

Frontier settlement as a dynamic process: using GIS to map the Ukrainian settlement frontier in southeastern Manitoba

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Abstract: Beginning in 1896 immigrants from western Ukraine settled in the Stuartburn district of southeastern Manitoba. The lands occupied by these settlers were often sub-marginal and included large tracts of swampland. To determine the process and tempo of land occupation a time series of maps showing the progress of frontier settlement was created using GIS. This paper describes and evaluates the methodology employed in producing this time series of maps. The extent of Ukrainian settlement is plotted on a bi-annual basis from 1896 to 1940.

Introduction

In 1892 the first small group of Ukrainian settlers to enter Canada took homestead land in east-central Alberta. For the next three years practically all Ukrainians who came to Canada followed this first group to Alberta and settled alongside their compatriots, laying the foundations of what would eventually become the largest Ukrainian settlement in the West. It was not until 1896 that Ukrainians settled elsewhere in the West (Kaye 1964). One of the first groups of settlers to do so chose to select their homesteads in Manitoba, east of the Red River in the bush country that lies immediately north of the international boundary (Lehr 1988)

They wished to settle near to the Mennonite reserves where they could secure employment to raise capital for the development of their farms but this proved to be impractical as there was not sufficient vacant land near to the Mennonites, certainly not a

contiguous area that could accommodate a settlement of twenty families or more (NAC Wendelbo 1896). Further east, beyond the valley margin was a vast unsettled area of “bush country,” which had been surveyed but not settled. Sir Richard Cartwright had managed to acquire several sections of land east of the Red River on which he ran cattle and there was a scattering of settlers to the east of Cartwright’s lands who were then at the very limits of settlement. To the Ontario border and beyond, the land was virtually empty.

In 1896 an initial settlement of some 94 Ukrainian immigrants in 28 families settled in Township 2 Ranges 6 and 7 East (Kaye 1975). This colony grew, through chain migration, to over 1500 families by 1920, and eventually embraced some 19 Townships, an area of 684 square miles (Figure 1).

The lands selected by this first group of Ukrainians to settle in Manitoba were later described as marginal at best and mostly unfit for settlement. In retrospect it seems odd that this area of badly drained, clay, and gravelly soils was first settled by one of the best organized and best led groups of Ukrainian settlers ever to settle in the West. Led by Kyrlo Genik, these first settlers had been selected by Dr. Osep Oleskiv, the Ukrainian professor of agriculture whose pamphlets *Pro Vilni Zemli* and *O Emigratsii* were largely responsible for triggering Ukrainian interest in Canada as a destination for emigrants. A year previously Oleskiv had visited Manitoba and toured the area south of Winnipeg as far as, and possibly beyond, Dominion City, on the eastern margin of the Red River valley. On the basis of this reconnaissance he advised settlers to select land south of Winnipeg, adjacent to the Mennonite reserves where cash-poor settlers could obtain employment (Kaye 1962). He perhaps made a common error in assuming that land quality remained constant throughout the region and that the quality of the soil that he observed in the Dominion City area would be much the same in the more heavily wooded area beyond the valley margins some twenty miles to the east. It may have been that he was aware that the nature of the land changed but considered it to be of little consequence since he intended his settlers to enter dairy farming and stock rearing, or perhaps he was misled by the Winnipeg land agent’s description of the area as “chiefly rolling prairie interspersed

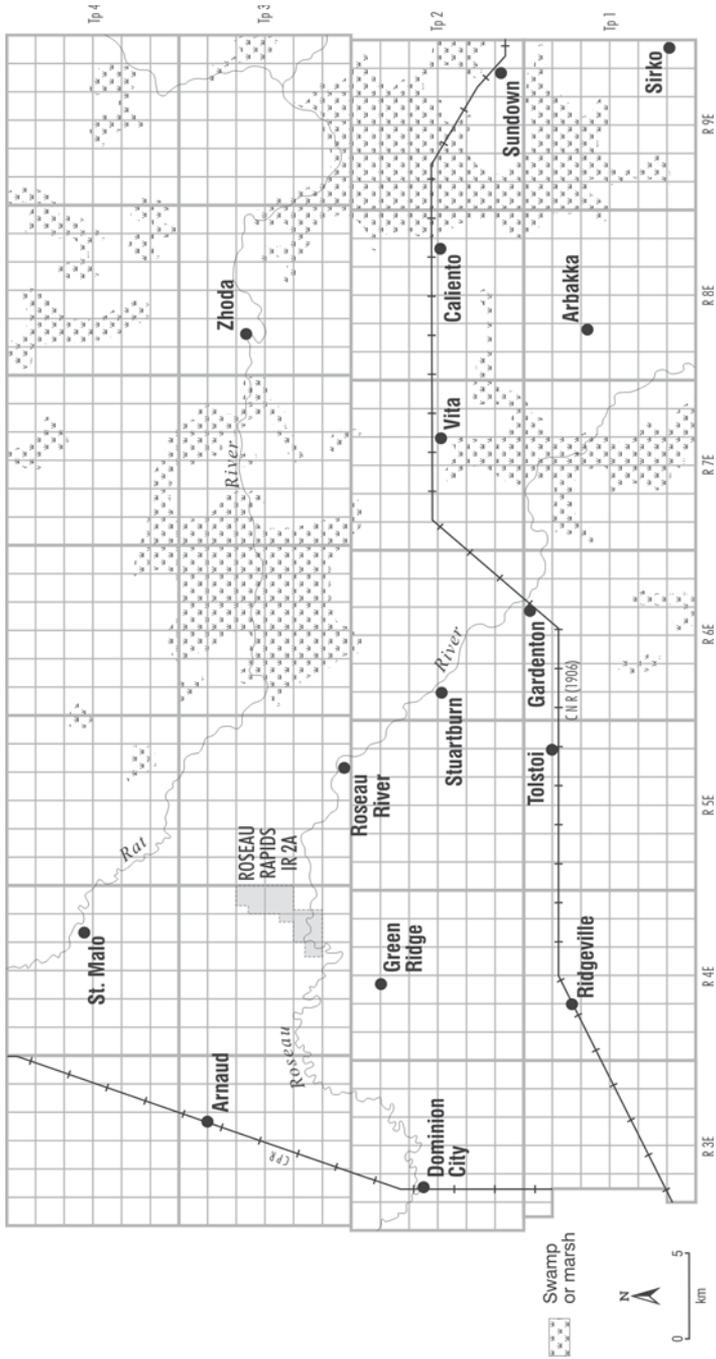


Figure 1: Area of southeastern Manitoba initially settled by Ukrainians.

with fine groves of poplar timber, the soil ... a rich dark loam” (NAC Carstens 1896)

What later proved to be more realistic assessments were that the area was “... very rough and hard to clear and improve,” and that it was “...of inferior character, and as such would be rejected by ordinary (i.e. Canadian) farmers...” (Canada, Sessional Papers 1896) The Commissioner of Immigration in Winnipeg, W.F. McCreary, had already learned that the Ukrainians evaluated land somewhat differently than settlers of other backgrounds and noted that “...they care but little whether the land is heavy soil or light gravel; but each man must have some wood on his place....” (NAC McCreary 1897). In his opinion the Township had some “very nice timber bluffs” and the land was of the type that Ukrainians elsewhere had settled eagerly (Canada Sessional Papers 1900). It has been argued elsewhere that these settlers not only evaluated the resource base from perspectives different from those of settlers from other backgrounds but that they were prepared to overlook a homestead’s environmental shortcomings if they could attain a social advantage by settling adjacent to other family members or friends (Lehr 1985; 1996).

In order to gain further insight into the settlement process and the effect of the physical environment on the movement of the frontier of settlement, it was decided to map the extent of Ukrainian settlement, showing entries, abandonments, and patents, throughout the Stuartburn block from the inception of settlement in 1896 until the frontier had effectively closed in 1930. To do this effectively using conventional manual mapping techniques would be a daunting, extremely time consuming undertaking, so it was decided that GIS techniques would be employed and that as a first step a time series of maps showing the state of settlement at two year intervals would be produced.

Methodology

Maps are geographers’ most important tool for displaying and analyzing spatial relationships. In this case they allow the process of settlement to be followed and the evolving pattern to be

immediately evident. At the time that settlement was taking place neither the process nor the pattern would have been readily discernable by an observer on the ground. Maps, through their ability to convey to the observer information which never actually appears in the landscape, such as the ethnic origin, religion or age of a homesteader, can make the invisible visible. Through changes in scale they can extend our vision and so enable regional perspectives to be apprehended. Maps also have the capacity to extend our vision by displaying aggregate data, that is by displaying temporal relationships at another scale. Conventionally this has been done by compressing a period of time down to a point in time. For example, we can create a map of the Ukrainian settlement that took place between 1890 and 1900. Now, with computer technology, it has become practical to create animated sequences. For example, to study the progress of Ukrainian settlement the time scale can be changed so each year is represented by one second. Just as small distances between the symbols on the map represent larger distances on the ground we can use small units of time to represent longer time periods; a second might represent a day, a week, a month, or a year, or whatever time period best illustrates the process under examination (Vasiliev 1997).

For this study the progress of settlement at intervals of two years was mapped beginning in 1896. This was the year that Ukrainian settlers first entered the district and began to make official entries on to the land by paying an entry fee of \$10.00. After they had fulfilled certain agricultural obligations, had built a house of specified dimensions and had resided on the homestead for a period of at least three years settlers were eligible to apply for the patent to their homestead. If this was granted they then owned the land outright, and so could mortgage, lease, rent or dispose of it as they saw fit. This administrative change in the status of the land was also mapped.

Records of homesteading attempts on over 1600 quarter sections in southeastern Manitoba were extracted from the records of homestead entry now held in the Provincial Archives of Manitoba. Each of these records, which contained up to 41 separate items of data, was then entered into a database. Only a very small number of these data fields were used in this preliminary analysis.

The first field in the database contains code numbers uniquely identifying each quarter section of land, other fields include the date of entry onto the land, the name of the settler, the settlers ethnic origin, the date the land was patented, the amount of land cleared and cultivated by year, and so forth.

The GIS software package IDRISI was used to generate the maps. First a raster image of the area was created where the cell values were the unique quarter section code numbers. The quarter section codes provide the essential link back to the database so other fields of data can be mapped. Coverages of the entry and patent years were made by having IDRISI replace the quarter section codes with the entry and patent years. These layers were then reclassified and overlaid on a raster image of the areas swampland to create coverages showing the state of settlement at the selected times. Vector overlays showing the location of rivers, the township grids, and the rail lines, when they came in, were added to create the final maps. The actual GIS operations were called from a macro file so it was only necessary to change the date on a few lines and rerun the macro file to create a new map.

Interpretation

The first maps showed some unexpectedly sharp and what appeared to be arbitrary limits to the extent of Ukrainian settlement. Some townships were not settled by Ukrainian or any other settlers according to available data. To ensure that no errors of omission had occurred in the recording and entry of data during the research phase of the study, the basic homestead entry information was checked against the information recorded in the Township General Registers. These data are less comprehensive than the Records of Homestead Entry but the Township General Registers do contain the name of all who attempted entry on to each quarter, the date of entry, and indicates if and when patent to the land was granted, or whether the entrant abandoned the claim. There is the further advantage that this record contains data on all lands including those that were never entered or patented or were not opened to homestead settlement.

These records indicated that the limits of the Ukrainian settlement were set by the United States boundary to the south, by physical limitations to the east, by 1880s Anglo- Canadian settlement to the west and by the presence of Metis Land Grants in Townships 3, 4 and 5 in Range 5E and the presence of Mennonite settlers, who entered in 1874-6, to the north in Township 6 Ranges 5 and 6E (see Figure 6). Other Townships that conspicuously lacked Ukrainian settlement and appear to be enclaves of vacant land in the midst of the Ukrainian settlement were entirely devoted to Metis Land Grants and so were never available for homestead settlement by non-Metis settlers. Other Townships were never opened to homestead settlement for other reasons. Townships 4 and 5 Range 7E, and Townships 4 and 5 Range 8E, were designated as “Swamp Lands” and remained vested in the Crown and thus were never opened to homestead settlement (PAM).

The time series of maps illustrates that the process of settlement was not the simple movement of an easily defined frontier. From the initial nucleus of settlement in Township 2 Range 6 E Ukrainian settlement expanded westwards until it encountered lands previously settled by non-Ukrainian peoples. To the south the international boundary limited settlement, although several families inadvertently wandered across the poorly marked border and settled on the most northerly tier of sections in Minnesota adjacent to their compatriots in Canada. These settlers were not recorded in this Canadian data and hence do not appear on the maps. Settlement expanded freely to the east, unfettered by political or administrative borders. The physical environment was the most significant factor controlling this eastward movement of the settlement frontier. The maps clearly demonstrate that swamps formed a physical barrier which caused the frontier to stabilize until most of the eligible vacant lands behind the frontier were taken, at which point settlement would leap-frog across the swamp and create a new nucleus which would expand both eastwards and westwards as settlers sought lands alongside their relatives and friends (Figures 2-6).

On occasion Ukrainian settlers would move into swampy areas. A common assumption has been that this was a course of action imposed upon them, one fostered in part by politically motivated claims carried at the time by the *Winnipeg Telegram*:

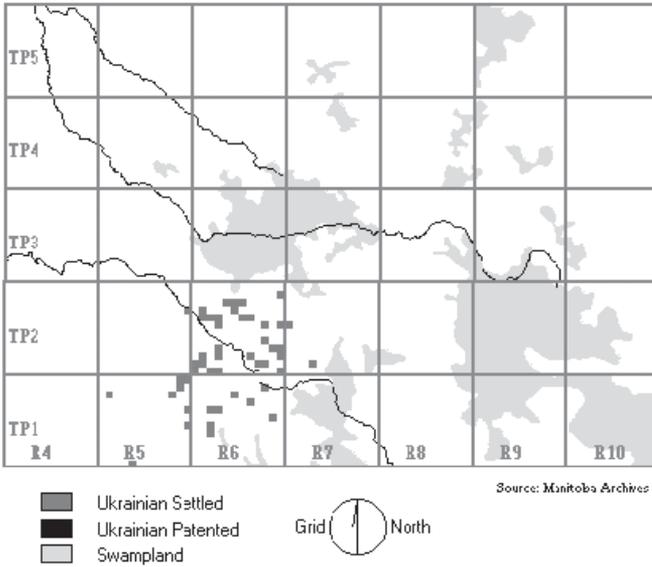


Figure 2: Ukrainian settlement in southeastern Manitoba prior to 1898.

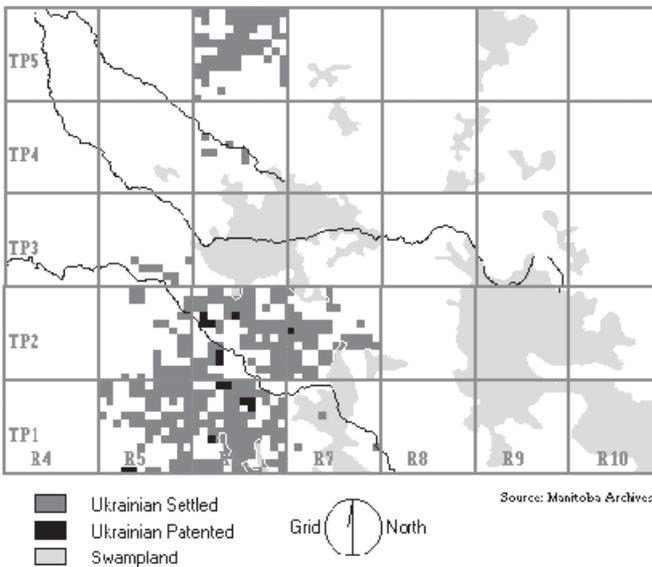


Figure 3: Ukrainian settlement in southeastern Manitoba prior to 1902.

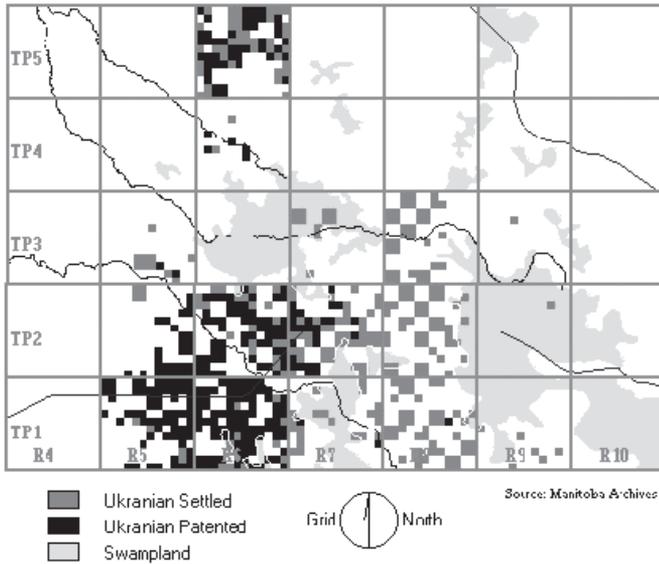


Figure 4: Ukrainian settlement in southeastern Manitoba prior to 1906.

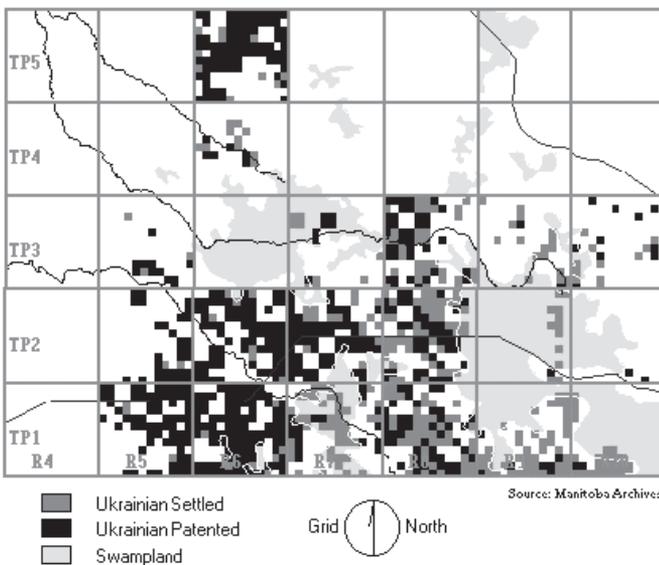


Figure 5: Ukrainian settlement in southeastern Manitoba prior to 1916.

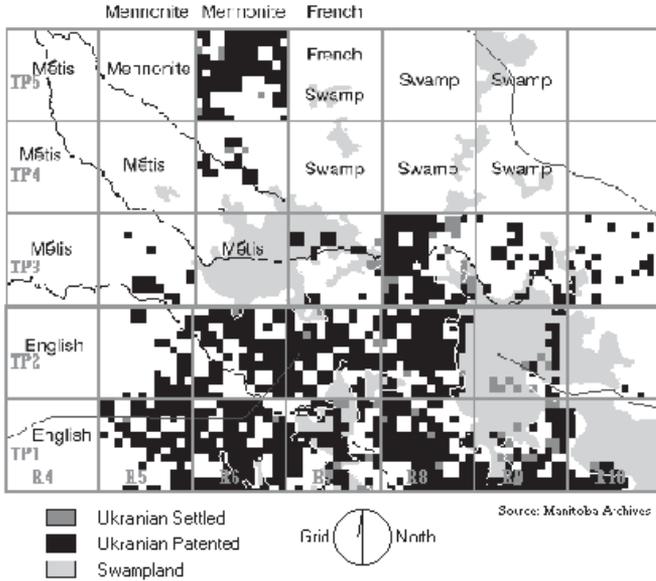


Figure 6: Ukrainian settlement in southeastern Manitoba prior to 1928.

Frank Oliver [the Minister of the Interior] has placed these unfortunate Galicians on these lands and left them to bear as best they could the trials and sufferings incident to the attempted settlement of districts that could only be reached by walking through five or six miles of water. Women have shared with men these sufferings, deliberately imposed upon them by the Minister of the Interior (Winnipeg Telegram 1 April 1911)

The documentary record suggests otherwise and the process of settlement revealed by the maps also suggests that such claims were either politically motivated or were founded on ignorance of the situation in southeastern Manitoba. The lands entered before 1900 almost without exception lay outside of the swampland. In 1904, settlement was pushing the margins of the swamps in Township 1 Range 6 East, but only two settlers had entered for homesteads well within the swamp. It is possible, of course, that some Ukrainian settlers may have squatted in this area before it

was officially opened for settlement and so would only appear on the record when they first made an official application for entry on to their prospective homesteads (Lehr 1988). Since only two settlers appear to have made entry for homesteads in this area by the end of 1904, it seems that there was no great pent-up demand by squatters waiting for the area to be opened for settlement. Indeed, there was no significant movement into this territory until 1910 when alternative locations in the same general area were becoming increasingly scarce. At this time settlers had to weigh environmental limitations against the social advantages that would accrue from settling alongside friends and kin. It is significant that the first two settlers to penetrate the swamp in Township 1 Range 6E formed the nucleus of a small group who subsequently settled around them in the swamplands.

Conclusion

When placed in the context of the documentary record and supplemented with other data gleaned from the records of homestead entry, municipal tax rolls and from pioneer reminiscences, map time series can greatly enhance our understanding of the settlement process. While it is possible to produce such a series of maps using conventional manual plotting of data the process would be labourious, time consuming and expensive. More significantly it would be relatively inflexible. Previous attempts to map the spread of Ukrainian settlement over a smaller area than that covered in the present study produced unsatisfactory results. To produce a single map showing the annual spread of settlement, while distinguishing between entries and patents, necessitated the employment of numerous hues in the legend. This created a map which was overly cluttered and as a result did not convey a clear impression of temporal trends.

Perhaps more significantly, when plotting data manually, the researcher is effectively denied the opportunity to see the state of settlement at a particular month within a specified year, or to select out a particular category such as the entries made or the patents granted in a specified month. The flexibility and low cost of

producing maps of temporal data using GIS technology promises to establish it as an essential element in modern historical geography.

Acknowledgements

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