximate (probable) reactions of Setesdølene through analysis of a few significant aspects of the feedback mechanism (such as the use of Seter, reliance upon a labor intensive system, etc.) using the policy approach. If conceptual frameworks were to be developed

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[33]For a non-technical introduction to this subject see Richard Bellman's "Control Theory" in Mathematical Thinking in Behavioral Sciences, San Francisco and London: W. H. Freeman and Co., 1965, pp. 74-82.

[34]Op. cit. p. 79.

for similar types of underdevelopment for example, the researcher's task may be simplified. He could look for diagnostic clues as to the nature of the feedback and using the policy approach then project the likely effect of the introduction of a given innovation in the region.

The geographer's preoccupation with process has perhaps prepared him in an unique way to develop a body of diffusion theory. Specifically social scientists may now be in a position to quantitatively deduce a body of diffusion theory from these process studies and the operational methods of general systems theory. In this author's mind such an approach has enormous implications for isolating, understanding, and solving the problems of economic development. Cybernetics (the engineering arm of general systems theory) may be used to adjust the feedback mechanism in such a way that product maximization may be equated with social and political maximization, permitting the process of economic development to be culturally less painful.

# APPENDIX 2

# APPENDIX

## Questionnaire

The following questionnaire was circulated by the school children of Setesdal through the kind help of Augund Brottveit of Valle i Setesdal. Of the data collected through the circulation of this questionnaire, only that from question 8 was finally included in this study, which is summarized in Table 4.

The following is a translation and the original Norwegian version of the questionnaire.

### Questionnaire

This questionnaire is written by an American researcher in order to obtain information for a doctor's dissertation. Please have the head of the family answer the questions and send the questionnaire back to your teacher. All information is confidential. Thanks, Vincent P. Miller, Indiana, Pa. USA.

1. a. How many generations has your family lived in Setesdal?(one generation = ca. 35-40 years, please fill in number). _____generation(s).

   b. How long have you lived on your farm?_____years.

   c. How long have you lived in your home?_____years.

2. How much of your income comes from agriculture?_____%

3. a. What percent of your food is produced in your own fields?____%

   b. Is other food bought from the country store(shop) (check) _____yes_____no.

   c. Is the other food from (check)_____barter with other farmers or other Setesdølene?_____barter with country store or other shops?

   d. If you barter with the country store or shops where is the shop? (Give town name:)_____.

   e. Where do you go to shop? (regularly, give town name:) _____.

4. a. Do you have labor enough at harvest time?(check)____yes____no.

   b. If no, how many other laborers do you need?_____.

   c. Are the laborers relations?(check)_____yes_____no.

   d. Where do these laborers come from?(Give name of place(s): _____

5. a. How often do you travel to the local general store(cooperative) for food(Give times per month or year:)_____month or____year.

   b. In which town?(town, city regularly visited, give name:) _____

   c. How often do you go to other stores in other towns in Setesdal? _____

   d. In which other Setesdal town(s)?(Give name:)_____.

   e. How often do you travel to the country store outside of Setesdal?(Give number:)_____per month, or_____per year.

   f. How often do you travel to other shops beyond Setesdal? _____per month, or_____per year.

   g. To which town do you usually travel(give place name(s):) _____

   i. How often do you travel to a shop in Kristiansand?_____ per month_____per year. (give number)

   j. Do you have family members(who live in your house) who work beyond Setesdal?(check:)___yes____no. If yes, give principal work place_____.

6. What is the principal reason for your family to go to a nearby town: (check:)_____church_____store_____organization affairs, or_____to visit.

7. a. Do you now use a <u>seter</u>? (check:)_____yes_____no.

   b. <u>If</u> no, when did you last use the <u>seter</u>? Give year_____.

   c. How many kilometers is (was) the <u>seter</u> from the house?_____km.

8. a. Do you favor a political consolidation of Aust and Vest Agder? _____yes_____no. (check one)

   b. Do you think that:(check:)_____Arendal or____Kristiansand best represents the political interest of Setesdal?

   c. Which paper(if any) do you read regularly (Give name of paper and town that paper comes from:)_____.

9. a. Which 'township' or place were you born?_____.

   b. (If 'township') How far was the nearest town?_____km.

   c. How does your family normally travel?_____family car _____other(neighbors car)_____bicycle _____horse(or other animal).

   d. How does your family normally go to places beyond Setesdal? _____bus_____bus and train_____family car _____other car.

   e. What is the travel time to the nearest town? (give number)_____hour(s).

## UNDERSØKELSE

Denne undersøkelse er skrevet av Amerikansk forsker for doktorgradsinformasjon. Vær så snill å ha familiehovedpersonen svare spørmålene og send undersøkelse tilbake til læren. All informasjon er fortrolig. Tak! Vincent P. Miller, Indiana, Pa., U.S.A.

1.,a. Hvor mange generasjoner har Deres familie boret i Setesdal? (en generasjon=cirka 35-40 år, vær så snill og fylt inn nummer:)_____generasjon(er)

b. Hvor mange år har De boret på denne bondegård?_____år

c. Hvor mange år har De boret i hjemmet?_____år

2. Hvor meget av Deres inntekt (erverv) kommer fra jordbruk?___%

3.,a. Hva prosent av familiemat er dyrker på gården?_____%

b. Er annen mat kjøpt fra landhandel (butikk)?(sjekk:)___ja___neg.

c. Er annen mat fra:(sjekk:)____tuskhandel med andre bonder eller andre Setesdølene?;_____tuskhandel med landhandel eller annen butikk?

d. Hvis De tuskhandler med landhandel eller annen butikk, hvor omtrent er disse butikker? (Giv byens navn:)_____.

e. Hvor gar De for landhandel? (med regelmessighet, giv byens navn:)_____.

4.,a. Har De arbeidsfolk nok i høsttiden?(sjekk:)____ja,_____neg.

b. Hvis neg, hvor mange andre arbeidsfolk søker De?_____.

c. Er disse arbeidsfolk slektninger?(sjekk:)_____ja,_____neg.

d. Hvor kommer disse arbeidsfolk fra? (Giv navn av byen -ene, stad -ene, osv.)_____

_____.

5.,a. Hvor ofte går (eller reiser) De til lokallandhandel (-samvirkelag) for mat? (Giv nummer pr. måned eller pr. år:)_____pr. måned _____pr. år.

b. Til Hvilket sted?(byen, stad, osv. med regelmessighet, giv navn:)

_____.

c. Hvor ofte går (reiser) De til andre landhandeler eller andre samvirkelager pa andre Setesdalssteder?____pr. måned;_____pr. år. (Giv nummer pr. måned eller pr. år.)

d. Hvilke andre Setesdalssted(er) (Giv navn(e):)_____

_____.

e. Hvor ofte reiser De til en landhandel utenfor Setesdal? (giv nummer:)_____pr. måned, eller_____pr. år.

f. Hvor ofte reiser De til andre butikker utenfor Setesdal? (giv nummer:)_____pr. måned, eller_____pr. år.

g. Til Hvilke andre hovedsteder utenfor Setesdal reiser De? (Giv sted (-er) navn(e):)_____

_____.

h. Hvor ofte reiser De til en Arendalsbutikk?_____pr. måned, eller, _____pr. år. (Giv nummer.)

i. Hvor ofte reiser De til en Kristiandsbutikk?_____pr. måned, eller,_____pr. år. (Giv nummer.)

j. Har noen familiemedlem (som bor i huset) arbeidet utenfor Setesdal? (Sjekk:)_____ja,_____neg.
Hvis ja, giv hovedarbeidssted:_____.

6., Hva er Deres families hovedgrunn å går (reiser) til lokalbygen? (Sjekk:)_____til kirkje;_____til landhandel;_____til organisasjonssaker (f. eks.: til bedehus, til jordbruksforening, osv.): eller,_____for besøk.

7.,a. Bruk De en sæter nu? (Sjekk:)_____ja,_____neg.

b. Hvis neg, hvornår brukte De sæter sist?(Giv år:)_____.

c. Hvor mange kilometer er (var) sætern fra hjemmet?_____km.

8.,a. Liker De politiskkonsolidering mellom Aust Agder og Vest Agder?
_____ja,_____neg. (Sjekk en.)

b. Tenker De:(sjekk:)_____Arendal eller_____Kristiansand framstiller med hensyn til politikksaker Setesdal beste?

c. Hvilken avis (hvis noen) leser De med regelmessighet? (Giv navn av avis og byen avis kommer fra:)_____

_____.

9.,a. Hvilken bygde eller stad bor De (på) (i)?_____.

b. Hvor mange kilometer(hvis bygde) er nærmest byen?_____km.

c. Hvordan går (reiser) Deres familie som regel til by?(Sjekk:)
___familiebilen;___andre (nabors-) bil;___sykkel;___hest (andre dyr).

d. Hvordan går (reiser Deres familie som regel til byen utenfor Setesdal?(Sjekk:)___buss;___buss og tog;___familiebilen___andre bil.

e. Hva er reisertiden til lokalbysentrum?(Giv nummer:)_____time(r).