HUMAN GEOGRAPHIC RESEARCH IN THE NORTH AMERICAN NORTHERN LANDS*

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FEW people would doubt that northern North America needs more people. Nor is there much question that the region can support and will have a greater population in the near future. Further, the usual assumption is that the additional people should or would be permanent rather than temporary inhabitants. It is necessary therefore to consider the human geography, or the locational characteristics of the present and future population distribution. This analysis reveals the significances of the relative locations of people to people and land to people. In this broad field the following topics and problems have been selected to demonstrate the great range and promise of such research in northern North America.

Basic hypotheses

First, the regional extent of the Northern Lands needs defining. Existing boundaries are based largely on physical elements of the landscape, possibly because there have been more physical than cultural measurements. The regional boundary shown on Fig. 1 summarizes a series of cultural as well as physical characteristics. This arbitrary southern limit includes all of Alaska and Greenland and extends through southern Canada so as to include parts of the northern edge of continuous white settlement in North America. But how else may the regional limit be drawn?

The relative significance of northern North America to the population of the rest of the world needs to be determined. For example, thinly settled Alaska and the Canadian north have been considered as possible areas to absorb world over-population (Hewetson, 1946; Sandwell, 1950, p. 162; Warren, 1941, p. 167). But are they significantly so? Certainly not for the many European refugees who are largely city dwellers with few possessions and with occupations not yet needed in unsettled Alaska and Canada (Warren, 1941, p. 167). Perhaps not, also, for European and Oriental agriculturalists since economic or physical conditions would require different methods of farming from those to which they are accustomed. Yet people in modest numbers and with certain occupations, such as skilled labourers, might be absorbed from some of the present highly populated parts of Europe and North America.

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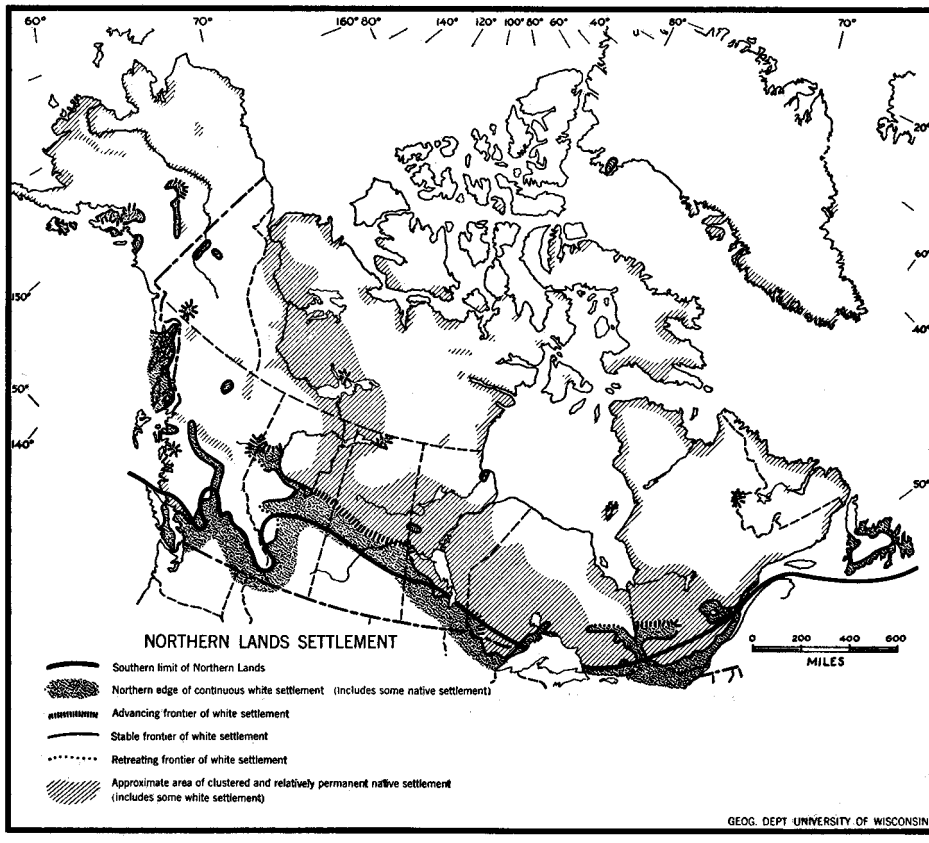

Fig. 1.

Northern North America's relative significance varies greatly with changes of viewpoints and time. It has been said that "There are no vital international problems which have their real origins in the northern high latitudes" (Jones, 1948, p. 16). Economically, however, Alaska is a world leader in commercial fishing, the Canadian north in commercial fur trapping and mining and forestry, and Greenland is a primary source of natural cryolite. In recent years, the whole region has possibly become more significant militarily than in any other way. Certainly the region's human geography is being changed drastically by the military developments.

It is sometimes assumed that the historical pattern of expanding Anglo-American settlement will continue. We know that the spread of Canadian population has been continuous and outwards from the original settlement (MacLean, 1933, p. 210); so it has been in Alaska (Stone, 1952) and Greenland (Friis, 1937, pp. 80–5) although from more than one origin in each. But we must question the validity of basing present-day human geographic research in Canada and Alaska on the hypothesis that because settlement swept westward to the Pacific Ocean and thence northward it will continue in this

direction. The "Go west" of the early 1900's is not necessarily "Go north" now. Equally, we should not assume that the expected population growth in northern North America is likely to maintain the steady increase of recent decades. The days of "boom" populations may be over for possibly the whole region. We need now to show the geographic trends for the present population of the North American Northern Lands and to forget the recent Anglo-American experiences of a continuous, rapid, and steady wave of thin settlement to the west and then northward.[1]

Further, we need to beware of subconscious, or conscious, acceptance of the concept of environmental determinism, in whole or in part. Humans may be thought to be controlled by their physical environment, or be a product of it, in the parts of the region which are more difficult physically. However, throughout the world people live in areas largely by choice rather than environmental force and they also select their ways of living. Further, we have seen through history that different people have lived differently in the same section of the north; even now in northern North America there are significant differences in occupations and population densities.

Another concept, often unsaid, is that any exploitation is only temporary. This needs testing. Present settlement based on non-renewable resources might be assumed to be temporary because the resource can be removed completely. However, do we anticipate losing the whole population of the Lake Superior ore ranges with the area's decline in production of iron ore? There is a semi-permanent, if not permanent, settlement in northern Sweden where the Kiruna iron mines are producing on a plan which extends production at least two hundred years into the future. Similar permanence might well be expected at the new Labrador iron mines and elsewhere?

If these non-renewable resources may be expected to last for long periods then we may certainly expect more permanence of settlement based on extracting renewable resources. There will naturally be fluctuations: fishing grounds, forests, and fur producing areas may be depleted by unwise use, or the persistence of settlements may become difficult because of economic trends. However, there is little evidence to justify an assumption that population based on exploitation of local renewable resources will not last as long as that based on, say, processing foreign resources. Furthermore, there are numerous examples of abandoned agricultural areas in the world to remind us that agricultural settlement is not necessarily permanent.

Is is often assumed, though, that new settlement in northern North America will be based on agriculture and some research has been improperly or unnecessarily limited by this idea. In two accounts nearly the whole North American Northern Lands, as shown on Fig. 1, is mapped as being "unfavorable to settlement" or "negative settlement areas" while the analyses are largely in terms of the agricultural future only (Broek, 1941; Stamp, 1952, p. 49); actually relatively great non-agricultural population increases have since taken place in the area. Another author mapped the future population density of Canada

[1]It is dangerous to accept such statements as "The settlement of this vast area [Canada] will follow along the lines indicated by the settlement during the last three centuries . . ." (Taylor, 1946, p. 71).

entirely in terms of the limits of certain crops (Taylor, 1946, p. 72). It is refreshing, however, in other Canadian accounts to find fishing, lumbering, trapping, mining, and petroleum developments considered as bases for future developments (Hewetson, 1946; Mackintosh and Joerg, 1934–40). To these may be added the rapid, and presumably permanent, population growth based on water power and tidewater location at Kitimat, the new lead mine at Mesters Vig in east Greenland, as well as Dawson's suggestion that agriculture, in the Canadian northwest at least, is likely to be based only on local demands which originate from non-agricultural occupation in the region (Dawson, 1945, p. 584). We need more of this completeness of analysis and denial of assumption that the future population will be rooted permanently only through agriculture.

Another hypothesis to consider about future settlement is whether it could or should be self-sufficient. There are, of course, varying degrees of self-sufficiency. However, specialization has accompanied much of the world's development, particularly in the mid-latitudes from which growth has spread to the adjacent Northern Lands. There are few expanding economies today which do not include increasing specialization, such as the cod fishing in Greenland. In times past, when people in cities had only a few more conveniences than those in rural areas, new settlers could be fairly self-sufficient and could accept the somewhat less convenient frontier life. Today, technological developments and the improvement of transportation and communication facilities generally have increased the differences of living in old and newly developed communities and have made it possible for new settlers to be constantly aware of what they are missing. Under these circumstances it appears wise for human geographers to prove whether or not future settlement should be thought of in terms of: specialized developments, combinations of specialities, or as frontier life with amenities unknown on the frontiers of the past. In the past, rural farm populations in Canada have spread over an area near the Northern Lands but as numbers of people increased the poorer lands were abandoned (Lemieux *et al.*, 1934). Should we not restudy this situation to see if the present movement of frontiersmen should be restricted to that land only which is best for the occupation proposed?

Hypotheses formed on assumed evidence must, of course, be resisted. A common belief is that persons from Scandinavia or the north-central United States are the best settlers in Alaska. Many experiences have shown the contrary. Similarly, lengthening hours of sunlight with increased latitude were thought to shorten periods of plant growth. Now we know that the reverse is true, that moisture and temperature are quite important, and that selection of plants for experimental growth is as complex as the selecting of new settlers.

In general it is clear that more thought and research on the basic hypotheses of frontier settlement are sorely needed. Much more information is required on both the physical elements of the landscape (Flint, 1950) and the human, or cultural, landscape (Keenleyside, 1950) before the North American Northern Lands can be developed wisely.

Population enumeration

There were approximately 937,000 people in the North American Northern Lands in 1951 (Table 1). These were composed of about 25,000 Eskimo, 22,000 Greenlanders, 80,000 Indians, and 810,000 white people. However, human geographic research depends on accurate, current, and detailed population data for specific areas and the problem is how to obtain such information.

Table 1. Estimated population for North American Northern Lands, 1951.

	Total	*Estimated portion in Northern Lands*
Alaska[a]	128,643	108,000[b]
Canada[c]		
Northwest Territories	16,004	16,004
Yukon Territory	9,096	9,096
British Columbia	1,165,210	20,000
Alberta	939,501	80,000
Saskatchewan	831,728	60,000
Manitoba	776,541	30,000
Ontario	4,597,542	110,000
Quebec	4,055,681	120,000
Labrador	7,890	7,890
Newfoundland	353,526	353,526
Greenland[d]	22,890	22,890
		(about) 937,000

[a]'United States census of population: 1950, Alaska, general characteristics', 1952. Washington: U.S. Dept. of Commerce, Bur. of the Census.
[b]Excludes 20,643 military personnel on duty in Alaska.
[c]'The Canada Year Book, 1952-53'. 1953. Ottawa: Dom. Bur. of Statistics, p. 128.
[d]'Report on Greenland, 1953'. 1953. Copenhagen: The Prime Minister's Second Dept. p. 2.

Improvement of the reliability of the censuses is a fundamental need. Much of the native population is mobile, being at fishing sites in summer and at hunting sites in winter. There is the risk of counting such people twice or not at all and it is clear that data may not be comparable if the censuses are taken at different times of the year, as has happened. Also, it is difficult and expensive to count relatively few people widely separated in such a large area as northern North America, and improved counting techniques are needed.

Northern population figures do not remain current for long, even if they are reliable. In Alaska, for example, the 77 per cent increase from 1940 to the 1950 figure of 128,000 people was the most rapid under the United States flag for the period. Yet the estimated population changed to 152,000 in April 1951, to 182,000 in April 1952, and to 199,000 in April 1953.[1] By the time Fig. 2 was completed for distributional analysis the population had increased more than 40 per cent! Thus, human geographers need to perfect rapid estimating of current population in northern North America and to aid quick publication of population maps and data.

As yet, the detail of census data is insufficient for analysis. Throughout northern North America the enumeration districts are too large for specific location of a population which is mainly (60 to 90 per cent) clustered in small groups. Usually official populations for unincorporated settlements with fewer than 25 people are grouped in district totals, thus making difficult the

[1]'Estimate of Alaska population, January 1, 1950–July 1, 1953'. 1954. Juneau: Office of the Governor, Alaska Development Board, Alaska Dept. of Health, pp. 5–6.

locational analysis of the large percentage of the population that lives in small settlements. A partial solution for this problem may be the "postcard censuses" taken by publishing companies, such as Rand McNally and Company. Also, population data by race at each settlement are often unavailable for past censuses. A frustrating example is the Alaskan 1920 census in which all Indians, Eskimo, and Aleuts were reported simply as "Natives". For Alaskan censuses special tabulations by race for settlements with more than 25 people may be purchased by special order whereas in Canada dependable details for Eskimo settlements can be obtained for the 1941 and 1951 censuses only.[1] Until such detailed data are generally available human geographic research is likely to remain on the too-small scale of large political (Veyret, 1953) and census divisions, which are geographically artificial, or the too-large scale of special studies of very small areas.

Population distribution

Analysis of population distribution is the core of human geographic research. In northern North America at least five generalizations may be made about the location of people: much of the population is in the southern parts of the region, settlements are largely on water bodies and primarily on coasts and large rivers, the people are clustered unevenly throughout the region, there have been significant changes in regional population patterns in recent times, and the explanations for the past and present distributions are complex and only partly known. But we need to know to what degree these generalizations are based on or may be supported by human geographic research.

Locational analyses are based on maps. Therefore, human geographic research must be preceded by the compilation of the available map and air photo coverage. For Alaska this has been done, but only partly so for northern Canada and for Greenland (Stone, 1954; Stone *et al.*, 1953). Also, the maps available need improvements in completeness and accuracy as well as enlargement in scale. Coverage of the whole region is available on the 1:1 million aeronautical charts and for much of it on 1:500,000 topographic maps. However, these scales are too small for the direct mapping of the form and function of settlements. Both of these may be interpreted, though, from the air photo coverage which is available for most of the region. These photos are suitable for detailed research where 1:20,000 to 1:40,000 verticals are available but the photos are often unsuitable for detailed interpretation in the large areas covered by oblique photography only. There is, therefore, serious need for improved human geographic mapping methods as well as for indices of the current map and photo coverage by areas and types. Human geographers should share part of the responsibility to prepare these indices.

In addition, there is a shortage of air photo interpretation aids for human geographic research. Procedures have been outlined (Stone, 1951), but no

[1]The problems of taking the census of Canadian Eskimo are noted in: "The 1951 census in the Northwest Territories" and "Population of Eskimo peoples". 1954. *Arctic*, Vol. 7, pp. 52–5.

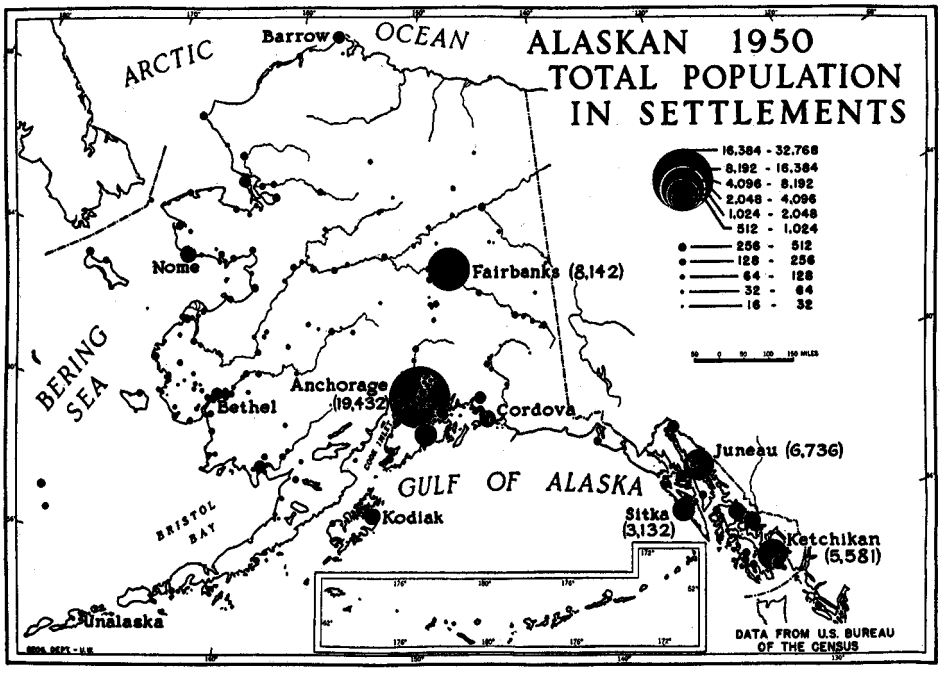

Fig. 2.

specific interpretation aids are generally available for arctic and subarctic settlements or uses of land. Because air photos are one of the basic sources for North American research, the immediacy of the need for interpretational experience and published aids, particularly in human geography, is emphasized.

Distribution of population maps for the region are scant and inadequate. There is pressing need for one for the whole region on a scale of, perhaps, 1:5 million, with a carefully designed population breakdown. The distribution maps now available for the major political parts of the region show the coastal and riverine concentrations properly but are out-dated, small in scale, or not comparable in the divisions of population.[1] Racial distribution analyses are as scarce. For example, the most recent published analyses of Canadian Indian distribution and Alaskan native locations are based largely on observations of the 1930's.[2]

Mapping population distribution leads immediately to a basic question: What are the significant units of size? For Fig. 2 the system of doubling numbers was employed largely for the visual simplicity of doubled areas of the circles for groups of increasing settlement size. From field observations

[1]*See*: Map of "Distribution of population, Canada, 1951" *in* 'The Canada Year Book, 1952–53'. 1953. Ottawa: Dom. Bur. of Statistics, *following* p. 128; Friis (1937, Fig. 7, p. 81); and U.S. Air Force, "Density of population chart; northern hemisphere". 1947 (revised). Washington: Aero. Chart Serv.

[2]Jenness, D. 1932. 'The Indians of Canada'. Ottawa: *Nat. Mus. Can. Bull.* No. 65; and 'House Report' No. 2503. 1953. Washington: U.S. Congress, House of Representatives, 82nd Congress, 2nd Session, Addendum IV, pp. 1,406–1,537 and Maps Nos. 156 and 157.

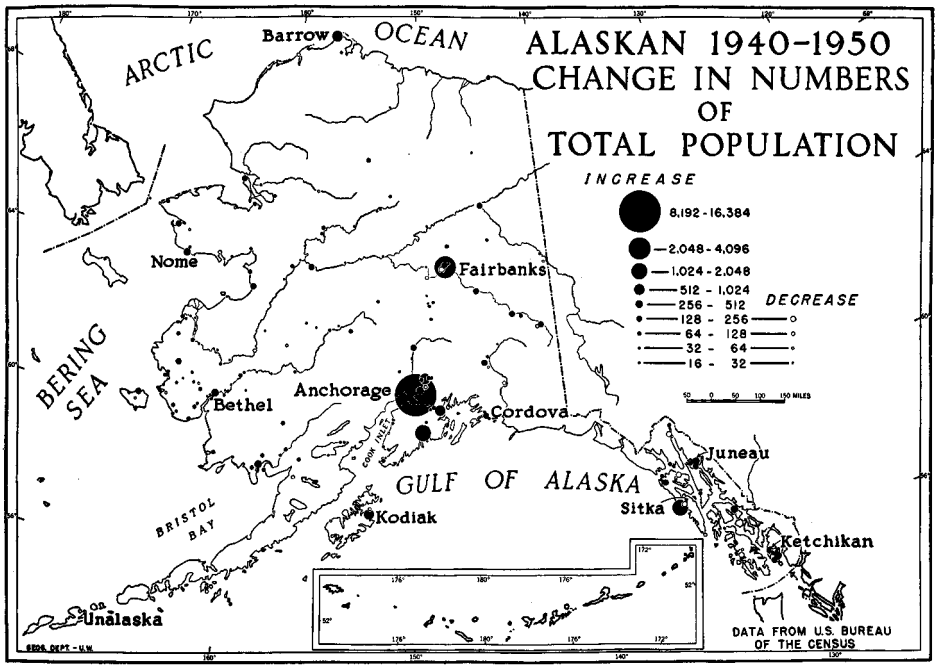

Fig. 3.

it is felt that the lower divisions shown are significant groupings of the population. That is, from the smaller to larger numbers the classes represent villages of increasing permanence of settlement. However, the classification is too subjective, particularly in the classes of more than 1,024 people. Further, should the Eskimo, Indian, Aleut, Greenlandic, and white settlements all be classified in the same system or separately? For example, a frequency analysis of the 1950 populations of Alaskan natives in settlements shows these groupings: Aleut 10–80, 80–180, and more than 180; Eskimo 10–80, 180–270, and more than 270; and Indian 10–50, 50–210, and more than 210. Perhaps this statistical grouping of settlement sizes is significant. Or, more likely, should a combination of size, area, race, and occupation be used in grouping populations? On this we sorely need experimentation.

On large-scale population maps the research may be in terms of density rather than individual settlements. If so, again there is need to determine what the significant classes are rather than selecting round numbers, such as 5, 25, or 100. Per-square-mile figures in areas of agglomerated settlement are of questionable value whereas more significant are the per-mile-of-coastline densities as have been used in analysing Canadian native settlement (Kroeber, 1939; Robinson, 1944).

Distribution of changes in population have been studied little in northern North America. Figure 3 is an example of what is needed. It shows the well-known heavy concentration of the Alaskan 1940–1950 population increase in the Anchorage area. Less well known and possibly more significant is the

concentration of decrease of population in the smaller settlements of southeastern Alaska, perhaps directly related to the decreased fish pack in recent years. However, these growth figures represent only the total changes in settlements, thus clouding locational differences of change related to variations in sex, race, and occupation. It is known, for instance, that changes in Alaskan white population (Stone, 1952) differ from those of the natives and it is suggested that the same is true, for example, of the Canadian inland and coastal Eskimo. There are many additional examples of such research needed in Greenland and Canada.

Historical geographic research on population distribution is desirable to supplement current investigations. Where, for example, did the Indians, Eskimo, Aleuts, and Greenlanders live in the past in northern North America? What are the relations of those locations to present distributions and why the changes, if any? In Alaska there are indications that the Indians now occupy about the same areas as they did when white settlement began whereas the Eskimo are presently in a smaller area. Detailed analyses to verify these generalizations are in progress but the same kind of research is essential for Canada and Greenland. The general locations of abandoned early Eskimo settlement are known for the northern Alaskan coast, in the southeastern Queen Elizabeth Islands, and on the eastern Greenland coast. However, additional investigation is necessary to determine why the people were once there, but are no longer. Further, "Even today . . . we are still unable to speak with assurance on the origin and affinities of the Eskimo race" (Collins, 1951, p. 440).

Population growth needs to be analysed locationally in terms of birth and death rates. This might show regional needs for better nutrition or sanitation. Further, determining how to measure mobility, often more characteristic than stability at a single site, would be of great significance to the understanding of the northern native population. It is probable, for example, that on Fig. 3 the increased population of the Yukon–Kuskokwim delta is partly a result of Eskimo occupying sites in 1950 that they were not occupying in 1940 because of differences in the months when the censuses were taken of people living at two places each year.[1] It would be desirable to analyse and depict a changing population in terms of areas, distances, seasons, and types of mobility rather than in terms of fixed sites.

Human geography also involves analysis of function and form of settlement. It is likely that regional and sub-regional delimitations of types of commercial and subsistence occupations will help to anticipate the population potential of an area under a given culture. So would research on the kinds of permanent and temporary residences, the shapes of the villages, and the size and location of the areas upon which each settlement depends. Such study has been initiated (Adams, 1939, 1941) and recently stimulated by research of both applied and theoretical values (Rumney, 1949; Shimkin, 1955).

[1]The number of symbols depicting decreased settlement in the delta area does not equal those showing increase primarily because many of the 1940 locations cannot be determined. The 1950 census was taken on April 1 while the previous enumeration was on 1 October 1939, when the natives were likely to have been at a different type of site.

For existing settlements human geographers need to devise measures of the permanence of occupation. These measures will involve different ways of making a living at one site, some of the ways being exploitive. But what else is significant? The number of stores, acreage of cleared land, construction of public utilities, residential building materials, incorporation of settlements, and attitudes of the people? Only the testing of possible measures from present settlements and historical analyses of representative ones–representative of different cultures, occupations, and locations–will produce scientific results useful in the analyses of present and future settlements.

It might be said that there can be no permanence of white settlement in northern North America without good transportation. Thus, challenges are present for human geographers to prove how much permanence of settlement is a product of various types of transportation in areas of varying occupations. Exemplary studies have been done on the significance of the Mackenzie River (Lloyd, 1943) and the Hudson Bay Railway (Innis, 1930). However, there is need for continuing research on these lines of circulation. Even more, planners should have analyses of the significance to the areas traversed by the railroads to Moosonee, Lake St. John, Waterways, and Hines Creek, and of the roads in these areas as well as in the southeastern quarter of the main part of Alaska. These studies would be somewhat historical in nature but present-day analyses should be of value in determining the significance of the Alaska Highway to settlement,[1] of the railroad to the Knob Lake iron centre, and of the new commercial air routes across northern North America.

Further analyses of the permanence of native settlement is a requirement as well. Most of the northern North American natives are largely dependent on animal life for their existence and we know that "In the Arctic, especially, original faunas are so delicately adjusted to their environment that any kind of northern development is likely to have unfavourable consequences for wild-life".[2] Thus, studies of the continuance of native settlement in an area must be closely tied to faunal studies.

Frontier settlement

Frontier settlement research is one of the more fascinating and promising parts of northern North American human geography. Its focus is the edge of an *area* of occupation (a way of living), that is, the zone of settled–unsettled or used–unused land, whereas studies of "pioneer" settlement refer to economy rather than area. Thus, frontier settlement analysis requires great breadth of research involving both the physical and cultural elements of a landscape and leading to the total understanding of man–land relations. The promise of this research is the possible guidance that may be given to present and future settlers to assure their permanence of settlement.

Much has been written on frontier settlement in the past; particularly in the economic depression of the late 1920's and early 1930's when Bowman

[1]In progress at the University of Wisconsin.

[2]Washburn, A. L. 1951. "Geography and arctic lands" *in* Taylor, G. 'Geography in the twentieth century'. New York: p. 285.

initiated pioneer settlement research to aid people in the "back to the land" movement (Bowman, 1931; Joerg, 1932; Mackintosh and Joerg, 1934–40). Since then, interest in the development of principles of frontier settlement has lagged and only a few studies have been made of relatively small areas in the North American Northern Lands.[1] Yet the past twenty-five years have included great changes in the world's economy and big technological improvements, bringing new problems to consider in frontier settlement research.

The most pressing geographical questions are: Where is the frontier and how should it be defined? One location is shown on Fig. 1 as generally between 200 and 300 miles north of the southern edge of the Northern Lands and in a few places extending south of the regional boundary; this frontier is the northern edge of relatively continuous settlement by white people, regardless of their kind of occupation. But perhaps continuity of settlement is not to be expected in the western mountains and, therefore, the frontier really should be farther north and include the settlement of southeastern and southern central Alaska. Further, if the frontier should mark the farthest extent of settlement by any people then the boundary is a very irregular line from 500 to 1,200 miles north of the frontier on Fig. 1.

It is clear that a frontier is defined in terms of arbitrarily selected elements. Thus, there are several frontiers, each of which needs careful definition and plotting on the map. Where, for example, are the frontiers of full-time agriculture, forestry, mining, hydroelectric development, and land transportation? What are their characteristics?[2] Where, also, are the frontiers of white–native contact where problems of adjustment may be quite serious (Fig. 1)? And, by no means least, where is the military frontier? What, for example, are likely to be the temporary and permanent effects of the construction of lines to provide military intelligence in northern North America?

Boundaries involving people are usually dynamic lines. Therefore, human geographers need to analyse frontier settlement in terms of stability. An example is the present limit of continuous white settlement which is expanding in parts, contracting in others, and elsewhere is relatively stable (Fig. 1). It would be helpful to see this classification applied to other types of frontiers, to learn what differences there are in rates of expansion and contraction, and to determine why the motions or stability occur in certain localities. Further research needs are to locate and explain the various types of movement of a frontier: mass movement, "leap-frogging", along fingers, and by encirclement.

Methods of new settlement by native and non-native require analysis. The present resettlement of Quebec Eskimo with Baffin Island families at Resolute and Craig Harbour is an opportunity for study of techniques leading to permanence of native settlement. In Alaska is the chance to learn about, and to aid, the adjustment of the Eskimo at Barrow Village to the substitution of a defence base for a petroleum exploration camp. An example of the

[1] In Canada primarily in the Geographical Branch of the Dept. of Mines and Technical Surveys and in the Dept. of Agriculture.

[2] Agricultural, mining, and forestry frontiers are examples of the suggested type of analysis given in Mackintosh and Joerg (1934–40, Vols. 5 and 9). Recent consideration of these problems is given by Hare (1952).

experiences of white settlement and resettlement has been recorded (Stone, 1950) but of the unsuccessful postwar veteran's settlement at Chilkoot Barracks and the partly successful religious settlements elsewhere in Alaska the records are lacking. Similarly, few reports are available on Canadian settlement during the past twenty years in the Peace River district (Chapman and Gilmore, 1953) and in the Quebec–Ontario Clay Belt (Boucher, 1946; Spence, 1946). However, publication on and planning for the great recent changes in Greenland afford human geographic data which may be useful in some other parts of North America as well as numerous immediate opportunities for applied research (Dunbar, 1947; Greenland Dept., 1953).

Human geographic analyses have already been included in some land classification surveys (Chapman and Gilmore, 1953; Bureau of Land Management, 1947; General Land Office, 1946), and should supplement physical resource analysis in all mapping of the suitability of land for settlement. It was suggested previously that agriculture is not necessarily the sole means of living permanently in a commercial world, particularly when we are considering native occupation. In addition, the function and form of new settlement is as likely to be determined by the new settlers, in the long run, as by the planners. As has been said, "The equipment that new settlers and native residents bring to the new society are as important as the country that receives it, especially the ideas that individuals live by . . ." (Lantis, 1953, p. 30). The human geographer's task is to help produce the harmonious meeting of the settlers' and planners' desires and capabilities in conjunction with the classification of land for either resettlement or new settlement.

The value of frontier settlement analyses for future settlement is unquestionably great. It has been pointed out that land now vacant in the world is usually so because of its marginal nature (Binns, 1951, p. 3; Calder, 1949). If this is true, new settlement will have to be undertaken with caution and will be, therefore, a planned or guided movement of people, rather than a spontaneous one, to ensure its permanence. Such guidance may require governmental participation. And, before the new planned or guided settlements are started research on the advantages of public versus private financing and group versus individual settlement will be necessary. Many other general problems and needs have been outlined (Bowman, 1951). The results of such research could have been used by settlement planners in recent times and are sorely needed at present.

Methods of research

Much of the research suggested could probably be done best by analysts working from general considerations toward the specific. To accumulate sufficient large-scale studies of small areas in order to determine principles or trends will take too long and be difficult, particularly where changes are rapid and great. In the analysis of physical features in northern North America great success has been achieved by starting research on broad areas at small scales and supplementing it with large-scale studies in critical or problem areas

(Hare, 1955). Porsild's work (1954) illustrates the advisability of this procedure in human geographic research.

Also, the historical method can be used successfully to supplement research on current distributions. This is particularly desirable with respect to analyses of frontier settlement and distribution of population. For both topics explanations of current patterns are likely to be understandable in part from historical distributions and the reasons for them.[1]

Human geographic research comparing northern North America with other Northern Lands should be most useful. In Scandinavia, for example, there are settlements much older than in northern North America and which are based on exploitive industries. Have Norway, Sweden, Finland, and Iceland been able to support larger populations longer than in northern North America only because of earlier settlement? Or, is it not because of their proximity to and water connection with the great market and producing area of northwestern Europe?

Only examples of the kind of human geographic research that is possible in the North American Northern Lands have been suggested.[2] The great breadth of research accomplished elsewhere in this field is shown by the large number of topics under human geography in bibliographies.[3] Yet, there are relatively few references on such work in northern North America and these are mainly inventories from which analyses are still to be made.[4] The future of human geographic research in the North American Northern Lands is very promising. It is by such work that the planner, administrator, research analyst, and settler will acquire the data most needed to make secure the present and future population of the region.

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[1]For examples of white population *see* Stone (1952) and for examples of Eskimo and Greenlanders *see* Collins (1951) and Jenness (1944).

[2]Many promising geographers have forsaken research in the Northern Lands because they believed research funds were not available for topics with such broad scope or involving work in distant areas. There are many possible sources of support and those desirous and deserving of it are sure to find it. *See*, for example, Stone *et al.*, 1954.

[3]'Arctic bibliography'. Arct. Inst. North Amer. and U.S. Dept. Def. 1953–5, Vols. 1–5.

[4]Human geographic references in addition to those in 'Arctic bibliography' are in: B. Dietrich. 1930. "Nordamerika" *in Geogr. Jahrbuch*, Vol. 45, pp. 243–300; W. Tuckermann. 1941. "Kanada (und Newfoundland)" *in Geogr. Jahrbuch*, Vol. 56, pp. 357–432; H. Wagner. 1940. "Geography of settlements and population" *in Geogr. Jahrbuch*, Vol. 55, pp. 1–461; Geogr. Br. Can. 1950. "Selected bibliography on colonization and land settlement in Canada"; and Geogr. Br. Can. 1954. "A list of periodical literature on topics related to Canadian geography for the period 1940–1950".

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